Personal Research Database

Part B

By

Prof. Yuh-Shan Ho

Last data updates: 10/01/12

#: in processing of inter-library loan

?: has not asked for inter-library loan yet

??: questions

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# Title: Baillieres Clinical Endocrinology and Metabolism

Full Journal Title: Baillieres Clinical Endocrinology and Metabolism

ISO Abbreviated Title:

JCR Abbreviated Title: Baillieres Clin Endocrinol Metab

ISSN: 950-351X

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Messina, M. and Bennink, M. (1998), Soyfoods, isoflavones and risk of colonic cancer: A review of the in vitro and in vivo data. *Baillieres Clinical Endocrinology and Metabolism*, **12** (4), 707-728.

Abstract: Soy foods and soybean components have received considerable attention of late for their potential role in reducing cancer risk. Although the relationship between soy intake and the risk of breast and prostate cancer has been the focus of most interest, the relationship between soy intake and other cancers, including colorectal cancer, has also been studied. Several anti-carcinogens have been identified in soybeans, but most enthusiasm for the potential anti-cancer effects of soy undoubtedly stems from work involving soybean isoflavones. Isoflavones have a limited distribution in nature, and, for practical purposes, soyfoods are the only nutritionally relevant dietary source of these phytochemicals. Isoflavones are weak oestrogens but possess other potentially important biological attributes independent of their ability to bind to the oestrogen receptor. The isoflavone genistein inhibits the growth of most types of hormone-dependent and hormone-independent cancer cells in vitro, including colonic cancer cells. Several mechanisms for the in vitro anti-cancer effects of genistein have been proposed, including effects on signal transduction. A number of epidemiological studies, primarily of Asian origin, have examined the relationship between soy intake and the risk of colorectal cancer. Although these studies provide little support for a protective effect of soy, concerns have been raised about the completeness of the soy intake data, since soy was not the focus of these studies and most of this research was conducted prior to the recent interest in the anti-cancer effects of soy. The effect of soy/isoflavone intake has also been studied in rodents, but again these data are conflicting and provide only modest support for a protective effect. Although the relationship between soy intake and colonic cancer risk is certainly worthy of further investigation, there is, at the moment, very limited support for soy exerting a protective effect against this type of cancer.

Keywords: Soy, Isolate, Isoflavones, Genistein, Colonic Cancer, Epidemiology, Animal, Genistein Inhibits Proliferation, Postmenopausal Hormone Use, Tyrosine Kinase Inhibitor, Cell-Cycle Progression, Large-Bowel Cancer, Breast-Cancer, Colorectal-Cancer, In-Vitro, Leukemia-Cells, Phyto-Estrogens

# Title: Baillieres Clinical Rheumatology

Full Journal Title: Baillieres Clinical Rheumatology

ISO Abbreviated Title: Baillieres Clin. Rheumatol.

JCR Abbreviated Title: Bailliere Clin Rheum

ISSN: 0950-3579

Issues/Year: 4

Journal Country/Territory: England

Language: English

Publisher: Bailliere Tindall

Publisher Address: 24-28 Oval Rd, London NW1 7DX, England

Subject Categories:

Rheumatology: Impact Factor

? McGill, P.E. (1995), Endemic fluorosis. *Baillieres Clinical Rheumatology*, **9** (1), 75-81.

Abstract: The presence of excessive quantities of fluorine in drinking water is accompanied by a characteristic sequence of changes in teeth, bone and periarticular tissues. These changes lead to a variable degree of locomotor disability, ranging from simple mechanical back pain to severe, crippling, combined locomotor and neurological impairment. In endemic areas, a substantial proportion of the population may be affected, posing a severe public health problem. In some areas, the hazards to human health are not fully appreciated and are under-reported. The maximum impact is felt in those communities engaged in physically strenuous activities, either agricultural or industrial. The need of these often isolated communities in economically hard-pressed countries, for the provision of low-fluoride drinking water remains a hope rather than an expectation at the present time.

# Title: Basic and Applied Ecology

Full Journal Title: [Basic and Applied Ecology](http://www.sciencedirect.com/science/journal/14391791)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Retzer, V. and Jurasinski, G. (2009), Towards objectivity in research evaluation using bibliometric indicators: A protocol for incorporating complexity. *Basic and Applied Ecology*, **10** (5), 393-400.

Full Text: [2009\Bas App Eco10, 393.pdf](2009/Bas%20App%20Eco10,%20393.pdf)

Abstract: Publications are thought to be an integrative indicator best suited to measure the multifaceted nature of scientific performance. Therefore, indicators based on the publication record (citation analysis) are the primary tool for rapid evaluation of scientific performance. Nevertheless, it has to be questioned whether the indicators really do measure what they are intended to measure because people adjust to the indicator value system by optimizing their indicator rather than their performance. Thus, no matter how sophisticated an indicator may be, it will never be proof against manipulation. A literature review identifies the most critical problems of citation analysis: database-related problems, inflated citation records, bias in citation rates and crediting of multi-author papers. We present a step-by-step protocol to address these problems. By applying this protocol, reviewers can avoid most of the pitfalls associated with the pure numbers of indicators and achieve a fast but fair evaluation of a scientist’s performance. We as ecologists should accept complexity not only in our research but also in our research evaluation and should encourage scientists of other disciplines to do so as well. (C) 2008 Gesellschaft fur Okologie. Published by Elsevier GmbH. All rights reserved.

Keywords: Authorship, Bibliometric Indicators, Citation Analysis, Citation Analysis, Citation Index, Co-Authorship, Contributorship, Ecology, Index, Indicators, Journal Impact Factors, Multiple Authorship, Patterns, Peer Review, Publication, Publication Bias, Publications, Quality, Research, Research Evaluation, Science

# Title: Basic and Applied Myology

Full Journal Title: [Basic and Applied Myology](http://www.bio.unipd.it/bam/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Dodson, M., YablonkaReuveni, Z., Bandman, E. and Grounds, M. (1997), *Basic and Applied Myology*: A reflection of our roots and vision for the immediate future. *Basic and Applied Myology*, **7** (3-4), 295-298.

Full Text: [1997\Bas App Myo7, 295.pdf](1997/Bas%20App%20Myo7,%20295.pdf)

Abstract: “Published by Scientists for Scientists,” Basic and Applied Myology (BAM) is entering its seventh year of service to the world-wide scientific community. Originally established to provide an outlet for articles covering topics relevant to “basic research in skeletal muscle,” BAM coverage presently includes reports of “experimental studies in large animals, as-well-as basic and clinical research in anatomy, physiology, cell biology, biochemistry, molecular biology, gene mapping, comparative biology, development and differentiation, regeneration, pathology, epidemiology, bioengineering, pharmacology, toxicology, surgery and medicine.” The format of BAM is different from many other journals in that many issues are centered on “Guest-Edited” topics, called “Hot Sections.” As such, the most recent advances in a wide variety of disciplines are presented in BAM. While the foundation of the journal seems firm, the success of BAMs future depends on a number of variables. First, it is important for researchers who submit articles for publication in BAM to become more disciplined in their use of experimental hypotheses, data analyses and interpretation, and to assure strong article content. Second, while BAM is presently included in Science Citation Index Expanded(R), Research Alert(R) and Focus on Molecular Medicine(R), it is requisite that BAM be accepted as a citation into the myriad of full-service scientific indexing systems, like Medline,(R) Current Contents(R) and Agricola(R) to provide the entire muscle field access to BAM articles. Finally, since the field of muscle research is experiencing an unprecedented explosion of new data and research groups, BAM must continue to pursue Guest Editors of Hot Sections who would critically express the most current status of the topic covered.

Keywords: Articles, Basic and Applied Myology, Basic Research, Citation, Clinical Research, Coverage, Development, Editors, Epidemiology, Groups, Guest Editors, Hot Section, Indexing Systems, Interpretation, Journal, Journals, Mapping, Molecular Biology, Publication, Regeneration, Research, Research Groups, Researchers, Science, Science Citation Index, Surgery, Topic, Topics, Toxicology

# Title: Basic & Clinical Pharmacology & Toxicology

Full Journal Title: [Basic & Clinical Pharmacology & Toxicology](http://www.blackwell-synergy.com/doi/abs/10.1111/j.1742-7843.2005.pto_139.x)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1742-7835

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Wallin, J.A. (2005), Bibliometric methods: Pitfalls and possibilities. *Basic & Clinical Pharmacology & Toxicology*, **97** (5), 261-275.

Full Text: [2005\Bas Cli Pha Tox97, 261.pdf](2005/Bas%20Cli%20Pha%20Tox97,%20261.pdf)

Abstract: Bibliometric studies are increasingly being used for research assessment. Bibliometric indicators are strongly methodology-dependent but for all of them, various types of data normalization are an indispensable requirement. Bibliometric studies have many pitfalls; technical skill, critical sense and a precise knowledge about the examined scientific domain are required to carry out and interpret bibliometric investigations correctly.

Keywords: Assessment Exercise Ratings, Behavioral-Sciences, Bibliometric, Citer Motivations, Co-Heading Analysis, Cocitation Analysis, Information Impact, Journal Impact Factors, Patent Citation Analysis, Research, Research Performance, Scientific Literature

? Robert, C., Wilson, C., Gaudy, J.F. and Arreto, C.D. (2009), Bibliometric Snapshot of Research Involving Cytochromes P450 in Medicine and Biology. *Basic & Clinical Pharmacology & Toxicology*, **105**, 145.

Full Text: Bas Cli Pha Tox105, 145.pdf

Keywords: Research

# Title: Behavior Analyst

Full Journal Title: Behavior Analyst

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Coleman, S.R. and Mehlman, S.E. (1992), An empirical update (1969-1989) of Krantz, D.L. Thesis: That the experimental-analysis of behavior is isolated. *Behavior Analyst*, **15** (1), 43-49.

Abstract: Citation data from 1970 to 1989 were examined in order to determine whether the “isolation” of the experimental analysis of behavior (EAB) that was originally documented by Krantz (1971, 1972) has persisted beyond the early 1970s. Our findings from analyses of the Journal of the Experimental Analysis of Behavior (JEAB) and of related journals support the following conclusions: (1) In the 20-year period since 1969, JEAB has continued to cite its own articles (“self-cite”) at a higher rate than related journals; (2) JEAB’s self-citation rate decreased by a larger amount since 1969 than did that of related journals; and (3) JEAB was cited with diminishing frequency by some related journals during the 20-year period. These findings and other disciplinary comparisons provide information relevant to the issue of the health of behavior analysis and related specialties.

Keywords: Analysis, Citation, Citations, Isolation of Experimental Analysis of Behavior (EAB), Journal-of-the-Experimental-Analysis-of-Behavior, Journals, Krantz, D.L., Self-Citation

? Critchfield, T.S., Buskist, W., Saville, B., Crockett, J., Sherburne, T. and Keel, K. (2000), Sources cited most frequently in the experimental analysis of human behavior. *Behavior Analyst*, **23** (2), 255-266.

Full Text: [2000\Beh Ana23, 255.pdf](2000/Beh%20Ana23,%20255.pdf)

Abstract: We conducted an analysis of the sources cited most frequently in primary empirical reports in the experimental analysis of human behavior (EAHB) published in four journals between 1990 and 1999. Citation patterns suggest that modern EAHB is topically focused and relatively independent of both animal operant research and human research conducted outside of behavior analysis.

Keywords: Analysis, Behavior, Citation, Citation Analysis, Conditional-Discrimination Procedures, Contextual Control, Differential Consequences, Equivalence Class Formation, Experimental, Human, Human Behavior, Instructional-Control, Journals, Matching-To-Sample, Primary, Research, Rule-Governed Behavior, Schedule-Controlled Behavior, Sources, Stimulus Class Formation, Verbal-Behavior

? McKerchar, T.L., Morris, E.K. and Smith, N.G. (2011), A quantitative analysis and natural history of B. F. Skinner’s coauthoring practices. *Behavior Analyst*, **34** (1), 75-91.

Full Text: [2011\Beh Ana34, 75.pdf](2011/Beh%20Ana34,%2075.pdf)

Abstract: This paper describes and analyzes B. F. Skinner’s coauthoring practices. After identifying his 35 coauthored publications and 27 coauthors, we analyze his coauthored works by their form (e.g., journal articles) and kind (e.g., empirical); identify the journals in which he published and their type (e.g., data-type); describe his overall and local rates of publishing with his coauthors (e.g., noting breaks in the latter); and compare his coauthoring practices with his single-authoring practices (e.g., form, kind, journal type) and with those in the scientometric literature (e.g., majority of coauthored publications are empirical). We address these findings in the context of describing the natural history of Skinner’s coauthoring practices. Finally, we describe some limitations in our methods and offer suggestions for future research.

Keywords: B.F. Skinner, Behavior, Coauthorship, Future, History, History of Behavior Analysis, Journal, Journals, Literature, Multiple Authorship, Psychologists, Publication, Publications, Publishing, Reinforcement, Research, Schedules, Scientific Collaboration, Scientometrics

# Title: Behavioral Ecology and Sociobiology

Full Journal Title: Behavioral Ecology and Sociobiology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Montgomerie, R. (1995), The impact of behavioral ecology and sociobiology. *Behavioral Ecology and Sociobiology*, **37** (3), 145-146.

# Title: Behavioral Sciences & the Law

Full Journal Title: Behavioral Sciences & the Law

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Sommers, S.R. and Ellsworth, P.C. (2009), “Race Salience” in Juror Decision-Making: Misconceptions, Clarifications, and Unanswered Questions. *Behavioral Sciences & the Law*, **27** (4), 599-609.

Full Text: [2009\Beh Sci Law27, 599.pdf](2009/Beh%20Sci%20Law27,%20599.pdf)

Abstract: In two frequently cited articles, Sommers and Ellsworth (2000, 2001) concluded that the influence of a defendant’s race on White mock jurors is more pronounced in interracial trials in which race remains a silent background issue than in trials involving racially charged incidents. Referring to this variable more generally as “race salience,” we predicted that any aspect of a trial that leads White mock jurors to be concerned about racial bias should render the race of a defendant less influential. Though subsequent researchers have further explored this idea of “race salience,” they have manipulated it in the same way as in these original studies. As such, the scope of the extant literature on “race salience” and juror bias is narrower than many realize. The present article seeks to clarify this and other misconceptions regarding “race salience” and jury decision-making, identifying in the process avenues for future research on the biasing influence of defendant race. Copyright (C) 2009 John Wiley & Sons, Ltd.

Keywords: Bias, Black Defendants, Juries, Motivation, Prejudice, Racial Diversity

# Title: Behavioral & Social Sciences Librarian

Full Journal Title: [Behavioral & Social Sciences Librarian](http://www.informaworld.com/smpp/title~content=t792303973~db=all)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Thomas, J. (1993), Graduate student use of journals: A bibliometric study of psychology theses. *Behavioral & Social Sciences Librarian*, **12** (1), 1-7.

Full Text: [1993\Beh Soc Sci Lib12, 1.pdf](1993/Beh%20Soc%20Sci%20Lib12,%201.pdf)

Abstract: A 17% reduction in the library materials budget and faculty resistance to journal cancellations necessitated a demonstration of journal usage in a large academic library. Analysis of journal citations from theses revealed quantifiable data that differed from the 80, 20 rule. Graduate students cited journals almost twice as frequently as do professional psychologists, and 91.9% of journal citations in theses were from locally-owned journals. One-quarter of the library’s ‘psychology’ journals were cited not at all, providing a large list of candidates for cancellation consideration. Thesis bibliographies tended to be longer after acquisition of PsycLIT

Keywords: Citations, English, Journal, Journals, SCI

? Herubel, J.P.V.M. and Buchanan, A.L. (1994), Jean-Jacques Rousseau among the footnotes: Mapping interdisciplinary research in *Social Science Citation Index*. *Behavioral & Social Sciences Librarian*, **13** (1), 49-57.

Full Text: [1994\Beh Soc Sci Lib13, 49.pdf](1994/Beh%20Soc%20Sci%20Lib13,%2049.pdf)

Abstract: Using the Social Science Citation Index (SSCI) researcher and librarian alike can trace the published record of research on a given figure in the social sciences. Jean-Jacques Rousseau was chosen since he is a major figure in political science and in other social sciences. Examination of citations indexed in SSCI revealed salient patterns which can be helpful in determining interdisciplinarity and/or disciplinarity. Rousseau’s contributions are still readily cited in contemporary research and cross disciplinary boundaries. Collection development efforts can be enhanced through this open window into the nature of published research by examining citation patterns of a given classical social science author.

Keywords: Boundaries, Citation, Citation Patterns, Citations, Development, Interdisciplinarity, Open, Record, Research, Science, Science Citation Index, Sciences, Social, Social Science, Social Science Citation Index, Social Sciences, SSCI, Trace

? Buchanan, A.L., Goedeken, E.A. and Herubel, J.P.V.M. (1996), Scholarly communication among academic librarians: An analysis of six ACRL proceedings. *Behavioral & Social Sciences Librarian*, **14** (2), 1-15.

Full Text: [1996\Beh Soc Sci Lib14, 1.pdf](1996/Beh%20Soc%20Sci%20Lib14,%201.pdf)

Abstract: Between the years 1978 and 1992 the Association of College and Research Libraries (ACRL) has held national conferences to discuss the current state of academic librarianship. The published conference proceedings appeared as a natural body of literature to use to analyze the scholarly activity of academic librarians and to study its place in the larger sociological models of scholarly academic activity. Once a bibliometric analysis of the proceedings was completed, the institutions were ranked by scholarly production and then compared to earlier published studies. The final phase of the study analyzed the bibliometric data using Tony Becher’s theory of tribalism and Pierre Bourdieu’s theories of habitus, cultural capital, and reproduction. The result ii om this introductory study revealed a core of dominant institutions and conforms to several of Becher’s and Bourdieu’s theories.

Keywords: Bibliometric, Bibliometric Analysis, Bibliometric Data, Core, Literature, Research

? Hider, P.M. (1997), Three bibliometric analyses of anthropology literature. *Behavioral & Social Sciences Librarian*, **15** (1), 1-17.

Full Text: [1997\Beh Soc Sci Lib15, 1.pdf](1997/Beh%20Soc%20Sci%20Lib15,%201.pdf)

Abstract: Three bibliometric analyses of articles in the UK anthropology journal, Man, are described. The first analysis looks at the forms of material cited in the articles and confirms the observation that anthropologists rely heavily on books, while also revealing a rise in the popularity of anthologies of papers in book form at the expense of serials. The second study examines the relative age of cited publications. The lack of contraction in the citing half-life confirms the commonly-held view that anthropology is a relatively slow-moving discipline, but the decrease in the mean age of references contradicts statements made by citation analysts and librarians that anthropology lacks the capacity to build on its older literature without having to refer back to it explicitly. The third analysis investigates the presentational history of articles, following a study by Sydney Pierce, but produces conflicting results which demonstrate that, in this case at least, the variables examined are unsatisfactory indicators of disciplinary consensus. The concluding discussion looks at the applicability of bibliometrics to anthropology librarianship, outlining both problems and benefits, and suggesting areas of future bibliometric research most likely to be of interest to anthropology librarians.

Keywords: Bibliometric, Bibliometrics, Citation, Journals, Literature, Research

? Buchanan, A.L. and Herubel, J.P.V.M. (1997), Disciplinary culture, bibliometrics, and historical studies: Preliminary observations. *Behavioral & Social Sciences Librarian*, **15** (2), 37-53.

Full Text: [1997\Beh Soc Sci Lib15, 37.pdf](1997/Beh%20Soc%20Sci%20Lib15,%2037.pdf)

Abstract: Observations are made concerning bibliometrics and its relationship to historical studies. The authors suggest historical and qualitative bibliometrics be explored to examine community formation of scientific and scholarly communication through institutional affiliation. The history journal Annales: economie, societe, civilisations (Annales: e.s.c.) is investigated for years 1979-1993. The study reveals an institutional and geographical mapping of this school’s contributors. Although a recent sample, bibliometrics can be utilized to explore journals from the 18th, 19th, and 20th centuries for the history of disciplines, including library and information science.

Keywords: Authors, Bibliometrics, Citation, History, Information Science, Journals, Science

? Banks, R. (2006), Decision-making factors related to bibliographic database cancellation. *Behavioral & Social Sciences Librarian*, **25** (1), 93-110.

Full Text: [2006\Beh Soc Sci Lib25, 93.pdf](2006/Beh%20Soc%20Sci%20Lib25,%2093.pdf)

Abstract: The database analysis strategies used to decide whether the University of Illinois at Urbana-Champaign (UIUC) Library should maintain a subscription to the electronic database Wilson Social Sciences Abstracts (Wilson SSA) are described. A variety of analyses were conducted: comparison of journal title coverage with four other multi-subject databases available at UIUC (Social Sciences Citation Index. EBSCO Academic Search Elite, Current Contents, and Infotrac); usage statistics; comparison of actual journal year coverage between SSA and the database that offered the highest percentage of title coverage (Infotrac); search retrieval analysis for a small number of subjects; and comparison of journal coverage between Wilson SSA and a multi-social science database search across nine Cambridge Scientific Abstracts social sciences databases. Results showed a high degree of overlap in title, as well as year coverage between SSA and the targeted comparison databases, and low usage/high costs for the SSA product at UIUC. Despite some strong support for maintaining the subscription to SSA from a small number of UIUC faculty, students, and librarians, the decision was made to cancel Wilson Social Sciences Abstracts.

Keywords: Analyses, Analysis, Comparison, Costs, Coverage, Database, Databases, Decision, Faculty, Illinois, Journal, Science, Sciences, Small, Social, Social Sciences, Statistics, Students, Support

# Title: Behaviour & Information Technology

Full Journal Title: Behaviour & Information Technology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Valero, P. and Monk, A. (1998), Positioning HCI: Journals, descriptors and parent disciplines. *Behaviour & Information Technology*, **17** (1), 3-9.

Full Text: [1998\Beh Inf Tec17, 3.pdf](1998/Beh%20Inf%20Tec17,%203.pdf)

Abstract: The first part of this paper cautions against the injudicious use of citation data to rank journals. The second and main part presents a correspondence analysis of the descriptors assigned by abstractors to papers in five HCI, two human factors and three psychology journals. This analysis makes it possible to position the journals in a space of descriptors. The HCI journals form a cluster distinct from the psychology and human factors journals, suggesting HCI has now separated from its parent disciplines. Further, it is possible to position individual journals, for example, Behaviour & Information Technology is identified as an HCI journal with a leaning towards human factors.

# Title: Behavioural and Cognitive Psychotherapy

Full Journal Title: Behavioural and Cognitive Psychotherapy

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? McGuinness, M. (2011), OCD in the perinatal period: Is postpartum OCD (ppOCD) a distinct subtype? A review of the literature. *Behavioural and Cognitive Psychotherapy*, **39** (3), 285-310.

Abstract: Background: It has been suggested that the perinatal period is a period of increased risk for the development and/or exacerbation of OCD and that postpartum OCD (ppOCD) presents a distinct clinical picture. This raises the possibility that ppOCD might be a distinct subtype of OCD. This review examines this contention. Method: A search using Ovid (Medline, PsycINFO and EMBASE), EBSCO, Cochrane Library, Web of Science (ISI), PUBMED databases and Google Scholar was carried out using the key words: “obsessive compulsive disorder” (and derivatives), “perinatal”, “pregnancy”, “postnatal”, “postpartum”, “mothers” (and derivatives), “anxiety disorders” and “subtypes.” These articles and their references were reviewed. Results: The majority of studies reviewed were retrospective, which makes it impossible to infer causality. Two prospective studies found a higher incidence of OCD in the postpartum period. These were carried out in Turkey and Brazil and, as such, may be limited in their applicability to other cultural groups. Conclusion: The concept of ppOCD as a specific subtype has not been robustly demonstrated. The evidence that OCD is more prevalent in the postpartum period is mixed. The evidence that OCD in the postpartum period presents a distinctive clinical picture with specific symptomatology and course is more compelling. In view of the impact of culture and religion on the expression of OCD, collaborative, international, prospective studies that take into account the methodological and definitional issues raised in this review are necessary to provide clarification.

Keywords: Anxiety Disorders, Brazil, Case Series, Causality, Cochrane, Culture, Databases, Development, DSM-III, Epidemiology, Follow-up, Google Scholar, Impact, ISI, Mothers, Obsessive Compulsive Disorder, Obsessive-Compulsive Disorder, OCD, Onset, Perinatal, Postnatal, Postpartum, Pregnancy, Prevalence, Prospective Studies, Religion, Review, Risk, Science, Symptoms, Turkey, Web of Science

# Title: Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics

Full Journal Title: Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics

ISO Abbreviated Title: Ber. Bunsen-Ges. Phys. Chem. Chem. Phys.

JCR Abbreviated Title: Ber Bunsen-Ges Phys Chem Chem

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Henglein, A. and Gratzel, M. (1973), Pulse radiolytic polarography - adsorption effects in electrode kinetics of short-lived free-radicals. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **77** (1), 17-20.

? Katz, M., Schneide, H. and Wendt, H. (1973), Electrode kinetics studies on adsorption of different anions on graphite anodes in methane solutions. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **77** (10-1), 828-832.

? Jeziorowski, H. and Knozinger, H. (1975), Kinetics of adsorption of hexenes in microporous thorium oxide. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **79** (9), 790-795.

? Wuthrich, N., Herrmann, H.D., Lorenz, W.J. and Schmidt, E. (1975), Kinetics of metallic ion adsorption onto solid foreign metal substrates in subtension domain. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **79** (11), 1159.

? Joppien, G. (1976), Kinetics of adsorption of linear unbranched polyesters from solution on aerosil surfaces. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **80** (11), 1243-1244.

? Schultze, J.W. and Dickertmann, D. (1978), Kinetics of metal-ion adsorption and influence of surface- structure. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **82** (3), 342.

? Schultze, J.W. and Dickertmann, D. (1978), Kinetics of metal-ion adsorption and influence of surface- structure. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **82** (5), 528-534.

# Title: Berichte der Bunsen-Gesellschaft fur Physikalische Chemie

Full Journal Title: Berichte der Bunsen-Gesellschaft fur Physikalische Chemie

ISO Abbreviated Title:

JCR Abbreviated Title: Berichte Bunsen Gesellsch Phy

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Schultze, J.W. (1970), Thermodynamics and kinetics of adsorption of copper ions on platinum electrodes. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **74** (7), 705-??.

? Schultze, J.W. (1970), Thermodynamics and kinetics of adsorption of copper ions on platinum electrodes. *Berichte der Bunsen-Gesellschaft-Physical Chemistry Chemical Physics*, **74** (8-9), 944-??.

# Title: Berichte der Deutschen Chemischen Gesellschaft

Full Journal Title: Berichte der Deutschen Chemischen Gesellschaft

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0365-9496

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Spiegel, L. (1900), The significance of the nitrite-evidence in drinking water. *Berichte der Deutschen Chemischen Gesellschaft*, **33** (1), 639-644.

? Schaer, E. (1900), The hygienic meaning of nitrate in drinking water. *Berichte der Deutschen Chemischen Gesellschaft*, **33** (1), 1232-1236.

? Vorlander, D. (1900), The adsorption of ketomethane derivatives of unsaturated compounds. *Berichte der Deutschen Chemischen Gesellschaft*, **33** (3), 3185-3187.

Keywords: Adsorption

? Blitz, W. (1904), Adsorption compound of iodine with basic lanthanum acetate. *Berichte der Deutschen Chemischen Gesellschaft*, **37**, 719-724.

Abstract: The amount of iodine removed from its solution in potassium iodide by known quantities of the gelatinous precipitate formed by adding ammonia to lanthanum acetate solution varies largely with the physical state of the precipitate, but approximately the same proportion of the total amount of iodine is withdrawn by a fixed quantity of the same precipitate from solutions containing varying amounts of iodine. These results are similar to those obtained by Kuster in the case of iodine and starch. This analogy with starch is rendered complete by the fact that a colloidal solution of basic lanthanum acetate, obtained by dialysis, absorbs iodine according to the same law.

Keywords: Acetate, Solution

? Biltz, W. (1904), Action of arsenious acid on freshly-precipitated ferric hydroxide. *Berichte der Deutschen Chemischen Gesellschaft*, **87**, 3133-3150.

Abstract: Freshly- precipitated ferric hydroxide does not form a basic ferric arsenitc nor a solid solution with arsenious acid, which it takes up by adsorption. It is to this that the hydroxide owes its action as an antidote in arsenical poisoning. Silicic acid and aluminium hydroxide exhibit very slight adsorptive properties.

Keywords: Adsorption, Aluminium, Solution

? Paul, C. and Hohenegger, C. (1913), Adsorption of acetylene by palladium-black. *Berichte der Deutschen Chemischen Gesellschaft*, **46**, 128-132.

Abstract: In. the authors’ previous investigation on the same subject the palladium black was suspended in aqueous solutions of various substances. They huve now investigated the adsorptiom of acetylene, using either suspensions of temperature in pure water or else palladium-black. The experiments in which 60 % alcohol was used in place of pure water were also repeated. In all cases the adsorption of the acetylene takes place slowly, and the results given do not point to any fixed ratio between the weight of Pd and the amount of gas adsorbed. It is probable that the acetylene is not completely adsorberd as such, but undergoes partial polymerisation. When the dry palladium-black is not completely free from oxygen, formation of feeble sparks occur immediately it is brought into contact with the acetylene.

Keywords: Adsorption, Aqueous Solutions, Temperature, Water

? Fajans, K. and Richter, F. (1915), Behaviour of radio-elements in precipitation rations. II. *Berichte der Deutschen Chemischen Gesellschaft*, **48**, 700-716.

Abstract: The Conclusion of the first paper (Ibid. 46 pp. 3486-3497, 1913) was that a radio-element is carried down together with a precipitate of an ordinary element, from an extremely diluted solution, if under the prevailing conditions the radio-element itself would be precipitated when present in sufficient concentration-which meant in most cases that the radio-element must form a sparely soluble salt with the precipitating anion. This qualitative rule is now quantitatively tested with respect to thorium B, the percentage of which present in the original solution and in the precipitate (filtered or separated by centrifugal action) was estimated from its radio activity. The absolute amount of ThB ranged from 1 to 5 \* 10/sup -13/ gm. in different experiments. There is an unmistakable parallelity between the completeness of the removal of the ThB and the solubility of the salt it forms with the precipitating anion. The sulphide, sulphate, and carbonate which have solubilities up to 0-05 millimol/litre are almost completely precipitated; the nitrate Which is soluble to 1-5 millimol, is not precipitated to any notice able extent; the iodide and chloride, of intermediate solubility, are partly precipitated; in the two extreme cases the results are reliable, in the intermediate cases much depends upon conditions. When barium is incompletely precipitated from ThB solutions as sulphate, the ThB is parity precipitated. As regards the solubility of the ordinary precipitate for salts with the same anion, the authors agree with Wojtaszewski: MnCO/sub 3/ and BaCO/sub 3/, being themselves hardly soluble, precipitate ThB almost quantitatively, the readily soluble (NH/sub 4/)/sub 2/CO/sub 3/ precipitated only a few per cent. of the ThB present. Further, the degree of precipitation will be the higher, the less soluble the compound of the radio-element with the kathion of the precipitate. Concerning the precipitation or radio-elements together with their isotopes, the formation of solid solutions is the decisive factor; when there is no chemical analogy (ThB and AgCl), the precipitation depends upon adsorption. Adsorption is understood in the sense of Bragg, extended by Haber and Paneth. According to Bragg, the particles of a crystal are held together by the forces of chemical affinity in such a way that each kathion is held by all the anions near it (not only by one anion), and /b vice versa,/ so that there is a division of valencies in a crystal. If that hold also for the surface layers, part of the valencies must project into free space (Haber), and adsorption will become important for the saturation of those valencies; Paneth considers that in this kinetic; exchange between crystal and solvent (in the growth of crystal) the anions and kathions participate separately, not only the molecules. The authors discuss and adopt these views.

Keywords: Adsorption, Carbonate, Chloride, Growth, Kinetic, Removal, Solubility, Solution

# Title: Berkut

Full Journal Title: Berkut

ISO Abbreviated Title: Berkut

JCR Abbreviated Title: Berkut

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Grishchenko, V. (2003), Who is who in Ukrainian ornithology. *Berkut*, **12** (1-2), 166-176.

Abstract: Using of Science Citation Index and impact factor is discussed. Authors from different countries and branches of science are in unequal conditions. For example, researches in physic, chemistry, genetics, molecular biology etc. have general interest, but many zoological or botanical studies matter only in separate regions. They are much less chances to be cited in foreign journals. Citation index would be more useful, if it was calculated at 2-3 levels: national, regional (CIS, Europe) and worldwide. An attempt to analyse citations in one country is presented: publications on ornithology in Ukraine during last 10 years (1993-2002). Most important Ukrainian periodicals and materials (not abstracts) of ornithological conferences were used for the analysis (Table 1). Total 1360 publications were viewed. Only citations of periodicals (Tables 2-5) and Ukrainian ornithologists (Tables 7-8) were counted. Specific citation was used as an analogue of the impact factor (Table 6). It is the relation of total number of cites of publications from a periodical during considered time period (10 years) to the total number of ornithological works published in this periodical till the end of 2002.

Keywords: Analysis, Biology, Chemistry, CIS, Citation, Citations, Conferences, Country, Europe, General, Genetics, Impact, Impact Factor, Index, Journals, Molecular Biology, Periodical, Periodicals, Publications, Regional, Science, Science Citation Index, Till

? Kopij, G. (2009), Owls of the world: The state of knowledge on the threshold of the 21st century. *Berkut*, **18** (1-2), 72-76.

Full Text: 2009\Berkut18, 72.pdf

Abstract: An attempt is made to quantity the present knowledge on all owl species in the world. This quantification is based on the bibliometric analysis of literature for the years 1971-2000. The Wildlife & Ecology Studies Worldwide (WESW) has been used for this analysis. By far, the best known owl species are the Tawny Owl and the Barn Owl. A group of frequently studied species of owls (100[long dash]600 papers) include the Long-eared Owl, Tengmalm’s Owl, European Eagle Owl, Spotted Owl, Short-eared Owl, Great Horned Owl, Great Grey Owl, Little Owl, Eastern Common Screech Owl, Snowy Owl, Barred Owl, Northern Saw-whet Owl, Eurasian Pygmy Owl, Hawk Owl and Ural Owl. All these species occur in the Holarctic region. In tropical regions of the world, there are only seven owl species, which are fairly well-studied (20--30 publications); all others are little known (each species with less than 20 publications). Regional monographs on owls and monographs on particular owl species are listed.

Keywords: Analysis, Barn Owl, Bibliometric, Bibliometric Analysis, Knowledge, Literature, Papers, Publications, Quantification, Region, Species, State, Threshold, Tropical, Tropical Regions, World

# Title: Berlin Physikalische Gesellschaft Verhandlung

Full Journal Title: Berlin Physikalische Gesellschaft Verhandlung

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0365-9496

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Mehlhorn, F. (1898), Gases occluded by moist glass. *Berlin Physikalische Gesellschaft Verhandlung*, **17**, 123-128.

Abstract: The author investigates the absorption of atmospheric air by the thin coating of moisture which, according to Bunsen’s researches, adheres to glass until it is brought to a temperature of 500°. He finds that 80 or even 90 per cent. of the gas thus absorbed consists of carbonic acid. This explains to some extent the persistent occurrence of the spectrum bands of CO in the sparking spectra, since CO is generated by sparking CO/sub 2/.

Keywords: Absorption, Glass, Temperature

# Title: Best Practice & Research Clinical Endocrinology & Metabolism

Full Journal Title: Best Practice & Research Clinical Endocrinology & Metabolism

ISO Abbreviated Title: Best Pract. Res. Clin. Endoc. Metab.

JCR Abbreviated Title: Best Pract Res Cl En

ISSN: 1521-690X

Issues/Year: 4

Journal Country/Territory: England

Language: English

Publisher: Bailliere Tindall

Publisher Address: 24-28 Oval Rd, London NW1 7DX, England

Subject Categories:

Endocrinology & Metabolism: Impact Factor 1.231, / (2002)

? Peverill, R.E. (2003), Hormone therapy and venous thromboembolism. *Best Practice & Research Clinical Endocrinology & Metabolism*, **17** (1), 149-164.

Full Text: [B\Bes Pra Res Cli End Met17, 149.pdf](B/Bes%20Pra%20Res%20Cli%20End%20Met17,%20149.pdf)

Abstract: Convincing data from randomized trials and observational studies have demonstrated a two- to threefold increased risk of venous thromboembolism (VTE) with the use of hormone replacement therapy (HRT) in post-menopausal women. This risk is highest in the first year of use, but an increased risk persists after the first year if HRT use is ongoing. The risk of VTE is increased for oral oestrogen alone, oral oestrogen combined with progestin and probably for transdermal HRT. There is an increase in both idiopathic and non-idiopathic VTE with HRT. Early evidence suggests an interaction of HRT with thrombophilic states such as the factor V Leiden mutation, resulting in a synergistic increase in the risk of VTE. There is also an increased risk of VTE with raloxifene and tamoxifen, but the effects of low-dose HRT and tibolone on VTE risk are less clear.

Keywords: Hormone Replacement Therapy, Oestrogen, Progestin, Venous Thromboembolism, Deep Vein Thrombosis, Pulmonary Embolism, Coagulation, Fibrinolysis, Activated Protein C Resistance, Factor V Leiden, Activated Protein-C, Estrogen Replacement Therapy, Cardiovascular Risk-Factors, Deep-Vein Thrombosis, Healthy Postmenopausal Women, Conjugated Equine Estrogens, Oral-Contraceptive Users, Factor-V Leiden, Breast-Cancer, Double-Blind

# Title: Betriebswirtschaftliche Forschung und Praxis

Full Journal Title: Betriebswirtschaftliche Forschung und Praxis

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Kraus, S., Filser, M., Gotzen, T. and Harms, R. (2011), Family firms - On the state-of-the-art of business research. *Betriebswirtschaftliche Forschung und Praxis*, **63** (6), 587-605.

Full Text: 2011\*Bet For Pra***63**, 587.pdf

Abstract: Family Firms are receiving increasing attention in business research. At first sight, the field seems to be heterogeneous, which exacerbates the orientation in and the advancement of the field. Therefore, this article strives to systematize Anglo-American family firm research and thereby to identify key discussion lines of this field. Based on a comprehensive literature analysis, we identify core authors and core journals. Based on a bibliometric citation analysis of 276 journal articles with a total of 12,800 references, we have identifiedfive key discussion lines: 1) legitimization and definition, 2) governance, 3) competitive advantage, 4) leadership, and 5) succession. These five discussion lines and the respective literature constitute a framework for the advancement of family firm research.

Keywords: Agency Costs, Analysis, Articles, Attention, Authors, Bibliometric, Citation, Citation Analysis, Entrepreneurship-Research, Family, Issues, Journal, Journals, Literature, Literature Analysis, Management, Ownership, Performance, Research, State of the Art

# Title: Bibliometric indicators–definitions and usage at Karolinska Institutet

? Rehn, C., Kronman, U. and Wadskog, D. (2007), Bibliometric indicators–definitions and usage at Karolinska Institutet. Karolinska Institutet.

Full Text: [2007\Bibliometric indicators.pdf](2007/Bibliometric%20indicators.pdf)

# Title: Bibliometric Notes

Full Journal Title: Bibliometric Notes

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

# Title: Bilig

Full Journal Title: [Bilig](http://yayinlar.yesevi.edu.tr/index.php?menu_id=55&Itemid=48)

ISO Abbreviated Title: Bilig

JCR Abbreviated Title: Bilig

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Al, U., Soydal, İ. and Yalçın, H. (2010), An evaluation of the bibliometric features of *Bilig*. *Bilig*, **55**, 1-20.

Full Text: [2010\Bilig55, 1.pdf](2010/Bilig55,%201.pdf)

Abstract: bilig has been indexed by the Social Sciences Citation Index since 2008 This study examines bilig and the bibliometric features of its Publications in citation Indexes The following research questions are addressed 1) What are the institutional affiliations of the authors of the publications? 2) Is multiple authorship a prevalent feature of the publications? 3) Which types of sources (books, journal articles, etc) get cited more often in the publications? 4) What are the most frequently cited journals in bilig? 5) What is the rate of literature obsolescence in bilig? Moreover, this,study examines the relationships among the cited authors in bilig by using social network analysis method In conclusion, it is found that almost all of the publications are written in Turkish An important part of the contributors is affiliated with Gazi, Hacettepe and Baskent Universities Books receive 65% of all citations in Wig Half of the sources cited in bilig have been published in the last 16 years.

Keywords: Analysis, Authorship, Bibliometric, Bibliometrics Co-Citation Analysis, Bilig, Citation, Citations, Journal, Journals, Literature, Network, Network Analysis, Output, Publications, Research, Sciences, Social Network Analysis, Social-Science Publications, Universities

# Title: Biochemia Medica

Full Journal Title: [Biochemia Medica](http://hrcak.srce.hr/index.php?show=casopis&id_casopis=121)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Jokić, M. (2009), h-index as a new scientometric indicator. *Biochemia Medica*, **19** (1), 5-9.

Full Text: [2009\Bio Med19, 5.pdf](2009/Bio%20Med19,%205.pdf)

Abstract: In this text we discuss about indicators for evaluation of scientific work of both, the individual author, and journal as a whole. Emphasis is put on the value and significance of a new scientometric indicator, h-index, which was introduced by physicist Hirsch in 2005, and which was adopted both, by leading citation data base providers and by the wider scientific community.

Keywords: Bibliometric, Scientometric Indicators, Citation, Community, Data, Data Base, Evaluation, h Index, h-Index, Hirsch, Hirsch-Index, Impact Factor, Indicator, Indicators, Journal, Providers, Scientometric, Significance, Value, Work

? Bilic-Zulle, L. (2010), Responsible writing in science. *Biochemia Medica*, **20** (3), 279-281

Full Text: [2010\Bio Med20, 279.pdf](2010/Bio%20Med20,%20279.pdf)

Keywords: Medical-Students, Plagiarism, Writing

? Marusic, A. (2010), Editors as gatekeepers of responsible science. *Biochemia Medica*, **20** (3), 282-287.

Full Text: [2010\Bio Med20, 282.pdf](2010/Bio%20Med20,%20282.pdf)

Abstract: Journal article is the best publicly visible documentation of research activity so that fraud or misconduct in science is often first discovered in scientific journals. Journal editors are responsible for the integrity of the record they publish in their journals, but they may often find it difficult to ensure the full integrity of the published work, particularly if they work in small scientific communities. The support for editors is provided by the larger editorial community and well-developed guidelines for good publishing practice. Particularly useful for editors are the guidelines from the Committee on Publication Ethics (COPE), the largest editorial organization dealing with actual ethical problems of journal editors. COPE has developed ethics flow charts - algorithms for editors to follow when they have an ethical problem in their journals. These charts provide also important information for authors about what they may expect from journal editors as gatekeepers not only of good science but of responsible science.

Keywords: Authors, Clinical Trial, Editorial Policies, Ethics, Integrity, Journal, Journal Editors, Journals, Medical Journals, Plagiarism, Publication, Publishing, Registration, Research, Scientific Journals, Scientific Misconduct

? Katavic, V. (2010), Responsible conduct of research: Do we need training in fraud-science? *Biochemia Medica*, **20** (3), 288-294.

Full Text: [2010\Bio Med20, 288.pdf](2010/Bio%20Med20,%20288.pdf)

Abstract: In this evidence-based opinion piece on responsible conduct of research a short overview of the most prominent recent cases of sanctioned scientific misconduct, developments in the field of responsible conduct of research, definitions of types of scientific misconduct, and questionable research practices is given. Intrinsic and extrinsic motivation of scientists to publish and perform research is discussed, as well as the perception of fraud, its acceptability and influence on science and the scientific (public) record,with a special emphasis on the frequency of sanctioned and discovered fraudulent research. Data on (self) reported willingness to perform misconduct and questionable research practices are analyzed and discussed. An extensive overview on recent publications concerning topics of responsible conduct of research is presented. Finally, some suggestions to what the stakeholders could do are given, as well as easy (self) checks against scientific misconduct.

Keywords: Definitions, Editors, Ethics, Host, Journals, Overview, Perception, Plagiarism, Publications, Publishing, Research, Research Integrity, Scientific Misconduct, Scientific Misconduct, Students

? Roig, M. (2010), Plagiarism and self-plagiarism: What every author should know. *Biochemia Medica*, **20** (3), 295-300.

Full Text: [2010\Bio Med20, 295.pdf](2010/Bio%20Med20,%20295.pdf)

Abstract: The scientific community is greatly concerned about the problem of plagiarism and self-plagiarism. In this paper I explore these two transgressions and their various manifestations with a focus on the challenges faced by authors with limited English proficiency.

Keywords: Author, Begin, College, Duplicate Publication, Editors, Limited English Proficiency, Plagiarism, Science, Self-Plagiarism

? Comas-Forgas, R., Sureda-Negre, J. and Salva-Mut, F. (2010), Academic plagiarism prevalence among Spanish undergraduate students: An exploratory analysis. *Biochemia Medica*, **20** (3), 301-306.

Full Text: [2010\Bio Med20, 301.pdf](2010/Bio%20Med20,%20301.pdf)

Abstract: Introduction: The present research article is an exploratory study on academic plagiarism practices among Spanish university students. Materials and methods: To answer the main research questions, we based our work on across-sectional survey of the targeted population. The sample consisted of a total of 560 students and the procedure was non-probability sampling. Results and conclusions: The research findings show that the Internet has become the students’ main source for the plagiarism of academic essays. Furthermore, there is also a substantial prevalence of self-plagiarism and peer-to-peer (p2p) plagiarism when elaborating essays.

Keywords: Academic Integrity, Academic Plagiarism, Analysis, Dishonesty, Essays, Internet, Perceptions, Plagiarism, Research, Self-Plagiarism

? Pupovac, V., Bilic-Zulle, L., Mavrinac, M. and Petrovecki, M. (2010), Attitudes toward plagiarism among pharmacy and medical biochemistry students - cross-sectional survey study. *Biochemia Medica*, **20** (3), 307-313.

Full Text: [2010\Bio Med20, 307.pdf](2010/Bio%20Med20,%20307.pdf)

Abstract: Introduction: Plagiarism is one of the most frequent and serious forms of misconduct in academic environment. The cross-sectional survey study was done with aim to explore the attitudes toward plagiarism. Materials and methods: First year students of Faculty of Pharmacy and Medical Biochemistry, University of Zagreb, Croatia (N = 146) were anonymously tested using Attitude toward Plagiarism (ATP) questionnaire. The questionnaire is composed of 29 statements on a 5 point Likert scale, (1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree and 5-strongly agree) measuring three attitudinal factors (positive and negative attitude and subjective norms) toward plagiarism. Results were presented as score (mean +/- SD) followed by reference range (divided in three equal parts: low, moderate and high score). Score range expends from 12 to 60 (low: 12-28; moderate: 29-45; high: 46-60) measuring positive attitude toward plagiarism, from 7 to 35 (low: 7-16; moderate: 17-26; high: 27-35) measuring negative attitude toward plagiarism and from 10 to 50 (low: 10-23; moderate: 24-37; high: 38-50) measuring subjective norms. Response rate was 99% (N = 144). Results: Results revealed moderate positive attitude (36 +/- 7) and subjective norms (32 +/- 6) toward plagiarism and moderate to high negative attitude (26 +/- 4). Plagiarism is perceived as not very important (63% of students), harmless (59%), justified under special circumstances (42%), and sometimes necessary (35%). Conclusion: Students’ attitudes reflect insufficient level of seriousness and awareness with which plagiarism is perceived. They are lacking knowledge on scientific methodology, academic and scientific misconduct. Plan and program to educate students about academic integrity and research methodology is required on all educational level.

Keywords: Academic Integrity, Academic Misconduct, Academic Misconduct, Behavior, Environment, Ethics, Methodology, Perceptions, Plagiarism, Professional Practice, Questionnaire, Questionnaires, Research, Research Integrity, Science, Scientific Misconduct, Students, Survey, University

# Title: Biochemical and Biophysical Research Communications

Full Journal Title: [Biochemical and Biophysical Research Communications](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6713&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=68cbb480672f91b3f733614352a105a0)

ISO Abbreviated Title: Biochem. Biophys. Res. Commun.

JCR Abbreviated Title: Biochem Bioph Res Co

ISSN: 0006-291X

Issues/Year: 36

Journal Country/Territory: United States

Language: English

Publisher: Academic Press Inc

Publisher Address: 525 B St, Ste 1900, San Diego, CA 92101-4495

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor, 89/310(2000)

Biophysics: Impact Factor

Hanson, K.R., Ling, R. and Havir, E. (1967), A computer program for fitting data to the Michaelis-Menten equation. *Biochemical and Biophysical Research Communications*, **29** (2), 194-197.

Full Text: [B\Bio Bio Res Com29, 194.pdf](B/Bio%20Bio%20Res%20Com29,%20194.pdf)

Ormandy, C.J., Defazio, A., Kelly, P.A. and Sutherland, R.L. (1992), Coordinate regulation of oestrogen and prolactin receptor expression by sodium butyrate in human breast cancer cells. *Biochemical and Biophysical Research Communications*, **182** (2), 740-745.

Full Text: [B\Bio Bio Res Com182, 740.pdf](B/Bio%20Bio%20Res%20Com182,%20740.pdf)

Abstract: Prolactin receptor and oestrogen receptor are co-ordinately expressed in human breast cancer cell lines and in human breast tumour biopsies, leading to the suggestion that the expression of these receptors may be coupled. To examine this hypothesis, T-47D and MCF-7 human breast cancer cells were treated with sodium butyrate, a known modulator of oestrogen receptor levels, and the changes in oestrogen and prolactin receptor mRNA and binding activity were measured. In both cell lines treatment with 0.3–10 mM sodium butyrate resulted in a parallel decrease in prolactin and oestrogen receptor mRNA levels and binding activity. In T-47D cells, where the effect was transient, mRNA levels of both receptors recovered in parallel. These data indicated that oestrogen receptor and prolactin receptor gene expression is modulated in parallel by sodium butyrate and supported the hypothesis that the expression of these two receptors is coupled.

Keywords: Estrogen-Receptor, Lactogenic Receptor, Differentiation, Hormone, MCF-7, Cdna, Modulation, Lines

Banerjee, S.K., Bhatt, K., Rana, S., Misra, P. and Chakraborti, P.K. (1996), Involvement of an efflux system in mediating high level of fluoroquinolone resistance in *Mycobacterium smegmatis*. *Biochemical and Biophysical Research Communications*, **226** (2), 362-368.

Full Text: [B\Bio Bio Res Com226, 362.pdf](B/Bio%20Bio%20Res%20Com226,%20362.pdf)

Abstract: A wild type strain of *Mycobacterium smegmatis* mc(2) 155 was serially adapted to 64 fold of minimal inhibitory concentration of an antimycobacterial agent, ciprofloxacin. This clone (CIPr) exhibited cross resistance to ofloxacin and ethidium bromide. The rate of drug efflux was accelerated in CIPr compared to the wild type strain. Verapamil, a calcium channel blocker, enhanced the drug accumulation in CIPr by diminishing the efflux and thus reversed the resistant phenotype. Additionally, a missense mutation was detected in the quinolone resistance determining region of the DNA-gyrase A subunit of CIPr. Taken together, these results suggest that drug efflux plays a major role in conferring such a high level of resistance in CIPr, in addition to the mutation in the DNA-gyrase locus. (C) 1996 Academic Press, Inc

Keywords: Active Efflux, Antimicrobial Resistance, Dna Gyrase, Drug-Resistance, Gyra, Mechanisms, Mutations, Ofloxacin, Resistance, Tuberculosis

Reddy, G.V.B. and Gold, M.H. (1999), A two-component tetrachlorohydroquinone reductive dehalogenase system from the lignin-degrading basidiomycete Phanerochaete chrysosporium. *Biochemical and Biophysical Research Communications*, **257** (3), 901-905.

Full Text: [B\Bio Bio Res Com257, 901.pdf](B/Bio%20Bio%20Res%20Com257,%20901.pdf)

Abstract: Tetrachloro-1,4-hydroquinone (TC1HQ) is an intermediate in the degradation of pentachlorophenol by the lignin-degrading basidiomycete Phanerochaete chrysosporium, Two enzymes required for the reductive dehalogenation of TClHQ to trichlorohydroquinone (TrClHQ) were identified in cell-free extracts of P, chrysosporium. In the presence of GSH, a membrane-bound enzyme converted TClHQ to the glutathionyl conjugate of TrClHQ (GS TrClHQ). This membrane-bound glutathione transferase was specific for GSH as a cosubstrate, In the second step of the reductive dehalogenation reaction, a soluble enzyme fraction converted GS-TrClHQ to TrClHQ in the presence of GSH, cysteine, or dithiothreitol. Thus, this second enzyme appears to be a GS-conjugate reductase, These two enzyme fractions, working in tandem, also reductively dehalogenated TrClHQ and 2,6-dichlorohydroquinone, which are intermediates in the degradation of chlorophenols by this organism. (C) 1999 Academic Press.

Keywords: Glutathione S-Transferases, White-Rot Fungus, Biodegradation, Degradation, 2,4,6-Trichlorophenol, Dechlorination, Involvement, Protein, Gene

Chen, L.L., Ou, H.Y., Zhang, R. and Zhang, C.T. (2003), ZCURVE\_CoV: A new system to recognize protein coding genes in coronavirus genomes, and its applications in analyzing SARS-CoV genomes. *Biochemical and Biophysical Research Communications*, **307** (2), 382-388.

Full Text: [B\Bio Bio Res Com307, 382.pdf](B/Bio%20Bio%20Res%20Com307,%20382.pdf)

Abstract: A new system to recognize protein coding genes in the coronavirus genomes, specially suitable for the SARS-CoV genotiles, has been proposed in this paper. Compared with some existing systems, the new program package has the merits of simplicity, high accuracy, reliability, and quickness. The system ZCURVE\_CoV has been run for each of the 11 newly sequenced SARS-CoV genomes. Consequently, six genomes not annotated previously have been annotated, and some problems of previous annotations in the remaining five genomes have been pointed out and discussed. In addition to the polyprotein chain ORFs 1a and 1b and the four genes coding for the major structural proteins, spike (S), small envelop (E), membrane (M), and nuleocaspid (N), respectively, ZCURVE\_CoV also predicts 5-6 Putative proteins in length between 39 and 274 amino acids with unknown functions. Some single nucleotide mutations within these putative coding sequences have been detected and their biological implications are discussed. A web service is provided, by which a user can obtain the annotated result immediately by pasting the SARS-CoV genome sequences into the input window on the web site (http: //tubic.tju.cdu.cn/sars/). The software ZCURVE-CoV can also be downloaded freely from the web address mentioned above and run in Computers under the platforms of Windows or Linux. (C) 2003 Elsevier Inc. All rights reserved.

Keywords: Coronavirus, Severe Acute Respiratory Syndrome, SARS-COV, Genome, Gene-Finding, Mutation, Acute Respiratory Syndrome, Hong-Kong, Identification, Sequence, Models

# Title: Biochemical Education

Full Journal Title: [Biochemical Education](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=4979&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=aefe470f79d0487619525b8d53657648)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Price, R. and Dodds, P.F. (1989), Improved determination of *KM* and *V*max using weighted linear regression and direct fitting to the Michaelis-Menten curve. *Biochemical Education*, **17** (3), 138-140.

Full Text: [B\Bio Edu17, 138.pdf](B/Bio%20Edu17,%20138.pdf)

? Ritchie, R.J. and Prvan, T. (1996), Current statistical methods for estimating the Km and Vmax of Michaelis-Menten kinetics. *Biochemical Education*, **24** (4), 196-206.

Full Text: [1996\Bio Edu24, 196.pdf](1996/Bio%20Edu24,%20196.pdf)

Keywords: Fit, Goodness, Kinetics, Methods, Regression-Analysis, Statistical Methods, Vmax

# Title: Biochemical Engineering Journal

(Formerly known as [The Chemical Engineering Journal](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6672&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=373a902012de36b612ccf42fafae7068))

(Now published as [Biochemical Engineering Journal](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5791&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=70e413a1db08fe6b2d2d9c81258b884c) and [Chemical Engineering Journal](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5228&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=54c625845732bf7d6bb76b6a6e77ba6b)

Full Journal Title: [Biochemical Engineering Journal](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5791&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=70e413a1db08fe6b2d2d9c81258b884c)

ISO Abbreviated Title: Biochem. Eng. J.

JCR Abbreviated Title: Biochem Eng J

ISSN: 1369-703X

Issues/Year: 6

Journal Country/Territory: Switzerland

Language: English

Publisher: Elsevier Science SA

Publisher Address: PO Box 564, 1001 Lausanne, Switzerland

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 0.706, 89/131 (2001); Impact Factor 0.941, 76/131 (2002); Impact Factor 1.221, 64/132 (2003); Impact Factor 1.617, 56/133 (2004); Impact Factor 1.781, 63/139 (2005); Impact Factor 2.193, 68/152 (2009)

Engineering, Chemical: Impact Factor 0.566, 49/110 (1999); Impact Factor 0.706, 43/123 (2001); Impact Factor 0.941, 30/126 (2002); Impact Factor 1.221, 21/119 (2003); Impact Factor 1.617, 13/116 (2004); Impact Factor 1.781, 14/116 (2005); Impact Factor 2.193, 25/128 (2009)

Kokubo, K., Sakai, K., Okada, A. and Aoki, Y. (1998), Evaluation of the structure of asymmetric hollow-fiber dialysis membranes by dye adsorption. *Biochemical Engineering Journal*, **2** (1), 45-52.

Full Text: [B\Bio Eng J2, 45.pdf](B/Bio%20Eng%20J2,%2045.pdf)

Abstract: To develop high performance dialysis membranes, the asymmetric structure should be positively accepted and the relationship between asymmetric structure and diffusive permeability should be further clarified. A little information on the asymmetric structure can be obtained from SEM observation. The objective of the present study is to propose a new method for evaluating asymmetric hollow-fiber dialysis membranes by dye adsorption. Adsorption experiments were carried out using mini-modules composed of test membranes (AM-SD-M, PS-UW, PEPA, PAN-DX, PAN-CX2) of which the inside was packed with paraffin to make solutes diffuse only from the outside inward, or of which the outside was packed with paraffin to make solutes diffuse only from the inside outward. The amount of solutes (cytochrome C, Evans blue, Congo red, ethidium bromide) transferred into the membranes was plotted as a function of time. In membranes of asymmetric structure the shape of the transfer rate curves differed with the direction of transfer, and a difference in the rate of solute transfer was produced which is due to the asymmetric structure of the membrane. Further, depending on the solute size and on the membrane, the directional difference in the transfer rate curves appeared either in the middle portion or the initial portion of the curves. It is concluded that the adsorption technique can be used to evaluate the asymmetric structure and diffusive permeability.

Keywords: Structure Evaluation, Asymmetry, Adsorption, Dialysis, Pore-Size Distribution

McNevin, D. and Barford, J. (1998), Modelling adsorption and biological degradation of nutrients on peat. *Biochemical Engineering Journal*, **2** (3), 217-228.

Full Text: [B\Bio Eng J2, 217.pdf](B/Bio%20Eng%20J2,%20217.pdf)

Abstract: A dynamic mathematical and numerical model of adsorption and biological degradation of nutrients in an organic perfusion column with recycle has been developed. This model has applicability to industrial applications of biodegradation of nutrients in wastewater such as biofilters and biotrickling filters where concentrations are dilute and solid surface coverage is low. It successfully predicts that adsorption has the effect of masking a ‘true’ rate of biological degradation behind an ‘observed’ rate of degradation in the liquid phase. This is due to the adsorptive capacity of peat which provides a buffer for surges in loading and makes peat a useful carrier for engineered biological systems. Four dimensionless parameters were identified to totally describe the physical system without biological activity and a further two were identified for the system with biological activity. Analytical solutions to simplifications of the model were justified by showing that the assumption of a negligible concentration gradient in the column was valid after an initial perturbation in nutrient concentration had passed.

Keywords: Model, Adsorption[,](http://www.sciencedirect.com/#hit5) Biological Degradation, Nutrients, Peat, Biofilter, Biotrickling Filter

Aksu, Z. and Açikel, U. (2000), Modelling of a single-staged bioseparation process for simultaneous removal of iron(III) and chromium(VI) by using *Chlorella vulgaris*. *Biochemical Engineering Journal*, **4** (3), 229-238.

Full Text: [B\Bio Eng J4, 229.pdf](B/Bio%20Eng%20J4,%20229.pdf)

Abstract: In this study, the competitive biosorption of iron(III) and chromium(VI) to *Chlorella vulgaris* from a binary metal mixture was investigated in a single-staged batch reactor as a function of V0/X0 (volume of solution containing heavy metal mixture/quantity of biosorbent) ratio and second metal ion concentration at pH 2. The obtained results showed that the increase in biomass quantity (or the decrease of V0/X0 ratio) with the addition of second metal ion affected the removed quantities of iron(III) or chromium(VI). The sorption phenomenon was expressed by the competitive, multi-component Langmuir adsorption isotherm and this expression was used for calculating each residual or adsorbed metal ion concentration at equilibrium (Ceq, Ci or Cad, Ceq, Ci) at a constant V0X0 ratio for a given combination of heavy metal ions in a single-staged batch reactor. Experimental Ceq, Ci and Cad, Ceq, Ci values were compared to those calculated and graphically determined.

Keywords: *C. Vulgaris*, Metal-Ions, Biosorption, Cadmium, Binary Mixture of Iron(III)-Chromium(VI), Single-Staged Biosorption, *Chlorella vulgaris*

Sağ, Y. and Kutsal, T. (2000), Determination of the biosorption heats of heavy metal ions on *Zoogloea Ramigera* and *Rhizopus Arrhizus*. *Biochemical Engineering Journal*, **6** (2), 145-151.

Full Text: [B\Bio Eng J6, 145.pdf](B/Bio%20Eng%20J6,%20145.pdf)

Abstract: The biosorption of Fe(III), Cr(VI), Pb(II), Cu(II) and Ni(II) ions on *Zoogloea Ramigera* (activated sludge bacterium) and *Rhizopus Arrhizus* (filamentous fungus) has been studied as a function of initial metal ion concentration and temperature. The applicability of the Langmuir model for each metal-microorganism system has been tested at different temperatures. The enthalpy change for the biosorption process has been evaluated by using the Langmuir constant b, related to the energy of adsorption. Thermodynamic parameters indicate the exothermic nature of Cu(II) and Ni(II) biosorption on both microorganisms. Fe(III), Cr(VI) and Pb(II) biosorption is determined to be an endothermic process since increased binding occurs as the temperature is increased in the range 15-45°C. (C) 2000 Elsevier Science S.A. All rights reserved.

Keywords: Waste Water, Heavy Metal, *Zoogloea Ramigera*, *Rhizopus Arrhizus*, The Heat of Biosorption, Langmuir Model, *R-arrhizus*, Chromium(VI) Ions, Waste-Water, Adsorption, Recovery, Removal, Biomass, Uranium, Biosorbents, Copper(II)

Pandey, A., Soccol, C.R., Nigam, P., Brand, D., Mohan, R. and Roussos, S. (2000), Biotechnological potential of coffee pulp and coffee husk for bioprocesses. *Biochemical Engineering Journal*, **6** (2), 153-162.

Full Text: [B\Bio Eng J6, 153.pdf](B/Bio%20Eng%20J6,%20153.pdf)

Abstract: Advances in industrial biotechnology offer potential opportunities for economic utilization of agro-industrial residues such as coffee pulp and coffee husk. Coffee pulp or husk is a fibrous mucilagenous material (sub-product) obtained during the processing of coffee cherries by wet or dry process, respectively. Coffee pulp/husk contains some amount of caffeine and tannins, which makes it toxic in nature, resulting the disposal problem. However, it is rich in organic nature, which makes it an ideal substrate for microbial processes for the production of value-added products. Several solutions and alternative uses of the coffee pulp and husk have been attempted. These include as fertilizers, livestock feed, compost, etc. However, these applications utilize only a fraction of available quantity and are not technically very efficient. Attempts have been made to detoxify it for improved application as feed, and to produce several products such as enzymes, organic acids, flavour and aroma compounds, and mushrooms, etc. from coffee pulp/husk. Solid state fermentation has been mostly employed for bioconversion processes. Factorial design experiments offer useful information for the process optimization. This paper reviews the developments on processes and products developed for the value-addition of coffee pulp/husk through the biotechnological means. (C) 2000 Elsevier Science S.A. All rights reserved.

Keywords: Coffee Pulp, Coffee Husk, Submerged Fermentation, Solid State Fermentation, Biotechnological Applications, Solid-State Fermentation, *Aspergillus-Niger*, Caffeine, Pectinase, Substrate, Waste, Acid, Degradation, Selection, Digestion

Aksu, Z. (2001), Biosorption of reactive dyes by dried activated sludge: Equilibrium and kinetic modelling. *Biochemical Engineering Journal*, **7** (1), 79-84.

Full Text: [B\Bio Eng J7, 79.pdf](B/Bio%20Eng%20J7,%2079.pdf)

Abstract: The biosorption of reactive dyes (Reactive Blue 2-RB2 and Reactive Yellow 2-RY2) onto dried activated sludge was investigated. The dye binding capacity of biosorbent was shown as a function of initial pH, initial dye concentration and type of dye. The equilibrium data fitted very well to both the Freundlich and Langmuir adsorption models. The results showed that both the dyes uptake processes followed the second-order rate expression. (C) 2001 Elsevier Science B.V. All rights reserved.

Keywords: Activated Sludge, Adsorption, Biosorbent, Biosorption, Biotechnology, Capacity, Color Removal, Dried Activated Sludge, Dye, Dyes, Effluents, Equilibrium, Expression, Freundlich, Function, Kinetic, Kinetic Modelling, Langmuir, Modelling, Models, pH, Reactive Dyes, Rights, Science, Second Order, Second-Order, Sludge, Switzerland, Turkey

Aksu, Z. and Akpinar, D. (2001), Competitive biosorption of phenol and chromium(VI) from binary mixtures onto dried anaerobic activated sludge. *Biochemical Engineering Journal*, **7** (3), 183-193.

Full Text: [B\Bio Eng J7, 183.pdf](B/Bio%20Eng%20J7,%20183.pdf)

Abstract: The ability of dried anaerobic activated sludge to adsorb phenol and chromium(VI) ions, both singly and in combination, was investigated in a batch system. The effects of initial pH and single-and dual-component concentrations on the equilibrium uptakes were investigated. The optimum initial biosorption pH for both chromium(VI) ions and phenol was determined as 1.0. Multi-component biosorption studies were also performed at this initial pH value. It was observed that the equilibrium uptakes of phenol and chromium(VI) ions were changed due to the presence of other component. Adsorption isotherms were developed for both single-and dual-component systems at pH 1.0, and expressed by the mono-and multi-component Langmuir, Freundlich and Redlich-Peterson adsorption models and model parameters were estimated by the non-linear regression. It was seen that the mono-component adsorption equilibrium data fitted very well to the non-competitive Freundlich and Redlich-Peterson models for both the components while the modified Freundlich model adequately predicted the multi-component adsorption equilibrium data at moderate ranges of concentration. The results suggested that the cells of dried anaerobic activated sludge bacteria may find promising applications for simultaneous removal and separation of phenol and chromium(VI) ions from aqueous effluents. (C) 2001 Elsevier Science B.V. All rights reserved.

Keywords: Multi-Component Biosorption, Phenol, Chromium(VI), Dried Anaerobic Activated Sludge, Mono-and Multi-Component Adsorption Isotherms, Adsorption-Isotherms, *Chlorella-Vulgaris*, Organic Pollutants, Waste Biomass, Ions, Metals, Zinc, Bioaccumulation, Copper(II), Removal

Khoo, K.M. and Ting, Y.P. (2001), Biosorption of gold by immobilized fungal biomass. *Biochemical Engineering Journal*, **8** (1), 51-59.

Full Text: [B\Bio Eng J8, 51.pdf](B/Bio%20Eng%20J8,%2051.pdf)

Abstract: The characteristics of polyvinyl alcohol (PVA) and calcium alginate as immobilization matrices were examined and compared for the uptake of gold by a fungal biomass. PVA-immobilized biomass showed superior mechanical strength and chemical stability. In addition, PVA beads were also stable under a wider range of pH (1-13). The lower mass transfer resistance in PVA beads was evident from kinetic studies which showed a significantly shorter period of time for the immobilized PVA beads to achieve 80% gold removal as compared with immobilized alginate beads. Calculated rate constants and maximum rates for the uptake of gold by both immobilized PVA and immobilized alginate biosorbent revealed a much more rapid uptake phenomenon by the former. BET analyses also indicated a larger surface area and larger pore size distribution in PVA beads, further indicating a lower resistance to mass transfer. Gold biosorption in the immobilized PVA bead could be modeled by both the Langmuir and Freundlich adsorption isotherms. (C) 2001 Elsevier Science B.V. All rights reserved.

Keywords: Alginate, Biosorption, Fomitopsis Carnea, Gold, Polyvinyl Alcohol

? Bandhyopadhyay, K., Das, D., Bhattacharyya, P. and Maiti, B.R. (2001), Reaction engineering studies on biodegradation of phenol by *Pseudomonas putida* MTCC 1194 immobilized on calcium alginate. *Biochemical Engineering Journal*, **8** (3), 179-186.

Full Text: [2001\Bio Eng J8, 179.pdf](2001/Bio%20Eng%20J8,%20179.pdf)

Abstract: Phenol in industrial wastewater has been biologically degraded by Pseudomonas putida immobilized in calcium alginate matrix. Effect of different process variables like, initial phenol concentration, temperature, cell loading, bead size, etc. has been studied previously. An attempt has been made to explain the kinetics of this immobilized whole cell catalytic process on the basis of Michaelis–Menten (M–M) model within the phenol concentration range 100–1000 ppm. It has been observed that at phenol concentration above 750 ppm, the reaction behavior deviate from Michaelian kinetics possibly due to the effect of intraparticle diffusion. The batch experimental data have been obtained in shake flask experiments in aerobic conditions. The kinetic parameters of M–M model, vmax and Km, and the effective diffusion coefficient (Des) for large immobilized beads have been evaluated from Lineweaver–Burk plots and the Eadie–Hofstee plots, respectively. The simulated data satisfactorily correspond to those of the experimental values in the phenol concentration range up to 500 ppm.

Keywords: Phenol, Pseudomonas putida, Kinetics, Intraparticle Diffusion

Yavuz, H., Bayramoğlu, G., Kacar, Y., Denizli, A. and Arıca, M.Y. (2001), Congo Red attached monosize poly(HEMA-co-MMA) microspheres for use in reversible enzyme immobilisation. *Biochemical Engineering Journal*, **10** (1), 1-8.

Full Text: [B\Bio Eng J10, 1.pdf](B/Bio%20Eng%20J10,%201.pdf)

Abstract: Monosize and non-porous poly(2-hydroxyethylmethacrylate-co-methylmethacrylate) (poly(HEMA-co-MMA)), microspheres were prepared by dispersion polymerisation of HEMA and MMA in an ethanol-water medium in the presence of an initiator (alpha, alpha’-azobisisobutyronitrile, AIBN). An affinity dye, i.e. Congo Red (CR) was attached covalently and then Fe3+ ions were incorporated. The poly(HEMA-co-MMA)-CR attached and poly(HEMA-co-MMA)-CR-Fe3+ incorporated microspheres were used in the immobilisation of glucose oxidase (GOD) via adsorption. The adsorption capacities of these microspheres were determined by varying the concentration of GOD in the adsorption medium. GOD adsorption capacities of the Fe3+ incorporated microspheres (165 mg g-1) was greater than that of the dye-attached microspheres (126 mg g-1). The non-specific adsorption of the GOD on the poly(HEMA-co-MMA) microspheres was negligible. The K values for both immobilised poly(HEMA-co-MMA)-CR-GOD (7.2) and poly(HEMA-co-MMA)-CR-Fe3+-GOD (6.8) were higher than that of the free enzyme (6.6 mM). Optimum reaction pH was 5.0 for free and 7.0 for both immobilised preparations. Optimum reaction temperature of the adsorbed enzymes was 10°C higher than that of the free enzyme and was significantly broader. After 10 successive uses the retained activity of the adsorbed enzyme was 93%. It was observed that enzyme could be repeatedly adsorbed and desorbed on the CR attached poly(HEMA-co-MMA) microspheres without significant loss in adsorption capacity or enzyme activity. (C) 2002 Elsevier Science B.V. All rights reserved.

Keywords: Glucose Oxidase, Immobilisation, Adsorption, Congo Red, Enzyme Technology, Affinity Microcarriers, Poly(HEMA-co-MMA), Glucose-Oxidase, Poly(2-Hydroxyethyl Methacrylate), Covalent Immobilization, Affinity-Chromatography, Phema Membrane, Purification, Protein, Dye, Glucoamylase, Adsorption

Tsuneda, S., Auresenia, J., Inoue, Y., Hashimoto, Y. and Hira, A. (2001), Kinetic model for dynamic response of three-phase fluidized bed biofilm reactor for wastewater treatment. *Biochemical Engineering Journal*, **10** (1), 31-37.

Full Text: [B\Bio Eng J10, 31.pdf](B/Bio%20Eng%20J10,%2031.pdf)

Abstract: Step changes in inlet concentration has been introduced into the completely mixed three-phase fluidized bed biofilm reactor treating simulated domestic wastewater to study the dynamic behavior of the system and to establish the suitable kinetic model from the response curve. Three identical reactors having different biomass volumes were operated in parallel. It was found that the response curves showed second-order characteristics, and thus at least two first-order differential equations are necessary to simulate the substrate and biomass response curves. Nonlinear regression analysis was performed using different types of rate equations and their corresponding kinetic parameters were used to simulate the theoretical response curve using the Runge–Kutta numerical integration method. As a result, although various types of conventional biokinetic models such as Monod, Haldane and Andrew types were examined, all the theoretical substrate response curves underestimated time constants compared to the actual substrate response plots. On the other hand, the theoretical curve of the kinetic model that incorporates adsorption term has best fit to the actual response in most of the cases. Thus, it was concluded that adsorption of substrate onto biofilm and carrier particles has significant effect on the dynamic response in biofilm processes.

Keywords: Adsorption, Biofilm Reactor, Kinetic Model, Nonlinear Regression Analysis, Step Change Response, Three-Phase Fluidized Bed

Jeon, C., Park, J.Y. and Yoo, Y.J. (2002), Novel immobilization of alginic acid for heavy metal removal. *Biochemical Engineering Journal*, **11** (2-3), 159-166.

Full Text: [B\Bio Eng J11, 159.pdf](B/Bio%20Eng%20J11,%20159.pdf)

Abstract: To apply alginic acid efficiently to wastewater treatment system, it was immobilized by novel polyvinyl alcohol (PVA)–boric acid method using glutaraldehyde to reduce the hydration of the immobilized bead. Since the immobilized alginic acid bead did not swell and has enough mechanical strength, channeling of flow and the increase of pressure drop were not observed through the column operations. In addition, it was also stable under strong acidic (below pH 1.0) and high temperature (above 170 °C) conditions. The surface condition and existence of lead ions on the bead was confirmed by the SEM and (energy dispersive X-ray spectroscopy) EDX instrument analyses. The PVA–alginic acid bead showed that the breakthrough point emerged around 600 bed volumes and lead ions bound to the immobilized bead were readily desorbed by EDTA solution. Especially, the effect of alkaline metal ion (Ca2+ and Mg2+) on lead ion adsorption capacity was almost negligible.

Keywords: Biosorption, Immobilization, Heavy Metal, Polyvinyl Alcohol, Wastewater Treatment, Alginic Acid

Tong, X.D., Dong, X.Y. and Sun, Y. (2002), Lysozyme adsorption and purification by expanded bed chromatography with a small-sized dense adsorbent. *Biochemical Engineering Journal*, **12** (2), 117-124.

Full Text: [B\Bio Eng J12, 117.pdf](B/Bio%20Eng%20J12,%20117.pdf)

Abstract: Lysozyme adsorption and purification by expanded bed chromatography of a customized Nd–Fe–B alloy-densified agarose (NFBA) gel modified with Cibacron Blue 3GA (CB) were investigated, and the results were compared with those obtained with CB-modified Streamline gel (CB-Streamline). The NFBA gel had a mean size of 102 μm and a mean density of 1.88 g/ml. The breakthrough behavior of lysozyme was modeled considering the dispersion of the liquid and solid phases and the diffusive mass transport of protein to the solid phase. Using independently determined parameters, the model prediction agreed reasonably well to the experimental data. Although the two dye-ligand adsorbents showed nearly the same static capacity, the dynamic binding capacity of the CB-NFBA gel was nearly twice that of the CB-Streamline gel. Moreover, lysozyme was purified from chicken egg white solution by the expanded beds with the two adsorbents, and the expanded bed with the CB-NFBA gel produced much larger purification factor than that with the CB-Streamline gel. All the results indicated that the small-sized dense medium CB-NFBA gel was more efficient as an expanded bed adsorbent.

Keywords: Dense Composite Agarose Gel, Expanded Bed, Protein Adsorption, Protein Purification, Lysozyme, Model

Sağ, Y. and Aktay, Y. (2002), Kinetic studies on sorption of Cr(VI) and Cu(II) ions by chitin, chitosan and *Rhizopus Arrhizus*. *Biochemical Engineering Journal*, **12** (2), 143-153.

Full Text: [B\Bio Eng J12, 143.pdf](B/Bio%20Eng%20J12,%20143.pdf)

Abstract: This work focuses on Cr(VI), Cu(II) sorption kinetics by chitin, a naturally occurring material, chitosan, the deacetylated form of chitin, and *Rhizopus Arrhizus*, a filamentous fungus containing chitin and chitosan as a main cell wall component. The aim of this study is to understand the mechanisms that govern Cr(VI) and Cu(II) removal, and find an appropriate model for the kinetics of removal in a batch reactor. In order to investigate the mechanism of sorption and potential rate controlling steps, the pseudo-first, first, pseudo-second order kinetic models and the Elovich equation have been used to test experimental data. For all of the metal–biosorbent systems studied, the pseudo-second order rate expression provided the best fitting kinetic model.

Keywords: Adsorption Models, Aqueous-Solution, Batch Reactor, Cell Wall, Chitin, Chitosan, Cr(VI), Cr(VI)-Cu(II), Cu(II), Cu(II) Ions, Cu(II) Removal, Elovich Equation, Experimental, Expression, First, Fly-Ash, Fungus, Heavy-Metals, Hexavalent Chromium, Kinetic, Kinetic Model, Kinetic Models, Kinetics, Mechanism, Mechanisms, Model, Models, Potential, Pseudo-Second Order, Pseudo-Second-Order, Removal, *Rhizopus Arrhizus*, Rights, Simultaneous Biosorption, Sorption, Sorption Kinetics, Sphagnum Moss Peat, Waste-Water, Work, *Zoogloea-Ramigera*

? Okazakia, S.Y., Nagasawaa, S.I., Gotoa, M., Furusakia, S., Wariishi, H. and Tanaka, H. (2002), Decolorization of azo and anthraquinone dyes in hydrophobic organic media using microperoxidase-11 entrapped in reversed micelles. *Biochemical Engineering Journal*, **12** (3), 237-241.

Full Text: [2002\Bio Eng J12, 237.pdf](2002/Bio%20Eng%20J12,%20237.pdf)

Abstract: Microperoxidase-11 (MP-11), which is a heme-containing undecapeptide derived from horse heart cytochrome c, was utilized as a peroxidative catalyst in the system of bis(2-ethylhexyl)sulphosuccinate sodium salt (AOT)-reversed micelles to oxidatively decolorize water-insoluble dyes in isooctane. MP-11 entrapped in the reversed micelles exhibited a peroxidative activity in the presence of H2O2, effectively catalyzing the oxidative decolorization of an azo dye Solvent Yellow 7 and an anthraquinone dye Solvent Blue 11 in the hydrophobic organic solvent. H2O2-derived heme bleaching was successfully suppressed by replacing H2O2 with an organic hydroperoxide, tert-butyl hydroperoxide (t-BuOOH), thus sustaining a stable decolorization activity in the system. To optimize the reversed micellar system, the effect of the pH and the molar ratio of H2O/AOT hydration degree (Wo) was examined, indicating that MP-11 exhibited a maximal decolorization activity at pH 8–10 with the Wo value of 20.

Keywords: Artificial Enzyme, Biocatalysis, Dye Decolorization, Enzyme Activity, Microperoxidase, Reversed Micelles

Bayramoğlu, G., Yilmaz, M. and Arıca, M.Y. (2003), Affinity dye-ligand poly(hydroxyethyl methacrylate)/chitosan composite membrane for adsorption lysozyme and kinetic properties. *Biochemical Engineering Journal*, **13** (1), 35-42.

Full Text: [B\Bio Eng J13, 35.pdf](B/Bio%20Eng%20J13,%2035.pdf)

Abstract: A composite membrane from 2-hydroxyethyl methacrylate (HEMA) and poly(hydroxyethyl methacrylate)/chitosan (pHEMA/chitosan) was synthesized via UV initiated photo-polymerization in the presence of an initiator α, α‘-azoisobutyronitrile (AIBN). Procion Brown MX 5BR was then covalently immobilized onto composite membrane as a dye–ligand. The binding characteristics of a model protein (i.e. lysozyme) to the dye–ligand immobilized affinity membrane have been investigated from aqueous solution using the plain composite membrane as a control system. The experimental data was analyzed using two adsorption kinetic models, the pseudo-first-order and the pseudo-second-order, to determine the best-fit equation for the adsorption of lysozyme onto affinity composite membrane. The second-order equation for the adsorption of lysozyme on the dye–ligand membrane systems is the most appropriate equation to predict the adsorption capacity for the affinity membrane. The reversible lysozyme adsorption on the affinity membrane obeyed the Freundlich isotherm. The lysozyme adsorption capacity of the plain membrane and the dye–ligand affinity membrane were 8.3 and 121.5 mg ml-1, respectively.

Keywords: Adsorption, Affinity Chromatography, Composite Membrane, Dye–Ligand, Kinetic Parameters, Lysozyme, Protein

Barboza, M., Almeida, R.M.R.G. and Hokka, C.O. (2003), Influence of temperature on the kinetics of adsorption and desorption of clavulanic acid by ionic exchange. *Biochemical Engineering Journal*, **14** (1), 19-26.

Full Text: [B\Bio Eng J14, 19.pdf](B/Bio%20Eng%20J14,%2019.pdf)

Abstract: Beta-lactamases are enzymes that deactivate penicillins and cephalosporins by hydrolyzing their beta-lactam rings, producing penicilloic acid derivatives and, in the case of cephalosporins, analogous degradation products. Clavulanic acid (CA) is a beta-lactam antibiotic produced by *Streptomyces clavuligerus*, which has a potent beta-lactamase inhibiting activity. This antibiotic displays only weak antibacterial activity, therefore rendering it unsuitable for use by itself. However, its use in combination with certain penicillins (amoxycillin and ticarcillin) is effective in clinical use. The recovery process of CA involves steps such as adsorption, ion exchange chromatography or liquid–liquid extraction, but with low yields. Thus, in the case of CA, an investigation of the influence of temperature on the adsorption process is very important because of the unstable structure of this antibiotic, which degrades rapidly under normal processing conditions. In the work reported on herein, the influence of temperature on the CA adsorption process was investigated, involving equilibrium and kinetic studies and carrying out batch shake experiments with the ion exchanger resin Amberlite IRA 400 at four different temperatures. A model of the CA adsorption process, taking into account mass transfer limitation, is proposed. An estimate of the thermodynamics of the adsorption process was made based on van’t Hoff’s equation.

Keywords: Adsorption, Antibiotic, Downstream Processing, Purification, Clavulanic Acid, Ion Exchange Enthalpy

Chen, W.D., Dong, X.Y., Bai, S. and Sun, Y. (2003), Dependence of pore diffusivity of protein on adsorption density in anion-exchange adsorbent. *Biochemical Engineering Journal*, **14** (1), 45-50.

Full Text: [B\Bio Eng J14, 45.pdf](B/Bio%20Eng%20J14,%2045.pdf)

Abstract: The ion-exchange adsorption kinetics of bovine serum albumin and γ-globulin into a porous anion exchanger, DEAE Spherodex M, has been studied by batch adsorption experiments. The parallel diffusion model was employed to predict the pore and surface diffusivities in the model. The effect of the initial protein concentration and adsorption density on the pore diffusivity was investigated by assuming that the surface diffusivity was unchanged with these factors. It was found that the pore diffusivity decreased exponentially with increasing protein adsorption density in a wide range of average adsorption densities. Moreover, the pore diffusivity decreased with increasing the initial protein concentration because of the increase of the adsorption density or the steric hindrance effect for the proteins. The results reported in this paper provided an insight into the dependence of the pore diffusivity of macromolecules in porous adsorbents on adsorptio density.

Keywords: Protein, Pore diffusivity, Surface diffusivity, Adsorption density, Parallel diffusion model

Liu, J.Z., Weng, L.P., Zhang, Q.L., Xu, H. and Ji, L.N. (2003), A mathematical model for gluconic acid fermentation by *Aspergillus niger*. *Biochemical Engineering Journal*, **14** (2), 137-141.

Full Text: [B\Bio Eng J14, 137.pdf](B/Bio%20Eng%20J14,%20137.pdf)

Abstract: The fermentation kinetics of gluconic acid by *Aspergillus niger* were studied in a batch system. A simple model was proposed using the logistic equation for growth, the Luedeking–Piret equation for gluconic acid production and Luedeking–Piret-like equation for glucose consumption. The model appeared to provide a reasonable description for each parameter during the growth phase. The production of gluconic acid was growth-associated.

Keywords: Gluconic Acid, *Aspergillus niger*, Kinetic Model, Logistic Equation, Luedeking–Piret Equation

Pagnanelli, F., Beolchini, F., Di Biase, A. and Vegliò, F. (2003), Effect of equilibrium models in the simulation of heavy metal biosorption in single and two-stage UF/MF membrane reactor systems. *Biochemical Engineering Journal*, **15** (1), 27-35.

Full Text: [B\Bio Eng J15, 27.pdf](B/Bio%20Eng%20J15,%2027.pdf)

Abstract: In this paper heavy metal biosorption in an UF/MF (ultrafiltration/microfiltration) membrane reactor was simulated outlining the effect of different equilibrium models on the predicted performances of the bioreactor. In particular using Langmuir, Freundlich and Redlich-Peterson isotherms slightly different simulated profiles were obtained evidencing the adequacy of all the equilibrium models in representing a common dynamic behaviour. Experimental data of copper biosorption onto Sphaerotilus natans cells obtained using an of membrane reactor system, were compared with theoretical profiles obtained from the combination of mass balances with adsorption equilibrium properties. This comparison outlines the necessity of considering a partial cell degradation (as confirmed by permeate flux decline) which was taken into account in the modelling phase introducing a time depending biomass concentration, function of the copper retention coefficient. The simulated dynamic behaviour of a single reactor was also compared with a series of two reactors (with the same total volume and biomass amount) in order to optimise the operative configuration to use. (C) 2002 Elsevier Science B.V. All rights reserved.

Keywords: Membrane Reactor, Biosorption, Heavy Metal, Langmuir, Freundlich, Redlich-Peterson, Sphaerotilus Natans, Copper Biosorption, Arthrobacter sp., Biomass, Microfiltration, Removal

Otero, M., Rozada, F., Calvo, L.F., García, A.I. and Morán, A. (2003), Kinetic and equilibrium modelling of the Methylene blue removal from solution by adsorbent materials produced from sewage sludges. *Biochemical Engineering Journal*, **15** (1), 59-68.

Full Text: [B\Bio Eng J15, 59.pdf](B/Bio%20Eng%20J15,%2059.pdf)

Abstract: Sewage sludge utilisation must be the preferred management solution for a residue which does not show the desired improvement on wastewater treatment. This research work’s aim was to study the dye binding capacity of adsorbents produced from sewage sludges. The quality of sewage sludges as starting materials has been investigated by using sludges both from an urban and from an agrofood industry wastewater treatment plant. Dried sewage sludges, pyrolysed sewage sludges and both chemically activated and pyrolysed sewage sludges have been used as adsorbent materials in single batch liquid-phase adsorption tests. The adsorption equilibriums of Methylene blue by these materials have been described in terms of both Langmuir and Freundlich equations. In order to investigate the mechanisms of adsorption, the first- and second-order kinetic models have been used. All the sludge-derived adsorbents produced have been able to uptake Methylene blue from solution, the second-order rate expression being preferred to the first-order one. Nevertheless, the time needed for reaching the equilibrium and adsorptive capacity have differed from one to another adsorbent. Equilibrium and kinetic results have showed that dried urban sewage sludges are the most efficient materials for removing the Methylene blue from the solution.

Keywords: Adsorbent, Adsorbents, Adsorption, Adsorption, Aqueous-Solution, Biosorption, Biosorption, Capacity, Chemical Activation, Dried Activated-Sludge, Dye, Equilibrium, Expression, First, Freundlich, Kinetic, Kinetic Models, Kinetic Parameters, Langmuir, Liquid-Phase Adsorption, Management, Mechanisms, Methylene Blue, Modelling, Models, Phenol, Plant, Pyrolysis, Quality, Reactive Dyes, Removal, Research, Rights, Second-Order, Sewage, Sewage Sludges, Sludge, Solution, Treatment, Waste, Wastewater, Wastewater Treatment

Ho, Y.S. (2003), Affinity dye-ligand poly(hydroxyethyl methacrylate)/chitosan composite membrane for adsorption lysozyme and kinetic properties G. Bayramoǧlu, M. Yilmaz, M.Y. Arıca. *Biochemical Engineering Journal*, **15** (1), 77-78.

Full Text: [B\Bio Eng J15, 77.pdf](B/Bio%20Eng%20J15,%2077.pdf) [B\Bio Eng J-Ho.pdf](B/Bio%20Eng%20J-Ho.pdf)

Keywords: Fungus *Aspergillus-Niger*, Sphagnum Moss Peat, Aqueous-Solution, Sorption Kinetics, *Rhizopus-arrhizus*, Batch System, Metal-Ions, Removal, Biosorption, Lead

Arıca, M.Y. (2003), In reaction to the comment by Dr. Y.-S. Ho on our publication “Affinity dye-ligand poly(hydroxyethylmethacrylate/chitosan composite membrane for adsorption lysozyme and kinetic properties, Biochemical Engineering Journal 13 (2003) 35-45”. *Biochemical Engineering Journal*, **15** (1), 79-80.

Full Text: [B\Bio Eng J15, 79.pdf](B/Bio%20Eng%20J15,%2079.pdf)

Keywords: Adsorption, Aqueous-Solutions, Bone Char, Cadmium Ions, Composite, Dye Ligand, Kinetic, Lysozyme, Publication, Removal, Sorption, Sphagnum Moss Peat

Dursun, A.Y., Uslu, G., Tepe, O., Cucï, Y. and Ekïz, H.İ. (2003), A comparative investigation on the bioaccumulation of heavy metal ions by growing *Rhizopus Arrhizus* and *Aspergillus niger*. *Biochemical Engineering Journal*, **15** (2), 87-92.

Full Text: [B\Bio Eng J15, 87.pdf](B/Bio%20Eng%20J15,%2087.pdf)

Abstract: The bioaccumulation of Cu(II) and Cd(H) ions by viable *Rhizopus Arrhizus* and *Aspergillus niger* was studied as a function of initial pH and initial metal ion concentration. Optimum pH values for maximum Cu(II) and Cd(II) accumulation were determined, respectively, as 4.5 and 3.5 for *R. Arrhizus* and 5.0 and 3.0 for *A. Niger*. Although both the metal ions caused an inhibition effect on the growth of the microorganisms, *R. Arrhizus* and *A. Niger* were capable of removing Cu(II) with the maximum specific uptake of 10.76 and 9.53 mg g-1 at 75 mg dm-3 initial Cu(II) concentration, respectively. *R. Arrhizus* was found to be more resistant and efficient to accumulate larger amounts of Cd(II) than *A. Niger* at all Cd(II) concentrations. *A. Niger* was totally inhibited by 50 mg dm-3 initial Cd(II) concentration. (C) 2002 Elsevier Science B.V. All rights reserved.

Keywords: Bioaccumulation, Cu(II), Cd(II), *Rhizopus Arrhizus*, *Aspergillus niger*, Biosorption Characteristics, Cladophora-Crispata, Aqueous-Solution, Fungal Biomass, Removal, Adsorption, Vulgaris, Uranium

Shi, Q.H., Tian, Y., Dong, X.Y., Bai, S. and Sun, Y. (2003), Chitosan-coated silica beads as immobilized metal affinity support for protein adsorption. *Biochemical Engineering Journal*, **16** (3), 317-322.

Full Text: [B\Bio Eng J16, 317.pdf](B/Bio%20Eng%20J16,%20317.pdf)

Abstract: Chitosan was used for the surface coating of porous silica beads and copper(II) ions were immobilized to the chitosan layer to prepare an immobilized metal affinity (IMA) absorbent for protein adsorption. The amount of chitosan adsorbed on silica bead was about 8.5 mg/g of wet beads. Nonspecific adsorption of chitosan-coated silica beads decreased significantly from 0.23 to less than 0.08 mmol/l after the surface coating. A proper cross-linking ratio of glutaraldehyde was determined by investigating the adsorption of Cu2+ and then BSA. Copper(II) ions were loaded to the chitosan-coated silica at 48 mmol/l. BSA adsorption to this IMA adsorbent showed a maximum (0.91 mmol/l) at liquid phase pH of 5.0, close to its isoelectric point. The adsorbed protein could be dissociated by increasing liquid phase pH 8.0, indicating the reversibility of the adsorption. Most importantly, the chitosan-coated silica showed significantly enhanced stability in alkaline solutions, as demonstrated by the long-term treatment in 0.1 mol/l sodium hydroxide solution and repeated uses for protein adsorption.

Keywords: Protein, Adsorption, Affinity, Chromatography, Chitosan, Surface Coating

Othman, M.R. and Amin, A.M. (2003), Comparative analysis on equilibrium sorption of metal ions by biosorbent Tempe. *Biochemical Engineering Journal*, **16** (3), 361-364.

Full Text: [B\Bio Eng J16, 361.pdf](B/Bio%20Eng%20J16,%20361.pdf)

Abstract: This paper reports the biosorption study of Cu2+, Mn4+, and Zn2+ by Rhizopus Oligosporus biomass cultured in Tempe. The maximum adsorption rate occurred at pH 8 and initial concentration of 200 mg/l. The Cu2+ uptake was in equilibrium at 8 mg/g after 15 min of contact time. The Mn4+ uptake was at 9 mg/g after 60 min of contact time. The equilibrium adsorption for Zn2+ was at 12 mg/g after 30 min of contact time.

Keywords: Tempe, Biomass, Organisms, Biosorption, *Rhizopus Oligosporus*

Ma, W. and Tobin, J.M. (2004), Determination and modelling of effects of pH on peat biosorption of chromium, copper and cadmium. *Biochemical Engineering Journal*, **18** (1), 33-40.

Full Text: [B\Bio Eng J18, 33.pdf](B/Bio%20Eng%20J18,%2033.pdf)

Abstract: Adsorption of metals onto biological materials, including peat, or biosorption is well-recognised as a potential alternative to conventional wastewater treatments processes. In this work, biosorption of Cr3+, Cu2+ and Cd2+ onto peat in batch systems was investigated in the pH range 2-7. The order of maximum uptake was Cr > Cu > Cd. Both H+ ion competition and pH-dependent speciation affected uptake levels. For Cr and Cu optimum pH was ca. 4, while for Cd greatest uptake occurred at pH 7. of three selected multi-component sorption models an extended Langmuir model, which is based on the direct competition of metal ions and protons for biosorbent sites, exhibited best fit. Three-dimensional sorption surfaces were generated which described the cation uptake as a function of both final metal and final H+ concentrations. (C) 2003 Elsevier Science B.V. All rights reserved.

Keywords: Peat, Biosorption, Modelling, Wastewater Treatment, Metals, pH Effects, Waste-Water, Metal-Ions, Humic Substances, Aqueous-Solution, Removal, Adsorption, Sphagnum, Moss, Effluents, Sorption

? China, M., Shashi and Kumar, S. (2004), Sensitivity analysis of biodegradation of soil applied pesticides using a simulation model. *Biochemical Engineering Journal*, **19** (2), 119-125.

Full Text: [2004\Bio Eng J19, 119.pdf](2004/Bio%20Eng%20J19,%20119.pdf)

Abstract: Models, describing pesticide biodegradation in soil are necessary and useful tools. Shelton and Doherty [Soil Sci. Soc. Am. J. 61 (1997) 1085] proposed a model for describing rates of pesticide-substrate biodegradation in soil, which is relatively very simple. In this work, this model has been modified by incorporating the effect of toxicity of pesticides on microorganisms. It utilizes endogenous kinetics in the microorganism growth to include the effect of toxicity of pesticides, and considers Haldane kinetics instead of Monod kinetics for inhibitory pesticide substrate for predicting the biomass growth. Effects of change in variables on model predictions were studied. Further, the sensitivity of the biodegradation with respect to individual parameters and variables is also investigated. The sensitivity analysis identifies few parameters/variables, which are sensitive in some particular range of their values. It is also found that *K*s is insensitive to loss of efficacy (LE1). In conjunction with the estimation of loss of efficacy, the model may be useful to suggest the choice of microorganisms depending on the values of its characteristic parameters.

Keywords: Biodegradation, Kinetic Parameters, Modeling, Substrate Inhibition

Selatnia, A., Boukazoula, A., Kechid, N., Bakhti, M.Z., Chergui, A. and Kerchich, Y. (2004), Biosorption of lead(II) from aqueous solution by a bacterial dead *Streptomyces rimosus* biomass. *Biochemical Engineering Journal*, **19** (2), 127-135.

Full Text: [B\Bio Eng J19, 127.pdf](B/Bio%20Eng%20J19,%20127.pdf)

Abstract: The lead biosorption capacity of a *Streptomyces rimosus* biomass treated with NaOH (0.1 M) was studied in the batch mode. After pretreatment of biomass at the ambient temperature, optimum conditions of biosorption were found to be: a biomass particle size between 50 and 160 μm, an average contact time of 3 h, a biomass concentration of 3 g/l and a stirring speed of 250 rpm. The equilibrium data could be fitted by Langmuir isotherm equation. Under these optimal conditions, 135 mg Pb2+/g biomass was obtained.

Keywords: Activated Carbon, Aqueous Solution, Batch Mode, Batch Processing, Biomass, Biosorption, Capacity, Copper Adsorption, Diffusion-Model, Equilibrium, Filamentous Bacteria, Heavy-Metal Biosorption, Isotherm, Langmuir, Langmuir Isotherm, Lead, Mass-Transfer, Mucor-Miehei, Naoh, Particle Size, pH, Pretreatment, Removal, Rhizopus-Arrhizus, Rights, Size, Solution, Streptomyces Rimosus, Temperature, Waste-Water, Waste-Water Treatments

Özacar, M. and Şengýl, İ.A. (2004), Two-stage batch sorber design using second-order kinetic model for the sorption of metal complex dyes onto pine sawdust. *Biochemical Engineering Journal*, **21** (1), 39-45.

Full Text: [B\Bio Eng J21, 39.pdf](B/Bio%20Eng%20J21,%2039.pdf)

Abstract: The sorption of metal complex dyes, metal complex blue (MCB) and metal complex yellow (MCY), onto pine sawdust in a batch sorber has been studied. A model has been used for the design of a two-stage batch sorber based on pseudo second-order sorption kinetics. The model has been optimized with respect to contact time in order to minimize total contact time to achieve a fixed percentage of metal complex dyes removal. Three simplified kinetic models including pseudo first- and second-order equation, and intraparticle diffusion equation were selected to follow the sorption process. Kinetic parameters, rate constants, equilibrium sorption capacities and related correlation coefficients, for each kinetic model were calculated and discussed. It was shown that the sorption of metal complex dyes could be described by the pseudo second-order equation. The equilibrium data fit well in the Langmuir isotherm. Results of two-stage batch sorber design studies show that the required times for the 90% efficiencies removal of metal complex dyes are 45.9 and 22.4 min for MCB and MCY, respectively.

Keywords: Two-Stage Batch Sorber, Contact Time Optimization, Sorption Kinetics, Metal Complex Dyes, Sawdust

? Maeda, M., Itoh, A. and Kawase, Y. (2005), Kinetics for aerobic biological treatment of *o*-cresol containing wastewaters in a slurry bioreactor: Biodegradation by utilizing waste activated sludge. *Biochemical Engineering Journal*, **22** (2), 97-103.

Full Text: [2005\Bio Eng J22, 97.pdf](2005/Bio%20Eng%20J22,%2097.pdf)

Abstract: A toxic volatile organic compound (VOC), *o*-cresol, was biologically degraded by utilizing waste activated sludge in a gas–liquid–solid three-phase slurry bioreactor. The biodegradation kinetics of *o*-cresol was examined in batch experiments at varying initial *o*-cresol concentrations (from 30 to 600 mg/L), waste activated sludge concentrations (from 1000 to 11,500 mg/L) and aeration rates (from 0.05 to 1.0 L/min). The kinetic parameters of *o*-cresol aerobic biodegradation were estimated using Haldane substrate inhibition equation with the correlation factors of approximately 0.95. The oxygen consumption during the biodegradation process was also examined. The oxygen consumption rate was adequately described by the Haldane type model with the correlation factor of 0.965. The biodegradation of *o*-cresol by waste activated sludge and the change of dissolved oxygen concentration in the slurry bioreactor were successfully simulated.

Keywords: Biodegradation, *o*-Cresol, Slurry Bioreactor, Haldane Kinetics, Oxygen Consumption

Tewari, N., Vasudevan, P. and Guha, B.K. (2005), Study on biosorption of Cr(VI) by *Mucor hiemalis*. *Biochemical Engineering Journal*, **23** (2), 185-192.

Full Text: [2005\Bio Eng J23, 185.pdf](2005/Bio%20Eng%20J23,%20185.pdf)

Abstract: Many investigations have been carried on metal binding capacity of different groups of microorganisms. However, the reports on the kinetic, thermodynamic and desorption study of biosorption process are quite limited. The present study was carried out in a batch system using *Mucor hiemalis* for its sorption and desorption study of Cr(VI). *M. hiemalis* exhibited the highest Cr(VI) uptake of 53.5 mg/g at an initial pH of 2.0. Equilibrium data fitted well to Langmuir isotherm model. Biosorption showed pseudo-second order rate kinetics at different initial concentration of Cr(VI) and different dose of *M. hiemalis*. The activation energy of the biosorption (*E*a) was estimated as 4.0 kJ/mol using Arrhenius equation. Using the equilibrium constant value obtained at different temperature, the thermodynamics properties of the biosorption (ΔG°, ΔH° and ΔS°) were also determined. The biosorption of Cr(VI) onto *M. hiemalis* was found to be endothermic. Desorption data showed that nearly 99% of the Cr(VI) adsorbed on *M. hiemalis* could be desorbed using 0.1N NaOH. Study with the cyclic use of a batch of *M. hiemalis* repeatedly after desorption, showed that it retain its activity up to five sorption and desorption cycles.

Keywords: Activation, Activation Energy, Adsorption, Adsorption, Aqueous-Solutions, Biomass, Bioremediation, Biosorption, Capacity, Chromium, Chromium(VI), Cr(VI), Desorption, Desorption, Endothermic, Equilibrium, Ions, Isotherm, Isotherm Model, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, Metal, Microorganisms, Model, Mucor Hiemalis, NaOH, pH, Pseudo-Second Order, Pseudo-Second-Order, Rate Kinetics, Removal, Rhizopus-Arrhizus, Rights, Sorption, Temperature, Thermodynamic, Thermodynamics, Wastewater Treatment, Wastewaters

? Ho, Y.S. (2005), Comment on “Two-stage batch sorber design using second-order kinetic model for the sorption of metal complex dyes onto pine sawdust” by Özacar, M. and Şengýl, İ.A. *Biochemical Engineering Journal*, **23** (3), 291-292.

Full Text: [2005\Bio Eng J23, 291.pdf](2005/Bio%20Eng%20J23,%20291.pdf) [B\Bio Eng J-Ho2.pdf](B/Bio%20Eng%20J-Ho2.pdf) [B\Bio Eng J-Ho1.pdf](B/Bio%20Eng%20J-Ho1.pdf)

Keywords: Adsorption, Aqueous-Solution, Calcined Alunite, Chitosan, Dyes, Equilibrium, Ions, Kinetic, Kinetic Model, Metal, Model, Pseudo-Isotherms, Reactive Dyes, Removal, Second-Order, Sorption, Sphagnum Moss Peat

? Özacar, M. (2005), Response to comment on “Two-stage batch sorber design using second-order kinetic model for the sorption of metal complex dyes onto pine sawdust” by Dr. Y.-S. Ho, Biochem. Eng. J. 21 (2004) 39–45. *Biochemical Engineering Journal*, **23** (3), 293.

Full Text: [2005\Bio Eng J23, 293.pdf](2005/Bio%20Eng%20J23,%20293.pdf)

? Liang, Z.P., Feng, Y.Q., Liang, Z.Y. and Meng, S.X. (2005), Adsorption of urea nitrogen onto chitosan coated dialdehyde cellulose under biocatalysis of immobilized urease: Equilibrium and kinetic. *Biochemical Engineering Journal*, **24** (1), 65-72.

Full Text: [2005\Bio Eng J24, 65.pdf](2005/Bio%20Eng%20J24,%2065.pdf)

Abstract: Chitosan coated dialdehyde cellulose (CDAC) and immobilized urease in gelatin membrane (IE) were prepared. The adsorption of urea nitrogen onto CDAC under biocatalysis of IE was studied in batch system. The equilibrium isotherm of urea nitrogen adsorption onto CDAC with different degrees of oxidation (DO) and the kinetics of adsorption with respect to the DO of CDAC (53, 78 and 95%), CDAC/IE weight ratio (50:4, 50:5 and 50:6), the initial urea nitrogen concentration (395.2, 648.8 and 767.3 mg/L) and temperature (37, 42 and 47 °C) were investigated. Langmuir and Freundlich adsorption models were applied to describe the experimental isotherm and isotherm constants. Equilibrium data fitted very well to the Langmuir model in the entire saturation concentration range (128.2–708.2 mg/L). The maximum monolayer adsorption capacities obtained from Langmuir model are 70.18, 79.56 and 90.42 mg/g for the CDACs with DO 53, 78 and 95%, respectively, at CDAC/IE weight ratio 10:1 and 37 °C. The pseudo first-order and pseudo second-order kinetic models were used to describe the kinetic data, and the rate constants were evaluated. The results showed that adsorption process of urea nitrogen onto CDAC followed the pseudo second-order kinetic model. The DO of CDAC, CDAC/IE weight ratio, initial urea nitrogen concentration and temperature significantly affected the adsorption capacity. The apparent activation energy is 8.934 kJ mol−1 for the adsorption of the urea nitrogen onto CDAC under catalysis of IE at DO 95% of CDAC, CDAC/IE weight ratio 10:1 and initial urea nitrogen concentration 648.8 mg/L.

Keywords: Adsorption, Equilibrium, Kinetic, Urea Nitrogen, Chitosan Coated Dialdehyde Cellulose, Immobilized Urease, Biocatalysis

? Barona, A., Elías, A., Amurrio, A., Cano, I. and Arias, R. (2005), Hydrogen sulphide adsorption on a waste material used in bioreactors. *Biochemical Engineering Journal*, **24** (1), 79-86.

Full Text: [2005\Bio Eng J24, 79.pdf](2005/Bio%20Eng%20J24,%2079.pdf)

Abstract: The biofilter packing, support or bed material, is considered to be the “heart” of the biofiltration system, especially when it also provides active biomass. Furthermore, when biodegradation performance is not effective, the ability of the packing material surface to retain or adsorb the contaminant is a desirable property. In this paper, a pelletized organic material has been researched in order to quantify and to model its adsorption capacity when used as bed material in biofilters. For comparison purposes, adsorption tests have been carried out using sterilized organic material and activated carbon. Adsorption equilibrium isotherms have been established for both materials in a H2S concentration range from 40 to 330 ppmv at room temperature. A type I adsorption isotherm for the activated carbon and type III for the organic material have been obtained. The experimental adsorption data for the activated carbon can equally be represented by both Langmuir and Freunlich models. However, only the Freundlich approach is adequate for the organic bed with *K*F = 9.61 mg1−*n* L*n* g−1 of dry bed and *n* = 1.55. When the sterilized organic material is not dry, the contribution of absorption to the retention of the contaminant in the organic bed is negligible.

Keywords: Adsorption, Bioreactors, Biofilters, Air Pollution, Packing Material, Hydrogen Sulphide

? Bernet, N., Sanchez, O., Cesbron, D., Steyer, J.P. and Delgenès, J.P. (2005), Modeling and control of nitrite accumulation in a nitrifying biofilm reactor. *Biochemical Engineering Journal*, **24** (2), 173-183.

Full Text: [2005\Bio Eng J24, 173.pdf](2005/Bio%20Eng%20J24,%20173.pdf)

Abstract: Biological ammonium oxidation was carried out in an inverse turbulent bed reactor fed with a synthetic mineral wastewater containing a high ammonium concentration (250 or 500 mg N-NH4+/L). The effects of dissolved oxygen concentration in the reactor, of ammonium concentration in the feeding and of ammonium loading rate on nitrite accumulation was studied in order to optimize ammonium conversion. A model of the biofilm was proposed to describe the experiments and to predict the effects of some operating parameters on nitrite accumulation. The model could also describe oxygen concentration gradients in the biofilm in steady-state conditions. It was shown that the O2/N-NH4+ ratio in the bulk phase is the main parameter controlling nitrite accumulation. This parameter was thus chosen to control the process using on-line dissolved oxygen and ammonium concentration measurements to act on the air flow-rate. Using O2/N-NH4+ ratio set-points of 0.05 and 0.1, it was possible to oxidize up to 80% of the inflow ammonium into nitrite, which is better than results obtained without on-line control. Such a control clearly favors the activity of ammonium-oxidizing bacteria (AOB) over nitrite-oxidizing bacteria (NOB), therefore the selection pressure exerted on the nitrification ecosystem enhance nitrite accumulation in the process.

Keywords: Biofilms, Biokinetics, Control, Modeling, Diffusion-Reaction

? Jiang, Y., Wen, J.P., Li, H.M., Yang, S.L. and Hu, Z.D. (2005), The biodegradation of phenol at high initial concentration by the yeast *Candida tropicalis*. *Biochemical Engineering Journal*, **24** (3), 243-247.

Full Text: [2005\Bio Eng J24, 243.pdf](2005/Bio%20Eng%20J24,%20243.pdf)

Abstract: Strain *Candida tropicalis* was isolated from acclimated activated sludge, and was identified as a member of the genus *Candida*. Phenol biodegradation using a pure culture of *C. tropicalis* was studied. The results showed that *C. tropicalis* has pretty high phenol degradation potential, which could thoroughly degrade the phenol of 2000 mg l−1 in the mineral salt medium within 66 h. High inoculum volume lessened phenol toxic property for the cells and increased phenol biodegradation velocity. However, for a certain starting inoculum, with the step increase of phenol concentration, substrate inhibition was obviously enhanced, and more phenol consumption was not assimilated by cell for growth, but was used to counteract strong substrate inhibition. In addition, the cell growth and phenol degradation intrinsic kinetics of *C. tropicalis* in batch cultures were also investigated over a wide range of initial phenol concentrations (0–2000 mg l−1) using Haldane model. The results received in these experiments demonstrated that the Haldane kinetic model adequately described the dynamic behavior of the phenol biodegradation by the strain of *C. tropicalis*.

Keywords: *Candida Tropicalis*, Haldane’s Equation, High Phenol Concentration, Inoculum Volume, Phenol Degradation, Substrate Inhibition

? Yang, Q.X., Yediler, A., Yang, M. and Kettrup, A. (2005), Decolorization of an azo dye, *Reactive Black 5* and MnP production by yeast isolate: *Debaryomyces polymorphus*. *Biochemical Engineering Journal*, **24** (3), 249-253.

Full Text: [2005\Bio Eng J24, 249.pdf](2005/Bio%20Eng%20J24,%20249.pdf)

Abstract: The optimum conditions for decolorization of an azo dye, *C.I*. *Reactive Black 5* (RB5) and the kinetic characteristics of manganese-dependent peroxidase (MnP) production by yeast isolate, *Debaryomyces polymorphus*, were investigated. *D. polymorphus* could completely degrade 200 mg l−1 of non-hydrolyzed and hydrolyzed *C.I*. *Reactive Black 5* within 24 h of cultivation at an inoculum size of 1.4 g l−1 wet cells in 50 ml medium consisting of 5 g l−1 glucose and 0.5–1.0 g l−1 ammonium sulphate (pH 5–7). In addition, the MnP activities during the cultivation were evaluated in the absence and presence of 200 mg l−1 *C.I. Reactive Black 5*. Maximum activity of MnP (1555.6 U l−1) was detected at 24 h cultivation in the presence of the dye, and a significant reduction of the enzyme activity was observed thereafter. The presence of *C.I. Reactive Black 5* in the culture was found to be indispensable to the production of MnP by *D. polymorphus*. A good correlation was found between the dye degradation and the enzyme production.

Keywords: Decolorization, Yeast, Manganese-Dependent Peroxidase, Azo dye, *C.I. Reactive Black 5*

? Akar, T., Tunali, S. and Kiran, I. (2005), Botrytis cinerea as a new fungal biosorbent for removal of Pb(II) from aqueous solutions. *Biochemical Engineering Journal*, **25** (3), 227-235.

Full Text: [2005\Bio Eng J25, 227.pdf](2005/Bio%20Eng%20J25,%20227.pdf)

Abstract: Pb(II) ions were found to be accumulated extracellularly on the surface of Botrytis cinerea. The rate and extent of accumulation were affected by pH, contact time and initial Pb(II) ion concentrations. The Pb(II) sorption capacities of heat inactivated, detergent, NaOH, DMSO and AcOH pretreated B. cinerea cells were determined as 107.10±1.87, 57.50±2.42, 51.73±1.19, 46.63±3.22 and 30.00±2.23 mg/g, respectively, at initial Pb(II) ion concentration of 350 mg/dm3 and optimum conditions of pH 4.0 and contact time of 90 min. The biosorbent was regenerated using 10 mM HCl solution, with up to 97% recovery and reused five times in biosorption–desorption cycles successively. The influence of Cu(II), Cd(II) and Ni(II) co-cations on Pb(II) biosorption capacity of heat inactivated B. cinerea biomass in binary and multimetal systems was evaluated and biosorption capacity of the Pb(II) ions was found to be reduced by the presence of the other competing metal ions. Langmuir adsorption isotherm model was used to describe the biosorption of Pb(II) ions by B. cinerea. The nature of the possible cell–metal ions interactions was also evaluated by FTIR, SEM and EDAX analysis. These examinations indicated the involvement of –COOH, –OH and –NH groups in the biosorption process and that Pb(II) ions were accumulated as crystals looking like “billiard balls” over the surface of B. cinerea cells.

Keywords: Biosorption, Botrytis Cinerea, Pb(II), Langmuir Isotherm, Competitive Biosorption

? Bayramoğlu, G. Yalçin, E. and Arıca, M.Y. (2005), Adsorption of serum albumin and γ-globulin from single and binary mixture and characterization of pHEMA-based affinity membrane surface by contact angle measurements. *Biochemical Engineering Journal*, **26** (1), 12-21.

Full Text: [2005\Bio Eng J26, 12.pdf](2005/Bio%20Eng%20J26,%2012.pdf)

Abstract: In this study, an affinity membrane was synthesized using 2-hydroxyethylmethacrylate (HEMA) via UV-initiated photopolymerization. A dye-ligand (i.e., Procion Red HE-3B; Red-120) was covalently immobilized onto membrane. Human serum albumin (HSA) and human γ-globulin (HIgG) adsorption onto pHEMA-Red-120 membrane were studied using bare poly(hydroxyethylmethacrylate) (pHEMA) membrane as a control system. The information about surface energy, hydrophobicity and chemical heterogeneity of the affinity membrane was obtained by contact angle measurements. The contact angle values of the affinity membrane were determined by sessile drop method using water, glycerol and diiodomethane as test liquids. Component and parameters of the surface free energy of all the investigated samples were calculated from measured contact angle values using the acid–base method of the van Oss. The adsorption of HSA and HIgG significantly changed both the contact angles and component of surface free energies of the affinity membrane. The reversible HSA and HIgG adsorption on the pHEMA-Red-120 followed the Freundlich and Langmuir–Freundlich isotherm models. Selectivity of the affinity membrane was tested at different pH values to HSA and HIgG and the protein concentration of in the binary system was determined by HPLC. The affinity membrane was stable when subjected to sanitization with sodium hydroxide after repeated adsorption–elution cycles.

Keywords: Microporous Membrane, Affinity Chromatography, Dye-Ligand, Adsorption, Separation, Albumin, Γ-Globulins, Contact Angle

? Tziotzios, G., Teliou, M., Kaltsouni, V., Lyberatos, G. and Vayenas, D.V. (2005), Biological phenol removal using suspended growth and packed bed reactors. *Biochemical Engineering Journal*, **26** (1), 65-71.

Full Text: [2005\Bio Eng J26, 65.pdf](2005/Bio%20Eng%20J26,%2065.pdf)

Abstract: Phenol removal was studied using batch cultures of free suspended cells and attached growth processes. Indigenous bacteria from olive pulp were enriched and used as inoculum for the filter and a suspended-growth flask reactor. A pilot-scale packed bed reactor was constructed and operated for biological phenol removal from industrial wastewater. The packed bed reactor was found to be more resistant to high phenol concentrations and led to significantly higher removal rates than the suspended-growth reactor. Two different operating modes were used to investigate the optimal performance of the filter, i.e., continuous and draw-fill. The latter was found to achieve removal rates up to 12.65 g phenol/(l d), while the continuous operating mode achieved removal rates only up to 0.082 g phenol/(l d).The low operating cost combined with the high phenol removal rates indicates that the above technology may offer a feasible solution to a serious environmental problem.

Keywords: Aerobic Processes, Biofilms, Packed Bed Bioreactors, Waste-Water Treatment, Phenol, Olive Pulp Bacteria

? Ho, Y.S. (2005), Comments on “Study on biosorption of Cr(VI) by *Mucor hiemalis*”. *Biochemical Engineering Journal*, **26** (1), 82-83.

Full Text: [2005\Bio Eng J26, 82.pdf](2005/Bio%20Eng%20J26,%2082.pdf) [2005\Bio Eng J26, 82-1.pdf](2005/Bio%20Eng%20J26,%2082-1.pdf) [Bio Eng J-Ho](B/Bio%20Eng%20J-Ho3.pdf)

Keywords: Accuracy, Aqueous-Solution, Biosorption, Cr(VI), Journals, Kinetics, Kinetics, Pseudo-First-Order, Pseudo-Second-Order, Quotation Accuracy, References, Removal, Sorption

? de Lucas, A., Rodríguez, L., Villaseñor, J. and Fernández, F.J. (2005), Biodegradation kinetics of stored wastewater substrates by a mixed microbial culture. *Biochemical Engineering Journal*, **26** (2-3), 191-197.

Full Text: [2005\Bio Eng J26, 191.pdf](2005/Bio%20Eng%20J26,%20191.pdf)

Abstract: The anaerobic accumulation of several organic pollutants from industrial wastewaters, as storage substrates, and their subsequent aerobic biodegradation using a wastewater treatment mixed microbial culture for biological nutrient removal has been studied. The amount and the kinetics of substrate accumulation in the anaerobic stage depended on the characteristics of the wastewater fed to the anaerobic stage. Depending on the substrate used, levels of between 27 and 86% of storage polymers were accumulated with respect to the level obtained on feeding with acetate. The biodegradation kinetics were studied by modelling respirometry results. During the aerobic stage, oxygen-consumption data obtained in the respirometric tests were fitted to a model using a non-linear fitting estimation method. The simulation data obtained correlated well with the experimental oxygen-consumption data. The estimated kinetic parameters obtained indicate that each storage polymer was degraded at a different rate. However, the values obtained for the storage polymer half-saturation coefficient, *K*S: 16 mg COD l−1, and for the coefficient for endogenous respiration, *b*: 0.008 h−1, were similar in all the experiments. The results indicate that each substrate produces the synthesis of a specific storage polymer that is degraded at a different rate.

Keywords: Biodegradation, Kinetic Parameters, Storage Polymers, Modelling, Wastewater Treatment, Electrolytic Respirometry

? Kumar, K.V. and Kumaran, A. (2005), Removal of Methylene blue by mango seed kernel powder. *Biochemical Engineering Journal*, **27** (1), 83-93.

Full Text: [2005\Bio Eng J27, 83.pdf](2005/Bio%20Eng%20J27,%2083.pdf)

Abstract: Batch experiments were carried out for the sorption of methylene blue onto mango seed kernel particles. The operating variables studied were initial solution pH, temperature, adsorbent mass, initial dye concentration and contact time. Equilibrium data were fitted to Freundlich and Langmuir isotherm equation and the equilibrium data were found to well represented by Langmuir isotherm equation. The monolayer sorption capacity of mango seed kernel for methylene blue sorption was found to be 142.857 mg/g at 303K. The sorption kinetics was found to follow pseudo first order kinetic model. The methylene blue uptake process was found to be controlled by both surface and pore diffusion with surface diffusion at the earlier stages followed by pore diffusion at later stages. The average effective diffusion coefficient was calculated and found to be 5.66×10−4 cm2/s. Analysis of sorption data using Boyd plot confirms that the external mass transfer as the rate limiting step in the sorption process. Various thermodynamic parameters such as enthalpy of sorption ΔH, free energy change ΔG and entropy ΔS were estimated. The positive value of ΔH and negative values of ΔG shows the sorption process is exothermic and spontaneous. The positive value of entropy ΔS shows the increased randomness at the solid–liquid interface during the sorption of dye ions onto mango seed kernel particles.

Keywords: Adsorbent, Adsorption, Aqueous-Solution, Basic-Dyes, Boyd Plot, Capacity, Diffusion, Diffusion Coefficient, Dye, Enthalpy, Entropy, Equilibrium, Exothermic, Experiments, First, Freundlich, Ions, Isotherm, Kinetic, Kinetic Model, Kinetics, Kinetics, Langmuir, Langmuir Isotherm, Mango Seed Kernel, Mass Transfer, Mechanism, Mechanism, Methylene Blue, Model, Monolayer, Particles, Peat, pH, Pore Diffusion, Pseudo-First-Order, Randomness, Rate Limiting Step, Removal, Rights, Solution, Sorption, Sorption, Sorption Capacity, Sorption Kinetics, Sorption Process, Surface Diffusion, Temperature, Thermodynamic, Thermodynamic Parameters, Waste-Water

? Adriano, W.S., Veredas, V., Santana, C.C. and Gonçalves, L.R.B. (2005), Adsorption of amoxicillin on chitosan beads: Kinetics, equilibrium and validation of finite bath models. *Biochemical Engineering Journal*, **27** (2), 132-137.

Full Text: [2005\Bio Eng J27, 132.pdf](2005/Bio%20Eng%20J27,%20132.pdf)

Abstract: The kinetics and equilibrium of amoxicillin adsorption on chitosan beads have been determined in batch studies. The fit to experimental equilibrium data indicates that the isotherm for this system can be considered of Langmuir type. Two mathematical models proposed in the literature were used to describe the adsorption kinetic. The validation of the models allowed optimizing mass transfer parameters, that describe the phenomena of internal diffusion and external convection on chitosan beads, as well as determining the kinetic rate constant.

Keywords: Adsorption, Amoxicillin, Antibiotic, Bioseparation, Chitosan, Modelling

? Kermanshahi pour, A., Karamanev, D. and Margaritis, A. (2006), Kinetic modeling of the biodegradation of the aqueous p-xylene in the immobilized soil bioreactor. *Biochemical Engineering Journal*, **27** (3), 204-211.

Full Text: [2006\Bio Eng J27, 204.pdf](2006/Bio%20Eng%20J27,%20204.pdf)

Abstract: Biodegradation kinetics of *p*-xylene in aqueous solution was studied in a new type of biofilm reactor—immobilized soil bioreactor. Biofilm modeling was performed in order to determine the concentration gradients within the biofilm based on a coupled diffusion-reaction model for cylindrical geometry. The total amount of biomass in the 0.83 L bioreactor changed from 460 to 780 mg during continuous operation. The concentration gradient was typical for a shallow biofilm and also predicts low mass transfer resistance within the biofilm. Rate constants for the continuous regime were determined based on the biomass growth and the amount of substrate utilization, resulting in the values of: maximum specific growth rate (*μ*max) of 0.0047 h−1, half saturation constant (*K*s) of 3.9 mg L−1 and yield (*Y*x/s) of 0.05 mg biomass mg−1 substrate. For batch operation, a similar yield coefficient was assumed and the experimental data was fitted to the Monod equation. *μ*max of 0.0047 h−1 (similar to continuous) and *K*s of 10 mg L−1 were obtained.

Keywords: Microbial Kinetics, *p*-Xylene, Biodegradation, Bioremediation, Bioreactor, Biofilm

? Martins, B.L., Cruz, C.C.V., Luna, A.S. and Henriques, C.A. (2006), Sorption and desorption of Pb2+ ions by dead *Sargassum* sp. biomass. *Biochemical Engineering Journal*, **27** (3), 310-314.

Full Text: [2006\Bio Eng J27, 310.pdf](2006/Bio%20Eng%20J27,%20310.pdf)

Abstract: Dead *Sargassum* sp. as a biosorbent for Pb2+ ions from aqueous solutions was studied. Kinetics and equilibrium of Pb2+ biosorption were evaluated. The biosorption process used in this work followed a second-order kinetics and was not influenced by temperature, at least within 298–328K. The equilibrium of biosorption was well described by Langmuir isotherm and the maximum Pb2+ uptake capacity (1.26 mmol g−1) is higher than those reported in the literature, for different sorbents. More than 95% of sorbed Pb2+cations could be removed by desorption with a 0.10 mol l−1 Na2EDTA solution at 298K.

Keywords: aqueous Solutions, Aqueous-Solutions, Biomass, Biosorbent, Biosorption, Biosorption, Cadmium, Capacity, Copper, Desorption, Equilibrium, Isotherm, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, Lead, Lead, Literature, Marine-Algae, Pb2+, Recovery, Removal, Sargassum sp., Second Order Kinetics, Second-Order, Second-Order Kinetics, Solution, Sorbents, Sorption, Temperature, Work

? Chang, Y.K., Huang, R.Z., Lin, S.Y., Chiu, S.J. and Tsai, J.C. (2006), Equilibrium study of immobilized lysozyme on the extrudate-shaped NaY zeolite. *Biochemical Engineering Journal*, **28** (1), 1-9.

Full Text: [2006\Bio Eng J28, 1.pdf](2006/Bio%20Eng%20J28,%201.pdf)

Abstract: Studies of adsorption isotherms were used as a method of characterizing the adsorption behavior of the extrudate-shaped NaY zeolite for lysozyme in a reciprocal shaking water bath system. In equilibrium isotherm studies, the experimental data obtained either at different pH or with different ionic strength of buffer were fitted reasonably well by the Langmuir model. In parallel experiments, the influences of changes in temperature on the equilibrium isotherms were further investigated. With increasing temperature, different patterns of isothermal adsorption behavior for lysozyme were observed. When the temperature was lower than 310 K, equilibrium isotherms were well correlated by the Langmuir model. However, at temperature higher than 323 K, equilibrium isotherms were well correlated by the Freundlich model. In addition, thermodynamic parameters (ΔG°ads, ΔH°ads, and ΔS°ads) for the adsorption process were also determined by using equilibrium association constant and van’t Hoff relationship to analyze the experimental data. The results revealed that the use of extrudate-shaped NaY zeolite may be an ideal and promising support for the adsorption of lysozyme because of its low cost and simplicity of its preparation method.

Keywords: Lysozyme, Adsorption, Extrudate-shaped NaY zeolite, Equilibrium isotherm model, van’t Hoff equation

? Dursun, A.Y. (2006), A comparative study on determination of the equilibrium, kinetic and thermodynamic parameters of biosorption of copper(II) and lead(II) ions onto pretreated *Aspergillus niger*. *Biochemical Engineering Journal*, **28** (2), 187-195.

Full Text: [2006\Bio Eng J28, 187.pdf](2006/Bio%20Eng%20J28,%20187.pdf)

Abstract: The kinetics and thermodynamics of copper(II) and lead(II) biosorption onto *Aspergillus niger* pretreated with NaOH were studied with respect to pH, temperature and initial metal ion concentration. The optimum pH values were determined as 5.0 and 4.0 for copper(II) and lead(II) at 25 °C, respectively. Biosorption capacity values of the biomass increased with increasing initial metal ion concentration and temperature. The maximum biosorption capacities were obtained as 28.7 and 32.6 mg g−1 at 250 mg dm−3 initial copper(II) and lead(II) concentration at 35 °C, respectively. The equilibrium data were analyzed using Freundlich, Langmuir and Redlich–Peterson adsorption models. The model parameters were estimated by the non-linear regression analysis. It was seen that equilibrium data fitted very well to the Langmuir adsorption model at all temperatures studied. The applicability of the saturation type kinetic model for metal–*A. niger* system was tested at different temperature in the range of 20–35 °C. The activation energies of the biosorption were determined as 27.48 and 36.76 kJ mol−1 for Cu(II) and Pb(II)–*A. niger* systems, respectively. Using the thermodynamic equilibrium coefficients obtained at different temperature, the Gibbs free energy changes (−18.97 kJ mol−1 for Cu(II) and −22.97 kJ mol−1 for Pb(II) (at 35 °C)), enthalpy changes (28.9 kJ mol−1 for Cu(II) and 38.3 kJ mol−1 for Pb(II)) and entropy changes (0.168 kJ mol−1 K−1 for Cu(II) and 0.186 kJ mol−1 K−1 for Pb(II)) of biosorption were also determined. The results showed that biosorption of copper(II) and lead(II) on *A. niger* was endothermic and spontaneous.

Keywords: Biosorption, Copper(II), Lead(II), *Aspergillus niger*, Adsorption Isotherm, Saturation Type Kinetic Model, Activation Energy, Gibbs Free Energy, Enthalpy, Entropy

? Liu, Y., Dong, X.Y. and Sun, Y. (2006), Equilibria and kinetics of protein transfer to and from affinity-based reverse micelles of Span 85 modified with Cibacron Blue F-3GA. *Biochemical Engineering Journal*, **28** (3), 281-288.

Full Text: [2006\Bio Eng J28, 281.pdf](2006/Bio%20Eng%20J28,%20281.pdf)

Abstract: Sorbitan trioleate was modified with Cibacron Blue F-3GA (CB) to create an affinity surfactant and to form affinity-based reverse micelles in *n*-hexane. The partitioning equilibria and the extraction kinetics of lysozyme and bovine serum albumin (BSA) were then examined. The solubilization capacity of the reverse micellar system for lysozyme increased linearly with increasing the CB concentration from 0.1 to 0.5 mmol L−1. In contrast, the capacity for BSA at 0.5 mmol L−1 of coupled CB was only about one-fifth that for lysozyme. It indicates a strong steric hindrance effect of the micelles for the high molecular mass protein. The overall volumetric mass transfer coefficient of lysozyme in the forward extraction increased from 0.43×10−3 to 1.25×10−3 s−1 with increasing CB concentration from 0.1 to 0.5 mmol L−1. Due to the high molecular mass of BSA, its volumetric mass transfer coefficient in the forward extraction was only one-sixth that of lysozyme. The ratio of the coefficient in the back extraction to that in the forward extraction was less than 0.03, much lower than those in other micellar systems. It indicates that the interfacial resistance in this system was severer than in others.

Keywords: Affinity, Reverse Micelles, Nonionic Surfactant, Protein, Equilibrium, Extraction Kinetics

? Ho, Y.S. and Ofomaja, A.E. (2006), Biosorption thermodynamics of cadmium on coconut copra meal as biosorbent. *Biochemical Engineering Journal*, **30** (2), 117-123.

Full Text: [2006\Bio Eng J30, 117.pdf](2006/Bio%20Eng%20J30,%20117.pdf) [2006\Bio Eng J-Ho.pdf](2006/Bio%20Eng%20J-Ho.pdf)

Abstract: Coconut copra meal, a waste product of coconut oil production was investigated for its potential use as a biosorbent for cadmium ions from an aqueous solution. A comparison of linear least-squares method and a trial and error non-linear method of three widely used isotherms, Langmuir, Freundlich, and Redlich–Peterson, were examined. Langmuir isotherm parameters obtained from the four Langmuir linear equations by using linear method were not similar, but were the same when non-linear method was used. The best-fitting isotherms were Langmuir and Redlich–Peterson isotherms. Langmuir isotherm is a special case of Redlich–Peterson isotherm when constant g is unity. In addition, various thermodynamic parameters, such as ΔG°, ΔH°, and ΔS°, were calculated. The biosorption process is a spontaneous and exothermic process. © 2006 Published by Elsevier B.V. 18

Keywords: Copra Meal, Cadmium Ions, Langmuir Isotherm, Temperature, Adsorption

? Sgountzos, I.N., Pavlou, S., Paraskeva, C.A. and Payatakes, A.C. (2006), Growth kinetics of *Pseudomonas fluorescens* in sand beds during biodegradation of phenol. *Biochemical Engineering Journal*, **30** (2), 164-173.

Full Text: [2006\Bio Eng J30, 164.pdf](2006/Bio%20Eng%20J30,%20164.pdf)

Abstract: The growth kinetics of a bacterium of the strain *Pseudomonas fluorescens*, which is indigenous in soil, has been investigated in batch cultures and sand packs during biodegradation of phenol. Batch experiments were conducted at 25 °C with four different initial concentrations of phenol for the estimation of the kinetic parameters. Phenol was found to inhibit microbial growth and so Andrews’s model was used to describe the growth rate. Growth kinetics in sand packs was studied in a series of eight virtually identical columns, which were operated simultaneously under the same conditions and in a continuous flow mode, with phenol as the sole carbon source. The idea of eight columns allowed monitoring of biomass growth as a function of time. Every 1 or 2 weeks, one column was drawn out of the system and was “sacrificed” to measure the developed biomass in the porous medium. The results indicated that growth of *P. fluorescens* in sand packs during biodegradation of phenol was an intensely dynamic phenomenon. Detachment of clusters of bacteria from the sand grains was found to be one of the main processes taking place in such a system, caused by a combination of low nutrient supply, oxygen availability and flow velocity.

Keywords: Batch Processing, Biofilms, Packed Bed Bioreactors, Growth Kinetics, Detachment, Sand Beds

? Marrot, B., Barrios-Martinez, A., Moulin, P. and Roche, N. (2006), Biodegradation of high phenol concentration by activated sludge in an immersed membrane bioreactor. *Biochemical Engineering Journal*, **30** (2), 174-183.

Full Text: [2006\Bio Eng J30, 174.pdf](2006/Bio%20Eng%20J30,%20174.pdf)

Abstract: The effect of adaptation of *mixed culture* in the phenol biodegradation has been studied. The degradation experiments have been conducted at different phenol concentrations from 0.5 to 3 g L−1. Biological treatment has been shown to be economical, practical and it leads to a complete removal of phenol. High concentrations of phenol are inhibitory for growth; so it is for the rates of substrates utilization that are greater at low initial concentrations. Haldane kinetics model for single substrate was used to obtain maximum specific growth rates (*μ*m = 0.438 h−1), half saturation (*K*s = 29.54 mg L−1) and substrate inhibition constant (*K*i = 72.45 mg L−1). Although the concentration in phenol is significant, these results are in agreement with those reported in the literature for phenol removal abilities in different systems and the Haldane model is still acceptable.

Keywords: Activated Sludge, Phenol, Biodegradation, Kinetic Model, Haldane, Immersed Membrane Bioreactor

? Borba, C.E., Guirardello, R., Silva, E.A., Veit, M.T. and Tavares, C.R.G. (2006), Removal of nickel(II) ions from aqueous solution by biosorption in a fixed bed column: Experimental and theoretical breakthrough curves. *Biochemical Engineering Journal*, **30** (2), 184-191.

Full Text: [2006\Bio Eng J30, 184.pdf](2006/Bio%20Eng%20J30,%20184.pdf)

Abstract: The nickel(II) ions biosorption process by marine algae *Sargassum filipendula* in a fixed bed column was investigated for the following experimental conditions: temperature = 30 °C and pH 3.0. The experimental breakthrough curves were obtained for the following chosen flow rates 0.002, 0.004, 0.006, and 0.008 L/min. A mathematical model was developed to describe the nickel ion sorption in a fixed bed column. The model of three partial differential equations (PDE) has considered the hydrodynamics throughout the fixed bed column as well as the sorption process in the liquid and solid phases. The internal and external mass transfer limitations were considered, as well. The nickel ion sorption kinetics has been studied utilizing the Langmuir isotherm. The PDE of the system were discretized in the form of ordinary differential equations (ODE) and were solved for the given initial and boundary conditions using the finite volume method. A new correlation for external mass transfer coefficient was developed. Some of the model parameters were experimentally determined (*ε*, *d*p) where the others such as (*K*F, *K*S) were evaluated on the base of experimental data parameters. The identification procedure was based on the least square statistical method. The robustness and flexibility of the developed model was checked out using four sets of experimental data and the predictive power of the model was evaluated to be good enough for the all studied cases. The developed model can be useful tool for nickel ion removal process optimization and design of fixed bed columns using biomass of *S. filipendula* as a sorbent.

Keywords: Adsorption, Fixed Bed, Nickel, Marine Algae, Mass Transfer, Modeling

? Baral, S.S., Das, S.N. and Rath, P. (2006), Hexavalent chromium removal from aqueous solution by adsorption on treated sawdust. *Biochemical Engineering Journal*, **31** (3), 216-222.

Full Text: [2006\Bio Eng J31, 216.pdf](2006/Bio%20Eng%20J31,%20216.pdf)

Abstract: The studies on adsorption of hexavalent chromium were conducted by varying various parameters such as contact time, pH, amount of adsorbent, concentration of adsorbate and temperature. The kinetics of adsorption of Cr(VI) ion followed pseudo second order. Langmuir adsorption isotherm was employed in order to evaluate the optimum adsorption capacity of the adsorbent. The adsorption capacity was found to be pH dependant. Sawdust was found to be very effective and reached equilibrium in 3 h (adsorbate concentration 30 mg l-1). The rate constant has been calculated at 303, 308, 313 and 318 K and the activation energy (E,) was calculated using the Arrhenius equation. Thermodynamic parameters such as standard Gibbs energy (ΔG°) and heat of adsorption (ΔH°) were calculated. The ΔG° and ΔH° values for Cr(VI) adsorption on the sawdust showed the process to be exothermic in nature. The percentage of adsorption increased with decrease in pH and showed maximum removal of Cr(VI) in the pH range 4.5-6.5 for an initial concentration of 5 mg l-1. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Cr(VI), Treated Sawdust, Kinetics, Isotherm and Thermodynamics, Activated Carbon, Waste-Water, Cr(VI), Kinetics, Biosorption, Sludge

? Kumar, K.V. and Guha, B.K. (2006), Reply to the comments on “Study on biosorption of Cr(VI) by *Mucor hiemalis*” by Y.-S. Ho, Biochem. Eng. J. 26 (2005) 82–83. *Biochemical Engineering Journal*, **30** (2), 222-223.

Full Text: [2006\Bio Eng J30, 222.pdf](2006/Bio%20Eng%20J30,%20222.pdf)

Keywords: Citation Error, Pseudo Second Order Kinetic, Sorption, Optimum Sorption Isotherm, Nonlinear Method

? Kiran, İ., Akar, T., Özcan, A.S., Özcan, A. and Tunali, S. (2006), Biosorption kinetics and isotherm studies of Acid Red 57 by dried *Cephalosporium aphidicola* cells from aqueous solutions. *Biochemical Engineering Journal*, **31** (3), 197-203.

Full Text: [2006\Bio Eng J31, 197.pdf](2006/Bio%20Eng%20J31,%20197.pdf)

Abstract: Equilibrium, kinetics and thermodynamic studies on the removal of Acid Red 57 (AR57) by biosorption onto dried Cephalosporium aphidicola (C. aphidicola) cells have been investigated in a batch system with respect to pH, contact time and temperature. The results showed that the equilibrium time was attained within 40 min and the maximum biosorption capacity of AR57 dye onto C. aphidicola cells was 2.08×10-4 mol g-1 or 109.41 mg g-1 obtained after contact with 0.4 g dm-3 biosorbent concentration, pH(0) of 1 and at a temperature of 20°C. The pseudo- second-order kinetic model was observed to provide the best correlation of the experimental data among the kinetic models studied. Biosorption isotherm models were developed and the Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherm models were conformed well to the experimental data. The changes of free energy, enthalpy and entropy of biosorption were also evaluated for the biosorption of AR57 dye onto C. aphidicola cells. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Cephalosporium Aphidicola, Biosorption, AR57, Isotherms, Kinetics, Methylene-Blue, Removal, Adsorption, Dyes, Biosorbent, Hydroxylation, Sorption, Acid, Pore

? Inbaraj, B.S., Chien, J.T., Ho, G.H., Yang, J. and Chen, B.H. (2006), Equilibrium and kinetic studies on sorption of basic dyes by a natural biopolymer poly(gamma-glutamic acid). *Biochemical Engineering Journal*, **31** (3), 204-215.

Full Text: [2006\Bio Eng J31, 204.pdf](2006/Bio%20Eng%20J31,%20204.pdf)

Abstract: A bacteria-derived biodegradable and non-toxic biopolymer poly(gamma-glutamic acid) (gamma-PGA) was evaluated as an adsorbent for removal of basic dyes from aqueous solution. Sorption experiments were carried out with three basic dyes Auramine O (Au-O), Rhodamine B (Rh-B) and Safranin O (Sa-O) by a batch mode at different initial dye concentrations, agitation times, gamma-PGA doses, temperatures, pH and added salts. Sorption isotherms were well described by the Redlich-Peterson equation, closely followed by Sips, when compared to Freundich and Langmuir models. The maximum sorption capacity derived from Langmuir model at 301 K was 277.29, 390.25 and 502.83 mg/g for Au-O, Rh-B and Sa-O dyes, respectively. The kinetics of dyes sorption on gamma-PGA followed a pseudo second order equation and the rate was controlled by chemical sorption. An ion-exchange model assuming adsorption to be a chemical phenomenon also predicted the kinetic data precisely. Thermodynamic parameters (ΔH°, ΔS° and ΔG°) obtained revealed dye sorption to be an exothermic and spontaneous process with decreasing randomness of dyes at the solid/solution interface. Dye sorption increased with increase in solution pH and reached a plateau at pH 5, while desorption of about 98% of dyes from spent gamma-PGA occurred at pH 1. The incorporation of salts decreased the dye sorption, suggesting the binding of dyes on gamma-PGA may involve ion-exchange mechanism. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Adsorbent, Adsorbents, Adsorption, Adsorption, Aqueous Solution, Aqueous-Solutions, Basic Dyes, Batch Mode, Capacity, Carbon, Desorption, Dye, Dyes, Equilibrium, Experiments, Heavy-Metals, Ion Exchange, Ion-Exchange, Ions, Isotherm Parameters, Isotherms, Jackfruit Peel, Kinetic, Kinetic Parameters, Kinetic Studies, Kinetics, Langmuir, Langmuir Model, Mechanism, Model, Modelling, Models, Palm-Fruit Bunch, pH, Poly(Gamma-Glutamic Acid), Polypeptide, Pseudo-Second-Order, Randomness, Redlich-Peterson, Removal, Rights, Safranin, Salts, Solution, Sorption, Sorption Capacity, Thermodynamic, Thermodynamic Parameters, Tree Fern

? Baral, S.S., Das, S.N. and Rath, P. (2006), Hexavalent chromium removal from aqueous solution by adsorption on treated sawdust. *Biochemical Engineering Journal*, **31** (3), 216-222.

Full Text: [2006\Bio Eng J31, 216.pdf](2006/Bio%20Eng%20J31,%20216.pdf)

Abstract: The studies on adsorption of hexavalent chromium were conducted by varying various parameters such as contact time, pH, amount of adsorbent, concentration of adsorbate and temperature. The kinetics of adsorption of Cr(VI) ion followed pseudo second order. Langmuir adsorption isotherm was employed in order to evaluate the optimum adsorption capacity of the adsorbent. The adsorption capacity was found to be pH dependant. Sawdust was found to be very effective and reached equilibrium in 3 h (adsorbate concentration 30 mg l-1). The rate constant has been calculated at 303, 308, 313 and 318 K and the activation energy (E,) was calculated using the Arrhenius equation. Thermodynamic parameters such as standard Gibbs energy (ΔG°) and heat of adsorption (ΔH°) were calculated. The ΔG° and ΔH° values for Cr(VI) adsorption on the sawdust showed the process to be exothermic in nature. The percentage of adsorption increased with decrease in pH and showed maximum removal of Cr(VI) in the pH range 4.5-6.5 for an initial concentration of 5 mg l-1. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Cr(VI), Treated Sawdust, Kinetics, Isotherm and Thermodynamics, Activated Carbon, Waste-Water, Cr(VI), Kinetics, Biosorption, Sludge

? Lin, C.W., Chen, S.Y. and Cheng, Y.W. (2007), Effect of metals on biodegradation kinetics for methyl *tert*-butyl ether. *Biochemical Engineering Journal*, **32** (1), 25-32.

Full Text: [2006\Bio Eng J32, 25.pdf](2006/Bio%20Eng%20J32,%2025.pdf)

Abstract: Many ground waters are polluted with a complex mixture of organic and metal contaminants. Especially, the presence of heavy metals may be of particular concern, since they may be toxic for microorganisms and may interfere with the biodegradation process. A study of methyl *tert*-butyl ether (MTBE) biodegradation in the presence of heavy metals with the purpose of determining the effects of type and concentration of metals on reaction kinetics was undertaken. The experiments were performed as batch biodegradation experiments, and the kinetic parameters were determined by a nonlinear regression technique. Experimental results showed that the presence of Mn2+ offers a slight stimulating effect on MTBE degradation; however, Cr3+ and Zn2+ resulted in less biodegradation at metal concentrations of 1 mg l−1. The inhibitory effect of adding metals was obvious, with constantly decreasing value of MTBE degradation rate in the following order Cu2+ > Cr3+ > Zn2+ > Mn2+ at metal concentrations 10 mg l−1 and 50 mg l−1. The kinetic parameters of *μ*m were found to be virtually unaffected until a threshold concentration (10 mg l−1) of metal was reached. However, a significant inhibitory effect on bacterial growth, as manifested by a decrease in both *K*i values for Cu2+ (at 1 and 10 mg l−1), and both Cr3+ and Zn2+ (at 10 mg l−1).

Keywords: Inhibition, Kinetic Parameters, Metal Ions, MTBE

? Yu, J.X., Tong, M., Sun, X.M. and Li, B.H. (2007), A simple method to prepare poly(amic acid)-modified biomass for enhancement of lead and cadmium adsorption. *Biochemical Engineering Journal*, **33** (2), 126-133.

Full Text: [2007\Bio Eng J33, 126.pdf](2007/Bio%20Eng%20J33,%20126.pdf)

Abstract: A modified biomass of baker’s yeast was prepared by grafting poly(amic acid), which was obtained via reaction of pyromellitic dianhydride (PMDA) and thiourea, onto the biomass surface at 50 C for 4 h. This method was simpler than other reported chemical grafting methods. The presence of poly(amic acid) on the biomass surface was verified by FTIR, X-ray photoelectron spectroscopy (XPS) and microscope analyses, and the amount of carboxylate and amide groups in the biomass surface were found to be 1.36 and 0.7 mmol g-1 through potentiometric titration. Compared with the pristine biomass, the adsorption capacity of the modified biomass increased 15- and 11-fold for Cd2+ and Pb2+, respectively. According to the Langmuir equation, the maximum uptake capacities (qm) for lead and cadmium were 210.5 and 95.2 mg g-1, respectively. The kinetics for cadmium and lead adsorption followed the pseudo-second-order kinetics. FTIR and XPS demonstrated that carboxyl, amide, and hydroxyl groups were involved in the adsorption of lead and cadmium, and the adsorption mechanism for the two metal ions included ion exchange, electrostatic interaction and complexation. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Adsorption Mechanism, Aqueous-Solution, Baker’s Yeast, Biomass, Biosorbent, Biosorption, Biosorption, Cadmium, Capacity, Carboxylate, Chemical, Complexation, Copper, FTIR, Grafted, Grafting, Groups, Heavy-Metals, Hydroxyl, Interaction, Ion, Ion Exchange, Kinetics, Langmuir, Langmuir Equation, Lead, Mechanism, Metal, Metal Ions, Methods, Modified, Modified Fungal Biomass, Nickel, Photoelectron Spectroscopy, Poly(Amic Acid), Potentiometric, Potentiometric Titration, Reaction, Removal, Sorption, Spectroscopy, Surface, Titration, Uptake, Waste, X-Ray Photoelectron Spectroscopy, XPS, Yeast

? Senthilkumar, R., Vijayaraghavan, K., Thilakavathi, M., Iyer, P.V.R. and Velan, M. (2007), Application of seaweeds for the removal of lead from aqueous solution. *Biochemical Engineering Journal*, **33** (3), 211-216.

Full Text: [2007\Bio Eng J33, 211.pdf](2007/Bio%20Eng%20J33,%20211.pdf)

Abstract: Ten different seaweed species were compared on the basis of lead uptake at different pH conditions. The brown seaweed, Turbinaria conoides, exhibited maximum lead uptake (at pH 4.5) and hence was selected for further studies. Sorption isotherms, obtained at different pH (4–5) and temperature (25–35 °C) conditions were fitted using Langmuir and Sips models. According to the Langmuir model, the maximum lead uptake of 439.4 mg/g was obtained at optimum pH (4.5) and temperature (30 °C). The Sips model better described the sorption isotherms with high correlation coefficients at all conditions examined. Various thermodynamic parameters such as ΔG°, ΔH° and ΔS° were calculated indicating that the present system was a spontaneous and endothermic process. Through potentiometric titrations, number of binding sites (carboxyl groups) and pK1 were determined as 4.1 mmol/g and 4.4, respectively. The influence of co-ions (Na+, K+, Mg2+ and Ca2+) on lead uptake was well pronounced in the case of divalent ions compared to monovalent ions. The solution of 0.1 M HCl successfully eluted all lead ions from lead-loaded T. conoides biomass. The regeneration experiments revealed that the alga could be successfully reused for five cycles without any loss in lead biosorption capacity. A glass column (2 cm i.d. and 35 cm height) was used to study the continuous lead biosorption performance of T. conoides. At 25 cm (bed height), 5 ml/min (flow rate) and 100 mg/l (initial lead concentration), T. conoides exhibited lead uptake of 220.1 mg/g. The column was successfully eluted using 0.1 M HCl, with elution efficiency of 99.7%.

Keywords: Biosorption, Lead, Seaweed, Turbinaria conoides, Regeneration

? Baral, S.S., Das, S.N., Rath, P. and Chaudhury, G.R. (2007), Chromium(VI) removal by calcined bauxite. *Biochemical Engineering Journal*, **34** (1), 69-75.

Full Text: [2007\Bio Eng J34, 69.pdf](2007/Bio%20Eng%20J34,%2069.pdf)

Abstract: The present paper deals with the efficiency of treated bauxite to remove Cr(VI) from a synthetic solution. It includes adsorption of Cr(VI) as a function of contact time, particle size, adsorbent dosage, temperature and initial concentration of the synthetic solution. The treated bauxite (1 g/25 mL) is found to be capable of removing up to 98% of Cr(VI) from solution having low initial concentration (10 mg/L). The adsorption is highest at 45 degrees C and rate of adsorption is very slow after 5 min. The adsorption isotherm follows both the Langmuir and Freundlich isotherm. The change in the lattice structure of adsorbent before and after calcinations was analyzed by XRD, FTIR and SEM analysis. The thermodynamic and kinetic parameter such as Gibbs free energy, isosteric heat of adsorption and rate constant were calculated. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Calcined Bauxite, Adsorption, Cr(VI) Removal, Isotherm, Kinetics, XRD, FRIR, Sem, Hexavalent Chromium, Aqueous-Solution, Adsorption Mechanism, Activated Carbon, Cr(VI), Dehydroxylation, Reduction, Trivalent, Sludge, Water

? Fagundes-Klen, M.R., Ferri, P., Martins, T.D., Tavares, C.R.G. and Silva, E.A. (2007), Equilibrium study of the binary mixture of cadmium-zinc ions biosorption by the *Sargassum filipendula* species using adsorption isotherms models and neural network. *Biochemical Engineering Journal*, **34** (2), 136-146.

Full Text: [2007\Bio Eng J34, 136.pdf](2007/Bio%20Eng%20J34,%20136.pdf)

Abstract: In this work, experiments have been carried out in the batch reactor to obtain equilibrium data of the individual biosorption and the mixture of cadmium and zinc ions by the biomass of the *Sargassum filipendula* species pre-treated with 0.5 mol/L calcium chloride. The experiments have been performed for the chosen temperature of 30°C and operational conditions such as constant agitation and pH 5.0. Six adsorption isotherms models of the Langmuir type have been tested to represent the equilibrium data of the binary system. The artificial neural nets technique was used to fit the equilibrium experimental data. Different types of the net architecture have been tested varying the neurons number of the entrance and the hidden layer. The equilibrium concentrations of the fluid phase were used as input variables and the equilibrium concentrations of the biosorbent were used as output variable. The obtained simulation results have shown that the applied technique of artificial neural network has better adjusted the equilibrium data of the binary system when compared with the conventional biosorption isotherm models. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Biosorption, Neural Network, Isotherm, Multi-Component, Metal Biosorption, Aqueous-Solution, Biomass, Langmuir, Alga, Copper(II), Lead(II), Cu(II), Carbon, Column

? Han, M.H. and Yun, Y.S. (2007), Mechanistic understanding and performance enhancement of biosorption of reactive dyestuffs by the waste biomass generated from amino acid fermentation process. *Biochemical Engineering Journal*, **36** (1), 2-7.

Full Text: [2007\Bio Eng J36, 2.pdf](2007/Bio%20Eng%20J36,%202.pdf)

Abstract: Biosorption has been demonstrated as a useful alternative to conventional treatment systems for the removal of dyes from dilute aqueous solution. This study dealt with a renewable, low cost biosorbent derived from the waste biomass of Corynebacterium glutamicum which are generated from full-scale amino acid fermentation industry. The biosorbent has been proved to have a higher (or comparable) dye uptake capacity than conventional sorbents, such as activated carbons and ion-exchange resins. This study focused on the underlying mechanisms of dye binding to the biosorbent. The binding sites were identified to be primary amine groups present in the biomass. Chemical modification of the biomass, FT-IR and potentiometric fitration studies revealed that carboxyl and phosphate groups played a role in repulsion of dye molecules, inhibiting the dye binding to the biosorbent. With the help of elucidated biosorption mechanisms, the performance of biosorbent for practical application could be enhanced by removal of the inhibitory carboxyl groups. (c) 2006 Elsevier B.V. All rights reserved.

Keywords: Biosorption, Corynebacterium Glutamicum, Chemical Modification, Biosorbent, Binding Sites, Binding Mechanisms, Heavy-Metal Biosorption, Aspergillus-Niger, Textile Effluent, Fungal Biomass, Azo Dyes, Removal, Decolorization, Chromium

? Sari, A., Tuze, M., Uluözlü, O.D. and Soylak, M. (2007), Biosorption of Pb(II) and Ni(II) from aqueous solution by lichen (Cladonia furcata) biomass. *Biochemical Engineering Journal*, **37** (2), 151-158.

Full Text: [2007\Bio Eng J37, 151.pdf](2007/Bio%20Eng%20J37,%20151.pdf)

Abstract: Equilibrium, thermodynamic and kinetic studies were carried out for the biosorption of Pb(II) and Ni(II) ions from aqueous solution using the lichen (Cladonia furcata) biomass. Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherm models were applied to describe the biosorption of the metal ions onto C. furcata biomass. The influences of pH, biomass dosage, contact time and temperature of solution on the biosorption were studied. Langmuir model fitted the equilibrium data better than the Freundlich isotherm. The monolayer biosorption capacity of the biomass was found to be 12.3 and 7.9 mg/g for Pb(II) and Ni(II) ions, respectively. From the D-R model, the mean free energy was calculated as 9.1 kJ/mol for Pb(II) biosorption and 9.8 kJ/mol for Ni(II) biosorption, indicating that the biosorption of both metal ions was taken place by chemical ion-exchange. Thermodynamic parameters, the change of free energy (ΔG°), enthalpy (ΔH°) and entropy (ΔS°) of the biosorption were also calculated. These parameters showed that the biosorption process of Pb(II) and Ni(II) ions onto C. furcata biomass was feasible, spontaneous and exothermic under studied conditions. Experimental data were also tested in terms of kinetic characteristics and it was found that biosorption processes of both metal ions followed well pseudo-second-order kinetics. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Aqueous Solution, Biomass, Biomonitor, Biosorption, Biosorption Capacity, Capacity, Characteristics, Chemical, Cladonia Furcata, Contact Time, Copper(II), Dosage, Energy, Enthalpy, Entropy, Equilibrium, Equilibrium Data, Exothermic, Free Energy, Free-Energy, Freundlich, Freundlich Isotherm, G, Heavy-Metal Removal, Ion Exchange, Ion-Exchange, Ions, Isotherm, Isotherm Models, Kinetic, Kinetic Characteristics, Kinetic Studies, Kinetics, Langmuir, Langmuir Model, Lead, Lichen, Lichen Biomass, Marine-Algae, Metal, Metal Ions, Model, Models, Monolayer, Ni(II), Parameters, Pb(II), pH, Process, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Recovery, Spontaneous, Temperature, Thermodynamic, Thermodynamics, Time, Waste-Water

? Örnek, A., Özacar, M. and Şengil, I.A. (2007), Adsorption of lead onto formaldehyde or sulphuric acid treated acorn waste: Equilibrium and kinetic studies. *Biochemical Engineering Journal*, **37** (2), 192-200.

Full Text: [2007\Bio Eng J37, 192.pdf](2007/Bio%20Eng%20J37,%20192.pdf)

Abstract: The adsorption of lead onto formaldehyde or sulphuric acid treated acorn waste was studied using a batch sorber. The aim of this study was to understand the mechanisms that govern lead removal and find a suitable equilibrium isotherm and kinetic model for the lead removal in a batch reactor. The experimental isotherm data were analyzed using the Langmuir, Freundlich and Temkin equations. The equilibrium data fit well the Langmuir isotherm. The experimental data were analyzed using four adsorption kinetic models - the pseudo first- and second-order equations, intraparticle diffusion equation and the Elovich equation - to determine the best fit equation for the adsorption of lead ions onto formaldehyde or sulphuric acid treated acorn waste. The rate constants, equilibrium capacities and related correlation coefficients for each kinetic model were calculated and discussed. Also, predicted q(t) values from the kinetic equations were compared with the experimental data. Results show that the pseudo second-order equation provides the best correlation for the adsorption process, whereas the Elovich equation also fits the experimental data well. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Acid, Acorn Waste, Activated Carbons, Adsorption, Adsorption Kinetic, Adsorption Kinetics, Adsorption Process, Aqueous-Solutions, Batch, Batch Reactor, Calcined Alunite, Complex Dyes, Condensed Tannin, Constants, Correlation, Diffusion, Disperse Dyes, Elovich, Elovich Equation, Equations, Equilibrium, Equilibrium Data, Equilibrium Isotherm, Experimental, Experimental Data, Formaldehyde, Freundlich, Heavy-Metal Removal, Intraparticle, Intraparticle Diffusion, Ions, Isotherm, Isotherm Data, Kinetic, Kinetic Equations, Kinetic Model, Kinetic Models, Kinetic Studies, Langmuir, Langmuir Isotherm, Langmuir-Isotherm, Lead, Lead Ions, Lead Removal, Mechanisms, Model, Models, Pinus-Pinaster Bark, Process, Pseudo Second Order, Pseudo Second-Order, Pseudo Second-Order Equation, Pseudo-Second-Order, Rate, Rate Constants, Reactor, Removal, Sawdust, Second Order, Second-Order Equation, Sorption, Sulphuric Acid, Waste

? Kiran, B. and Kaushik, A. (2008), Chromium binding capacity of *Lyngbya putealis* exopolysaccharides. *Biochemical Engineering Journal*, **38** (1), 47-54.

Full Text: [2008\Bio Eng J38, 47.pdf](2008/Bio%20Eng%20J38,%2047.pdf)

Abstract: This paper presents the chromium adsorptive potential of polysaccharide produced by a novel cyanobacterium Lyngbya putealis HH-15. Batch mode experiments were performed to determine the adsorption equilibrium and the equilibrium data was applied to different two-parameter models (Langmuir, Freundlich, Temkin, Dubinin-Radushkevich, Flory-Huggins, and Brunauer, Emmer & Teller (BET) model). The highest coefficient of determination (0.9925) for Langmuir and BET models indicates best fitness of these models in explaining the sorption as a multilayer process. Effect of different variables like initial metal ion concentration (10-100 mg/L), pH (2-6) and temperature (25-45°C) on chromium adsorption of exopolysaccharides (EPS) were also examined, using Box-Behnken design model. Very high value of regression coefficient between the variables and the response (R-2 = 0.9982) indicates excellent evaluation of experimental data by second-order polynomial regression model. The response surface method indicated that 30-40 mg/L initial chromium concentration, pH 2 and 45°C temperature were optimal for biosorption of chromium by the cyanobacterial exopolysaccharides. Adsorption capacity of EPS increased from 45 to 157 mg/g of EPS as initial Cr(VI) concentration increased from 10 to 30 mg/L. Surface adsorption of the metal at surface of EPS was confirmed through scanning electron microscopy. (C) 2007 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Adsorption Equilibrium, Adsorption Isotherms, Aqueous-Solutions, Biosorption, Chromium, Cr(VI), Design, Equilibrium, Evaluation, Exopolysaccharides, Extracellular Polysaccharide, Gases, Langmuir, Lyngbya Putealis, Metal, Metals, pH, Removal, Response Surface Methodology, Scanning Electron Microscopy, Sorption, Surface Methodological Approach, Temperature

? Mohan, S.V., Ramanaiah, S.V. and Sarma, P.N. (2008), Biosorption of direct azo dye from aqueous phase onto *Spirogyra sp 102*: Evaluation of kinetics and mechanistic aspects. *Biochemical Engineering Journal*, **38** (1), 61-69.

Full Text: [2008\Bio Eng J38, 61.pdf](2008/Bio%20Eng%20J38,%2061.pdf)

Abstract: Sorption of azo dye from aqueous phase was evaluated using non-viable algal Spirogyra 102 as biosorbent. Agitated non-flow batch sorption studies revealed the capacity of algal biosorbent to adsorb the azo dye. Influence of dye concentration, effect of pH, biosorbent dosage, temperature effect and sorption-desorption were studied to evaluate the algal-dye sorption mechanism. Sorption interaction of dye on to algal species obeyed the pseudo second-order rate equation. Experimental data showed good fit with the Langmuir’s adsorption isotherm model. Dye sorption was found to be dependent on the aqueous phase pH and the uptake was observed to be higher at lower pH. Maximum dye sorption was observed at 30°C temperature. Sorption-desorption of dye into organic and/or inorganic solutions were observed and this indicated the combined effect of chemical and ion-exchange sorption phenomena. (C) 2007 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Adsorption Isotherm, Adsorption-Kinetics, Algal Spirogyra, Biomass, Biosorbent, Biosorbent, Biosorption, Degradation, Dye, Effluents, Fluoride, Interaction, Intraparticle Diffusion Model, Ion Exchange, Ion-Exchange, Ions, Isotherm, Kinetics, Mechanism, Microalgae, pH, Pseudo First-Order, Pseudo Second-Order, Reactive Dyes, Removal, Sorption, Temperature

? Li, Q.A., Su, H.J. and Tan, T.W. (2008), Synthesis of ion-imprinted chitosan-TiO2 adsorbent and its multi-functional performances. *Biochemical Engineering Journal*, **38** (2), 212-218.

Full Text: [2008\Bio Eng J38, 212.pdf](2008/Bio%20Eng%20J38,%20212.pdf)

Abstract: During the preparation of a novel adsorbent, molecular imprinting technology and photo degradation technology were coupled through the immobilization of nanometer titanium dioxide on molecular imprinted chitosan matrixes. This novel adsorbent can not only degrade organic compound but also adsorb the heavy metal ions. The compound adsorbent was characterized by using scanning electron microscope (SEM) and FI-IR spectrum. As can be deduced from the FI-IR spectrum, hydrogen bond was one of the combination strengths between chitosan and TiO2. The effects of amount of TiO2, chitosan concentration, solidifying solutions and imprinting ions on the degradation of methyl orange and adsorption for Ni2+ ions were investigated. The adsorptive capacity and degradability of the adsorbent were assessed in this work too. (c) 2007 Published by Elsevier B.V.

Keywords: Nanometer Titanium Dioxide, Chitosan, Molecular Imprinting, Metal Ions, Methyl Orange,Titanium-Dioxide, Photocatalytic Oxidation, Heavy-Metals, Separation, Sorption, Removal, Decomposition, Degradation, Polymers

? Liu, Y. and Shen, L. (2008), A general rate law equation for biosorption. *Biochemical Engineering Journal*, **38** (3), 390-394.

Full Text: [2008\Bio Eng J38, 390.pdf](2008/Bio%20Eng%20J38,%20390.pdf)

Abstract: The pseudo first- and second-order equations have been most commonly applied to describe biosorption kinetics under various conditions. This study attempted to develop a general rate law equation for biosorption. It was shown that biosorption kinetics would be subjected to the universal rate law for a chemical process, and the pseudo first- and second-order kinetic equations are the special cases of the proposed general rate law equation for biosorption. As the reaction order cannot be theoretically calculated, it is not reasonable to preset the order of biosorption kinetics to be the first or second as commonly exercised in biosorption studies. The actual kinetic order of biosorption process should be estimated from the proposed general rate law equation without any preset constrain. (C) 2007 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Biosorption, Biosorption Kinetics, Dried Activated-Sludge, Equilibrium, First, First-Order Kinetics, Kinetic, Kinetic Equations, Kinetics, Law, Rate Law, Rhizopus-Arrhizus, Rights, Second-Order Kinetics, Sorption

? Hameed, B.H. and Hakimi, H. (2008), Utilization of durian (*Durio zibethinus* Murray) peel as low cost sorbent for the removal of acid dye from aqueous solutions. *Biochemical Engineering Journal*, **39** (2), 338-343.

Full Text: [2008\Bio Eng J39, 338.pdf](2008/Bio%20Eng%20J39,%20338.pdf)

Abstract: In this paper, durian peel (DP), an agricultural waste, was evaluated for its ability to remove acid dye from aqueous solutions. Adsorption equilibrium and kinetics of acid green 25 (AG25) from aqueous solutions at various initial dye concentrations (50-500 mg/L), pH (2-10), and temperature (30-50°C) on DP were studied in a batch mode operation. Equilibrium isotherms were analyzed by Langmuir and Freundlich isotherm models. The equilibrium data were best represented by Langmuir isotherm model with maximum monolayer adsorption capacity of 63.29 mg/g at 30°C. Kinetics analyses were conducted using pseudo-first-order, pseudo-second-order and intraparticle diffusion models. It was found that the adsorption kinetics of AG25 on DP obeyed pseudo-second-order sorption kinetics. The results indicate the potential of DP as sorbent for the removal of acid dye from aqueous solution. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Acid Dye, Acid Green 25, Adsorption, Adsorption Capacity, Adsorption Isotherm, Adsorption Kinetics, Agricultural Waste, Aqueous Solution, Aqueous Solutions, Batch, Biosorption, Capacity, Cost, Diffusion, Durian Peel, Dye, Equilibrium, Equilibrium, Freundlich, Freundlich Isotherm, Isotherm, Isotherm Model, Isotherms, Kinetics, Kinetics, Langmuir, Langmuir Isotherm, Methylene-Blue, Model, Models, Monolayer, Palm Ash, pH, Potential, Pseudo-First-Order, Pseudo-Second-Order, Removal, Rights, Shells, Solution, Sorbent, Sorption, Sorption Kinetics, Temperature, Waste

? Ngah, W.S.W. and Hanafiah, M.A.K.M. (2008), Adsorption of copper on rubber (*Hevea brasiliensis*) leaf powder: Kinetic, equilibrium and thermodynamic studies. *Biochemical Engineering Journal*, **39** (3), 521-530.

Full Text: [2008\Bio Eng J39, 521.pdf](2008/Bio%20Eng%20J39,%20521.pdf)

Abstract: The adsorption of Cu(II) ions from aqueous solution by rubber (Hevea brasiliensis) leaf powder (RHBL) was studied in a batch adsorption system. Characteristics of RHBL such as pH of aqueous slurry, pH of zero point charge (pH(ZPC)), surface area and pore diameter, Fourier transform infrared (FTIR), scanning electron microscopy (SEM) and electron dispersive spectroscopy (EDS) were investigated. Factors influencing adsorption such as pH of the solution, adsorbent dosage, particle size, copper concentration and temperature have been studied. The adsorption process was relatively fast and equilibrium was achieved after about 60 min. Maximum adsorption of Cu(II) ions occurred at around pH 4-5. The kinetic data were analyzed using various kinetic models particularly pseudo-first-order, pseudo-second-order, Ritchie’s-second-order and intraparticle diffusion. The pseudo-second-order kinetic model was found to agree well with the experimental data. Adsorption equilibrium data could also be described well by Langmuir, Freundlich and Dubinin-Radushkevich isotherm models. Based on the Langmuir isotherm, the monolayer adsorption capacity of Cu(II) ions was 8.92 mg g-1. Thermodynamic parameters such as enthalpy change (ΔH°), free energy change (ΔG°) and entropy change (ΔS°) were calculated and adsorption process was spontaneous and exothermic. Copper removal by RHBL involved different kinds of mechanisms such as ion-exchange, complexation and physisorption. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Adsorbent, Adsorption, Aqueous Solution, Aqueous-Solutions, Batch Adsorption, Biosorption, Capacity, Charge, Complexation, Copper, Cu(II), Diffusion, EDS, Electron Microscopy, Entropy, Equilibrium, Experimental, Freundlich, Ftir, Ion Exchange, Ion-Exchange, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetic Models, Langmuir, Langmuir Isotherm, Metal-Ions, Model, Models, Monolayer, Particle Size, pH, Pseudo-Second-Order Kinetic Model, Removal, Rights, Rubber Leaf Powder, Sawdust, Scanning Electron Microscopy, SEM, Size, Solution, Sorption, Spectroscopy, Surface Area, Temperature, Thermodynamic, Thermodynamic Parameters, Waste-Water, Zero Point Charge, Zinc

? Cheng, W., Wang, S.G., Lu, L., Gong, W.X., Liu, X.W., Gao, B.Y. and Zhang, H.Y. (2008), Removal of malachite green (MG) from aqueous solutions by native and heat-treated anaerobic granular sludge. *Biochemical Engineering Journal*, **39** (3), 538-546.

Full Text: [2008\Bio Eng J39, 538.pdf](2008/Bio%20Eng%20J39,%20538.pdf)

Abstract: The performance of native and heat-treated anaerobic granular sludge in removing of malachite green (MG) from aqueous solution was investigated with different conditions, such as pH, ionic strength, initial concentration and temperature. The maximum biosorption was both observed at pH 5.0 on the native and heat-treated anaerobic granular sludge. The ionic strength had negative effect on MG removal. Kinetic studies showed that the biosorption process followed pseudo-second-order and q(e) for native and heat-treated anaerobic granular sludge is 61.73 and 59.17 mg/g at initial concentration 150 mg/L, respectively. Intraparticle diffusion model could well illuminate adsorption process and faster adsorption rate of native anaerobic granular sludge than heat-treated anaerobic granular sludge. The equilibrium data were analyzed using Langmuir and Freundlich model, and well fitted Langmuir model. ne negative values of ΔG° and ΔH° suggested that the interaction of MG adsorbed by native and heat-treated anaerobic granular sludge was spontaneous and exothermic. Desorption studies revealed that MG could be well removed from anaerobic granular sludge by 1% (v/v) of HCl-alcohol solution. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Activated-Sludge, Adsorption, Anaerobic Granular Sludge, Aqueous Solution, Aqueous Solutions, Biomass, Biosorption, Carbon, Component Systems, Desorption, Diffusion, Dye Adsorption, Equilibrium, Freundlich, Heat-Treatment, Interaction, Intraparticle Diffusion, Ionic Strength, Kinetic, Kinetics, Langmuir, Langmuir And Freundlich Model, Langmuir Model, Malachite Green, Mechanism, Methylene-Blue Biosorption, Model, Peat, pH, Removal, Rights, Sludge, Solution, Sorption, Temperature

? Ofomaja, A.E. (2008), Sorptive removal of Methylene blue from aqueous solution using palm kernel fibre: Effect of fibre dose. *Biochemical Engineering Journal*, **40** (1), 8-18.

Full Text: [2008\Bio Eng J40, 8.pdf](2008/Bio%20Eng%20J40,%208.pdf)

Abstract: The use of palm kernel fibre, a readily available agricultural waste product for the sorption of Methylene blue from aqueous solution and the possible mechanism of sorption has been investigated at various fibre doses. The extent of dye removal and the rate of sorption were analyzed using two kinetic rate models (pseudo-first and pseudo-second-order kinetic models) and two diffusion models (intraparticle and external mass transfer models). Analysis of the kinetic data at different sorbent dose revealed that the pseudo-first order kinetics fitted to the kinetic data only in the first 5 min of sorption and then deviated from the experimental data. The pseudo-second-order kinetic model was found to better fit the experimental data with high correlation coefficients at the various fibre dose used. The dye sorption was confirmed to follow the pseudo-second-order model by investigating the relationship between the amount of dye sorbed and the change in hydrogen ion concentration of the dye solution and also the dependence of dye uptake with solution temperature. It was found that the change in hydrogen ion concentration and increase in sorption temperature were directly related to the amount of dye sorbed, and activation energy was calculated to be -39.57 kJ/mol, indicating that the dye uptake is chemisorption, involving valence forces through sharing or exchange of electrons between sorbent and sorbate as covalent forces. The intraparticle diffusion plots showed three sections indicating that intraparticle diffusion is not solely rate controlling. The intraparticle, diffusion and mass transfer rate constants where observed to be well correlated with sorbent dose in the first 5 min of sorption, indicating sorption process is complex. It was found that at low sorbent dose the mass transfer is the main rate controlling parameter. However at high sorbent dose, intraparticle diffusion becomes rate controlling. (c) 2007 Elsevier B.V. All rights reserved.

Keywords: Activation, Activation Energy, Adsorption, Advanced Oxidation, Agricultural Waste, Aqueous Solution, Basic-Dyes, Cationic Dyes, Change in Hydrogen Concentration (ΔH°), Diffusion, Diffusion Model, Dye, Dye Removal, Equilibrium, Experimental, First, Hydrogen, Kinetic, Kinetic Model, Kinetic Models, Kinetics, Mass Transfer, Mechanism, Methylene Blue, Model, Models, Peat, Pseudo-First-Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Pseudo-Second-Order Model, Removal, Rights, Sawdust, Solution, Sorbent, Sorbent Dose, Sorption, Sorption Kinetics, Sorption Process, Temperature, Thermodynamics, Water

? Vaghetti, J.C.P., Lima, E.C., Royer, B., Brasil, J.L., da Cunha, B.M., Simon, N.M., Cardoso, N.F. and Noreña, C.R.Z. (2008), Application of Brazilian-pine fruit coat as a biosorbent to removal of Cr(VI) from aqueous solution - Kinetics and equilibrium study. *Biochemical Engineering Journal*, **42** (1), 67-76.

Full Text: [2008\Bio Eng J42, 67.pdf](2008/Bio%20Eng%20J42,%2067.pdf)

Abstract: In the present study we reported the feasibility of the Brazilian-pine fruit coat, named pinion wastes (PW; Araucaria angustifolia) as biosorbent to remove Cr(VI) from aqueous solutions. The PW biosorbent was characterized by N-2 adsorption-desorption isotherms, FTIR spectroscopy, scanning electron microscopy, elemental analysis, mineral composition determination, and functional groups detection. The ability of PW to adsorb Cr(VI) was investigated by using batch adsorption procedure. The effects such as pH, contact time and biosorbent dosages on the adsorption capacity were studied. The adsorption kinetics followed the Elovich chemisorption kinetic model, obtaining the following the initial adsorption rate, 284.9, 396.9 and 461.5 mgg-1 h-1 using a 500.0, 700.0 and 1000.0 mg L-1 initial concentration of Cr(VI), respectively. The maximum adsorption capacity of PW was 240.0 mgg-1 for Cr(VI), using Sips isotherm model. This high adsorption capacity of PW places this biosorbent as one of the best adsorbents for removal of Cr(VI) from aqueous effluents. (C) 2008 Elsevier B.V. All right reserved.

Keywords: Ability, Activated Carbon, Adsorbents, Adsorption, Adsorption, Adsorption Capacity, Adsorption Kinetics, Adsorption Rate, Adsorption-Desorption, Analysis, Aqueous Solution, Aqueous Solutions, Araucaria Angustifolia, Araucaria-Angustifolia Wastes, Atomic-Absorption-Spectrometry, Batch, Batch Adsorption, Biosorbent, Biosorption, Brazilian-Pine Fruit Wastes, Capacity, Chemisorption, Composition, Contact, Contact-Time, Cr(VI), Elovich, Equilibrium, Equilibrium Study, Feasibility, Fruit, FTIR, Functional Groups, Hexavalent Chromium Removal, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetics, Metals Uptake, Mineral Composition, Model, Nonlinear Isotherm Fittings, pH, Removal, Scanning Electron Microscopy, Silica-Gel, Sorption Capacity, Statistical Design

? Lesmana, S.O., Febriana, N., Soetaredjo, F.E., Sunarso, J. and Ismadji, S. (2009), Studies on potential applications of biomass for the separation of heavy metals from water and wastewater. *Biochemical Engineering Journal*, **44** (1), 19-41.

Full Text: [2009\Bio Eng J44, 19.pdf](2009/Bio%20Eng%20J44,%2019.pdf)

Abstract: Heavy metal pollution has become a more serious environmental problem in the last several decades as a result of its toxicity and insusceptibility to the environment. This paper attempts to present a brief summary of the role of biomass in heavy metal removal from aqueous solutions. Undoubtedly, the biosorption process is a potential technique for heavy metal decontamination. The current spectrum of effective adsorbents includes agricultural waste material, various algae, bacteria, fungi and other biomass. This paper also discusses the equilibria and kinetic aspects of biosorption. It was apparent from a literature survey that the Langmuir and Freundlich isotherms are by far the most widely used models for the biosorption equilibria representation, while pseudo-first and second order kinetic models have gained popularity among kinetic studies for their simplicity. Additional features on biosorption experiments utilizing a fixed bed column are also highlighted. as they offer useful information for biosorption process design. (C) 2008 Elsevier B.V. All rights reserved.

Keywords: Aqueous-Solutions, Biosorbent, Biosorption, Cadmium Biosorption, Copper Biosorption, Fixed-Bed Column, Fungal Biomass, Green Coconut Shell, Heavy Metals, Isotherms, Neem Leaf Powder, Pretreated *Aspergillus-niger*, Removal, *Rhizopus-Arrhizus*, Sugar-Beet Pulp

? Yu, J.X., Li, B.H., Sun, X.M., Jun, Y. and Chi, R.A. (2009), Adsorption of methylene blue and rhodamine B on baker’s yeast and photocatalytic regeneration of the biosorbent. *Biochemical Engineering Journal*, **45** (2), 145-151.

Full Text: [2009\Bio Eng J45, 145.pdf](2009/Bio%20Eng%20J45,%20145.pdf)

Abstract: Biomass of baker’s yeast was used as biosorbent for the removal of methylene blue and rhodamine B, and the dyes-loaded biomass was regenerated by acid TiO2 hydrosol. Adsorption experiments showed that the uptake of the two dyes followed the Langmuir monolayer adsorption models and the kinetics of dyes adsorption fit better to the pseudo-second-order equation than to the pseudo-first-order equation. Since biosorption cannot detoxify the dyes, regeneration of the biosorbent and simultaneous photodegradation of the desorbed dyes by acid TiO2 hydrosol were attempted at the first time. The acid TiO2 hydrosol was prepared by sol-gel method. The photocatalytic regeneration experiments showed that the two dyes could be desorbed at the acid condition, and the time for degradation of methylene blue and rhodamine B was 100 and 50 min, respectively. The treatment for dyes by integrating biosorption and photocatalytic degradation results in no secondary pollution in the form of any concentrated wastes, which is an environmentally acceptable option. (C) 2009 Elsevier B.V. All rights reserved.

Keywords: Adsorbent, Adsorption, Aqueous-Solutions, Biosorption, Biosorption, Chemical-Modification, Corynebacterium-Glutamicum, Degradation, Equilibrium, Films, Methylene Blue, Photocatalytic Degradation, Removal, Rhodamine B, Sorption, TiO2 Hydrosol

? Yang, J., Wang, Q.H., Luo, Q.S., Wang, Q. and Wu, T.J. (2009), Biosorption behavior of heavy metals in bioleaching process of MSWI fly ash by *Aspergillus niger*. *Biochemical Engineering Journal*, **46** (3), 294-299.

Full Text: [2009\Bio Eng J46, 294.pdf](2009/Bio%20Eng%20J46,%20294.pdf)

Abstract: In this study, it was considered that the biosorption of heavy metals by biomass might occur during the bioleaching of fly ash. This work is focused on the biosorption behavior of Al, Fe, Pb and Zn by *Aspergillus niger* during the bioleaching process. The fungal biomass was contacted with heavy metals solution which extracted from. fly ash by using gluconic acid as leaching agent. The equilibrium time for biosorption was about 120 min. The biosorption experiment data at initial pH 6.5 was used to. fit the biosorption kinetics and isotherm models. The results indicated that the biosorption of Al, Fe and Zn by A. niger biomass were well described by the pseudo-first order kinetic model. The pseudo-second order kinetic model was more suitable for that of Pb. The Langmuir isotherm model could well describe the biosorption of Fe, Pb and Zn while the Freundlich model could well describe the biosorption of Al. Furthermore, the biosorption of metal ions decreased evidently in the presence of. fly ash as compared to that in the absence of. fly ash. This research showed that although the biomass sorption occurred during the bioleaching process, it did not inhibit the removal of Al, Fe, Pb and Zn evidently from. fly ash. (C) 2009 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Aqueous-Solution, *Aspergillus niger*, Behavior, Bioleaching, Biomass, Biomass, Biosorption, Biosorption Kinetics, Cadmium(II), Data, Equilibrium, Experiment, Extraction, Fly Ash, Freundlich, Freundlich Model, Fungal Biomass, Heavy Metals, Ions, Isotherm, Isotherm Model, Kinetic, Kinetic Model, Kinetics, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Leaching, Metal, Metal Ions, Metals, Model, Models, NOV, Pb, Pb(II), pH, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Removal, Research, Rights, Solution, Sorption, Time, Waste Incineration, Waste Treatment, Work

? Lagoa, R. and Rodrigues, J.R. (2009), Kinetic analysis of metal uptake by dry and gel alginate particles. *Biochemical Engineering Journal*, **46** (3), 320-326.

Full Text: [2009\Bio Eng J46, 320.pdf](2009/Bio%20Eng%20J46,%20320.pdf)

Abstract: The kinetics of metal uptake by gel and dry calcium alginate beads was analysed using solutions of copper or lead ions. Gel beads sorbed metal ions faster than the dry ones and larger diffusivities of metal ions were calculated for gel beads: approximately 10-4 cm2/min vs. 10-6 cm2/min for dry beads. In accordance, scanning electron microscopy and nitrogen adsorption data revealed a low porosity of dry alginate particles. However, dry beads showed higher sorption capacities and a mechanical stability more suitable for large-scale use. Two sorption models were. fitted to the kinetic results: the Lagergren pseudo. first order and the Ho and McKay pseudo-second order equations. The former was found to be the most adequate to model metal uptake by dry alginate beads and kinetic constants in the orders of 10-3 and 10-2 min-1 were obtained for lead solutions with concentrations up to 100 g/m3. The pseudo-first order model was also found to be valid to describe biosorbent operation with a real wastewater indicating that it can be used to design processes of metal sorption with alginate-based materials. (C) 2009 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Alginate, Analysis, Aqueous-Solutions, Beads, Biomaterial, Biopolymer, Biosorbent, Biosorption, Biosorption, Ca-Alginate, Calcium, Calcium Alginate, Copper, Data, Design, Effluent, Electron Microscopy, First, First Order, Gel, Heavy Metals, Heavy-Metals, Humic-Acid, Ion-Exchange-Resin, Ions, Kinetic, Kinetics, Lead, Metal, Metal Ions, Metal Sorption, Metal Uptake, Model, Modeling Simulation, Models, Nitrogen, NOV, Operation, Particles, Porosity, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Removal, Rights, Scanning Electron Microscopy, Solutions, Sorption, Sorption Models, Stability, Trivalent Chromium, Uptake, Wastewater, Water Treatment

? Ncibi, M.C., Mahjoub, B., Seffen, M., Brouers, F. and Gaspard, S. (2009), Sorption dynamic investigation of chromium(VI) onto Posidonia oceanica fibres: Kinetic modelling using new generalized fractal equation. *Biochemical Engineering Journal*, **46** (2), 141-146.

Full Text: [2009\Bio Eng J46, 141.pdf](2009/Bio%20Eng%20J46,%20141.pdf)

Abstract: This research deals with the utilization of highly available and renewable marine biomass, *Posidonia oceanica* (L.) fibres as low cost biosorbent for the removal of toxic hexavalent chromium from aqueous solutions and the investigation of the probably involved physiochemical mechanisms ill Such sorption system throughout a kinetic modelling study. Experiments were carried out in batch reactor. Firstly, the adsorption process was studied as a function of contact time under different initial chromium concentration and initial solution pH. The highest Cr(VI) adsorption capacity determined within the equilibrium time (3h) was found at pH 2, under a constant temperature of 30ºC. Secondly, several adsorption kinetic models were applied to fit the experimental data, namely Lagergren irreversible first-order, reversible first-order, pseudo-second-order, Elovich and Brouers-Sotolongo models using both the linear and nonlinear regression analyses. The proposed explanations were deduced from the theoretical assumptions behind the most appropriate model(s), which could satisfactorily describe the present biosorption phenomenon. The interpretation of the related results have shown, although some error estimation ambiguities, that the Brouers-Sotolongo “BS” model is the most suitable dynamic theory describing the biosorption of hexavalent chromium onto P. oceanica fibres, predicting therefore a chemisorption process and providing the time necessary to adsorbed half the maximum quantity (tau(1/2)), a convenient tool to measure the speed of the reaction. (C) 2009 Elsevier B.V. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Adsorption Kinetic, Analyses, Aqueous Solutions, Aqueous-Solution, Assumptions, Batch, Batch Reactor, Biomass, Biosorbent, Biosorption, Capacity, Chemisorption, Chitosan, Chromium, Chromium(VI), Concentration, Cost, Cr(VI), Cr(VI) Adsorption, Cr(VI) Removal, Data, Dynamic, Elovich, Equilibrium, Error, Experimental, First Order, Fractal, Function, Heavy-Metals, Hexavalent Chromium, Investigation, Kinetic, Kinetic Modelling, Kinetic Models, Kinetics, Low Cost, Measure, Mechanisms, Model, Modelling, Models, Nonlinear Regression, P, pH, Posidonia Fibres, Pseudo Second Order, Pseudo-Second-Order, Reaction, Regression, Removal, Research, Rights, Solution, Solutions, Sorbents, Sorption, Temperature, Theory, Time, Toxic, Utilization, Water

? Bhatnagar, A., Minocha, A.K. and Sillanpää, M. (2010), Adsorptive removal of cobalt from aqueous solution by utilizing lemon peel as biosorbent. *Biochemical Engineering Journal*, **48** (2), 181-186.

Full Text: [2010\Bio Eng J48, 181.pdf](2010/Bio%20Eng%20J48,%20181.pdf)

Abstract: The present study was undertaken to evaluate the feasibility of lemon peel waste for the removal of cobalt ions from aqueous solutions. Batch experiments were performed to study the adsorption of cobalt on lemon peel adsorbent. The maximum adsorption capacity of lemon peel adsorbent for cobalt removal was ca. 22 mg g-1. Three simplified kinetic models viz. pseudo-first-order, pseudo-second-order, and Weber and Morris intraparticle diffusion models were tested to describe the adsorption process. Kinetic parameters, rate constants, equilibrium sorption capacities, and related correlation coefficients for kinetic models were determined. It was found that the present system of cobalt adsorption on lemon peel adsorbent could be described more favorably by the pseudo-second-order kinetic model. The adsorption process has been found to be exothermic. The results of the present study suggest that lemon peel waste can be used beneficially in treating industrial effluents containing heavy metal ions. (C) 2009 Elsevier B.V. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Capacity, Aqueous Solution, Aqueous Solutions, Biosorbent, Biosorption, Biosorption, Capacity, Co(II), Cobalt, Cobalt Removal, Correlation, Cr(III), Cr(VI), Diffusion, Effluents, Equilibrium, Exothermic, Experiments, Feasibility, Heavy Metal, Heavy Metal Ions, Heavy Metals, Heavy-Metals, Intraparticle Diffusion, Ion, Ions, Kinetic, Kinetic Model, Kinetic Models, Kinetic Parameters, Kinetics, Lemon Peel Waste, Metal, Metal Ions, Model, Models, Peel Waste, Pseudo First Order, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Rate Constants, Removal, Rights, Solution, Solutions, Sorption, Waste, Waste Treatment, Waste-Water

? Nawi, M.A., Sabar, S., Jawad, A.H., Sheilatina and Ngah, W.S.W. (2010), Adsorption of Reactive Red 4 by immobilized chitosan on glass plates: Towards the design of immobilized TiO2-chitosan synergistic photocatalyst-adsorption bilayer system. *Biochemical Engineering Journal*, **49** (3), 317-325.

Full Text: [2010\Bio Eng J49, 317.pdf](2010/Bio%20Eng%20J49,%20317.pdf)

Abstract: Immobilized chitosan adsorbent on glass plates (CS/glass) has been fabricated as a pre-step towards the design of bilayer immobilized TiO2-chitosan synergistic photocatalyst-adsorbent system. The characterizations of the immobilized chitosan were studied by SEM, FFIR, BET, and strength test. Experiments were carried out as a function of adsorbent loading, pH, contact time, initial dye concentration and temperature using Reactive Red 4 anionic dye (RR4) as a model pollutant. The adsorption equilibrium data can be described well by the Langmuir and Freundlich isotherm models. The maximum adsorption capacity calculated from the Langmuir model was found to be 172.41 mg g-1. Experimental kinetic data were analyzed using pseudo-first and pseudo-second order rate models. Pseudo-second order model demonstrated to be the best kinetic model for the system suggesting that the rate-limiting step may be chemisorption. The negative value of free energy and enthalpy obtained indicates that the adsorption process is spontaneous and exothermic. (C) 2010 Elsevier B.V. All rights reserved.

Keywords: Adsorbent, Adsorption, Adsorption Capacity, Adsorption Equilibrium, Anionic Dye, Aqueous-Solution, Behavior, BET, Capacity, Characterizations, Chemisorption, Chitosan, Concentration, Corynebacterium-Glutamicum, Data, Degradation, Design, Dye, Energy, Enthalpy, Equilibrium, Exothermic, Freundlich, Freundlich Isotherm, Function, Glass, Immobilization, Immobilized, Isotherm, Kinetic, Kinetic Data, Kinetic Model, Langmuir, Langmuir Model, Loading, Model, Models, pH, Photodegradation, Pseudo Second Order, Pseudo-First and, Pseudo-Second Order, Pseudo-Second-Order, Rate Limiting Step, Rate-Limiting Step, Reactive Red 4, Removal, Rights, SEM, Separation, Strength, Temperature, Titanium-Dioxide, Value, Wastewater Treatment

? Wang, J.S., Hu, X.J., Wang, J., Bao, Z.L., Xie, S.B. and Yang, J.H. (2010), The tolerance of *Rhizopus arrihizus* to U(VI) and biosorption behavior of U(VI) onto R. arrihizus. *Biochemical Engineering Journal*, **51** (1-2), 19-23.

Full Text: [2010\Bio Eng J51, 19.pdf](2010/Bio%20Eng%20J51,%2019.pdf)

Abstract: This work focused on U(VI) biosorption using suspended Rhizopus arrihizus. To understand the biosorption process, the tolerance of the strain to U(VI) and the effects of solution pH, initial U(VI) concentration, temperature, and contact time on U(VI) removal were investigated in batch systems. The results demonstrated that R. arrihizus can grow normally in 200 mg L-1 uranium-contained medium. Optimum biosorption was observed at solution pH 4.0 and the maximum biosorption capacity (112.2 mg g-1) was obtained at initial U(VI) concentration of 200 mg L-1. The biosorption process appeared to be temperature independent. Biosorption equilibrium was established within 90 min and the pseudo second-order model was found to fit accurately with the experimental data. FT-IR analysis and SEM morphology indicated that the structure of the strain remained integral after biosorption. Amino group plays an important role in the biosorption process, hydroxyl and carboxyl groups are also involved in U binding. (C) 2010 Elsevier B.V. All rights reserved.

Keywords: Analysis, Aqueous-Solution, Arrhizus, Batch, Batch Systems, Behavior, Binding, Biosorption, Capacity, Chromium(VI), Concentration, Data, Equilibrium, Experimental, FT-IR, FTIR, FTIR Analysis, Functional Groups, Fungal Biomass, L1, Metal-Ions, Model, Morphology, pH, Pseudo Second Order, Pseudo Second-Order, Pseudo-Second-Order, Removal, Rhizopus Arrihizus, Rights, Role, Second Order, Second-Order, Second-Order Model, SEM, Solution, Structure, Systems, Temperature, Thermodynamic Parameters, Tolerance, U, U(VI), Uranium, Uranium, Waste-Water, Work

? Abidin, M.A.Z., Jalil, A.A., Triwahyono, S., Adam, S.H. and Kamarudin, N.H.N. (2011), Recovery of gold(III) from an aqueous solution onto a *durio zibethinus* husk. *Biochemical Engineering Journal*, **54** (2), 124-131.

Full Text: [2011\Bio Eng J54, 124.pdf](2011/Bio%20Eng%20J54,%20124.pdf)

Abstract: The recovery of gold(III) ions from an aqueous solution onto a durio zibethinus husk (DZH) was examined after varying pH, contact time, adsorbent dosage, initial Au(III) concentration, and temperature. The functional groups of DZH were analyzed by FTIR and Au(III) recovery onto DZH was verified by FESEM-EDX and XRD analysis. Adsorption equilibrium isotherms and kinetics of the DZH were studied using Freundlich and Langmuir models, as well as pseudo first-order, second-order kinetic and intraparticle diffusion equations. The experimental data obtained with DZH fitted best to the Langmuir isotherm model and exhibited a maximum adsorption capacity (*q*max) of 1724 mu mol g-1. The data followed the pseudo second-order equation. The activation energy of the adsorption (E-a) was estimated to be 38.5 kJ mol-1. Thermodynamic parameters, such as changes in enthalpy, entropy and Gibbs free energy, showed that the adsorption is exothermic. spontaneous at low temperature, and is a chemisorption process. These results indicate that DZH adsorbs efficiently and could be used as a low-cost alternative for the adsorption of Au(III) in wastewater treatment. Crown Copyright (C) 2011 Published by Elsevier B.V. All rights reserved.

Keywords: Adsorbent, Adsorption, Aqueous Solution, Biomass, Carbon, Durio Zibethinus Husk, Equilibrium, Equilibrium Isotherms, Freundlich, Freundlich and Langmuir Models, FTIR, Gold Recovery, Gold(III), Heavy-Metals, Ions, Isotherm, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, pH, Recovery, Removal, Thermodynamic, Thermodynamic Parameters, Waste-Water, Wastewater, Wastewater Treatment

# Title: Biochemical Journal

Full Journal Title: [Biochemical Journal](http://www.pubmedcentral.gov/tocrender.fcgi?action=archive&journal=74), [Biochemical Journal](http://www.biochemj.org/)

ISO Abbreviated Title: Biochem. J.

JCR Abbreviated Title: Biochem J

ISSN: 0264-6021

Issues/Year: 24

Language: English

Journal Country/Territory: England

Publisher: Portland Press Ltd

Publisher Address: Third Floor, Eagle House, 16 Procter Street, London WC1V 6 NX, England

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 4.009, 67/263 (2007)

? Hanes, C.S. (1932), Studies on plant amylases. I. The effect of starch concentration upon the velocity of hydrolysis by the amylase of germinated barley. *Biochemical Journal*, **26** (5), 1406-1421.

Full Text: [-1959\Bio J26, 1406.pdf](-1959/Bio%20J26,%201406.pdf)

Notes: highly cited

? Martin, A.J.P. and Synge, R.L.M. (1941), A new form of chromatogram employing two liquid phases I. A theory of chromatography 2. Application to the micro-determination of the higher monoamino-acids in proteins. *Biochemical Journal*, **35** (12), 1358-1368.

Full Text: [-1959\Bio J35, 1358.pdf](-1959/Bio%20J35,%201358.pdf)

? Boardman, N.K. and Partridge, S.M. (1955), Separation of neutral proteins on ion-exchange resins. *Biochemical Journal*, **59** (4), 543-552.

Full Text: [-1959\Bio J59, 543.pdf](-1959/Bio%20J59,%20543.pdf)

Wilkinson, G. (1961), Statistical estimations in enzyme kinetics. *Biochemical Journal*, **80** (2), 324-332.

Full Text: [1960-80\Bio J80, 324.pdf](1960-80/Bio%20J80,%20324.pdf), [B\Bio J80, 324.pdf](B/Bio%20J80,%20324.pdf)

Notes: highly cited

? Greenwood, F.C. and Hunter, W.M. (1963), Preparation of 131I-Labelled human growth hormone of high specific radioactivity. *Biochemical Journal*, **89** (1), 114-123.

Full Text: [1960-80\Bio J89, 114.pdf](1960-80/Bio%20J89,%20114.pdf)

Keywords: Human, Preparation

Notes: highly cited

? Boveris, A. and Chance, B. (1973), The mitochondrial generation of hydrogen peroxide: General properties and effect of hyperbaric oxygen. *Biochemical Journal*, **134** (3), 707-716.

Full Text: [1960-80\Bio J134, 707.pdf](1960-80/Bio%20J134,%20707.pdf)

Abstract: 1. Pigeon heart mitochondria produce H2O2 at a maximal rate of about 20nmol/min per mg of protein. 2. Succinate-glutamate and malate-glutamate are substrates which are able to support maximal H2O2 production rates. With malate-glutamate, H2O2 formation is sensitive to rotenone. Endogenous substrate, octanoate, stearoyl-CoA and palmitoylcarnitine are by far less efficient substrates. 3. Antimycin Aexerts a very pronounced effect in enhancing H2O2 production in pigeon heart mitochondria; 0.26nmol ofantimycin A/mg of protein and the addition of an uncoupler are required for maximal H2O2 formation. 4. In the presence of endogenous substrate and of antimycin A, ATP decreases and uncoupler restores the rates of H2O2 formation. 5. Reincorporation of ubiquinone-10 and ubiquinone-3 to ubiquinone-depleted pigeon heart mitochondria gives a system in which H2O2 production is linearly related to the incorporated ubiquinone. 6. The generation of H2O2 by pigeon heart mitochondria in the presence of succinate-glutamate and in metabolic state 4 has an optimum pH value of 7.5. In states 1 and 3u, and in the presence of antimycin A and uncoupler, the optimum pH value is shifted towards more alkaline values. 7. With increase of the partial pressure of O2 to the hyperbaric region the formation of H2O2 is markedly increased in pigeon heart mitochondria and in rat liver mitochondria. With rat liver mitochondria and succinate as substrate in state 4, an increase in the pO2 up to 1.97 MPa (19.5 atm) increases H2O2 formation 10-15-fold. Similar pO2 profiles were observed when rat liver mitochondria were supplemented either with antimycin A or with antimycin A and uncoupler. No saturation of the system with O2 was observed up to 1.97MPa (19.Satm). By increasing the pO2 to 1.97MPa (19.5atm), H2O2 formation in pigeon heart mitochondria with succinate as substrate increased fourfold in metabolic state 4, with antimycin A added the increase was threefold and with antimycinAand uncoupler it was 2.5-fold. In the last two saturation of the system with oxygen was observed, with an apparent Km of about 71 kPa (0.7-0.8atm) and a Vmax. of 12 and 20 nmol of H2O2/min per mg of protein. 8. It is postulated that in addition to the wellknown flavin reaction, formation of H2O2 may be due to interaction with an energydependent component of the respiratory chain at the cytochrome b level.

Eisenthal, R. and Cornish-Bowden, A. (1974), A new graphical procedure for estimating enzyme kinetic parameters. *Biochemical Journal*, **139** (3), 715-120.

Full Text: [1960-80\Bio J139, 715.pdf](1960-80/Bio%20J139,%20715.pdf), [B\Bio J139, 715.pdf](B/Bio%20J139,%20715.pdf)

? Cornishb, A. and Eisentha, R. (1974), Statistical considerations in estimation of enzyme kinetic-parameters by direct linear plot and other methods. *Biochemical Journal*, **139** (3), 721-730.

Full Text: [1960-80\Bio J139, 721.pdf](1960-80/Bio%20J139,%20721.pdf)

Merino, F.D.M. (1974), A new method for determining the Michaelis constant. *Biochemical Journal*, **143** (1), 93-95.

Full Text: [1960-80\Bio J143, 93.pdf](1960-80/Bio%20J143,%2093.pdf), [B\Bio J143, 93.pdf](B/Bio%20J143,%2093.pdf)

? Nimmo, I.A. and Atkins, G.L. (1974), A comparison of two methods for fitting integrated Michaelis-Menten equation. *Biochemical Journal*, **141** (3), 913-914.

Full Text: [1960-80\Bio J141, 913.pdf](1960-80/Bio%20J141,%20913.pdf)

Atkins, G.L. and Nimmo, I.A. (1975), A comparison of seven methods for fitting the Michaelis-Menten equation. *Biochemical Journal*, **149** (3), 775-777.

Full Text: [1960-80\Bio J149, 775.pdf](1960-80/Bio%20J149,%20775.pdf), [B\Bio J149, 775.pdf](B/Bio%20J149,%20775.pdf)

Abstract: The Michaelis-Menten equation was fitted to simulated data containing different sorts of error by using the three linear transformations, and the methods of S. R. Cohen [Anal. Biochem. (1968) 22, 549-552], R. Eisenthal & A. Cornish-Bowden [Biochem. J. (1974) 139, 715-120], F. de M. Merino [Biochem. J. 143, 93-95] and G. N. Wilkinson [Biochem. J. (1961) 808 324-332). The best methods were those of Eisenthal & Cornish-Bowden (1974) and Wilkinson (1961).

? Bardsley, W.G., Leff, P., Kavanagh, J. and Waight, R.D. (1980), Deviations from Michaelis-Menten kinetics - the possibility of complicated curves for simple kinetic schemes and the computer fitting of experimental-data for acetycholin-esterase, acid-phosphatase, adenosine-deaminase, arylsulfatase, benzylamine oxidase, chymotrypsin, fumarase, galactose dehydrogenase, beta-galactosidase, lactate-dehydrogenase, peroxidase and xanthine-oxidase-D. *Biochemical Journal*, **187** (3), 739-765.

Full Text: [1960-80\Bio J187, 739.pdf](1960-80/Bio%20J187,%20739.pdf)

Abstract: The possible graph shapes for one-site/two-state and substrate-modifier models are discussed. The two-state model is a version of the Monod-Wyman-Changeux model and gives a rate equation with 240 denominator terms. Discussion in terms of K and V effects is not possible. A simplified version of the mechanism can be shown to give v-versus-[S] curves that are either sigmoid or non-sigmoid. They may show substrate inhibition or no final maximum, and the double-reciprocal plots can be concave up or down. The corresponding binding model is determined by only two constants and gives a linear double-reciprocal plot. The substrate-modifier mechanism is a simple example of a mechanism where inclusion of catalytic steps leads to a genuine increase in degree of the rate equation. The v-versus-[S] curve can show such complexities as two maxima and a minimum, and the double-reciprocal plot can cross its asymptote twice, proving the rate equation to be 4:4. A simplified version is 3:3, and analysis shows that at least 18 of the 27 double-reciprocal plots that can arise with 3:3 functions are possible with this particular mechanism. Representative double-reciprocal and Scatchard plots are presented for several sets of rate-constant values. It is concluded that relatively simple mechanisms give pseudo-steady-state rate equations of high degree and considerable complexity. With extended ranges of substrate concentrations there is every reason to believe that experimental data would show the sort of deviations from Michaelis-Menten kinetics seen with calculated curves for such simple mechanisms. Narrow ranges of substrate concentration, on the other hand, would lead to inflexions and curvature being overlooked. It is not possible to discuss such deviations from Michaelis-Menten kinetics in terms of kinetic constants such as Km and V, and, in general, it is also difficult to see any simple way to explain intuitively such features as sigmoidicity, substrate inhibition, double-reciprocal convexity and decrease in degree by cancellation of common factors between numerator and denominator of rate equations. These conclusions apply with even more force when catalytic steps are included, for then the rate equations, are for multi-site mechanisms, of higher degree, allowing increasingly complex curve shapes. A number of enzymes were studied and initial-rate data were fitted by computer.

? Mehra, R.K. and Mulchandani, P. (1995), Glutathione-mediated transfer of Cu(I) into phytochelatins. *Biochemical Journal*, **307** (3), 697-705.

Full Text: [1995\Bio J307, 697.pdf](1995/Bio%20J307,%20697.pdf)

Abstract: Room temperature luminescence attributable to Cu(I)-thiolate clusters has been used to probe the transfer of Cu(I) from Cu(I)-glutathione complex to rabbit liver thionein-II and plant metal-binding peptides phytochelatins (gamma-Glu-Cys)2Gly, (gamma-Glu-Cys)3Gly and (gamma-Glu-Cys)4Gly. Reconstitutions were also performed using CuC1. The Cu(I)-binding stoichiometry of metallothionein or phytochelatins was generally independent of the Cu(I) donor. However, the luminescence of the reconstituted metallothionein or phytochelatins was higher when Cu(I)-GSH was the donor. This higher luminescence is presumably due to the stabilizing effect of GSH on Cu(I)-thiolate clusters. As expected, 12 Cu(I) ions were bound per molecule of metallothionein. The Cu(I) binding to phytochelatins depended on their chain length, the binding stoichiometries being 1.25, 2.0 and 2.5 for (gamma-Glu-Cys)2Gly, (gamma-Glu-Cys)3Gly and (gamma-Glu-Cys)4Gly respectively at neutral pH. A reduced stoichiometry for the longer phytochelatins was observed at alkaline pH. No GSH was found to associate with phytochelatins by a gel-filtration assay. The Cu(I) binding to (gamma-Glu-Cys)2Gly and (gamma-Glu-Cys)3Gly occurred in a biphasic manner in the sense that the relative luminescence increased approximately linearly with the amount of Cu(I) up to a certain molar ratio whereafter luminescence increased dramatically upon the binding of additional Cu(I). The luminescence intensity declined once the metal-binding sites were saturated. In analogy with the studies on metallothioneins, biphasic luminescence suggests the formation of two types of Cu(I) clusters in phytochelatins.

# Title: Biochemical Pharmacology

Full Journal Title: [Biochemical Pharmacology](http://sdos.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=00062952)

ISO Abbreviated Title: Biochem. Pharmacol.

JCR Abbreviated Title: Biochem Pharmacol

ISSN: 0006-2952

Issues/Year: 24

Journal Country/Territory: United States

Language: English

Publisher: Pergamon-Elsevier Science Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 2.975, 89/310 (2000)

Pharmacology & Pharmacy: Impact Factor 181 (2000)

Mentre, F., Steimer, J.L., Sommadossi, J.P., Diasio, R.B. and Cano, J.P. (1984), A mathematical model of the kinetics of 5-fluorouracil and its catabolites in freshly isolated rat hepatocytes. *Biochemical Pharmacology*, **33** (17), 2727-2732.

Full Text: [B\Bio Pha33, 2727.pdf](B/Bio%20Pha33,%202727.pdf)

Abstract: A mathematical model for the kinetics of 5-fluorouracil (FUra) catabolism in liver cells is proposed. It is based on published data for the metabolism of FUra by isolated rat hepatocytes. The model relies on biochemical knowledge of the catabolic pathway. The key-steps are: (i) the cellular uptake and the conversion of the unchanged drug to dihydrofluorouracil (FUH2) and subsequently to α-fluoro-β-alanine (FBAL), (ii) the cellular fluxes of the 2 catabolites, FUH2 and FBAL. Water is partitioned between the extracellular and intracellular spaces. The first step is described by Michaelis-Menten kinetics and the other processes by first-order kinetics. Satisfactory fitting of the model validates these simplifications and provides values for the parameters describing the process. The model indicates that (i) the kinetics of FUra disappearance are non linear, the *V*max of the first step being between 3.1 and 5.0 μM/min and the *Km* between 12 and 37 μM, (ii) the rate limiting step is the degradation of FUH2 (the major intracellular catabolite) with a rate constant of 0.1 to 0.02 min−1, (iii) the FUH2 trasmembrane exchange is active, (iv) the exchange of the final catabolite FBAL is by diffusion.

Keywords: FUra, 5-Fluorouracil, FUH2, Dihydrofluororacil, FUPA, α-Fluoro-β-Ureidopropionic Acid, FBAL, α-Fluoro-β-Alanine

Weiss, G., Kastner, S., Brock, J., Thaler, J. and Grünewald, K. (1997), Modulation of transferrin receptor expression by dexrazoxane (ICRF-187) via activation of iron regulatory protein. *Biochemical Pharmacology*, **53** (10), 1419-1424.

Full Text: [B\Bio Pha53, 1419.pdf](B/Bio%20Pha53,%201419.pdf)

Abstract: Dexrazoxane (ICRF-187) has recently been demonstrated to reduce cardiac toxicity induced by chemotherapy with anthracyclines, although the reason for this phenomenon has remained obscure thus far. In order to investigate whether ICRF-187 might exert its effects by modulating iron metabolism, we studied the drug’s potential to influence the maintenance of iron homeostasis in two human cell lines. We demonstrate that ICRF-187 enhanced the binding affinity of iron regulatory protein (IRP), the central regulatory factor for posttranscriptional iron regulation, to RNA stem Loop structures, called iron responsive elements (IRE), in THP-1 myelomonocytic as well as K562 erythroleukemic cells. Increased IRE/IRP interaction was paralleled by an elevation of transferrin receptor (trf-rec) mRNA levels which, according to the well-established mechanism of posttranscriptional iron regulation, was likely due to stabilisation of trf-rec mRNA by IRP. Subsequently, ICRF-187 treatment of cells increased trf-rec surface expression and enhanced cellular iron uptake. All these events, i.e. IRP activation, stabilisation of tri rec mRNA and increased surface expression of the protein in response to ICRF-187, follow a dose-response relationship. Increased cellular uptake and sequestration of iron in response to ICRF-187 may contribute to the protective activity of ICRF-187 by reducing the iron-anthracycline complex and iron catalysed generation of hydroxyl radicals via the Haber-Weiss reaction. (C) 1997 Elsevier Science Inc.

Keywords: Iron Metabolism, Transferrin Receptor, Human Monocytes, Iron Regulatory Protein, ICRF-187, RNA-Binding Protein, Nitric-Oxide, Topoisomerase-II, Messenger-RNAS, Breast-Cancer, Free-Radicals, IRE-BP, Doxorubicin, Reduction, Toxicity

# Title: Biochemische Zeitschrift

Full Journal Title: Biochemische Zeitschrift

ISO Abbreviated Title: Biochem. Z.

JCR Abbreviated Title:

ISSN: 0264-6021

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Notes: highly cited, TC > 2000

? Michaelis, L. and Menten, M.L. (1913), The kenetics of the inversion effect. *Biochemische Zeitschrift*, **49**, 333-369.

? Michaelis, L. and Menten, M.L. (1913), Die kinetik der invertinwerkung. *Biochemische Zeitschrift*, **49**, 333-369.

? Polanyi, M. (1914), Adsorption, swelling and osmotic compresion of colloids. *Biochemische Zeitschrift*, **66**, 258-268.

? Polanyi, M. (1920), Studies on the reduction of conductivity and adsorption by means of lyophil colloids. *Biochemische Zeitschrift*, **104**, 237-253.

# Title: Biochemistry

Full Journal Title: [Biochemistry](http://pubs.acs.org/journals/bichaw/index.html)

ISO Abbreviated Title: Biochemistry

JCR Abbreviated Title: Biochemistry-US

ISSN: 0006-2960

Issues/Year: 51

Journal Country/Territory: United States

Language: English

Publisher: Amer Chemical Soc

Publisher Address: 1155 16th St, NW, Washington, DC 20036

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 4.221, 60/310 (2000)

Notes: highly cited

? Pouny, Y., Rapaport, D., Mor, A., Nicolas, P. and Shai, Y. (1992), Interaction of antimicrobial dermaseptin and its fluorescently labeled analogs with phospholipid membranes. *Biochemistry*, **31** (49), 12416-12423.

Full Text: [1992\Biochemistry31, 12416.pdf](1992/Biochemistry31,%2012416.pdf)

Abstract: Dermaseptin, a 34 amino-acid residue antimicrobial polypeptide [Mor, A., Nguyen, V. H., Delfour, A., Migliore-Samour, D., & Nicolas, P. (1991) Biochemistry 30, 8824-88301 was synthesized and selectively labeled at its N-terminal amino acid with either 7-nitrobenz-2-oxa-1,3-diazole-4-yl (NBD), rhodamine, or fluorescein. The fluorescent emission spectra of the NBD-labeled dermaseptin displayed a blue-shift upon binding to small unilamellar vesicles (SUV), reflecting the relocation of the fluorescent probe to an environment of increased a polarity. Titrations of solutions containing NBD-labeled dermaseptin with SUV composed of zwitterionic or acidic phospholipids were used to generate binding isotherms, from which were derived surface partition constants of (0.66 +/- 0.06) X 10(4) M-1 and (2.8 +/- 0.3) x 10(4) M-1, respectively. The shape of the binding isotherms, as well as fluorescence energy transfer measurements, suggests that some aggregation of membrane-bound peptide monomers occurs in acidic but not in zwitterionic vesicles. The preferential susceptibility of the peptide to proteolysis when bound to zwitterionic but not to acidic SUV suggests that these aggregates might then penetrate a relatively short distance into the hydrophobic region of the acidic membrane. Furthermore, the results provide good correlation between the peptide’s strong binding and its ability to permeate membranes composed of acidic phospholipids, as revealed by a dissipation of diffusion potential and a release of entrapped calcein from SUV.

Keywords: Aggregation, Artificial Membranes, Cdna Sequence, Energy-Transfer, Forming Peptide Alamethicin, Lipid Bilayers, Magainins, Membranes, Pardaxin, Polypeptide, Vesicles

Wei, C.H., Chou, W.Y., Huang, S.M., Lin, C.C. and Chang, G.G. (1994), Affinity cleavage at the putative metal-binding site of pigeon liver malic enzyme by the Fe2+-ascorbate system. *Biochemistry*, **33** (25), 7931-7936.

Full Text: [B\Biochemistry33, 7931.pdf](B/Biochemistry33,%207931.pdf)

Abstract: Pigeon liver malic enzyme was rapidly inactivated by micromolar concentrations of ferrous sulfate in the presence of ascorbate at neutral pH and 0 or 25°C. Omitting the ascorbate or replacing the ferrous ion with manganese ion did not lead to any inactivation. Manganese, magnesium, zinc, cobalt, or calcium ion at 200 molar excess over ferrous ion offered complete protection of the enzyme from Fe2+-induced inactivation. Ni2+ provided partial protection, while Ba2+ or imidazole was ineffective in protection. Addition of 4 mM Mn2+ or 5 mM EDTA into a partially modified enzyme stopped further inactivation of the enzyme. Inclusion of substrates (L-malate or NADP (+), singly or in combination) in the incubation mixture did not affect the inactivation rate. The enzyme inactivation was demonstrated to be followed by protein cleavage. Native pigeon liver malic enzyme had a subunit M (r) of 65000. The inactivated enzyme with residual activity of only 0.3% was cleaved into two fragments with M (r) of 31000 and 34000, respectively. The cleavage site was identified as the peptide bond between Asp (258) and Ile (259). Native pigeon liver malic enzyme was blocked at the N-terminus. Cleavage at the putative metal-binding site exposed a new N-terminus, which was identified to be at the 34-kDa fragment containing the C-terminal half of original sequence 259-557. Our results indicated that Fe2+ catalyzed a specific oxidation of pigeon liver malic enzyme at Asp (258) and/or some other essential amino acid residues that caused enzyme inactivation. The modified enzyme was then affinity cleaved at the Mn2+-binding site.

Keyword: Mixed-Function Oxidation, Cancer Cell-Line, Rat-Liver, Glutamine-Synthetase, Catalyzed Oxidation, *Escherichia*-Coli, Nucleotide-Sequence, Hormonal-Regulation, Protein-Turnover, Messenger-RNA

Macdonnell, F.M. (1995), Reexamining the mössbauer-effect as a means to cleave DNA. *Biochemistry*, **34** (39), 12871-12876.

Full Text: [B\Biochemistry34, 12871.pdf](B/Biochemistry34,%2012871.pdf)

Abstract: The ability of a DNA-bound Mossbauer isotope to absorb resonant gamma-radiation and subsequently, upon decay, induce DNA double-strand breaks by emission of low-energy Auger electrons was examined with a simple plasmid DNA cleavage assay. This mechanism was postulated by Mills et al. [Mills et al. (1988) Nature 336, 787] in the observed ablation of tumor cell growth with Fe-57(III)-bleomycin and Mossbauer radiation. The observed linearization of supercoiled pAA15 plasmid DNA upon treatment with five or more Fe-57(III)-bleomycin per plasmid precluded its use for testing Mossbauer effect induced cleavage. An alternative Fe-57-DNA-binding complex, [Fe-57 (phen) (2) (DPPZ)] (PF6) (2). H2O ((57)1), was synthesized and found to tightly bind DNA (K = 9.8×105 M-1) yet not induce DNA nicks or cuts at loadings of less than 500/pAA15 plasmid. Mossbauer irradiation of (57)1/pAA15 samples under frozen and solution conditions does not result in observable linearization of the plasmid DNA over control samples. Some linearization is observed in all irradiated samples but is attributed only to the photoelectric effect.

Keywords: Metallointercalation Reagents, Metal-Complexes, Binding, Therapy, Cancer, Ruthenium(II), Intercalation, Bleomycin, Platinum, Invitro

Pelletier, H., Sawaya, M.R., Wolfle, W., Wilson, S.H. and Kraut, J. (1996), Crystal-structures of human DNA-polymerase-β complexed with DNA-implications for catalytic mechanism, processivity, and fidelity. *Biochemistry*, **35** (39), 12742-12761.

Full Text: [B\Biochemistry35, 12742.pdf](B/Biochemistry35,%2012742.pdf)

Abstract: Mammalian DNA palymerase β (pol β) is a small (39 kDa) DNA gap-filling enzyme that comprises an amino-terminal 8-kDa domain and a carboxy-terminal 31-kDa domain. In the work reported here, crystal structures of human poi β complexed with blunt-ended segments of DNA show that, although the crystals belong to a different space group, the DNA is nevertheless bound in the pal β binding channel in the same way as the DNA in previously reported structures of rat pol β complexed with a template-primer and ddCTP [Pelletier, H., Sawaya, M. R., Kumar, A., Wilson, S. H., & Kraut, J. (1994) Science 264, 1891-1903]. The 8-kDa domain is in one of three previously observed positions relative to the 31-kDa domain, suggesting that the 8-kDa domain may assume only a small number of stable conformations. The thumb subdomain is in a more open position in the human poi β-DNA binary complex than it is in the rat pol β-DNA-ddCTP ternary complex, and a closing thumb upon nucleotide binding could represent the rate-limiting conformational change that has been observed in pre-steady-state kinetic studies. Intermolecular contacts between the DNA and the 8-kDa domain of a symmetry-related pol β molecule reveal a plausible binding site on the 8-kDa domain far the downstream oligonucleotide of a gapped-DNA substrate, in addition to a lysine-rich binding pocket that accommodates a 5’-PO4 end group, the 8-kDa domain also contains a newly discovered helix-hairpin-helix (HhH) motif that binds to DNA in the same way as does a structurally and sequentially homologous HhH motif in the 31-kDa domain. DNA binding by both HhH motifs is facilitated by a metal ion, In that HhH motifs have been identified in other DNA repair enzymes and DNA polymerases, the HhH-DNA interactions observed in pol β may be applicable to a broad range of DNA binding proteins. The sequence similarity between the HhH motif of endonuclease III from *Escherichia coli* and the HhH motif of the 8-kDa domain of pol β is particularly striking in that all of the conserved residues are clustered in one short sequence segment, LPGVGXK, where LPGV corresponds to a type II β-turn (the hairpin turn), and GXK corresponds to a part of the HhH motif that is proposed to be critical for DNA binding and catalysis for both enzymes. These results suggest that endonuclease III and the 8-kDa domain of pol β may employ a similar mode of DNA binding and may have similar catalytic mechanisms for their respective DNA lyase activities. A model for productive binding of pol β to a gapped-DNA substrate requires a 90 degrees bend in the single-stranded template, which could enhance nucleotide selectivity during DNA repair or replication.

Keywords: HIV-1 Reverse-Transcriptase, Immunodeficiency-Virus Type-1, Coli Endonuclease-III, Base Excision-Repair, *Escherichia*-Coli, Colorectal-Cancer, Messenger-RNA, Dehydroquinate Synthase, Elimination Reactions, Angstrom Resolution

Babu, B.R. and Vaz, A.D.N. (1997), 1,2,3-Thiadiazole: A novel heterocyclic heme ligand for the design of cytochrome P450 inhibitors. *Biochemistry*, **36** (23), 7209-7216.

Full Text: [B\Biochemistry36, 7209.pdf](B/Biochemistry36,%207209.pdf)

Abstract: The 1,2,3-thiadiazole heterocycle has been explored as a heme ligand and mechanism-based inactivator for the design of cytochrome P450 inhibitors. One 4,5-fused bicyclic and three 4,5-disubstituted monocyclic 1,2,3-thiadiazoles have been examined for their spectral interactions, inhibition, mechanism-based inactivation, and oxidation products by the versatile microsomal P450s 2B4, 2E1, and 1A2. The compounds generally show heteroatom coordination to the heme iron, however the binding mode is influenced by the architecture of the active site. For example, 4,5-diphenyl-1,2,3-thiadiazole shows type I and type II difference spectra with P450s 2B4 and 2E1, respectively, and no spectral perturbation with P450 1A2. Except for the fused bicyclic compound, the spectral dissociation constants are in the 2-50 µM range. The effectiveness as an inhibitor depends on the substituents at the 4-and 5-positions and on the P450 examined. Inhibition of the P450-catalyzed 1-phenylethanol oxidation to acetophenone by the thiadiazoles does not correlate with either the type of binding spectra or the spectral dissociation constants of the compounds. P450s 2E1 and 2B4 are inactivated by the 4,5-fused bicyclic 1,2,3-thiadiazole in a mechanism-based manner. Inactivation of the P450 correlates with loss in absorbance at 450 nm for the ferrous-CO complex. The monocyclic 1,2,3-thiadiazoles do not inactivate any of the P450s examined. The 1,2,3-thiadiazole ring is oxidized by the P450 system. Oxidation of the monocyclic compounds results in extrusion of the three heteroatoms and formation of the corresponding acetylenes, whereas oxidation of the fused bicyclic compound does not yield an acetylenic product.

Keywords: Lanosterol 14-α-Methyl Demethylase, Mechanism-Based Inhibitors, Substrate-Based Inhibitors, HIV-Infected Patients, Aromatase Inhibitors, Nonsteroidal Inhibitors, Liver-Microsomes, Tienilic Acid, Breast-Cancer, Steroidal Inhibitors

Roehm, P.C. and Berg, J.M. (1997), Sequential metal binding by the RING finger domain of BRCA1. *Biochemistry*, **36** (33), 10240-10245.

Full Text: [B\Biochemistry36, 10240.pdf](B/Biochemistry36,%2010240.pdf)

Abstract: Analysis of the amino acid sequence encoded by the familial breast and ovarian cancer susceptibility gene, BRCA1 [Miki *et al.* (1994) Science 266, 66-71], revealed the presence of an amino-terminal RING finger domain, a zinc binding motif found in a variety of proteins, Previously determined structures of two RING finger peptides from other proteins revealed that each RING finger sequence forms a single domain that includes two interleaved metal binding sites. One is a four-cysteine site comprised of metal binding residues 1, 2, 5, and 6 (in terms of position along the amino acid sequence) (site 1) and I-he other is a three-cysteine, one-histidine site involving metal binding residues 3, 4, 7, and 8 (site 2). We have characterized the metal binding and metal-dependent folding properties of peptides encompassing the BRCA1 RING finger. Using cobalt(II) as a spectroscopic probe, we have found that metal binding is sequential, with site I becoming nearly fully occupied prior to metal binding To site 2. More detailed thermodynamic analysis as well as studies of a variant peptide revealed that metal binding appears to be anticooperative with dissociation constants of 3×10-8 M for site 1, 5×10-7 M for site 2 with site I unoccupied, and 8×10-6 M for site 2 when site 1 is occupied. Circular dichroism spectroscopic studies revealed that the BRCA1 RING finger peptide is somewhat structured at pH 7 in the absence of metal ions, with further structural changes occurring after the metal binding.

Keywords: Cancer Susceptibility Gene, Zinc-Finger, Motif, Identification, Mutations, Protein, Breast

# Title: Biochemistry-Moscow

Full Journal Title: Biochemistry-Moscow

ISO Abbreviated Title: Biochem.-Moscow

JCR Abbreviated Title: Biochemistry-Engl Tr

ISSN: 0006-2979

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Ivanov, K.K. and Shibaeva, I.V. (1966), Isotherm of adsorption on an anion exchange resin and electrophoretic mobility of some carbohydrate borate complexes. *Biochemistry-Moscow*, **31** (4), 299-??.

? Petrova, S.D., Bakalova, N.G. and Kolev, D.N. (2006), Catalytically important amino acid residues in endoglucanases from a mutant strain Trichoderma sp M-7. *Biochemistry-Moscow*, **71**, S25-S30.

Abstract: Two endoglucanases, EG-III (49.7 kD) and EG-IV (47.5 kD), from a mutant strain Trichoderma sp. M-7 were modified with several specific reagents. Water-soluble carbodiimide completely inactivated only one of the purified endoglucanases and kinetic analysis indicated that at least two molecules of carbodiimide bind to EG-IV for inactivation. The reaction followed pseudo-first-order kinetics with a second-order rate constant of 3.57×10-5 mM-1.min-1. Both endoglucanases were inhibited by iodoacetamide, but the absence of substrate protection excluded direct involvement of cysteine residues in the catalysis. N-Bromosuccinimide (NBS) showed a strong inhibitory effect on both endoglucanases, suggesting that tryptophan residues are essential for the activity and binding to the substrate, since the presence of substrates or analogs prior to NBS modification protected the enzymes against inactivation.

Keywords: Cellulase, Chemical Modification, Endoglucanase, Trichoderma, Crystalline Cellulose Degradation, Chemical-Modification, Tryptophan Residues, Microcrystalline Cellulose, Adsorption-Kinetics, Reesei, Cellobiohydrolases, Cellulases, Binding, Domains

# Title: Biochemistry and Cell Biology-Biochimie et Biologie Cellulaire

Full Journal Title: Biochemistry and Cell Biology-Biochimie et Biologie Cellulaire

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0829-8211

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Robert, C., Wilson, C.S., Gaudy, J.F., Hornebeck, W. and Arreto, C.D. (2010), Trends in matrix metalloproteinase research from 1986-2007: A bibliometric study. *Biochemistry and Cell Biology-Biochimie et Biologie Cellulaire*, **88** (5), 843-851.

Full Text: [2010\Bio Cel Bio88, 843.pdf](2010/Bio%20Cel%20Bio88,%20843.pdf)

Abstract: Using the SCI-expanded database, this study provides a quantitative description of the development of the research involving matrix metalloproteinase (MMP) over a period of 20 years. From 1986 to 2007 the scientific literature related to MMP increased sevenfold (397 papers in 1986-1987 and 2834 in 2006-2007). The number of countries participating in MMP-related research doubled during this period (33 in 1986-1987 to 67 in 2006-2007), and the USA continually remained the leader. Several industrialized nations (Japan, Germany, UK, Canada, and France) also continuously played important roles, with some emerging Asian countries joining the top 10 most productive countries in 20062007: China (ranked 5th), South Korea (6th), and Taiwan (10th). The MMP-related literature was distributed among a continuously growing number of journals (188 in 1986-1987, 527 in 1996-1997, and 913 in 2006-2007) and The Journal of Biological Chemistry remained the most prolific throughout the entire period. The development of the research involving MMPs during the past two decades was also characterized by a progressive transfer of interest from basic research to clinical medicine; cell biology and pharmacology were important routes of investigation generally pursued by researchers. Journals dedicated to oncology have progressively risen to the top 8 most prolific journals during the 20 year period analyzed.

Keywords: Matrix Metalloproteinase, MMP, Journal Analysis, Cancer Research, Bibliometrics, Tadpole Collagenase, Tissue Inhibitors, Science, Cancer, Progression, Targets, World

# Title: Biochimica et Biophysica Acta

Full Journal Title: Biochimica et Biophysica Acta

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0006-3002

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Notes: highly cited

? Genty, B., Briantais, J.M. and Baker, N.R. (1989), The relationship between the quantum yield of photosynthetic electron transport and quenching of chlorophyll fluorescence. *Biochimica et Biophysica Acta*, **990** (1), 87-92.

Full Text: [1989\Bio Bio Act990, 87.pdf](1989/Bio%20Bio%20Act990,%2087.pdf)

Abstract: Measurements of the quantum yields of chlorophyll fluorescence and CO2 assimilation for a number of plant species exposed to changing light intensity and atmospheric CO2 concentrations and during induction of photosynthesis are used to examine the relationship between fluorescence quenching parameters and the quantum yield of non-cyclic electron transport. Over a wide range of physiological conditions the quantum yield of non-cyclic electron transport was found to be directly proportional to the product of the photochemical fluorescence quenching (qQ) and the efficiency of excitation capture by open Photosystem II (PS II) reaction centres (Fe/Fm) A simple fluorescence parameter, Δφe/φFm which is defined by the difference in fluorescence yield at maximal φFm, and steady-state φFs., divided by φFm, can be used routinely to estimate changes in the quantum yield of non-cyclic electron transport. It is demonstrated that both the concentration of open PS II reaction centres and the efficiency of excitation capture by these centres will determine the quantum yield of non-cyclic electron transport in vivo and that deactivation of excitation within PS II complexes by non-photochemical processes must influence the quantum yield of non-cyclic electron transport.

# Title: Biochimica et Biophysica Acta-Biomembranes

Full Journal Title: [Biochimica et Biophysica Acta-Biomembranes](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=4899&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=a9fdf5a585bcc9a15ceabb0f0debd7bb)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0005-2736

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Abood, L.G. and Hoss, W. (1974), Kinetics of Ca2+ adsorption and cationic selectivity with a synaptic membrane protein. *Biochimica et Biophysica Acta-Biomembranes*, **332** (1), 85-96.

Full Text: [B\Bio Bio Act-Bio1415, 85.pdf](B/Bio%20Bio%20Act-Bio1415,%2085.pdf)

Abstract: A study was conducted on the adsorptio of 45Ca2+ to a surface film of a hydrophobic protein derived from synaptic membranes isolated from bovine cerebellum. A kinetic analysis of Ca2+ displacement from the protein by various metal and organic cations could be described by a rate law based on diffusion and displacement. The relative rate constants for the displacement of bound Ca2+ were in the order Li+ <Na+, Rb+ <Cs+ <K+, NH4+. Among the alkaline earth series the sequence was Mg2+, Sr2+ <Ba2+. Ca2+ adsorption could be described by a theoretical formulation which takes into account an interfacial energy and potential barrier as well as the diffusional process. An attempt was made to consider the effect of energy of hydration of the cations, surface charge, and the chemical environment at the interface on catonic selectivity. The behavior of the cations in this system significantly resemble their behavior in natural membranes, particularly excitatory ones. The structural and physicochemical environment of the protein at the interface is discussed in relation to Ca2+ binding and cationic selectivity.

Atkins, G.L. (1983), A comparison of methods for estimating the kinetic parameters of two simple types of transport process. *Biochimica et Biophysica Acta-Biomembranes*, **732** (2), 455-463.

Full Text: [B\Bio Bio Act-Bio1415, 455.pdf](B/Bio%20Bio%20Act-Bio1415,%20455.pdf)

Abstract: Sets of experimental data, with known characteristics and error structures, have been simulated for the Michaelis-Menten equation plus a second term, either for linear transport or for competitive inhibition. The Michaelis-Menten equation plus linear term was fitted by several methods and the accuracy and the precision of the parameter estimates from the several methods were compared. The model-fitting methods were: three for least-squares non-linear regression, computer versions of two graphical methods and of two non-parametric methods. The most precise and accurate method was that of D.W. Marquardt (J. Soc. Ind. Appl. Math. 11 (1963) 431–441). The Michaelis-Menten equation with competitive inhibition was also fitted by several methods, viz., two for least-squared non-linear regression, a non-parametric method and four variants of the Preston-Schaeffer-Curran plot (Preston, R.L. et al. (1974) J. Gen. Physiol. 64, 443–467). The most precise and accurate of these was the non-linear regression method of W.W. Cleland (Adv. Enzymol. 29 (1967) 1–32). For both these models, the various graphical methods and non-parametric methods gave poor results and are not recommended.

Keywords: Transport Kinetics,Competitive Inhibition, Michaelis-Menten Equation

? Duggleby, R.G. and Clarke, R.B. (1991), Experimental-designs for estimating the parameters of the Michaelis-Menten equation from progress curves of enzyme-catalyzed reactions. *Biochimica et Biophysica Acta-Biomembranes*, **1080** (3), 231-236.

Abstract: When the progress curve for an enzyme catalysed reaction follows the integrated Michaelis-Menten equation, the maximum velocity and Michaelis constant can be determined from a single such curve. In this paper, an experimental design for collecting the data is proposed which is close to optimum in the sense that it produces the smallest standard error in the estimate of the Michaelis constant. This design involves choosing an initial substrate concentration which is approx. two or three times the value of the Michaelis constant.

Keywords: Concentration, Design, Discrimination, Enzyme, Enzyme Kinetics, Experimental, Experimental Design, Kinetic Analysis, Kinetic-Models, Michaelis-Menten Kinetics, Paper, Progress Curve, Reaction, Regression-Analysis, Standard, Statistical Criteria, Substrate, Value, Velocity

Schote, U. and Seelig, J. (1998), Interaction of the neuronal marker dye FM1-43 with lipid membranes: Thermodynamics and lipid ordering. *Biochimica et Biophysica Acta-Biomembranes*, **1415** (1), 135-146.

Full Text: [B\Bio Bio Act-Bio1415, 135.pdf](B/Bio%20Bio%20Act-Bio1415,%20135.pdf)

Abstract: The fluorescent dye FM1-43 labels nerve terminals in an activity-dependent fashion and has been found increasingly useful in exploring the exo- and endocytosis of synaptic vesicles and other cells by fluorescence methods. The dye distributes between the aqueous phase and the lipid membrane but the physical-chemical parameters characterizing the adsorption/ partition equilibrium have not yet been determined. Fluorescence spectroscopy alone is not sufficient for a detailed elucidation of the adsorption mechanism since the method can be applied only in a rather narrow low-concentration window. In addition to fluorescence spectroscopy, we have therefore employed high sensitivity isothermal titration calorimetry (ITC) and deuterium magnetic resonance (H-2-NMR). ITC allows the measurement of the adsorption isotherm up to 100 μM dye concentration whereas H-2-NMR provides information on the location of the dye with respect to the plane of the membrane. Dye adsorption/partition isotherms were measured for neutral and negatively-charged phospholipid vesicles. A non-linear dependence between the extent of adsorption and the free dye concentration was observed. Though the adsorption was mainly driven by the insertion of the non-polar part of the dye into the hydrophobic membrane interior, the adsorption equilibrium was further modulated by an electrostatic attraction/repulsion interaction of the cationic dye (z = +2) with the membrane surface. The Gouy-Chapman theory was employed to separate electrostatic and hydrophobic effects. After correcting for electrostatic effects, the dye-membrane interaction could be described by a simple partition equilibrium (X-b =Kc(dye)) with a partition constant of 103-104 M-1, a partition enthalpy of ΔH = -2.0 kcal/mol and a free energy of binding of ΔG = -7.8 kcal/mol. The insertion of FM1-43 into lipid membranes at room temperature is thus an entropy-driven reaction following the classical hydrophobic effect. Deuterium nuclear magnetic resonance provided insight into the structural changes of the lipid bilayer induced by the insertion of FM1-43. The dye disturbed the packing of the fatty acyl chains and decreased the fatty acyl chain order. FM1-43 also induced a conformational change in the phosphocholine headgroup. The P--N+ dipole was parallel to the membrane surface in the absence of dye and was rotated with its positive end towards the water phase upon dye insertion. The extent of rotation was, however, much smaller than that induced by other cationic molecules of similar charge, suggesting an alignment of FM1-43 such that the POPC phosphate group is sandwiched by the two quaternary FM1-43 ammonium groups. In such an arrangement the two cationic charges counteract each other in a rotation of the P--N+ dipole. (C) 1998 Elsevier Science B.V. All rights reserved.

Keywords: Lipid Ordering, Thermodynamics, Neuronal Marker Dye, FM1-43, Frog Neuromuscular-Junction, Phospholipid Head Groups, Charge-Shift Probes, Magnetic-Resonance, Lateral Interactions, Phosphatidylcholine, Bilayers, Binding, Headgroup, Conformation

# Title: Biochimica et Biophysica Acta-Enzymolog

Full Journal Title: [Biochimica et Biophysica Acta-Enzymolog*y*](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=11527&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=6a44b30c18e2e9f9cbb6ecc0b1b58a8d)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year: 119

Journal Country/Territory:

Language: English

Publisher: Elsevier Science BV

Publisher Address: PO Box 211, 1000 AE Amsterdam, Netherlands

Subject Categories:

: Impact Factor

Mannervik, B., Jakobson, I. and Warholm, M. (1979), A new procedure to derive weighting factors for nonlinear regression analysis applied to enzyme kinetic data. *Biochimica et Biophysica Acta-Enzymology*, **567** (1), 43-48.

Full Text: [B\Bio Bio Act Enz567, 43.pdf](B/Bio%20Bio%20Act%20Enz567,%2043.pdf)

Abstract: The experimental variance of enzymic steady-state kinetic experiments depends on velocity as approximated by a power function Var(*v*) = *K*1 · *v*α (Askelöf, P., Korsfeldt, M. and Mannervik, B. (1976) Eur. J. Biochem. 69, 61–67). The values of the constants (*K*1, α) can be estimated by making replicate measurements of velocity, and the inverse of the function can then be used as a weighting factor. In order to avoid measurement of a large number of replicates to establish the error structure of a kinetic data set, a different approach was tested. After a preliminary regression using a ‘good model’, which satisfies reasonable goodness-of-fit criteria, the residuals were taken to represent the experimental error. The neighbouring residuals were grouped together and the sum of their mean squared values was used as a measure of the variance in the neighbourhood of the corresponding measurements. The values of the constants obtained in this way agreed with those obtained by replicates.

Keywords: Regression Analysis, Weighting Factor, Variance, Kinetics

# Title: Biochimica et Biophysica Acta-General Subjects

Full Journal Title: [Biochimica et Biophysica Acta-General Subjects](http://www.sciencedirect.com/science/journal/03044165)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Potter, K., Spencer, R.G.S. and McFarland, E.W. (1997), Magnetic resonance microscopy studies of cation diffusion in cartilage. *Biochimica et Biophysica Acta-General Subjects*, **1334** (2-3), 129-139.

Full Text: [1997\Bio Bio Act-Gen Sub1334, 129.pdf](1997/Bio%20Bio%20Act-Gen%20Sub1334,%20129.pdf)

Abstract: The diffusion of copper ions in bovine nasal cartilage (BNC), a dense connective tissue, was investigated to further the understanding of ion transport in charged biopolymer systems. Using an inversion-recovery null-point imaging technique, it was found that the diffusion rate of divalent copper ions into cartilage was significantly lower in normal BNC than in BNC in which the matrix fixed charges had been reduced by enzymatic digestion or acid neutralization. In normal cartilage, counterion diffusion was not well described by a simple Fickian process, likely owing to the high charge density of the constituent molecules. In contrast, in both digested and acid neutralized BNC, counterion diffusion appeared Fickian. Features of the ion transport process were modeled using a diffusion equation which included a linear sorption term to account for cation binding. The diffusion coefficient of copper in cartilage increased with decreasing matrix fixed charge and was constant for reservoir concentrations up to 30 mM. The activation energy for the diffusion of copper into BNC was determined to be 34.5 kJ/mol.

Keywords: Magnetic Resonance Microscopy, Cartilage, Diffusion, Copper, Polyelectrolyte, Cation, Articular-Cartilage, Glassy Polymers, Proteoglycans, Transport, Tension, Forces

# Title: Biochimica et Biophysica Acta-Lipids and Lipid Metabolism

Full Journal Title: [Biochimica et Biophysica Acta-Lipids and Lipid Metabolism](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=4902&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=ac56f5adb526afce3aea0f71828a3ac8)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Gatt, S. and Bartfai, T. (1977), Rate equations and simulation curves for enzymatic-reactions which utilize lipids as substrates. II. Effect of adsorption of substrate or enzyme on steady-state kinetics. *Biochimica et Biophysica Acta-Lipids and Lipid Metabolism*, **448** (1), 13-24.

Full Text: [B\Bio Bio Act-Lip Lip Met448, 13.pdf](B/Bio%20Bio%20Act-Lip%20Lip%20Met448,%2013.pdf)

Abstract: Theoretical aspects of the kinetics of interaction of enzymes with lipid substrates are presented. Rate equations were written and used to simulate *v* versus *S* curves for the following cases: (a) The substrate is adsorbed onto non-catalytic sites of the enzyme or to other proteins accompanying the enzyme, (b) The enzyme is adsorbed, via non-catalytic sites to aggregated forms of the substrate. (c) The substrate is adsorbed onto an externally added protein such as albumin. Although all rate equations are based on the Michaelis-Menten kinetic theory, most of the simulated *v* vs. *S* curves were not hyperbolic and some of the *v* vs. *E* curves not linear.

Kilinc, K. and Rouhani, R. (1992), Cobaltous ion inhibition of lipid-peroxidation in biological-membranes. *Biochimica et Biophysica Acta-Lipids and Lipid Metabolism*, **1125** (2), 189-195.

Full Text: [B\Bio Bio Act-Lip Lip Met1125, 189.pdf](B/Bio%20Bio%20Act-Lip%20Lip%20Met1125,%20189.pdf)

Abstract: The effect of cobalt on lipid peroxidation in biological membranes, phospholipid liposomes and fatty acid micelles was investigated. Cobaltous ion, at micromolar concentrations, inhibited iron-ascorbate induced lipid peroxidation in erythrocyte ghosts. microsomes and phosphatidylserine liposomes at pH 7.4. The pH seemed to bc important for the anti-peroxidative effect of cobalt, because under slightly acidic conditions cobalt did not inhibit peroxidation. Cobalt was less effective in inhibiting peroxidation stimulated by organic hydroperoxides. Iron-ascorbate induced lipid peroxidation was also inhibited by EDTA. However, certain ratios of EDTA: cobalt in the reaction mixture stimulated peroxidation. Cobalt did not inhibit lipid peroxidation in linoleic acid micelles and phosphatidylethanolamine liposomes. The presence of phosphatidylserine, however, rendered these micelles and liposomes to cobalt inhibition. We conclude that the cobaltous ion is a potent inhibitor of lipid peroxidation in biological membranes and that the binding of cobalt to phosphatidylserine is necessary for the inhibitory effect of this metal ion.

Keywords: Cobalt, Lipid Peroxidation, Erythrocyte Membrane, Microsome, Liposome, Micelle, Radical Formation, Chloride, Cancer, Metal, Rats

# Title: Biochimica et Biophysica Acta-Protein Structure and Molecular Enzymology

Full Journal Title: [Biochimica et Biophysica Acta-Protein Structure and Molecular Enzymology](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=4905&_auth=y&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=66ef38c6b4dd63b25c9c887661d80c21)

ISO Abbreviated Title: Biochim. Biophys. Acta-Protein Struct. Molec. Enzym.

JCR Abbreviated Title: Bba-Protein Struct M

ISSN: 0167-4838

Issues/Year: 11

Journal Country/Territory: Netherlands

Language: English

Publisher: Elsevier Science BV

Publisher Address: PO Box 211, 1000 Ae Amsterdam, Netherlands

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 1.687, 175/310 (2000)

Biophysics: Impact Factor 1.687, / (2000)

Notes: IIsotherm

Johnson, R.D. and Arnold, F.H. (1995), The Temkin isotherm describes heterogeneous protein adsorption. *Biochimica et Biophysica Acta-Protein Structure and Molecular Enzymology*, **1247** (2), 293-297.

Full Text: [B\Bio et Bio Act-ProStr Mol Enz1247, 293.pdf](B/Bio%20et%20Bio%20Act-ProStr%20Mol%20Enz1247,%20293.pdf)

Abstract: Here we examine how heterogeneous protein adsorption arises from multivalent interactions with a seemingly homogeneous functional surface. During adsorption, some arrangement of functional groups on the protein (e.g., charged or hydrophobic amino-acid residues or specific ligand binding sites) interacts with complementary sites distributed on the adsorbent surface. The protein will show the highest affinity for the surface arrangements which best match its own distribution of functional sites, resulting in a distribution of binding energies. To support this interpretation, we show that changing the density of affinity ligands on a surface (immobilized metal ions) is equivalent to changing the number of target groups on a protein (surface histidines). We also report that reversible protein adsorption obeys the Temkin isotherm and propose that model as a practical framework for describing the behavior of proteins adsorbing via multivalent interactions onto surfaces densely derivatized with a random distribution of binding functionalities. This result has important implications for the design of separations materials and the interpretation of biological recognition phenomena.

Keywords: Biological Recognition, Heterogeneous Binding, Histidine, Metal Affinity Chromatography, Copper Iminodiacetic Acid, Model, Chromatography, Matrices, Co

# Title: BioCycle

Full Journal Title: BioCycle

ISO Abbreviated Title: BioCycle

JCR Abbreviated Title: BioCycle

ISSN: 0276-5055

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Jg Press, Inc

Publisher Address: 419 State Ave, Emmaus, PA 18049

Subject Categories:

Ecology Agriculture: Impact Factor

Soil Science: Impact Factor

? Spencer, R. (1990), Can a dormant incinerator be recycled. *BioCycle*, **31** (3), 30-34,

Full Text: BioCycle31, 30.pdf

? (1996), Front end diversion at incinerator. *BioCycle*, **37** (1), 24.

Full Text: [1996\BioCycle37, 24.pdf](1996/BioCycle37,%2024.pdf)

(1997), Fungus cleans up incinerator fly ash. *BioCycle*, **38** (1), 14.

Full Text: [B\BioCycle38, 14.pdf](B/BioCycle38,%2014.pdf)

? (1997), North Hempstead, New York: Closed incinerator converted into transfer station. *BioCycle*, **38** (7), 22.

Full Text: [1997\BioCycle38, 22.pdf](1997/BioCycle38,%2022.pdf)

# Title: Biodegradation

Full Journal Title: [Biodegradation](http://www.kluweronline.com/issn/0923-9820/contents)

ISO Abbreviated Title: Biodegradation

JCR Abbreviated Title: Biodegradation

ISSN: 0923-9820

Issues/Year: 6

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor

Mamaril, J.C., Paner, E.T. and Alpante, B.M. (1997), Biosorption and desorption studies of chromium(III) by free and immobilized Rhizobium (BJV r 12) cell biomass. *Biodegradation*, **8** (4), 275-285.

Full Text: [B\Biodegradation8, 275.pdf](B/Biodegradation8,%20275.pdf)

Abstract: Experiments with free cell biomass (cells + exopolysaccharides) of Rhizobium BJV r 12 (mungbean isolate) showed that amount of Cr3+ ion sorbed is influenced by the amount of biomass to Cr3+ concentration ratio and time of contact. A ratio of 0.5 g fresh biomass to 10.0 mi 5.03 ppm Cr3+ sorbed 0.0275 mgCr equivalent to an uptake of 2.86 mgCr g-1 dry biomass and 1.0 g: 10.0 mi sorbed 0.0366 mgCr equivalent to an uptake of 1.9 mgCr g-1 biomass. Immobilized cell biomass in ceramic beads and in aquacel (a porous cellulose carrier with a charged surface) were more efficient than free cell biomass in adsorbing Cr(III). A reduction of 49.7% of Cr(III) for free cells, 95.6% for cells immobilized in ceramic beads and 94.6% for cells in aquacel was achieved after 48 hours under shaken conditions. Sorption capacities of immobilized cell biomass in ceramic beads and aquacel ranged from 5.01 to 5.06 mgCr g-1 dry cell biomass. The biosorption of Cr3+ follows generally the Langmuir and Freundlich models of adsorption at low Cr3+ concentrations. The Langmuir constant for immobilized cells in ceramic beads are: Q0, 0.065 mmol Cr g-1 biomass, b (affinity constant), -6941 mmol-1 Cr and for cells in aquacel Q, 0.07 mmol Cr g-1 biomass, b, -6941 mmol Cr g-1 Cr. The Freundlich constants are: K, 0.071 mmol Cr g-1 biomass, n, 0.13 g-1 biomass l-1 and for aquacel: K, 0.074 mmolg-1 biomass, n, 0.13 g-1 biomass. Biotraps made up of immobilized cells in ceramic beads and aquacel were tested for adsorbing Cr(III) using two different flow rates: 0.5 ml/min and 1.5 ml/min. A significantly higher amount of Cr(III) was adsorbed at the lower flow rate of 0.5 ml/min. Biosorption of Cr3+ is competitive. The treatment of a waste water sample containing 6.03 ppm Cr3+ and other cations with the biomass reduced the Cr3+ concentration to that much lower than for the test solution containing only Cr. Recovery of biosorbed Cr(III) was by treatment at a different pH using dilute HCl solution. Recovery was higher for cells imbibed in ceramic beads than aquacel. Percentage recoveries for cells in aquacel are 46.4% at pH 1.0, 33.0% at pH 3.0 and 6.6% at pH 6.0-7.0. For cells in ceramic beads, percentage recoveries are: 93.1% at pH 1.0, 75.6% at pH 3.0 and 16.4% at pH 6.0-7.0. Biosorption of Cr3+ by cells immobilized in ceramic beads is reversible but only partially for cells in aquacel.

Keywords: Metal-Ions, Polysaccharides, Removal, Biosorption of Cr(III), Biotraps, Desorption, Rhizobium Cells

? Cho, Y.G., Rhee, S.K. and Lee, S.T. (2000), Influence of phenol on biodegradation of p-nitrophenol by freely suspended and immobilized *Nocardioides* sp NSP41. *Biodegradation*, **11** (1), 21-28.

Full Text: [2000\Biodegradation11, 21.pdf](2000/Biodegradation11,%2021.pdf)

Abstract: The effect of the presence of an alternate toxic compound (phenol) on the p-nitrophenol (PNP)-degrading activity of freely suspended and calcium alginate immobilized Nocardioides sp. NSP41 was investigated. In the single substrate experiments, when the concentration of phenol and PNP was increased to 1400 mg l-1 and 400 mg l-1, respectively, the initial cell concentrations in the freely suspended cell culture should be higher than 1.5 g dry cell weight l-1 for complete degradation. In the simultaneous degradation experiment, when the initial concentration of phenol was increased from 100 to 400 mg l-1, the specific PNP degradation rate at the concentration of 200 mg l-1 was decreased from 0.028 to 0.021 h-1. A freely suspended cell culture with a high initial cell concentration resulted in a high volumetric degradation rate, suggesting the potential use of immobilized cells for simultaneous degradation. In the immobilized cell cultures, although simultaneous degradation of PNP and phenol was maintained, the specific PNP and phenol degradation rate decreased. However, a high volumetric PNP and phenol degradation rate could be achieved by immobilization because of the high cell concentration. Furthermore, when the immobilized cells were reused in the simultaneous degradation of PNP and phenol, they did not lose their PNP- and phenol-degrading activity for 12 times in semi-continuous cultures. Taken together, the use of immobilized Nocardioides sp. NSP41 for the simultaneous degradation of PNP and phenol at high concentrations is quite feasible because of the high volumetric PNP and phenol degradation rate and the reusability of immobilized cells.

Keywords: 4-Chlorophenol, Activity, Alginate, Biodegradation, Calcium, Calcium-Alginate, Cell Culture, Cells, Concentration, Concentrations, Culture, Degradation, Degrading Bacterium, Experiment, Immobilization, Kinetics, Nocardioides, P-Nitrophenol, Pentachlorophenol, Phenol, Pimelobacter sp, Pyridine, Simultaneous Degradation, Substrate, Toxic, Waste-Water

Beccari, M., Carucci, G., Lanz, A.M., Majone, M. and Papini, M.P. (2002), Removal of molecular weight fractions of COD and phenolic compounds in an integrated treatment of olive oil mill effluents. *Biodegradation*, **13** (6), 401-410.

Full Text: [B\Biodegradation13, 401.pdf](B/Biodegradation13,%20401.pdf)

Abstract: Previous works (Beccari et al. 1999b, Beccari et al. 2001a, Beccari et al. 2001b) on the anaerobic treatment of olive oil mill effluents (OME) have shown: (a) a pre-treatment based on the addition of Ca(OH)2 and bentonite was able to remove lipids (i.e. the most inhibiting substances present in OME) almost quantitatively, (b) the mixture OME-Ca(OH)2-bentonite, fed to a methanogenic reactor without providing an intermediate phase separation, gave way to high biogas production even at very low dilution ratios, (c) the effluent from the methanogenic reactor still contained significant concentrations of residual phenolic compounds (i.e. the most biorecalcitrant substances present in OME). Consequently, this paper was aimed at evaluating the fate of the phenolic fractions with different molecular weights during the sequence of operations (adsorption on bentonite, methanogenic digestion, activated sludge post-treatment). The results show that a very high percentage (above 80%) of the phenolic fraction below 500 D is removed by the methanogenic process whereas the phenolic fractions above 1,000 D are significantly adsorbed on bentonite, the 8-day activated sludge post-treatment allows an additional removal of about 40% of total filtered phenolic compounds. The complete sequence of treatments was able to remove more than the 96% of the phenolic fraction below 500 D (i.e. the most toxic fraction towards plant germination). Preliminary respirometric tests show low level of inhibition exerted by the effluent from the methanogenic reactor on aerobic activated sludges taken from full-scale municipal wastewater plants.

Keywords: Olive Oil Mill Effluent, Bentonite, Adsorption, Anaerobic Digestion, Aerobic Post-Treatment, Anaerobic-Digestion, Waste-Water, Treatability, Pretreatment, Separation

? Huang, L.Z., Zeng, G.M., Huang, D.L., Li, L.F., Huang, P.M. and Xia, C.B. (2009), Adsorption of lead(II) from aqueous solution onto *Hydrilla verticillata*. *Biodegradation*, **20** (5), 651-660.

Full Text: [2009\Biodegradation20, 651.pdf](2009/Biodegradation20,%20651.pdf)

Abstract: The adsorption of Pb(II) onto Hydrilla verticillata was examined in aqueous solution with parameters of pH, adsorbent dosage, contact time and temperature. The linear Langmuir and Freundlich models were applied to describe equilibrium isotherms, and both models fitted well. The monolayer adsorption capacity of Pb(II) was found as 104.2 mg, g at pH 4 and 25°C. Dubinin-Radushkevich (D-R) isotherm model was also applied to the equilibrium data. The mean free energy of adsorption (15.81 kJ, mol) indicated that the adsorption of Pb(II) onto H. verticillata may be carried out via chemical ion-exchange mechanism. Thermodynamic parameters, free energy (ΔG°), enthalpy (ΔH°) and entropy (ΔS°) of adsorption were also calculated. These parameters showed that the adsorption of Pb(II) onto H. verticillata was a feasible, spontaneous and exothermic process in nature. The influence of Cd2+, Cu2+ and Ni2+ on adsorption of Pb2+ onto H. verticillata was studied, too. In the investigated range of operating conditions, it was found that the existence of Cd2+, Cu2+ and Ni2+ had no impact on the adsorption of Pb2+.

Keywords: Adsorbent, Adsorbent Dosage, Adsorption, Adsorption Capacity, Adsorption Isotherm, Aqueous Solution, Biomass, Biosorption, Cadmium(II), Capacity, Cd, Cd2+, Chemical, Cu, Cu2+, Data, Energy, Enthalpy, Entropy, Equilibrium, Equilibrium Isotherms, Exothermic, Filtration, Freundlich, Heavy-Metal Removal, Hydrilla Verticillata, Impact, Ion Exchange, Ion-Exchange, Ionexchange, Ions, Isotherm, Isotherm Model, Isotherms, Langmuir, Lead(II), Mechanism, Model, Models, Monolayer, Ni2+, Operating Conditions, Pb(II), Pb2+, pH, Solution, Sorption, Temperature, Thermodynamic, Thermodynamic Parameters, Thermodynamics, Waste

? Basha, S., Jaiswar, S. and Jha, B. (2010), On the biosorption, by brown seaweed, *Lobophora variegata*, of Ni(II) from aqueous solutions: Equilibrium and thermodynamic studies. *Biodegradation*, **21** (5), 661-680.

Full Text: [2010\Biodegradation21, 661.PDF](2010/Biodegradation21,%20661.PDF)

Abstract: The biosorption equilibrium isotherms of Ni(II) onto marine brown algae Lobophora variegata, which was chemically-modified by CaCl2 were studied and modeled. To predict the biosorption isotherms and to determine the characteristic parameters for process design, twenty-three one-, two-, three-, four- and five-parameter isotherm models were applied to experimental data. The interaction among biosorbed molecules is attractive and biosorption is carried out on energetically different sites and is an endothermic process. The five-parameter Fritz-Schluender model gives the most accurate fit with high regression coefficient, R (2) (0.9911-0.9975) and F-ratio (118.03-179.96), and low standard error, SE (0.0902-0.0.1556) and the residual or sum of square error, SSE (0.0012-0.1789) values to all experimental data in comparison to other models. The biosorption isotherm models fitted the experimental data in the order: Fritz-Schluender (five-parameter) > Freundlich (two-parameter) > Langmuir (two-parameter) > Khan (three-parameter) > Fritz-Schluender (four-parameter). The thermodynamic parameters such as ΔG(0), ΔH(0) and ΔS(0) have been determined, which indicates the sorption of Ni(II) onto L. variegata was spontaneous and endothermic in nature.

Keywords: Activated Carbon, Algae, Aqueous Solutions, Biosorption, Biosorption Isotherm, Biosorption Isotherms, Chlorella-Vulgaris, Comparison, Data, Design, Endothermic, Equilibrium, Equilibrium Isotherms, Error, Experimental, Freundlich, Heavy-Metal Biosorption, Interaction, Isotherm, Isotherm Models, Isotherm Models, Isotherms, Langmuir, Lobophora Variegata, Marine Macroalgae, Model, Models, *Myriophyllum-spicatum*, Ni(II), Nickel, Nickel(II) Ions, Organic Solutes, Potential-Theory, Process Design, Regression, *Sargassum-wightii*, Se, Seaweed, Solutions, Sorption, Standard, Thermodynamic, Thermodynamic Parameters, Thermodynamic Studies, Thermodynamics

? Rajeshkannan, R., Rajasimman, M. and Rajamohan, N. (2010), Optimization, equilibrium and kinetics studies on sorption of Acid Blue 9 using brown marine algae Turbinaria conoides. *Biodegradation*, **21** (5), 713-727.

Full Text: [2010\Biodegradation21, 713.PDF](2010/Biodegradation21,%20713.PDF)

Abstract: In the present study, the parameters, temperature, adsorbent dose, contact time, adsorbent size and agitation speed were optimized for Acid Blue 9 removal from aqueous medium by using response surface methodology (RSM). The optimum conditions for maximum removal of Acid Blue 9 from an aqueous solution of 100 mg/l were found as follows: temperature (33AºC), adsorbent dose (3 g/l), contact time (225 min), adsorbent size (85 mesh (0.177 mm)) and agitation speed (226 rpm). At these optimized conditions, batch adsorption experiments were conducted to study the effect of pH and initial dye concentration for the removal Acid Blue 9 dye. Kinetic and equilibrium studies were carried out for the experimental results. From the kinetic studies it was found that pseudo second order model suits the system well. From the equilibrium studies, the Freundlich and Redlich-Peterson isotherm fit the data well.

Keywords: Acid Blue 9, Adsorbent, Adsorbent Dose, Adsorbents, Adsorption, Agitation, Algae, Aqueous Medium, Aqueous Solution, Aqueous-Solutions, Basic Dye, Batch, Batch Adsorption, Biosorption, Concentration, Data, Dye, Equilibrium, Equilibrium Studies, Experimental, Experiments, Freundlich, Isotherm, Kinetic, Kinetic Studies, Kinetics, Malachite Green, Marine Algae, Methodology, Model, Optimization, pH, Phanerochaete-Chrysosporium, Pseudo Second Order, Pseudo-Second-Order, Redlich-Peterson, Removal, Response Surface Methodology, Rice-Husk, Second Order, Second-Order, Size, Solution, Sorption, Surface, Temperature, Textile Dye Effluent, Turbinaria Conoides

# Title: Biodiversity and Conservation

Full Journal Title: Biodiversity and Conservation

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Liu, X.J., Zhang, L.A. and Hong, S. (2011), Global biodiversity research during 1900-2009: A bibliometric analysis. *Biodiversity and Conservation*, **20** (4), 807-826.

Full Text: [2011\Bio Con20, 807.pdf](2011/Bio%20Con20,%20807.pdf)

Abstract: We performed a bibliometric analysis of published biodiversity research for the period of 1900-2009, based on the Science Citation Index (SCI) database. Our analysis reveals the authorial, institutional, spatiotemporal, and categorical patterns in biodiversity research and provides an alternative demonstration of research advancements, which may serve as a potential guide for future research. The growth of article outputs has exploded since the 1990s, along with an increasing collaboration index, references, and citations. Ecology, environmental sciences, biodiversity conservations, and plant science were most frequently used subject categories in biodiversity studies, and Biological Conservation, Journal of Soil and Water Conservation, Conservation Biology and Biodiversity and Conservation were most active journals in this field. The United States was the largest contributor in global biodiversity research, as the U.S. produced the most single-country and collaborative articles, had the greatest number of top research institutions, and had a central position in collaboration networks. We perceived an increasing number of both internationally collaborative and inter-institutionally collaborative articles, with the latter form of collaboration being more prevalent than the former. A keyword analysis found several interesting terminology preferences, confirmed conservation’s central position as a topic in biodiversity research, revealed the adoption of advanced technologies, and demonstrated keen interest in both the patterns and underlying processes of ecosystems. Our study reveals patterns in scientific outputs and academic collaborations and serves as an alternative and innovative way of revealing global research trends in biodiversity.

Keywords: Adoption, Alternative, Analysis, Bibliometric, Bibliometric Analysis, Bibliometrics, Biodiversity, Biology, Citation, Citations, Collaboration, Collaboration Networks, Collaborations, Consequences, Conservation, Conservation, Database, Ecology, Ecosystems, Environmental, Field, Genetic Diversity, Global, Growth, Index, Institutions, Journal, Journals, Networks, Patterns, Plant, Potential, References, Research, Research Trends, Research Trends, SCI, Science, Science Citation Index, Sciences, Scientific Outputs, Soil, Species-Diversity, Technologies, Terminology, Threats, Trends, Tropical Forest, United States, Water

# Title: Bioelectrochemistry

Full Journal Title: [Bioelectrochemistry](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6614&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=44c1cb79f746714deb64896ca8274884)

ISO Abbreviated Title: Bioelectrochemistry

JCR Abbreviated Title: Bioelectrochemistry

ISSN: 0302-4598

Issues/Year: 4

Journal Country/Territory: Switzerland

Language: English

Publisher: Elsevier Science SA

Publisher Address: PO Box 564, 1001 Lausanne, Switzerland

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 1.096, / (2001)

Biology, Miscellaneous: Impact Factor 1.096, / (2001)

Biophysics: Impact Factor 1.096, / (2001)

(1999), A Bibliometric Survey of Volumes 1 - 48. *Bioelectrochemistry*, **50** (1-2), 1-17.

Full Text: [B\Bioelectrochemistry, 50, 1.pdf](B/Bioelectrochemistry,%2050,%201.pdf)

# Title: Bioelectrochemistry and Bioenergetics

Full Journal Title: [Bioelectrochemistry and Bioenergetics](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5219&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=8d95b345b5b76b24d3dff17f7667173d)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0302-4598

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

(1999), A bibliometric survey of volumes 1-48. *Bioelectrochemistry and Bioenergetics*, **50** (1), 1-17.

Full Text: [B\Bioe Bio50, 1.pdf](B/Bioe%20Bio50,%201.pdf)

? (1999), Bioelectrochemistry and Bioenergetics: Citation-based bibliography, 1975-1998. *Bioelectrochemistry and Bioenergetics*, **50** (1-2), 19-213.

Full Text: [B\Bioe Bio50, 19.pdf](B/Bioe%20Bio50,%2019.pdf)

# Title: Bioelectromagnetics

Full Journal Title: [Bioelectromagnetics](http://www3.interscience.wiley.com/cgi-bin/jtoc?ID=34135)

ISO Abbreviated Title: Bioelectromagnetics

JCR Abbreviated Title: Bioelectromagnetics

ISSN: 0197-8462

Issues/Year: 8

Journal Country/Territory: United States

Language: English

Publisher: Wiley-Liss

Publisher Address: Div John Wiley & Sons Inc, 605 Third Ave, New York, NY 10158-0012

Subject Categories:

Biology, Miscellaneous Biophysics: Impact Factor

? Wertheimer, N., Savitz, D.A. and Leeper, E. (1995), Childhood cancer in relation to indicators of magnetic fields from ground current sources. *Bioelectromagnetics*, **16** (2), 86-96.

Abstract: This study examines childhood cancer risk in relation to certain factors likely to indicate magnetic field exposure from ground currents in the home. Substantial ground currents are most often found in homes having conductive plumbing, in which an uninterrupted metallic path in the water pipes and water main connects the grounding systems of neighboring houses. Information on plumbing conductivity was obtained from water suppliers for the homes of 347 cases and 277 controls identified in an earlier study of magnetic field exposure and childhood cancer in the Denver area. An increased cancer risk was observed for children in homes with conductive plumbing: The matched odds ratio was 1.72 (1.03-2.88) and increased to 3.00 (1.33-6.76) when analysis was limited to cases and controls who were residentially stable from the reference date to the study date. A measurement metric likely to indicate active ground currents (measurements having above-median intensity and a nonvertical orientation of < 55 degrees from the horizontal) was identified. In contrast to measured field intensity alone, for which only modest associations with cancer have been reported, this metric shows a high and significant cancer risk [matched O.R. = 4.0 (1.6-10.0)] consistent over a range of intensity and angle cutpoints. Such elevated nonvertical fields were also associated with cancer in an independent data set, which was gathered to study adult nonlymphocytic leukemia in the Seattle area. The associations of cancer with conductive plumbing and with this exposure metric both suggest that cancer risk is increased among persons with elevated magnetic field exposure from residential ground currents.

# Title: Bioessays

Full Journal Title: [Bioessays](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1521-1878/issues)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Finch, A. (2010), Can we do better than existing author citation metrics? *Bioessays*, **32** (9), 744-747.

Full Text: [2010\Bioessays32, 744.pdf](2010/Bioessays32,%20744.pdf)

Keywords: Author, Bibliometrics, Citation, Citations, Google-Scholar, h-Index, h-Index, Journal Impact Factor, Science, Scopus, Snip, Variants, Web

# Title: Bioethics

Full Journal Title: Bioethics

ISO Abbreviated Title: Bioethics

JCR Abbreviated Title: Bioethics

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Anekwe, T.D. (2010), Profits and plagiarism: The case of medical ghostwriting. *Bioethics*, **24** (6), 267-272.

Full Text: [2010\Bioethics24, 267.pdf](2010/Bioethics24,%20267.pdf)

Abstract: This paper focuses on medical ghostwriting in the United States. I argue that medical ghostwriting often involves plagiarism and, in those cases, can be treated as an act of research misconduct by both the federal government and research institutions. I also propose several anti-ghostwriting measures, including: 1) journals should implement guarantor policies so that researchers may be better held accountable for their work; 2) research institutions and the federal government should explicitly prohibit medical ghostwriting and outline appropriate penalties; and 3) a publicly available database should be created to record researchers’ ethics violations.

Keywords: Articles, Ethics, Ghostwriting, Honorary Authors, Industry, Journals, Medical Ethics, Pharmaceutical Companies, Pharmaceutical Companies, Plagiarism, Policies, Public Health, Research, Research Misconduct

? Schüklenk, U. (2011), Publishing bioethics and *Bioethics*- Reflections on academic publishing by a journal editor. *Bioethics*, **25** (2), 57-61.

Full Text: [2011\Bioethics25, 57.pdf](2011/Bioethics25,%2057.pdf)

Abstract: This article by one of the Editors of Bioethics, published in the 25th anniversary issue of the journal, describes some of the revolutionary changes academic publishing has undergone during the last decades. Many humanities journals went from typically small print-runs, counting by the hundreds, to on-line availability in thousands of university libraries worldwide. Article up-take by our subscribers can be measured efficiently. The implications of this and other changes to academic publishing are discussed. Important ethical challenges need to be addressed in areas such as the enforcement of plagiarism-related policies, the so-called ‘impact factor’ and its impact on academic integrity, and the question of whether on-line only publishing can currently guarantee the integrity of academic publishing histories.

Keywords: Academic Integrity, Digital Publishing, Impact Factor, Journal, Journals, Plagiarism, Policies, Publication Ethics, Publishing

# Title: Biofizika

Full Journal Title: Biofizika

ISO Abbreviated Title: Biofizika

JCR Abbreviated Title: Biofizika

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Bulatov, D.S. (1974), Isotherm curves of water sorption by proteins - Estimation by means of infrared technique. *Biofizika*, **19** (3), 443-446.

? Bobrovnik, S.A. and Mendzhul, M.I. and Lisenko, T.G. (1978), Kinetics, mechanism and thermodynamics of cyanophage A-1 adsorption on cells of algae-host. *Biofizika*, **23** (3), 489-493.

# Title: Biofouling

Full Journal Title: Biofouling

ISO Abbreviated Title: Biofouling

JCR Abbreviated Title: Biofouling

ISSN: 0892-7014

Issues/Year: 4

Journal Country/Territory: England

Language: English

Publisher: Harwood Acad Publ Gmbh

Publisher Address: C/O Stbs Ltd, Po Box 90, Reading RG1 8JL, Berks, England

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 1.828, / (2000)

Marine & Freshwater Biology: Impact Factor 1.828, / (2000)

? Gaylarde, C.C. and Morton, L.H.G. (1999), Deteriogenic biofilms on buildings and their control: A review. *Biofouling*, **14** (1), 59-74.

Full Text: [1999\Biofouling14, 59.pdf](1999/Biofouling14,%2059.pdf)

Abstract: Concrete, stone, brick, plaster, wood, plastic, painted surfaces and metal are all colonised by bacteria, algae and fungi which accelerate their deterioration. The mechanisms of deterioration, the main microbial genera involved and factors which may affect the degree of colonisation and attack are discussed. The chief factor determining microbial growth on constructional materials is moisture. Thus it is important for architects and engineers to consider critical points in the humidity profile of a building at the design stage. Damp surfaces are readily colonised by microbial cells settling from the air. This leads to the formation of a biofilm, which can trap dust and other particulate materials, increasing its disfiguring effect. In addition, the biofilm can act as a reservoir for potentially dangerous microorganisms such as the bacteria responsible for legionnaires’ disease and allergenic fungal and actinomycete spores. Materials may be protected against microbial growth by the use of biocides. The use of such toxic agents is critically reviewed.

Keywords: Algae, Bacteria, Biocides, Biofilms, Constructional Materials, Fungi, Blue-Green-Algae, *Legionella*-*Pneumophila*, Localized Corrosion, Bacterial Decay, Fungal Strains, Drinking-Water, Cooling-Tower, Wood, Biodeterioration, Cyanobacteria

# Title: Biofutur

Full Journal Title: [Biofutur](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6126&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=1dab155b247f6aa3a973d5ca10f3a6e9)

ISO Abbreviated Title: Biofutur

JCR Abbreviated Title: Biofutur

ISSN: 0294-3506

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Filliatreau, G. (2003), Life sciences in France: Elements of a bibliometric analysis. *Biofutur*, **232**, 43-49.

Full Text: Biofutur232, 43.pdf

Keywords: Bibliometric, Bibliometric Analysis, Sciences

# Title: Biogeochemistry

Full Journal Title: Biogeochemistry

ISO Abbreviated Title: Biogeochemistry

JCR Abbreviated Title: Biogeochemistry

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Notes: highly cited

? Vitousek, P.M. and Howarth, R.W. (1991), Nitrogen limitation on land and in the sea: How can it occur. *Biogeochemistry*, **13** (2), 87-115.

Full Text: [1991\Biogeochemistry13, 87.pdf](1991/Biogeochemistry13,%2087.pdf)

Abstract: The widespread occurrence of nitrogen limitation to net primary production in terrestrial and marine ecosystems is something of a puzzle; it would seem that nitrogen fixers should have a substantial competitive advantage wherever nitrogen is limiting, and that their activity in turn should reverse limitation. Nevertheless, there is substantial evidence that nitrogen limits net primary production much of the time in most terrestrial biomes and many marine ecosystems. We examine both how the biogeochemistry of the nitrogen cycle could cause limitation to develop, and how nitrogen limitation could persist as a consequence of processes that prevent or reduce nitrogen fixation. Biogeochemical mechansism that favor nitrogen limitation include: the substantial mobility of nitrogen across ecosystem boundaries, which favors nitrogen limitation in the “source” ecosystem - especially where denitrification is important in sediments and soils, or in terrestrial ecosystems where fires is frequent; differences in the biochemistry of nitrogen as opposed to phosphorus (with detrital N mostly carbon-bonded and detrital P mostly ester-bonded), which favor the development of nitrogen limitation where decomposition is slow, and allow the development of a positive feedback from nitrogen limitation to producers, to reduced decomposition of their detritus, and on to reduced nitrogen availability; and other more specialized, but perhaps no less important, processes. A number of mechanisms could keep nitrogen fixation from reversing nitrogen limitation. These include: energetic constraints on the colonization or activity of nitrogen fixers; limitation of nitrogen fixers or fixation by another nutrient (phosphorus, molybdenum, or iron) - which would then represent the ultimate factor limiting net primary production; other physical and ecological mechanisms. The possible importance of these and other processes is discussed for a wide range of terrestrial, freshwater, and marine ecosystems.

Keywords: Availability, Biochemistry, Biogeochemistry, Boundaries, Colonization, Competitive, Decomposition, Denitrification, Development, Ecosystem, Ecosystems, Energetic Constraints, Evidence, Forest Ecosystems, Fresh-Water, Freshwater, Iron, Leaf Litter Decomposition, Limitation, Marine Ecosystems, Mechanisms, Mobility, Molybdenum, N, N-2 Fixation, Net Primary Production, Nitrogen, Nitrogen Cycle, Nitrogen Fixation, Nutrient, Nutrient Limitation, Organic-Matter, P, Phosphorus, Phosphorus Limitation, Physical, Phytoplankton Growth, Primary, Primary Production, Seagrass Syringodium-Filiforme, Sediments, Soils, Succession, Trace Elements

# Title: Biohydrometallurgical Technologies

The Minerals, Metals & Materials Society: Warrendale, PA

? Brierley, C.L. and Brierley, J.A. (1993), Immobilisation of biomass for industrial application of biosorption. in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 35.

? Stuetz, R.M., Madgwick, J.C. and Gee, A.R. (1993), Immobilisation of biomass for industrial application of biosorption*.* in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 85.

? Cotoras, D., Viedma, P. and Pimentel, J. (1996), Biosorption of metal ions by attached bacterial cells in a packed-bed bioreactor*.* in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 103.

? Mattuschka, B., Junghaus, K. and Straube, G. (1993), biosorption of metals by waste biomass. in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 125.

? Paknikar, K.M., Palnitkar, U.S. and Puranik, P.R. (1993), Biosorption of metals from solution by mycelial waste of *Penicillium Chrysogenum*. in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 229.

? Brady, K.D. and Duncan, J.R. (1993), Bioaccumulation of metal cations by saccharomyces cerevisiae. in *Biohydrometallurgical Technologies*, (Edited by Torma, A.E., Apel, M.L. and Breierley, C.L.), The Minerals, Metals & Materials Society: Warrendale, PA, 711.

# Title: Bioinformatics

Full Journal Title: [Bioinformatics](http://bioinformatics.oupjournals.org/)

ISO Abbreviated Title: Bioinformatics

JCR Abbreviated Title: Bioinformatics

ISSN: 1367-4803

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Bogusk, M.S. (1998), Bioinformatics - a new era. *Bioinformatics*, Suppl. S, 1-3.

Full Text: [B\Bioinformatics, 1.pdf](B/Bioinformatics,%201.pdf)

Keywords: Sequence

Wada, A. (2000), Bioinformatics - The necessity of the quest for ‘first principles’ in life. *Bioinformatics*, **16** (8), 663-664.

Full Text: [B\Bioinformatics16, 663.pdf](B/Bioinformatics16,%20663.pdf)

? Errami, M., Sun, Z.H., George, A.C., Long, T.C., Skinner, M.A., Wren, J.D. and Garner, H.R. (2010), Identifying duplicate content using statistically improbable phrases. *Bioinformatics*, **26** (11), 1453-1457.

Full Text: [2010\Bioinformatics26, 1453.pdf](2010/Bioinformatics26,%201453.pdf)

Abstract: Motivation: Document similarity metrics such as PubMed’s ‘Find related articles’ feature, which have been primarily used to identify studies with similar topics, can now also be used to detect duplicated or potentially plagiarized papers within literature reference databases. However, the CPU-intensive nature of document comparison has limited MEDLINE text similarity studies to the comparison of abstracts, which constitute only a small fraction of a publication’s total text. Extending searches to include text archived by online search engines would drastically increase comparison ability. For large-scale studies, submitting short phrases encased in direct quotes to search engines for exact matches would be optimal for both individual queries and programmatic interfaces. We have derived a method of analyzing statistically improbable phrases (SIPs) for assistance in identifying duplicate content. Results: When applied to MEDLINE citations, this method substantially improves upon previous algorithms in the detection of duplication citations, yielding a precision and recall of 78.9% (versus 50.3% for eTBLAST) and 99.6% (versus 99.8% for eTBLAST), respectively.

Keywords: Citations, Databases, Deja-VU, Iceberg, Journals, Literature, Medline, Papers, Plagiarism, Publications, Surgery, Tip

# Title: Bioinorganic Chemistry and Applications

Full Journal Title: Bioinorganic Chemistry and Applications

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1565-3633

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Gardea-Torresdey, J.L., Contreras, C., de la Rosa, G. and Peralta-Videa, J.R. (2005), Flow rate and interference studies for copper binding to a silica-immobilized humin polymer matrix: Column and batch experiments. *Bioinorganic Chemistry and Applications*, **3** (1-2), 1-14.

Abstract: Batch and column experiments were performed to determine the Cu(II) binding capacity of silica-immobilized humin biomass. For column studies, 500 bed volumes of a 0.1mM Cu(II) solution were passed through humin packed columns at the flow rates of 1, 1.5, 2, and 3 mL/min. The biopolymer showed an average Cu binding capacity of 12±1.5 mg/g and a Cu recovery of about 96.5 %±1.5. The breakthrough points for Cu(II) alone were approximately 420, 390, 385, and 300 bed volumes for the flow rates of 1, 1.5, 2 and 3 mL/min, respectively. The interference studies demonstrated that at low concentrations, the hard cations Ca(II) and Mg(II) did not seem to represent a major interference on Cu(II) binding to the humin biopolymer. The selectivity showed by this biopolymer was Cu(II)>Ca(II)>Mg.(II). On the other hand, batch experiments showed that Ca(II) + Mg(II) at 100mM each reduced the Cu(II) binding to 73 %. However, 1000 mM concentrations of Ca(II) and Mg(II), separately and in mixture, reduced the Cu(II) binding to 47 %, 44 %, and 31 %, respectively. The results of this study showed that immobilized humin in a silica matrix could represent an inexpensive bio-source for Cu removal from contaminated water, even in the presence of low concentrations of the hard cations Ca(II) and Mg(II).

Keywords: Humin-Silica Biopolymer, Packed-Bed Column, Heavy Metals, Removal, Copper, Hard Cations,Heavy-Metals, Waste-Water, Adsorption, Removal, Moss, Ions, Fractions, Biomass, Cu(II), Carbon

? Romero-Gonzalez, J., Gardea-Torresdey, J.L., Peralta-Videa, J.R. and Rodriguez, E. (2005), Determination of equilibrium and kinetic parameters of the adsorption of Cr(III) and Cr(VI) from aqueous solutions to Agave Lechuguilla biomass. *Bioinorganic Chemistry and Applications*, **3** (1-2), 55-68.

Abstract: This investigation reveals the capability of Agave lechuguilla for trivalent and hexavalent chromium removal from aqueous solutions. Experimentation included pH profile, time dependence, adsorption capacity (K-F and Q(L)), adsorption intensity (n and R-L) and saturation capacity (q(s)) studies. Batch experiments were conducted at 22°C to characterize and model the adsorption equilibrium as well as biomass adsorption rates. pH 4 was the optimum for Cr(III) binding, while Cr(VI) optimum binding was at pH 2. Time profile experiments indicated that the adsorption of Cr(VI) by lechuguilla biomass was time-dependent and that of Cr(III) was not. Kinetic models demonstrated that a pseudo-second order reaction model best described the kinetic data for Cr(VI). The adsorption isotherms showed that the binding pattern for Cr(VI) followed the Freundlich isotherm model, while that for Cr(III) followed the Langmuir isotherm.

Keywords: adsorption, Cr(III), Cr(VI), Kinetic, Equilibrium, Lechuguilla, Trivalent Chromium, Waste-Water, Metal-Ions, Removal, Biosorption, Adsorbents, Speciation, Reduction, Recovery, Binding

# Title: Biological Degradation of Wastes

Elsever Applied Science, London and New York

Tyagi, R.D. and Couillard, D. (1991), An innovative biological process for heavy metals removal from municipal sludge. in *Biological Degradation of Wastes*, (Edited by Martin, A.M.), Elsever Applied Science, London and New York, 307-322.

Martin, A.M. (1991), Peat as agent in biological degradation: Peat biofilters. in *Biological Degradation of Wastes*, (Edited by Martin, A.M.), Elsever Applied Science, London and New York, 341-362.

# Title: Biological Invasions

Full Journal Title: Biological Invasions

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Esler, K.J., Prozesky, H., Sharma, G.P. and McGeoch, M. (2010), How wide is the “knowing-doing” gap in invasion biology? *Biological Invasions*, **12** (12), 4065-4075.

Full Text: [2010\Bio Inv12, 4065.pdf](2010/Bio%20Inv12,%204065.pdf)

Abstract: Invasion biology is a growing discipline with clear ecological, social and economic implications. A wide range of research effort is thus required to address the invasion problem, and literature on the topic is extensive. However, the extent to which the invasion biology research is addressing the challenges associated with management and mitigation of the impacts of invasions has been questioned. Using bibliometric analysis, we investigated the extent to which the literature on the subject contributes to implementation of knowledge generated, by addressing aspects of management, policy, and/or implementation; the impact of these papers as indicated by the number of citations they attract; and the geopolitical scale of focus of invasion ecology papers, particularly those that attempt to bridge the knowing-doing gap. We then compared these findings with the information needs of conservation practitioners. We first looked globally at popular search engines and then narrowed our focus to South Africa-one of three regions outside USA where researchers producing highly cited papers in invasion ecology are well represented. At this level, we conducted a content analysis of invasion ecology-related papers, of which at least one author was affiliated to a South African institution. The knowledge base in the field of invasion biology is comprised largely of research oriented towards “knowing”, while research aimed at strategically applying or implementing that knowledge is poorly represented in the scientific literature, and the scale of its emphasis is not local. Conservation practitioners clearly indicate a need for basic knowledge. However, invasion science must develop channels for effective engagement to ensure that the research is contextualised, and will deal with the complex ecological, social and economic challenges posed by invasions.

Keywords: Alien Plants, Analysis, Bibliometric, Bibliometric Analysis, Biodiversity, Biological Invasion, Biology, Bridge, Citations, Conservation, Conservation Practitioners, Content Analysis, Ecology, Economic, Economic Implications, Engagement, Field, First, Impact, Impacts, Implementation, Information, Interdisciplinary Research, Knowledge, Knowledge Base, Literature, Local, Management, Management, Mitigation, Needs, Papers, Policy, Policy-Makers, Research, Restoration, Scale, Science, Scientific Literature, Si, Social, South-Africa, USA

# Title: Biological Journal of the Linnean Society

Full Journal Title: [Biological Journal of the Linnean Society](http://ap.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=00244066)

ISO Abbreviated Title: Biol. J. Linnean Soc.

JCR Abbreviated Title: Biol J Linn Soc

ISSN: 0024-4066

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Academic Press Ltd

Publisher Address: 24-28 Oval Rd, London NW1 7DX, England

Subject Categories:

Evolutionary Biology: Impact Factor 2.308, 15/30 (2001)

? Kirby, K.J., Thomas, R.C., Key, R.S., Mclean, I.F.G. and Hodgetts, N. (1995), Pasture woodland and its conservation in Britain. *Biological Journal of the Linnean Society*, **56** (S), 135-153.

Full Text: Bio J Lin Soc56, 135

Abstract: Pasture-woodland occurs as a wide range of types in Britain. It is particularly important for nature conservation in terms of its lichen, invertebrate and bird populations and also for bat roosts and probably fungi. Its interest tends to complement that of coppice woods, the other major form in which ancient semi-natural woodland has survived. Pasture-woodland (including pollard trees) is widespread in Europe, but British examples of international importance have been identified. It is under threat from over-grazing and consequent lack of regeneration, but also some of its characteristic species may be lost if grazing is removed altogether. The lichen component of pasture-woodland is particularly sensitive to air pollution, while removal of fallen dead wood and felling of old trees may damage the invertebrate interest. There is a major need to produce site inventories and descriptions, to raise awareness of the special value of pasture-woodland and to implement more widely the site management techniques that are being used successfully on a number of key sites at present. The isolation of many sites cannot be reduced in the short term, but in general terms old trees in the countryside must not be allowed to diminish further.

Keywords: Management, Europe, UK, Dead Wood, Old Trees, British, Forest, England

? Sundberg, P. and Strand, M. (2009), Taxonomic inflation or taxonomist deflation? A comment on Dubois. *Biological Journal of the Linnean Society*, **96** (3), 712-714.

Full Text: [2009\Bio J Lin Soc96, 712.pdf](2009/Bio%20J%20Lin%20Soc96,%20712.pdf)

Abstract: In a recent article, Dubois (2008) discussed the problem of an increasing number of taxonomic names and the load of synonymies. Dubios recognized three reasons for an increasing number of species description: one comprising unwarranted descriptions in an effort to increase citations. We discuss this aspect, arguing that although new names may increase the prestige of the taxonomist, few journals actually put authors of taxonomic names in the reference lists and hence it does not affect citation figures. This practice instead deflates the importance of taxonomic work in a world with increasing bibliometric evaluations of research output. (C) 2009 The Linnean Society of London, Biological Journal of the Linnean Society, 2009, 96, 712-714.

Keywords: Affect, Authors, Bibliometric, Bibliometry, Citation, Citations, Effort, Inflation, Journals, Load, Mar, Practice, Problem, Reference, Reference Lists, Research, Species, Species Description, Work, World

# Title: Biological Psychiatry

Full Journal Title: [Biological Psychiatry](http://www.sciencedirect.com/science/journal/00063223)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Notes: highly cited

? Ulett, G.A., Han, S.P. and Han, J.S. (1998), Electroacupuncture: Mechanisms and clinical application. *Biological Psychiatry*, **44** (2), 129-138.

Full Text: [1998\Bio Psy44, 129.pdf](1998/Bio%20Psy44,%20129.pdf)

Abstract: Acupuncture is an ancient Chinese method to treat diseases and relieve pain. We have conducted a series of studies to examine the mechanisms of this ancient method far pain relief This article reviews some of our major findings. Our studies showed that acupuncture produces analgesic effect and that electroacupuncture (EA) is more effective than manual acupuncture. Furthermore, electrical stimulation via skin patch electrodes is as effective as EA. The induction and recovering profiles of acupuncture analgesia suggest the involvement of humoral factors. This notion was supported by cross-perfusion experiments in which acupuncture-induced analgesic effect was transferred from the donor rabbit to the recipient rabbit when the cerebrospinal fluid (CSF) was transferred. The prevention of EA-induced analgesia by naloxone and by antiserum against endorphins suggests that endorphins are involved. More recent work demonstrated the release of endorphins into CSF following EA. In addition, low frequency (2 Hz) and high frequency (100 Hz) of EA selectively induces the release of enkephalins and dynorphins in both experimental animals and humans. Clinical studies suggesting its effectiveness for the treatment of various types of pain, depression, anxiety, spinally induced muscle spasm, stroke, gastrointestinal disorders, and drug addiction were also discussed. Biol Psychiatry 1998;44:129-138 (C) 1998 Society of Biological Psychiatry.

Keywords: Acupuncture Analgesia, Drug Addiction, Endorphins, Nociception, Opioids, Pain, Neuroelectric Stimulation, Electrical Nerve-Stimulation, Acupuncture, Frequencies, Endorphin, Analgesia, Morphine, Stroke, Rabbit, Pain

# Title: Biological Research

Full Journal Title: Biological Research

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Welljams-Dorof, A. (1994), Biological sciences in Chile and South America, 1981-1991: A citationist perspective. Output data and specialty area impact trends. *Biological Research*, **27** (2), 91-103.

Abstract: The purpose of this report is to examine the biological sciences in Chile and South America in bibliographic terms - the number of papers each nation published from 1981-1991 and the number of citations to them in the international research literature. The database consists of 34,600 biological science papers from Argentina, Brazil, Chile, and Venezuela in the 1981-1991 Science Citation Index files of the Institute for Scientific Information. Twelve specialty areas were selected to represent the biological sciences of special interest to Chile: animal sciences, biochemistry/biophysics, environmental sciences, experimental biology/medicine, immunology, microbiology/cell biology, molecular biology/genetics, neurosciences, pharmacology, physiology, plant sciences, and reproductive sciences. Data are reported on the number of papers in these fields, combined, by authors based in Chile and other South American nations. In addition, time-series trends in the impact (average citations per paper) of Chilean research relative to South America as a whole, overall and in each specialty, are presented and discussed.

Keywords: Argentina, Biological, Biological Sciences, Biology, Brazil, Chile, Citations, Data, Database, Environmental, Experimental, Impact, Institute for Scientific Information, International, Literature, Nations, Papers, Pharmacology, Physiology, Plant, Purpose, Research, Science, Science Citation Index, Sciences, South America, Specialty, Time Series, Trends

? Krauskopf, M. (2002), A scientometric view of some biological disciplines in Chile. *Biological Research*, **35** (1), 95-99.

Abstract: During the last decade the articles published by Chilean Research Centers grew 1,73 which compares to the 2.34 fold increase of mainstream research articles registered as a whole in Latin America. However, the relative impact of the Chilean publications surpassed that of Latin America. In Biological Sciences, traditionally the strongest research area within Chile, Latin America also shows a steeper slope of growth. Qualitatively, biological disciplines in Chile are comparable to those published in Latin America although in Chile there are specialties as Physiology that surpass the average world’s impact. The scientometric data is consistent with the fall in individual grants that the Chilean Research Fund (FONDECYT) has been allocating during the last decade.

Keywords: Biological, Chile, Data, Growth, Impact, Latin America, Publications, Research, Scientometric

? Krauskopf, E. (2008), Plant Science research productivity in Chile during the past 20 years. *Biological Research*, **41** (2), 137-141.

Abstract: The purpose of this study was to carry out a bibliometric analysis of the articles published in Chile during 1987-2006 that were categorized into the Plant Science discipline by ISI. The data was extracted from the Web of Science database, obtaining a total of 911 articles for analysis. Almost half of the articles were the outcome of an international collaboration, the United States being the country with more collaborative links with Chile within this discipline. A list was made with file 10 most-cited articles and 10 most frequently used journals. The analysis showed that almost 50% of the articles were concentrated in 10 different journals. The number of articles produced each year revealed a steady growth in scientific production since 1987. This is probably related to the progressive interaction between industry and public-research institutions.

Keywords: Bibliometric, Bibliometric Analysis, Chile, Collaboration, Database, Growth, Journals, Productivity, Research, Research Productivity, Science, Scientific Production, Web of Science

# Title: Biological Trace Element Research

Full Journal Title: [Biological Trace Element Research](http://www.springerlink.com/content/120549/?p=ed64c2bd169742468ddf4ea53a9a07fb&pi=0)

ISO Abbreviated Title: Biol. Trace Elem. Res.

JCR Abbreviated Title: Biol Trace Elem Res

ISSN: 0163-4984

Issues/Year: 13

Journal Country/Territory: United States

Language: English

Publisher: Humana Press Inc

Publisher Address: 999 Riverview Drive Suite 208, Totowa, NJ 07512

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 0.786, 252/310 (2000), Impact Factor 0.769, / (2001)

Endocrinology & Metabolism: Impact Factor 0.769, / (2001)

Nutrition & Dietetics: Impact Factor 0.769, / (2001)

? Mei, W.D., Dong, Z.M., Liao, B.L. and Xu, H.B. (1991), Study of immune function of cancer-patients influenced by supplemental zinc or selenium-zinc combination. *Biological Trace Element Research*, **28** (1), 11-20.

Full Text: [1991\Bio Tra Ele Res28, 11.pdf](1991/Bio%20Tra%20Ele%20Res28,%2011.pdf)

Abstract: Since hair Zn and serum Zn are usually decreased in cancer patients, and Zn deficiency, may reduce the function of T-cells, granulocytes, and Nk cells, we observed in cancer patients the influences of the Zinc or Selenium-Zinc on DNCB skin delayed hypersensitivity mediated by T cell, and the effects of Zinc on oxidative metabolic function of neutrophils and level of serum interferon that potentiate NK cell activity. The results showed that DNCB skin reaction was strengthened, the oxidative metabolic function of neutrophils and serum interferon level were increased by the drugs. It is reasonable to expect that Zinc or Selenium-Zinc is instrumental in restoring failing immunocompetence of cancer patient.

? Baruthio, F. (1992), Toxic effects of chromium and its compounds. *Biological Trace Element Research*, **32**, 145-153.

Full Text: [1992\Bio Tra Ele Res32, 145.pdf](1992/Bio%20Tra%20Ele%20Res32,%20145.pdf)

Abstract: Chromium was discovered in 1797 by Vauquelin. Numerous industrial applications raised chromium to a very important economic element. At the same time, with the development of its uses, the adverse effects of chromium compounds in human health were being defined. Trivalent chromium is an essential trace element in humans and in animals. Chromium as pure metal has no adverse effect. Little toxic effect is attributed to trivalent chromium when present in very large quantities. Both acute and chronic toxicity of chromium are mainly caused by hexavalent compounds. The most important toxic effects, after contact, inhalation, or ingestion of hexavalent chromium compounds are the following: dermatitis, allergic and eczematous skin reactions, skin and mucous membrane ulcerations, perforation of the nasal septum, allergic asthmatic reactions, bronchial carcinomas, gastro-enteritis, hepatocellular deficiency, and renal oligo anuric deficiency. Prevention of occupational risks, biological monitoring of workers, and treatment of poisoning are also reported.

Keywords: Chromium Adverse Health Effects, Acute and Chronic Toxicity, Occupational Health, Carcinogenicity of Hexavalent Compounds, Treatment of Poisoning, Prevention, Biological Monitoring, Atmospheric Limit Values, Hexavalent Chromium, Trivalent Chromium, Lung-Cancer, Exposure, Welders, Workers, Carcinogenicity, Erythrocytes, Organs, Cells

? Furst, A. and Fan, A.M. (1993), Carcinogenic action of nickel and cadmium powders in the same rat. *Biological Trace Element Research*, **36** (3), 243-249.

Full Text: [1993\Bio Tra Ele Res36, 243.pdf](1993/Bio%20Tra%20Ele%20Res36,%20243.pdf)

Abstract: Powders of nickel and cadmium metals were compared for their relative carcinogenic action when injected in contra thigh muscles of legs in the same Fischer-344 rat. For negative controls, rats of both sexes were injected im with 0.2 mL of the suspending vehicle, trioctanoin, once a month for 12 m. The two positive controls were treated once a month with either a suspension of powdered nickel (10 mg/mL for 5 m) or powdered cadmium (5 mg/mL twice). These dose levels were those found previously in the authors’ laboratories to yield fibrosarcomas in 50-70% of the treated animals. For the combined experiment where the animals were injected with Ni and Cd in contra legs, the doses were about one-half of that used for the positive controls. Individual vehicle controls were used for each group. The fibrosarcoma yields for the experiments with individual positive metal controls were: vehicle alone, 0%, for both nickel and cadmium injected individually, between 60 and 80% for both males and females. In the combined metal experiment, one male and one female vehicle control developed tumors at the site of injection. The yield in the nickel leg was 14% for the females and 57% for the males, in the cadmium leg, the values were 93 and 50%, respectively. Only one male and one female developed sarcomas in both legs, in each case, the cadmium-induced tumor appeared first and grew seven to eight times larger than that induced by nickel.

Keywords: Nickel and Cadmium Cancer, Metal Carcinogenesis, Carcinogenic Mixtures

? Yucel, I., Arpaci, F., Ozet, A., Doner, B., Karayilanoglu, T., Sayar, A. and Berk, O. (1994), Serum copper and zinc levels and copper/zinc ratio in patients with breast-cancer. *Biological Trace Element Research*, **40** (1), 31-38.

Full Text: [1994\Bio Tra Ele Res40, 31.pdf](1994/Bio%20Tra%20Ele%20Res40,%2031.pdf)

Abstract: Serum copper, zinc levels, and the Cu/Zn ratio were evaluated in 31 patients with breast cancer and 35 healthy controls. Copper and zinc were determined by atomic absorbtion spectrophotometry. The mean serum copper level and the mean Cu/Zn ratio in patients with breast cancer were significantly higher than the control group (p < 0.001 and p < 0.001). In addition, the mean serum zinc level in patients with breast cancer was significantly lower than the control group (p < 0.001). Neither serum copper and zinc levels nor the Cu/Zn ratio were of value in discriminating of the disease activity and severity. Interestingly, the Cu/Zn ratio in premenopausal patients was higher than postmenopausal patients (p < 0.05) and this was not related to age. The further combined biological and epidemiological studies are necessary to investigate the roles of copper and zinc in breast cancer.

Keywords: Cu-Zn Ratio, Malignant-Tumors, Plasma, Blood, Breast Cancer, Copper, Zinc

? Krishnan, S.S., Jervis, R.E. and Vela, L.D. (1994), Studies of incinerator ashes and environmental-effects using radioanalytical techniques. *Biological Trace Element Research*, **43-5**, 169-175.

Full Text: [1994\Bio Tra Ele Res43-5, 169.pdf](1994/Bio%20Tra%20Ele%20Res43-5,%20169.pdf)

Abstract: We have studied solid waste incinerator ashes to understand the leaching mechanism and speciation of toxic and other elements in them. Leaching media, such as water and acetate buffer, at various pHs were used. Incinerator ashes generally contain concentrations of many toxic elements, such as Cd, As, Hg, and Se. These elements are leached out rather easily. Many of the elements are leached within the first few minutes to an hour, and the majority of the elements reach peak equilibrium concentrations within 200 h. The pH and nature of the leaching medium are important factors in the leaching of the elements.

Keywords: Municipal Solid Waste, Municipal Refuse, Incinerator Ashes, Leaching, Solid Waste, Toxic Elements, Trace-Elements, Fly-Ash, Speciation, Particles

? Chen, S.L., Yeh, S.J., Yang, M.H. and Lin, T.H. (1995), Trace-element concentration and arsenic speciation in the well water of a Taiwan area with endemic blackfoot disease. *Biological Trace Element Research*, **48** (3), 263-274.

Full Text: [1995\Bio Tra Ele Res48, 263.pdf](1995/Bio%20Tra%20Ele%20Res48,%20263.pdf)

Abstract: Blackfoot disease is a peripheral vascular disease resulting in gangrene of the lower extremities. Although extensive epidemiological study has implicated high arsenic content in artesian well water in the endemic area, there is more to learn about the etiology of the disease. In this study, effort is paid on multielement determination and arsenic speciation in order to find out whether the trace element concentration pattern in well water in the Blackfoot disease endemic area is different from those of two control areas. Experimental results indicate that the concentrations of Fe, P, Na, and Ba in well water in the Blackfoot disease endemic area are found to be significantly higher than those of the controls, but they are still below the drinking water standard. The total arsenic in well water in the endemic area (671±149 ppb) is much higher than that of one normal control area of Hsin-Chu (<0.7 ppb), but is a similar level as that of other control areas of I-Lan (653±71 ppb) where no Blackfoot disease has ever been found. It was also found that the insoluble arsenic in the endemic area (21.9 ppb) is much higher than that in two control areas (less than or equal to 1.8 ppb), and the concentration ratio between As(III) and As(V) species in the endemic area (2.6) is much lower than that in one of the control areas, where the total arsenic is also high (14.7). The possible connection of Blackfoot disease with trace elements, arsenic species, and possibly other as yet undefined environmental factors in the artesian well water, is discussed.

Keywords: Trace Elements, Arsenic Speciation, Blackfoot Disease, Artesian Well Water, Insoluble Arsenic, Drinking-Water, Natural-Waters, Skin Cancer, Acid

# Title: Biological Wastes

Full Journal Title: [Biological Wastes](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=13007&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=c5d5957207ffd3710cdcf32f6d947119)

ISO Abbreviated Title: Biol. Waste.

JCR Abbreviated Title: Biol Waste

ISSN: 0269-7483

Issues/Year:

Journal Country/Territory:

Language:

Publisher: Elsevier Sci Ltd, Oxford

Publisher Address:

Subject Categories:

: Impact Factor

Viraraghavan, T. and Kikkeri, S.R. (1988), Peat filtration of food-processing wastewaters. *Biological Wastes*, **26** (2), 151-155.

Full Text: [B\Bio Was26, 151.pdf](B/Bio%20Was26,%20151.pdf)

Abstract: Laboratory column studies were conducted to examine the feasibility of using horticultural peat as a filter medium to treat slaughterhouse and dairy wastewaters.

A 100 mm diameter column with 300 mm depth of peat was used for each wastewater application. The slaughterhouse wastewater was fed continuously to the column at a hydraulic loading rate of 3.55 m3/m2 per day. The column clogged at the end of five days. In the five day period, the system achieved SS, BOD, COD and P removals of 94, 66, 65 and 87% respectively.

In the case of dairy wastewater, the column clogged at the end of 18 hours at an application rate of 3.55 m3/m2 per day. When the hydraulic loading rate was lowered to 2.13 m3/m2 per day, the column operated for 81 hours before clogging. At the end of the lower hydraulic loading rate, the system achieved SS, BOD, COD and P removals of 99, 61, 51 and 48% respectively. Earlier clogging noticed in the case of dairy wastewater was due to the higher levels of SS (2650 mg/litre) in comparison to the SS in slaughter house wastewater (243 mg/litre).

? Okieimen, F.E. and Onyenkpa, V.U. (1989), Removal of heavy metal ions from aqueous solutions with melon (*Citrullus vulgaris*) seed husks. *Biological Wastes*, **29** (1), 11-16.

Full Text: [1989\Bio Was29, 11.pdf](1989/Bio%20Was29,%2011.pdf)

Abstract: The removal of cadmium, copper and lead ions from aqueous solutions by melon seed husks was examined by equilibrium and dynamic sorption studies at 29°C. The amounts of the metal ions removed from solution depended on the metal ion type, and were enhanced by EDTA modification of the husks. The distribution coefficient, D, of the metal ions between the adsorbent phase and the bulk aquueous phase showed little variation with the equilibrium concentration of the metal ions, except for Pb(II) ions where the value of D doubled with a five-fold change in the equilibrium concentration. The sorption data fitted the Langmuir isotherm equation and maximum metal-ion binding capacities of 23·3 mg/g husk and 11·4 mg/g husk were predicted for Cd(II) ions and Cu(II) ions respectively. Relatively higher proportions of Pb(II) ions were removed from solution by melon husks in the column experiments. Pb(II) ions sorbed on melon husks can be quantitatively recovered by treatment with dilute acid.

Gariépy, S., Tyagi, R.D., Couillard, D. and Tran, F. (1989), Thermophilic process for protein recovery as an alternative to slaughterhouse wastewater treatment. *Biological Wastes*, **29** (2), 93-105.

Full Text: [B\Bio Was29, 93.pdf](B/Bio%20Was29,%2093.pdf)

Abstract: Thermophilic aerobic treatment of slaughterhouse waste was carried out in a laboratory bioreactor at different temperatures and solids retention times without cell recycle. COD was reduced by over 93%. Phosphorus was removed from 72 to 90% under different cultivation conditions. A high rate of specific substrate consumption was observed compared to that obtained in mesophilic processes. The biokinetic constants were evaluated. Crude protein content of the biomass varied from 64 to 78%. The composition of the essential amino acids in the biomass was similar to that of meat and soya meals and appeared well-balanced and appropriate for pigs and poultry feeding.

# Title: Biologist

Full Journal Title: Biologist

ISO Abbreviated Title: Biologist

JCR Abbreviated Title: Biologist

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Anderson, D. (1988), The Science Citation Index. *Biologist*, **35** (2), 88.

Keywords: Citation, Science Citation Index

# Title: Biology of Blood and Marrow Transplantation

Full Journal Title: Biology of Blood and Marrow Transplantation

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Saeed, M., Paulson, K., Lambert, P., Szwajcer, D. and Seftel, M. (2011), Publication bias in blood and marrow transplantation. *Biology of Blood and Marrow Transplantation*, **17** (6), 930-934.

Abstract: Only a small proportion of abstracts lead to full publication. Abstracts with “positive” results are more likely to be published than other abstracts, leading to publication bias. To date, this issue has not been examined in the blood and marrow transplantation (BMT) literature. We hypothesized that because BMT centers are often based at academic centers, the proportion of abstracts leading to publication will be high. All abstracts presented at the Canadian Blood and Marrow Transplant Group biannual meetings in 2002, 2004, and 2006 were reviewed and categorized by study type, funding source, single-center or multicenter study, form of presentation, and positive or negative results, using the authors’ definitions. To determine publication, each reference was searched on multiple databases (MEDLINE, EMBASE, Web of Science, and CINAHL) by first, second, and final author names. Two authors performed abstract categorization and searching, and disagreements were resolved by consensus. of the 141 abstracts reviewed, only 43 were published (30.4%). Twenty-one studies were published from 2002 (36.8%), compared with 12 from 2004 (24.0%) and 10 from 2006 (29.4%) (P = .35). Neither positive results nor the number of involved centers were associated with the likelihood of publication. Clinical studies (retrospective or prospective) were more likely to be published than nonclinical studies (P = .014). Funded studies and oral presentations were more likely to be published (P = .009 and .004, respectively). A low rate of publication is seen in the field of BMT. Studies with clinical outcomes, externally funded studies, and studies presented orally were more likely to be published. However, there was no publication bias in favor of studies with positive results. Publication bias should be evaluated further at larger BMT meetings, and efforts should be made to encourage full publication of scientific abstracts. Biol Blood Marrow Transplant 17: 930-934 (2011) (C) 2011 American Society for Blood and Marrow Transplantation.

Keywords: Author, Authors, Bias, Blood, Databases, Definitions, EMBASE, Evidence-Based Medicine, Full Publication, Funding, Hematopoietic Cell Transplantation, Lead, Literature, Medline, Outcomes, Publication, Publication Bias, Science, Transplant, Web of Science

# Title: Biomacromolecules

Full Journal Title: [Biomacromolecules](http://pubs.acs.org/loi/bomaf6)

ISO Abbreviated Title: Biomacromolecules

JCR Abbreviated Title: Biomacromolecules

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Notes: highly cited

? Sorlier, P., Denuzière, A., Viton, C. and Domard, A. (2001), Relation between the degree of acetylation and the electrostatic properties of chitin and chitosan. *Biomacromolecules*, **2** (3), 765-772.

Full Text: [2001\Biomacromolecules2, 765.pdf](2001/Biomacromolecules2,%20765.pdf)

Abstract: A series of chitosan/chitin samples with DA’s varying between 5.2 and 89% was prepared from the reacetylation under soft conditions of a unique chitosan sample allowing the preservation of the chain distribution. The study of the variation of pH for the same concentration of amine groups, at different ionic strengths, on the scale of DA’s allows us to extrapolate the variation of pK(a) at dissociation degrees (alpha) 0 and 1. A modeling of all the curves was obtained by means of only one equation. Then, for given concentration of chitosan and ionic strength, it is possible to predict the pH of the solution whatever the DA and alpha. The role of DA through the participation of hydrophobic interactions and hydrogen bondings on the electrostatic parameters is discussed. The results allow a better understanding of some physicochemical and biological propel-ties of chitosan and chitin.

Keywords: N-Acetylation, Spectroscopy, Titration, pH

? Wang, Q., Wang, J.F., Geil, P.H. and Padua, G.W. (2004), Zein adsorption to hydrophilic and hydrophobic surfaces investigated by surface plasmon resonance. *Biomacromolecules*, **5** (4), 1356-1361.

Full Text: [2004\Biomacromolecules5, 1356.pdf](2004/Biomacromolecules5,%201356.pdf)

Abstract: Zein, the prolamine of corn, has been investigated for its potential as an industrial biopolymer. In previous research, zein was plasticized with oleic acid and formed into sheets/films. Physical properties of films were affected by film structure and controlled in turn by zein-oleic acid interactions. The nature of such interactions is not well understood. Thus, protein-fatty acid interactions were investigated in this work by the use of surface plasmon resonance (SPR). Zein adsorption from 75% aqueous 2-propanol solutions, 0.05% to 0.5% w/v, onto hydrophilic and hydrophobic self-assembled monolayers (SAMs) formed by 11-mercaptoundecanoic acid and 1-octanethiol, respectively, was monitored by high time resolution SPR. Initial adsorption rate and ultimate surface coverage increased with bulk protein concentration for both surfaces. The initial slope of plotted adsorption isotherms was higher on 11-mercaptoundecanoic acid than on 1-octanethiol, indicating higher zein affinity for hydrophilic SAMs. Also, maxinium adsorption values were higher for zein on hydrophilic than on hydrophobic SAMs. Flushing off loosely bound zein in the SPR cell allowed estimation of apparent monolayer values. Differences in monolayer values for hydrophobic and hydrophilic surfaces were explained in terms of zein adsorption footprint.

Keywords: Acid, Adsorption, Adsorption Isotherms, Adsorption Rate, Albumin, Biophysical Properties, Biopolymer, Competitive Behavior, Corn, Coverage, Fibrinogen, Film, Films, Flushing, Hydrophilic, Hydrophobic, Interactions, Isotherms, Membrane-Protein Systems, Monolayer, Relaxation Kinetics, Research, Resonance, Self-Assembled Monolayers, Spectroscopy, Structure, Surface, Values, Work

? Subramanian, S. and Sampath, S. (2007), Adsorption of zein on surfaces with controlled wettability and thermal stability of adsorbed zein films. *Biomacromolecules*, **8** (7), 2120-2128.

Full Text: [2007\Biomacromolecules8, 2120.pdf](2007/Biomacromolecules8,%202120.pdf)

Abstract: Adsorption characteristics of zein protein on hydrophobic and hydrophilic surfaces have been investigated to understand the orientation changes associated with the protein structure on a surface. The protein is adsorbed by a self-assembly procedure on a monolayer-modified gold surface. It is observed that zein shows higher affinity toward hydrophilic than hydrophobic surfaces on the basis of the initial adsorption rate followed by quartz crystal microbalance studies. Reflection absorption infrared (RAIR) spectroscopic studies reveal the orientation changes associated with the adsorbed zein films. Upon adsorption, the protein is found to be denatured and the transformation of alpha-helix to beta-sheet form is inferred. This transformation is pronounced when the protein is adsorbed on hydrophobic surfaces as compared to hydrophilic surfaces. Electrochemical techniques (cyclic voltammetry and impedance techniques) are very useful in assessing the permeability of zein film. It is observed that the zein moieties adsorbed on hydrophilic surfaces are highly impermeable in nature and act as a barrier for small molecules. The topographical features of the deposits before and after adsorption are analyzed by atomic force microscopy. The protein adsorbed on hydrophilic surface shows rod- and disclike features that are likely to be the base units for the growth of cylindrical structures of zein. The thermal stability of the adsorbed zein film has been followed by variable-temperature RAIR measurements.

Keywords: Adsorption, Adsorption Rate, Base, Changes, Competitive Behavior, Film, Force, Gold, Growth, High Water Activity, Hydrophilic, Hydrophobic, Hydrophobic Surfaces, Impedance Spectroscopy, Linoleate Peroxidation, Maize Zein, Plasmon Resonance, Protein Adsorption, Relaxation Kinetics, Self-Assembled Monolayers, Stability, Structure, Surface, Thermal Stability, Transformation, Voltammetry

? Gorzelanny, C., Pöppelmann, B., Strozyk, E., Moerschbacher, B.M. and Schneider, S.W. (2007), Specific interaction between chitosan and matrix metalloprotease 2 decreases the invasive activity of human melanoma cells. *Biomacromolecules*, **8** (10), 3035-3040.

Full Text: [2007\Biomacromolecules8, 3035.pdf](2007/Biomacromolecules8,%203035.pdf)

Abstract: The crucial event in metastasis is tumor invasion which in the case of melanoma cells is dependent on matrix metalloprotease 2 (MMP2). Chitosan (MW ca. 5×105 g mol-1, degree of acetylation ca. 30%) attenuated the invasive activity of melanoma cells in a cell-based invasion assay and reduced MMP2 activity in the supernatant of melanoma cells. While the expression level of MMP2 was not affected, the amount of MMP2 in the cell supernatant was reduced, indicating a posttranscriptional effect of chitosan on MMP2. Atomic force microscopy revealed a direct molecular interaction between MMP2 and chitosan forming a complex with a diameter of 349.0 +/- 69.06 nm and a height of 26.5 +/- 11.50 nm. Affinity chromatography revealed a high binding-specificity of MMP2 to chitosan, and a colorimetric MMP2 activity assay suggests a noncompetitive inhibition of MMP2 by chitosan. The possible use of chitosan as a new type of MMP2 inhibitor is discussed.

Keywords: Atomic-Force Microscopy, Matrix Metalloproteinases, Proliferation, Inhibitors, Membrane, Proteins, Growth, Chitin, Copper, Assay

? Anema, S.G. and de Kruif, C.G. (2011), Interaction of lactoferrin and lysozyme with casein micelles. *Biomacromolecules*, **12** (11), 3970-3976.

Full Text: [2011\Biomacromolecules12, 3970.pdf](2011/Biomacromolecules12,%203970.pdf)

Abstract: On addition of lactoferrin (LF) to skim milk, the turbidity decreases. The basic protein binds to the caseins in the casein micelles, which is then followed by a (partial) disintegration of the casein micelles. The amount of LF initially binding to casein micelles follows a Langmuir adsorption isotherm. The kinetics of the binding of LF could be described by first-order kinetics and similarly the disintegration kinetics. The disintegration was, however, about 10 times slower than the initial adsorption, which allowed investigating both phenomena. Kinetic data were also obtained from turbidity measurements, and all data could be described with one equation. The disintegration of the casein micelles was further characterized by an activation energy of 52 kJ/mol. The initial increase in hydrodynamic size of the casein micelles could be accounted for by assuming that it would go as the cube root of the mass using the adsorption and disintegration kinetics as determined from gel electrophoresis. The results show that LF binds to casein micelles and that subsequently the casein micelles partly disintegrate. All micelles behave in a similar manner as average particle size decreases. Lysozyme also bound to the casein micelles, and this binding followed a Langmuir adsorption isotherm. However, lysozyme did not cause the disintegration of the casein micelles.

Keywords: Reconstituted Skim Milk, Polyelectrolyte Brushes, Complex Coacervation, Proteins, Particles, Association, pH

# Title: Biomass

Full Journal Title: [Biomass](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=13008&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=9d3ff78614a50bfee053732a29b644e9)

ISO Abbreviated Title: Biomass

JCR Abbreviated Title: Biomass

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Nakajima, A. and Sakaguchi, T. (1990), Recovery and removal of uranium by using plant wastes. *Biomass*, **21** (1), 55-63.

Full Text: [B\Biomass21, 55.pdf](B/Biomass21,%2055.pdf)

Abstract: The uranium-adsorbing abilities of seven plant wastes were investigated. High abilities to adsorb uranium from non-saline water containing 10 mg dm−3 of uranium were observed with a number of plant wastes tested. However, with seawater supplemented with 10 mg dm−3 of uranium, similar results were found only with chestnut residues. When the plant wastes were immobilized with formaldehyde, their ability to adsorb uranium was increased. Uranium and copper ions were more readily adsorbed by all plant wastes tested than other metal ions from a solution containing a mixture of seven different heavy metals. The selective adsorption of heavy metal ions differs with different species of plant wastes. The immobilization of peanut inner skin, orange peel and grapefruit peel increased the selectivity for uranium.

Keywords: Plant Wastes, Uranium Recovery, Uranium Removal

# Title: Biomass & Bioenergy

Full Journal Title: [Biomass & Bioenergy](http://sdos.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=09619534)

ISO Abbreviated Title: Biomass Bioenerg.

JCR Abbreviated Title: Biomass Bioenerg

ISSN: 0961-9534

Issues/Year: 10

Journal Country/Territory: England

Language: English

Publisher: Pergamon-Elsevier Science Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England

Subject Categories:

Agricultural Engineering: Impact Factor 0.466, / (2000), Impact Factor 0.432, 6/10 (2001)

Biotechnology & Applied Microbiology: Impact Factor 0.466, / (2000), Impact Factor 0.432, 106/131 (2001)

Energy & Fuels: Impact Factor 0.466, / (2000), Impact Factor 0.432, 30/66 (2001)

Woodbury, P.B. (1992), Trace-elements in municipal solid-waste composts: A review of potential detrimental effects on plants, soil biota, and water-quality. *Biomass & Bioenergy*, **3** (3-4), 239-259.

Full Text: [B\Bio Bioe3, 239.pdf](B/Bio%20Bioe3,%20239.pdf)

Abstract: Composts produced from municipal solid waste (MSW) contain trace amounts of metals and metalloids. Existing data from field experiments with MSW compost suggest that plant uptake of copper, nickel, zinc, arsenic, and lead will be slight, but boron may occasionally cause phytotoxicity. Most plant species take up little cadmium, but uptake of cadmium from MSW compost-amended soils by species that most readily accumulate cadmium has not been examined under field conditions. Some mushroom species can accumulate cadmium and mercury from MSW compost. The average values of lead, copper, and zinc in MSW composts may exceed limits recommended to protect invertebrates in soils, but these limits may be conservative. There is some evidence that metals in MSW composts can harm some soil microbiota, but such effects have not always been found. Metal concentrations in MSW compost leachates can exceed U.S.A. and E.E.C. drinking water standards, but under field conditions subsoil will presumably serve as a sink for metals, at least for many decades.

Keywords: Waste, Compost, Metal, Metalloid, Uptake, Quality, Plant

Williams, T.M. (1997), Obtaining water quality permits for land application of biomass boiler ash. *Biomass & Bioenergy*, **13** (4-5), 279-287.

Full Text: [B\Bio Bioe13, 279.pdf](B/Bio%20Bioe13,%20279.pdf)

Abstract: Land application of biomass fuelled boiler ash can save landfill space and return cations to the forest environment. However, environmental regulations throughout most of the U.S. do not specifically address application of biomass boiler ash to forest land. South Carolina Department of Health and Environmental Control (SCDHEC) treated bark boiler ash from International Paper’s Georgetown, SC, mill as an experimental permit with a requirement of monitoring experimental applications to show it would have “no detrimental impact to the environment or public health”. An initial catchment study showed no evidence of leaching into either the watertable aquifer or outlet streams when ash was applied to moderately well-drained portions of two watersheds at a rate of 11 Mg/ha. Concentrations of elements in groundwater samples were well within state drinking water standards, often more than an order of magnitude below the standards. The second study was a replicated block experiment of ash application rates of 11, 22 and 44 Mg/ha. Ash application increased leaching significantly for potassium. calcium and sulfate, although concentration increases were modest (0.12-0.17 Mg/l for potassium, 0.36-0.89 mg/l for calcium and 1.92-3.08 mg/l for sulfate). Ground water heavy metal concentrations were well below drinking water standards, even at the 44 Mg/ha rate. (C) 1998 Published by Elsevier Science Ltd.

Keywords: Boiler Ash, Wood Ash, Water Quality, Groundwater, Heavy Metal, Chromium, Wood Ash, Phosphorus, Soil

Lafi, W.K. (2001), Production of activated carbon from acorns and olive seeds. *Biomass & Bioenergy*, **20** (1), 57-62.

Full Text: [B\Bio Bioe20, 57.pdf](B/Bio%20Bioe20,%2057.pdf)

Abstract: This study has been designed to produce activated carbon from acorns and olive seeds. The starting materials are low in cost and they are the cause of solid waste pollution problems in Jordan. A chemical procedure is used to produce the required activated carbon. The results indicate that activated carbon produced from acorns compares favorably with that from olive seeds which rank second, along side commercial type activated carbon which comes last with respect to adsorption capacity. However, the optimum activation temperature is 800°C and the optimum regeneration temperature is also 800°C. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Jordan, Activated Carbon, Methylene Blue, Acorns, Olive Seed, Carbonization, Oil-Shale, Stones, Cake

Guo, J. and Lua, A.C. (2001), Kinetic study on pyrolytic process of oil-palm solid waste using two-step consecutive reaction model. *Biomass & Bioenergy*, **20** (3), 223-233.

Full Text: [B\Bio Bioe20, 223.pdf](B/Bio%20Bioe20,%20223.pdf)

Abstract: Pyrolysis of oil-palm (*Elaeis guineensis Jacq*.) shell, a cheap and abundantly available solid waste from palm oil producing process, was carried out using thermogravimetric analysis. The effects of raw material particle size and heating rate on the pyrolytic properties and kinetic parameters (activation energy, frequency factor and reaction order) were investigated. A one-step global model and a two-step consecutive reaction model were used to simulate the pyrolytic process and predict the weight loss during pyrolysis. The two-step model fitted the experimental data much better than the one-step model as the softening effect and formation of an intermediate during the pyrolytic process were taken into account. This two-stage reaction characteristic was confirmed by two obvious maxima in the derivative thermogram for pyrolysis of palm shells under different heating rates. The pyrolytic reactions at the low- and high-temperature regimes were found to be based on a first-order reaction mechanism and a contracting volume mechanism, respectively.

Keywords: Pyrolysis, Oil-Palm Shell, TGA, DTG, Kinetic Parameters, Two-Step Model

Namasivayam, C., Kumar, M.D., Selvi, K., Begum, R.A., Vanathi, T. and Yamuna, R.T. (2001), ‘Waste’ coir pith: A potential biomass for the treatment of dyeing wastewaters. *Biomass & Bioenergy*, **21** (6), 477-483.

Full Text: [B\Bio Bioe21, 477.pdf](B/Bio%20Bioe21,%20477.pdf)

Abstract: Removal of acid dyes (acid violet and acid Brilliant Blue) and basic dyes (rhodamine B and Methylene Blue) was carried out using ‘waste’ coir pith as adsorbent. Parameters like agitation time, adsorbent dosage and pH effect were studied. Adsorption followed the first-order rate expression. The equilibrium data fit well with both Langmuir and Freundlich models of adsorption. Desorption experiments confirmed that major mode of adsorption is ion-exchange for the dyes acid Brilliant Blue and Methylene Blue whereas acid violet showed mainly physical adsorption. Chemisorption seems to be the major mode of adsorption for rhodamine B. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Dyes, Adsorption, Isotherms, Coir Pith, pH, Desorption, Aqueous-Solutions, Color Removal, Activated Carbon, Banana Pith, Adsorption, Water, Dyes, Equilibrium, Hardwood, Reagent

Pedersen, A.J. (2003), Characterization and electrodialytic treatment of wood combustion fly ash for the removal of cadmium. *Biomass & Bioenergy*, **25** (4), 447-458.

Full Text: [B\Bio Bioe25, 447.pdf](B/Bio%20Bioe25,%20447.pdf)

Abstract: Due to a high content of macronutrients and a potential liming capacity, recycling of ashes from biomass combustion to agricultural fields as fertilisers and, or for soil improvement is considered in Denmark and other countries utilising biomass as an energy source. However, the fly ash fractions especially contain amounts of the toxic heavy metal cadmium that may exceed the limiting values for agricultural utilisation given by the Danish Environmental Protection Agency. In this work the advances of using an electrodialytic remediation method to reduce the Cd content in wood combustion fly ash-for the aim of recycling-was described. Initial characterisation of the experimental ash showed that the Cd content exceeded the limiting values for agricultural use and therefore needed treatment before being recycled. The pH in the ash was very high (13.3), and the Cd was not soluble at these alkaline conditions. However, significant amounts of Cd could be extracted at neutral to alkaline conditions using an ammonium citrate solution as a desorption agent. Electrodialytic remediation experiments showed that, under optimised remediation conditions using a mixture of ammonium citrate (0.25 M) and NH3 (1.25%) as an assisting agent, more than 70% of the initial Cd could be removed from the wood fly ash. The results also indicated that a continuous out-separation of Cd from the aqueous process solutions is possible. Thereby, recycling of the (nutrient rich) process solutions as well as of the remediated ash seems achievable. (C) 2003 Elsevier Ltd. All rights reserved.

Keywords: Biomass, Biomass Combustion Ash, Cadmium, Cd, Electrochemical Treatment, Elements, Extraction, Heavy Metal, Heavy-Metal, Heavy-Metals, Remediation, Soils, Utilisation, Wood, Wood Fly Ash

? Zhang, J.H., Fu, H., Lv, X.S., Tang, J. and Xu, X.H. (2011), Removal of Cu(II) from aqueous solution using the rice husk carbons prepared by the physical activation process. *Biomass & Bioenergy*, **35** (1), 464-472.

Full Text: [2011\Bio Bio35, 464.pdf](2011/Bio%20Bio35,%20464.pdf)

Abstract: The adsorption of Cu(II) from aqueous solution by carbons prepared from rice husk through pyrolysis and steam activation was studied. The rice husk carbon was characterized by Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM), and its pore structure was also examined. After comparing different characteristics of the carbons prepared under different conditions and their adsorption abilities of Cu(II), the optimum temperature for pyrolysis and steam activation was chosen as 700 and 750ºC, respectively, using 3% (V/V) steam as the best activation gas. It was found that the Cu(II) adsorption on the rice husk derived carbons was pH and temperature dependent with an optimum pH value of 5.0, and an equilibrium time of 24 h. The adsorption kinetics and isotherms of Cu(II) by the rice husk derived carbons were also investigated under four different temperatures, and good correlation coefficients were obtained for the pseudo-second-order kinetic models, and the Langmuir isotherm model fitted very well with the experimental data. The mean free energy E (kJ mol-1) obtained in the Dubinin-Radushkevitch (D-R) adsorption isortherm equation indicated a chemical ion-exchange mechanism. Several thermodynamic parameters were also caculated to predict the nature of adsorption process. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: 2-Stage Process, Adsorption, Adsorption, Cadmium, Carbon, Characterization, Chemical Activation, Copper, Cu(II), Equilibrium, Phosphoric-Acid Activation, Rice Husk, Sawdust, Surface, Waste-Water

? Ofomaja, A.E., Ukpebor, E.E. and Uzoekwe, S.A. (2011), Biosorption of Methyl violet onto palm kernel fiber: Diffusion studies and multistage process design to minimize biosorbent mass and contact time. *Biomass & Bioenergy*, **35** (10), 4112-4123.

Full Text: [2011\Bio Bio35, 4112.pdf](2011/Bio%20Bio35,%204112.pdf)

Abstract: Determination of the overall rate controlling step in the biosorption of Methyl violet dye onto a new biosorbent, palm kernel fiber has been determined. Pseudo-second-order model described the kinetics over the whole contact time period for the effect of initial concentration and temperature. Using the Wu’s approaching equilibrium factor, R(w), it was observed that the time for the switch from initial biosorption to intraparticle diffusion is affected by initial concentration and temperature. A comparison between the activation parameters of film diffusion, pseudo-second order ion exchange and intraparticle diffusion revealed that film diffusion is the overall slowest step in the biosorption process. Temperature increased the biosorption capacity but reduced slightly the rate of intraparticle diffusion, indicating that the biosorbent surface was activated by temperature which limited the diffusion of Methyl violet molecules into the interior of the biosorbent. A multistage process design to minimize mass and contact time was done. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Activation, Adsorption-Kinetics, Approaching Equilibrium Factor, Aqueous-Solution, Basic-Dyes, Biosorption, Blue, Diffusion, Intraparticle Diffusion, Kinetics, Methyl Violet, Multistage Optimization, Overall Biosorption Rate, Perlite, Removal, Sawdust, Sorption, Waste

? Vandermeulen, V., Prins, W., Nolte, S. and Van Huylenbroeck, G. (2011), How to measure the size of a bio-based economy: Evidence from Flanders. *Biomass & Bioenergy*, **35** (10), 4368-4375.

Full Text: [2011\Bio Bio35, 4368.pdf](2011/Bio%20Bio35,%204368.pdf)

Abstract: The need to shift from a fossil fuel based economy towards a more bio-based economy has received a lot of attention in public debates and policy making in recent years. However, there seems to be some inconsistency in how a bio-based economy is defined as well as how to estimate the size of this bio-based economy. The current article shows, using a Bibliometric analysis, that the topic “bio-based economy” does not come up extensively in the literature by mid 2010. Moreover, it seems that estimating the importance of the whole of a bio-based economy (and thereby not only focusing on one type of production or product) for a region or country is quite rare, besides a few examples. Within Flanders, one such study has been executed by order of the Flemish government. The current article suggests a framework that can be used to estimate the size of the bio-based economy in other regions or countries. It is based on several steps, so called critical points related to conceptualization, disaggregation, information and valuation. The critical points depend on who has and who wants the information, what the context is, what kind of data is available and whether the research should be comparable. The authors suggest that by following their proposed steps, a reliable estimate of the size of the bio-based economy can be calculated. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Analysis, Attention, Authors, Bibliometric, Bibliometric Analysis, Bio-Based Economy, Biomass, Economic Valuation, Framework, Information, Literature, Oil, Points, Policy, Policy Makers, Policy Making, Renewable Energy, Research, Stakeholders

# Title: Biomaterials

Full Journal Title: [Biomaterials](http://sdos.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=01429612), [Biomaterials](http://sciencejournals.info/Biomaterials.html)

ISO Abbreviated Title: Biomaterials

JCR Abbreviated Title: Biomaterials

ISSN: 0142-9612

Issues/Year: 24

Journal Country/Territory: England

Language: English

Publisher: Elsevier Sci Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford Ox5 1gb, Oxon, England

Subject Categories:

Engineering, biomedical: Impact Factor, 1.796 /

Materials science, biomaterials: Impact Factor, 1.796 /

Saraydin, D., Karadağ, E., Öztop, H.N. and Güven, O. (1994), Adsorption of bovine serum-albumin onto acrylamide-maleic acid hydrogels. *Biomaterials*, **15** (11), 917-920.

Full Text: [B\Biomaterials15, 917.pdf](B/Biomaterials15,%20917.pdf)

Abstract: In this study, acrylamide-maleic acid hydrogels containing different amounts of maleic acid have been prepared by irradiating with gamma radiation. They have been used in experiments on bovine serum albumin (BSA) adsorption. Acrylamide-maleic acid hydrogel containing 60 mg of maleic acid and irradiated at 5.20 kGy has been used for swelling and diffusion studies in water, solutions of NaCl and BSA. For this hydrogel, maximum and minimum swellings have been observed with water (1680%) and the solution of BSA (1085%), respectively. Diffusions of water, NaCl and BSA within hydrogels have been found as non-Fickian types of diffusion. In the experiments of BSA adsorption, Langmuir type adsorption has been found. The hydrogel prepared with 60 mg maleic acid and having been irradiated at 2.00 kGy has been found to be the best adsorption system for BSA. The adsorption capacity of acrylamide hydrogel has been increased by the addition of maleic acid almost 1.5-3-fold.

Keywords: Hydrogels, Poly(Acrylamide/Maleic Acid), Swelling, Adsorption, Bovine Serum Albumin

Notes: highly cited

? Boyan, B.D., Hummert, T.W., Dean, D.D. and Schwartz, Z. (1996), Role of material surfaces in regulating bone and cartilage cell response. *Biomaterials*, **17** (2), 137-146.

Full Text: [1996\Biomaterials17, 137.pdf](1996/Biomaterials17,%20137.pdf)

Abstract: Tissue engineering in vitro and in vivo involves the interaction of cells with a material surface. The nature of the surface can directly influence cellular response, ultimately affecting the rate and quality of new tissue formation. Initial events at the surface include the orientated adsorption of molecules from the surrounding fluid, creating a conditioned interface to which the cell responds. The gross morphology, as well as the microtopography and chemistry of the surface, determine which molecules can adsorb and how cells will attach and align themselves. The focal attachments made by the cells with their substrate determine cell shape which, when transduced via the cytoskeleton to the nucleus, result in expression of specific phenotypes. Osteoblasts and chondrocytes are sensitive to subtle differences in surface roughness and surface chemistry. Studies comparing chondrocyte response to TiO2 of differing crystallinities show that cells can discriminate between surfaces at this level as well. Cellular response also depends on the local environmental and state of maturation of the responding cells. Optimizing surface structure for site-specific tissue engineering is one option; modifying surfaces with biologicals is another.

Keywords: Implant, Surface Roughness, Osteoblasts, Chondrocytes, Extracellular-Matrix, Topographical Control, Different Dimensions, Osteoblast Cultures, Grooved Substrata, Epithelial-Cells, Bioactive Glass, Enzyme-Activity, Growth-Factors, Implants

Notes: highly cited

? Zhang, M., Li, X.H., Gong, Y.D., Zhao, N.M. and Zhang, X.F. (2002), Properties and biocompatibility of chitosan films modified by blending with PEG. *Biomaterials*, **23** (13), 2641-2648.

Full Text: [2002\Biomaterials23, 2641.pdf](2002/Biomaterials23,%202641.pdf)

Abstract: Chitosan (beta-1,4-D-glucosamine), a polysaccharide with excellent biological properties. has been widely used in biomedical fields, but many barriers still exist to its broader usage due to its chemical and physical limitations. Further work is needed to improve these properties. but changes of the chemical and physical properties will influence its biocompatibility, so the biological attribute of modified chitosan must he evaluated. In this study, the biocompatibility of chitosan modified by several methods was carefully evaluated at the cellular and protein levels using different physical and biological methods. The results provide a theoretical basis for screening biomaterials.

We studied the properties of fife kinds of materials made by blending chitosan with different types of polyethylene glycol (PEG). The properties included physical and chemical properties. such as mechanical strength. static contact angle. spectroscopy. thermodynamic attributes and so on. The mechanical properties were slightly improved with the proper amount of PEG, but the improvement was not obvious and was destroyed by the wrong proportion of PEG. Cultures of the cells and amounts and structures of the adsorbed proteins on different materials showed that the PEG effectively improved the biocompatibility of the materials, The PEG enhanced the protein adsorption, cell adhesion, growth and proliferation. but the effects were impaired by excessive PEG. The experiments also demonstrated that the optimum PEG concentration helped to maintain the natural structure of the protein adsorbed on the materials and that maintaining the natural structure benefited cell growth.

Analysis of the results based on the intramolecular and intermolecular interaction forces leads to a basic theory for the modification of biomaterials. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Chitosan, Polyethylene Glycol (PEG), Mechanical Properties, Biocompatibility, Polyethylene-Glycol, Morphology, Growth, Surfaces, Adhesion, Protein, Cells

Guo, T.Y., Xia, Y.Q., Hao, G.J., Song, M.D. and Zhang, B.H. (2004), Adsorptive separation of hemoglobin by molecularly imprinted chitosan beads. *Biomaterials*, **25** (27), 5905-5912.

Full Text: [B\Biomaterials25, 5905.pdf](B/Biomaterials25,%205905.pdf)

Abstract: A simply hemoglobin (Hb) molecularly imprinted polymer (MIP) was prepared using Hb as the imprinted molecule, acrylamide as the functional monomer and cross-linked chitosan beads as the supporting matrix. The MIP was achieved by entrapment of the selective soft polyacrylamide gel in the pores of the cross-linked chitosan beads by letting acrylamide monomer and the protein diffuse into the pores of chitosan beads before starting the polymerization. The chitosan beads were freed from the surrounding polyacrylamide gel by washing. The Langmuir and Freundlich adsorption models were applied to describe the equilibrium isotherms. Langmuir analysis showed that an equal class of adsorption was formed in the MIP and the adsorption equilibrium constant and the maximum adsorption capacity were evaluated. The MIP has much higher adsorption capacity for Hb than the non-imprinted polymer with the same chemical composition, and the MIP also has a higher selectivity for the imprinted molecule. The MIP can be reused in an easy way and the reproduction coefficient was approximately 100% at low concentration.

Keywords: Chitosan Beads, Polyacrylamide Gel, Protein Adsorption, Molecularly Imprinting

? Clem, W.C., Chowdhury, S., Catledge, S.A., Weimer, J.J., Shaikh, F.M., Hennessy, K.M., Konovalov, V.V., Hill, M.R., Waterfeld, A., Bellis, S.L. and Vohra, Y.K. (2008), Mesenchymal stem cell interaction with ultra-smooth nanostructured diamond for wear-resistant orthopaedic implants. *Biomaterials*, **29** (24-25), 3461-3468.

Full Text: [2008\Biomaterials29, 3461.pdf](2008/Biomaterials29,%203461.pdf)

Abstract: Ultra-smooth nanostructured diamond (USND) can be applied to greatly increase the wear resistance of orthopaedic implants over conventional designs. Herein we describe surface modification techniques and cytocompatibility studies performed on this new material. We report that hydrogen (H)-terminated USND surfaces supported robust mesenchymal stem cell (MSC) adhesion and survival, while oxygen-(O) and fluorine (F)-terminated surfaces resisted cell adhesion, indicating that USND can be modified to either promote or prevent cell/biomaterial interactions. Given the favorable cell response to H-terminated USND, this material was further compared with two commonly used biocompatible metals, titanium alloy (Ti-6Al-4V) and cobalt chrome (CoCrMo). MSC adhesion and proliferation were significantly improved on USND compared with CoCrMo, although cell adhesion was greatest on Ti-6Al-4V. Comparable amounts of the pro-adhesive protein, fibronectin, were deposited from serum on the three substrates. Finally, MSCs were induced to undergo osteoblastic differentiation on the three materials, and deposition of a mineralized matrix was quantified. Similar amounts of mineral were deposited onto USND and CoCrMo, whereas mineral deposition was slightly higher on Ti-6Al-4V. When coupled with recently published wear studies, these in vitro results suggest that USND has the potential to reduce debris particle release from orthopaedic implants without compromising osseointegration.(c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Adhesion, Alloy, Biocompatibility, Biocompatibility, Biomedical Applications, Carbon Composite Films, Coatings, Cobalt, Diamond, Differentiation, Implants, In-Vitro, Induced, Mesenchymal Stem Cell, Metals, Modification, Modified, Osseointegration, Protein Adsorption, Proteins, Resistance, Surface, Surface Modification, Surface Treatment, Survival, Vapor-Deposited Diamond

# Title: Biomedical Chromatography

Full Journal Title: [Biomedical Chromatography](http://www3.interscience.wiley.com/cgi-bin/jtoc?ID=2770)

ISO Abbreviated Title: Biomed. Chromatogr.

JCR Abbreviated Title: Biomed Chromatogr

ISSN: 0269-3879

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: John Wiley & Sons Ltd

Publisher Address: Baffins Lane Chichester, W Sussex PO19 1UD, England

Subject Categories:

Biochemical Research Methods: Impact Factor 1.432, 28/43 (2001)

Biochemistry & Molecular Biology: Impact Factor 1.311, 200/310 (2000), Impact Factor 1.432, 190/308 (2001)

Chemistry, Analytical: Impact Factor 1.432, 28/68 (2001)

Pharmacology & Pharmacy: Impact Factor 1.432, 87/186 (2001)

Kabzinski, A.K. (1998), Application of covalent affinity chromatography with thiol-disulphide interchange for determination of environmental exposition to heavy metals based on the quantitative determination of Zn-thionein from physiological human fluids by indirect method based on analysis of metal contents. *Biomedical Chromatography*, **12** (5), 281-290.

Full Text: [B\Bio Chr12, 281.pdf](B/Bio%20Chr12,%20281.pdf)

Abstract: Intoxication with heavy metals results in numerous poisonings and diseases. They disturb metabolism of the system, are the source of cancer, degeneration changes and others. As a result of kidney damage the urine of people exposed to heavy metals contains different low molecular weight proteins, oligopeptides and amino acids, indicating pathological changes. One of the proteins is a very specific metallopolythiopolypeptide-metallothionein (MT). Based on earlier investigations, a very good correlations has been found between the contents of metallothionein in urine and plasma and the concentration of heavy metals in the blood, urine, kidneys, liver and brain and general in level of exposition to heavy metals. The aim of our investigations was to carry out quantitative isolation of Zn-thionein (Zn-Th), in order to determine the level of exposition to heavy metals. For Zn-Th protein isolation by covalent affinity chromatography with thiol-disulphide interchange (CAC-TDI) was applied, which is a modern technique of separation of a high affinity, good repeatability and reproducibility, allowing specific isolation of the thiol-proteins CAC-TDI gel was used as a solid-phase extraction (SPE) support for preconcentration of Zn-Th protein and Zn bonded with Zn-Th from water, rine, plasma and breast milk samples. The investigations showed unfavourable effect of the support on separation of thiol proteins and good correlation between the concentration of MTs protein added to water, plasma and urine and the concentration of protein indirectly determined via atomic absorption spectrometric (AAS) method, by preconcentration on SPE support metals formerly bound with MT protein and absorbed on CAC-TDI gel and calculated from metals concentration. The present paper is a continuation of earlier experiments on quantitation of Hg-thionein and Cd-thionein in physiological fluids and homogenates.

# Title: Biomedical and Environmental Sciences

Full Journal Title: [Biomedical and Environmental Sciences](http://www.besjournal.com/n3236760/n3239148/n3239152/index.html)

ISO Abbreviated Title: Biomed. Environ. Sci.

JCR Abbreviated Title: Biomed Environ Sci

ISSN: 0895-3988

Issues/Year: 4

Journal Country/Territory: Peoples R China

Language: English

Publisher: Chinese Acad Preventive Medicine

Publisher Address: C/O Academic Press Inc, 6277 Sea Harbor Dr, Orlando, FL 32887-4900

Subject Categories:

Environmental Sciences: Impact Factor 0.839, 61/126 (1999), Impact Factor 0.400, 103/127 (2000)

Public, Environmental & Occupational Health: Impact Factor, 0.839, 56/85

? Hou, H., She, Y., Ma, Y., Hu, C., Zheng, M. and Zhang, S. (1988), Investigations on methyl mercury contamination of fishes in the Second Songhua River. *Biomedical and Environmental Sciences*, **1** (1), 79-82.

Abstract: Fishes in the middle reaches of the Second Songhua River in Jilin Province were heavily contaminated by methyl mercury, the average content of 61 fish samples being 0.42 mg/kg. The upper and lower reaches were less contaminated and the averages were 0.12 mg/kg (53 samples) and 0.08 mg/kg (20 samples), respectively. The average methyl mercury content of fishes (20 samples) collected from a nearby “nonpolluted” water reservoir was 0.03 mg/kg. In a total of 134 fish samples collected from the Second Songhua River, 41% of the samples had a methyl mercury content exceeding the National Tolerance Limit of 0.2 mg/kg.

? Funari, E., Brambilla, A.L., Camoni, I., Canuti, A., Cavallaro, A., Chierici, S., Cialella, G., Donati, G., Jaforte, A. and Prandi, L. (1988), Extensive atrazine pollution of drinking water in the Lombardia region and related public health aspects. *Biomedical and Environmental Sciences*, **1** (4), 350-355.

Abstract: Introduced in 1957, atrazine is a herbicide used worldwide, mainly in corn cultivation areas for weed control. It is only slightly volatile, is highly soluble in water, and is moderately persistent in topsoil, where it is strongly absorbed to organic carbon. Because of these properties, atrazine can leach to ground water and persist for a long time. This work presents the results obtained so far from an investigation initiated because of an emergency situation in the Lombardia Region of Italy caused by the occurrence of levels of atrazine in drinking water exceeding those established by the European Economic Community and Italian regulations. Water samples from almost 3000 wells were analyzed in different laboratories of the Lombardia Region. Atrazine contamination occurred in a significant number of the wells examined. Examination of the analytical data overall leads to the conclusion that the agricultural use of atrazine in the Lombardia Region is a serious source of ground water contamination. In some areas other factors may be responsible for the contamination of ground water (for instance, industrial activities and/or uncontrolled waste discharges). Geological and hydrological characteristics may play an important role in ground water contamination. Purification systems containing active charcoal seem to be highly efficient in removing atrazine from contaminated water.

? Wang, L., Su, D.Z. and Wang, Y.F. (1994), Studies on the aluminium content in Chinese foods and the maximum permitted levels of aluminum in wheat flour products. *Biomedical and Environmental Sciences*, **7** (1), 91-99.

Full Text: [1994\Bio Env Sci7, 91.pdf](1994/Bio%20Env%20Sci7,%2091.pdf)

Abstract: Four hundred and six food samples of 64 food items, as well as 19 samples of aluminum (Al) containing food additives, were collected from Guangdong, Hunan, Shanghai and Beijing, and their Al contents were determined. The migration of Al from cooking aluminium-utensils into foods was also studied. The results show that the average daily dietary intake of Al in Chinese population was 9-12 mg. The dietary intake of migrated Al from Al-containing cooking utensils was approximately 4 mg per person per day. However, the use of Al containing food additives in the preparation of certain wheat flour products (e.g. steamed bread, deep-fried dough sticks) caused significant increase of dietary Al intake (> 1 mg/kg/day, the ADI proposed by WHO.) It is suggested that the content of Al in wheat flour products should not exceed 100 mg/kg, in order to meet the WHO ADI.

? Chai, J.J. (1995), Epidemiological studies on cystic echinococcosis in China: A review. *Biomedical and Environmental Sciences*, **8** (2), 122-136.

Full Text: [1995\Bio Env Sci8, 122.pdf](1995/Bio%20Env%20Sci8,%20122.pdf)

Abstract: In the four decades from 1951 to 1990, the six provinces or autonomous regions (Xinjiang, Gansu, Qinghai, Ningxia, Xizang and Nei Monggol) reported a total of 26, 065 surgical cases of hydatid disease, most of which were reported in the recent decade. About one third of the patients was children and adolescents under 15 years old. So far, cystic hydatid infections of local origin have been confirmed in 22 provinces, autonomous regions and municipalities in the whole nation. Findings of X-ray examination and real-time B-mode ultrasonography in agricultural and pastoral areas of Xinjiang, Gansu, Qinghai, Ningxia and Xizang showed that the morbidity rate of hydatidosis in human population varied between 0.5% and 4.5%. The main animal intermediate host in all these regions is sheep, the morbidity of which varied between 3.3% and 90%. The infection rate of adult Echinococcus granulosus in dogs varied between 7% and 71%. The high-risk period for humans contracting hydatid disease is the pre-school age. Direct contact of children with dogs and ingestion of water, vegetables and foods contaminated by worm eggs are the chief mode of transmission for human hydatidosis. The common practices of home slaughter and of feeding dogs on offal containing hydatid cysts facilitate the life cycle of the parasite. On the basis of hydatid control efforts for several years, the Ministry of Public Health promulgated officially the “1992-1995 National Programme for Hydatid Disease Control” in April, 1992, and pilot studies in which the control of hydatidosis is composed of extensive health education, sanitation of slaughtering and management and deworming of dogs are being established. Cystic echinococcosis has wide distribution in China and is a major public health problem in hyperendemic areas, poses a great threat against people’s health and influences the development of livestock husbandry. This problem has received great attention from the medical and veterinary departments. In the recent decade great efforts have been made in the epidemiology, parasitology and clinical treatment of echinococcosis, resulting in a better understanding of the disease and procedures effective in bringing about control of the disease.

? Valentine, J.L. (1997), Environmental occurrence of selenium in waters and related health significance. *Biomedical and Environmental Sciences*, **10** (2-3), 292-299.

Full Text: [1997\Bio Env Sci10, 292.pdf](1997/Bio%20Env%20Sci10,%20292.pdf)

Abstract: Appreciable amounts of selenium in spring and well waters can be found due to geological occurrence. Concentrations of as much as 400-9000 micrograms/l have been reported in U.S. waters. These levels are 8 to 180 times the current EPA drinking water standard and approximate dietary exposures of 4900 micrograms in selenosis regions of China. Reviews of health significance of the elevated drinking water exposures to U.S. populations revealed elevated concentrations of selenium in urine and blood. A decrease in glutathione peroxidase activity in such instances was noted. However noticeable symptoms and signs seem absent in studies reviewed. A comparison of intake levels (diet or drinking water) to urinary excretion for residents of China and the U.S. produced a correlation coefficient, r = 0.82 (P < 0.01) for the three research studies available.

? Lemly, A.D. (1997), Environmental implications of excessive selenium: A review. *Biomedical and Environmental Sciences*, **10** (4), 415-435.

Full Text: [1997\Bio Env Sci10, 415.pdf](1997/Bio%20Env%20Sci10,%20415.pdf)

Abstract: Selenium is a naturally occurring trace element that is nutritionally required in small amounts but it can become toxic at concentrations only twice those required. The narrow margin between beneficial and harmful levels has important implications for human activities that increase the amount of selenium in the environment. Two of these activities, disposal of fossil fuel wastes and agricultural irrigation of arid, seleniferous soils, have poisoned fish and wildlife, and threatened public health at several locations in the United States. Research studies of these episodes have generated a data base that clearly illustrates the environmental hazard of excessive selenium. It is strongly bioaccumulated by aquatic organisms and even slight increases in waterborne concentrations can quickly result in toxic effects such as deformed embryos and reproductive failure in wildlife. The selenium data base has been very beneficial in developing hazard assessment procedures and establishing environmentally sound water quality criteria. The two faces of selenium, required nutrient and potent toxin, make it a particularly important trace element in the health of both animals and man. Because of this paradox, environmental selenium in relation to agriculture, fisheries, and wildlife will continue to raise important land and water management issues for decades to come. If these issues are dealt with using prudence and the available environmental selenium data base, adverse impacts to natural resources and public health can be avoided.

? Wang, J.L., Wu, W.Z. and Zhao, X. (2004), Microbial degradation of quinoline: Kinetics study with *Burkholderia pickttii*. *Biomedical and Environmental Sciences*, **17** (1), 21-26.

Full Text: [2004\Bio Env Sci17, 21.pdf](2004/Bio%20Env%20Sci17,%2021.pdf)

Abstract: Objective To investigate the kinetics of quinoline biodegradation by Burkholderia pickttii, a Gram negative rod-shaped aerobe, isolated in our laboratory. Methods HPLC (Hewlett-Packard model 5050 with an UV detector) was used for the analysis of quinoline concentration. GC/MS method was used to identify the intermediate metabolites of quinotine degradation. Results The biodegradation of quinoline was inhibited by quinoline at a high concentration, and the degradation process could be described by the Haldane model. The kinetic parameters based on Haldane substrate inhibition were evaluated. The values were nu(max) = 0.44 h-1, K-S = 166.7 mg/L, K-I = 650 mg/L, respectively. The quinoline concentration to avoid substrate inhibition was inferred theoretically and determined to be 329 mg/L. Conclusion The biodegradation of quinoline conforms to the Haldane inhibition model and the main intermediate metabolite of quinoline biodegradation is 2-hydroxy-quinoline.

Keywords: Quinoline, Microbial Degradation, Burkholderia Pickttii, Kinetics, Substrate Inhibition, Intermediate Metabolite

? Yang, Q., Wang, J.L. and Xing, Z. (2005), Biosorption of cadmium by fungal biomass of *Aspergillus niger*? *Biomedical and Environmental Sciences*, **18** (3), 141-145.

Full Text: [2005\Bio Env Sci18, 141.pdf](2005/Bio%20Env%20Sci18,%20141.pdf)

Abstract: Objective To investigate the removal of cadmium from aqueous solution by waste fungal biomass of *Aspergillus niger*, originated from citric acid fermentation industry. Methods Batch adsorption test was used to study the biosorption equilibrium and isotherm. The Cd2+ concentration was measured with atomic adsorption spectrophotometer (AAS) HITACHI 180-80. Results The biosorption achieved equilibrium within 30 min. The adsorption isotherm could be described by Freundlich adsorption model, and the constants K-F and 1/n were determined to be 2.07 and 0.18, respectively, and the correlation efficiency was 0.97. The optimal pH for Cd adsorption was 6.0. The cadmium-laden biomass could be effectively regenerated using 0.1 N HCl. Conclusion The waste biomass of *Aspergillus niger*, a by-product of fermentation industry, is a potential biosorbent for the removal of cadmium from aqueous solution.

Keywords: Accumulation, Adsorption, *Aspergillus niger*, Biomass, Biosorption, Cadmium, Citric-Acid Production, Cu(II), Equilibrium, Freundlich, Heavy Metal Pollution, Heavy-Metals, Immobilized Cells, Lead, Phytate, Removal, Uranium

? Huang, Y., Zhang, S.Y., Lv, M.J. and Xie, S.G. (2010), Biosorption characteristics of ectomycorrhizal fungal mycelium for anthracene. *Biomedical and Environmental Sciences*, **23** (5), 378-383.

Full Text: [2010\Bio Env Sci23, 378.pdf](2010/Bio%20Env%20Sci23,%20378.pdf)

Abstract: Objective To investigate the potential of Gomphidius viscidus, a kind of ectomycorrhizal fungi, for phytoremediation of anthracene in soil. Methods Absorptioe changes of micro-habitat were studied in detail. Conclusion Ectomycorrhizal plants have a strong potential for remediation of polycyclic aromatic hydrocarn characteristics of both active and inactivated mycelia. Results A high calculated adsorption capacity of 1886.79 mg/g and 1 515.15 mg/g at 25°C, pH 6.0 for active and inactivated mycelia respectively, was obtained based on Langmuir model. The ANT biosorption was more ideally characterized by the Langmuir model than by the Freundlich model. The biosorption of anthracene to biomass was extremely fast and could be modeled with pseudo-second order adsorption kinetics. Moreover, ectomycorrhizal mycelia demonstrated a strong ability to adjust the physiological process to get adapted to the change of micro-habitat.

Keywords: Adsorption, Adsorption Capacity, Adsorption Kinetics, Anthrocene, Aqueous-Solution, Biomass, Biosorption, Capacity, Cu, Ectomycorrhizal Fungi, Freundlich, Freundlich Model, Fungi, Kinetics, Langmuir, Langmuir Model, Lindane, Microbial Biomass, Model, Organic Pollutants, Pentachlorophenol, pH, Phytoremediation, Plants, Process, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second-Order, Remediation, Removal, Rhizosphere, Seedlings, Soil

# Title: Biomedical Papers-Olomouc

Full Journal Title: Biomedical Papers-Olomouc

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Pivodova, V., Frankova, J. and Ulrichova, J. (2011), Osteoblast and gingival fibroblast markers in dental implant studies. *Biomedical Papers-Olomouc*, **155** (2), 109-116.

Full Text: [2011\Bio Pap-Olo155, 109.pdf](2011/Bio%20Pap-Olo155,%20109.pdf)

Abstract: Background. Dental implants are a suitable option for the replacement of some or all missing teeth. Their main function is to secure the stability of the artificial tooth. The implant material interacts with several cell types including osteoblasts, gingival fibroblasts, periodontal ligament fibroblasts and monocytes. The most common material used is pure titanium which is corrosion resistant and has an elasticity modulus similar to that of bone. In recent years, diverse modified titanium surfaces have also been developed. The wound healing around the implant is a complex process that determines how well the host can heal and accept the implanted material. For this reason, search for markers of the biocompatibility of these new materials is paramount. To identify markers found to be suitable for studying the biocompatibility of dental implants. Methods. Review of Pubmed and Web of Science databases for the years 1958-2010. Conclusions. The surface of dental implant material should enhance firm attachment of the implant to junctional epithelium, soft connective tissue and bone. For the purposes of dental implant biocompatibility studies, a number of markers produced by osteoblasts or by cells of periodontal ligament have been proposed. In general, the most typical markers for osteoblasts and fibroblasts are alkaline phosphatase and collagen I, respectively. The involvement of both cell types in the inflammatory response is primarily evaluated by determination of tumour necrosis factor a and proinflammatory interleukins.

Keywords: Alkaline-Phosphatase, Bone, Cell-Surface, Corrosion, Databases, Dental Implants, Epidermal-Growth-Factor, Extracellular Matrix Proteins, Extracellular-Matrix, Factor-Alpha, Gingival Fibroblasts, Immunohistochemical Localization, Implants, In-Vitro, Interleukins, Involvement, Methods, Osteoblasts, Periodontal-Ligament Fibroblasts, Porphyromonas-Gingivalis, Review, Science, Titanium Surfaces, Tumor-Necrosis-Factor, Web of Science

# Title: Biomedecine & Pharmacotherapy

Full Journal Title: [Biomedecine & Pharmacotherapy](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6127&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=5efc8b4c66ab18794eacd163d349ced7)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Le Marchand, L. (2002), Cancer preventive effects of flavonoids: A review. *Biomedecine & Pharmacotherapy*, **56** (6), 296-301.

Full Text: [B\Bio Pha56, 296.pdf](B/Bio%20Pha56,%20296.pdf)

Abstract: A cancer protective effect from plant-derived foods has been found with uncommon consistency in epidemiologic studies. However, it has been difficult to identify specific components responsible for this effect. Many phytochemicals have been shown to be biologically active and they may interact to protect against cancer. In recent years, experimental studies have provided growing evidence for the beneficial action of flavonoids on multiple cancer-related biological pathways (carcinogen bioactivation, cell-signaling, cell cycle regulation, angiogenesis, oxidative stress, inflammation). Although the epidemiologic data on flavonoids and cancer are still limited and conflicting, some protective associations have been suggested for flavonoid-rich foods (soy and premenopausal breast cancer, green tea and stomach cancer, onion and lung cancer). This review focuses on the biological effects of the main flavonoids, as well as the epidemiologic evidence that support their potential cancer protective properties.

# Title: BioMetals

Full Journal Title: [BioMetals](http://www.kluweronline.com/issn/0966-0844/)

ISO Abbreviated Title: BioMetals

JCR Abbreviated Title: BioMetals

ISSN: 0966-0844

Issues/Year: 4

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 1.568, 182/310 (2000)

Biology: Impact Factor

? Noraho, N. and Gaur, J.P. (1995), Effect of cations, including heavy-metals, on cadmium uptake by *Lemna-polyrhiza L*. *BioMetals*, **8** (2), 95-98.

Abstract: Cations, including calcium, magnesium, potassium, sodium, copper, iron, nickel and zinc, inhibited (up to 40%) extracellular binding and intracellular uptake of cadmium by Lemna polyrhiza in solution culture, Test plants showed a high capacity of extracellular cadmium binding which was competitively inhibited by copper, nickel and zinc, however, calcium, magnesium and potassium caused non-competitive inhibition, Tron and sodium increased K-m and decreased V-max, thereby causing mixed inhibition of extracellular binding, Intracellular cadmium uptake displayed Michaelis-Menten kinetics, It was competitively inhibited by calcium, magnesium, iron, nickel and zinc. Monovalent cations (sodium and potassium) caused non-competitive and copper caused mixed inhibition of intracellular cadmium uptake, Thus, high levels of cations and metals in the external environment should be expected to lower the cadmium accumulation efficiency of L. polyrhiza.

Keywords: Cations, Cadmium, Extracellular Binding, Heavy Metals, Inhibition Kinetics, Intracellular Uptake, Lemna Polyrhiza, Moss Rhytidiadelphus-Squarrosus, Cell-Walls, Adsorption, Exchange, Toxicity, Culture, Growth, Zinc

? Akthar, M.N., Sastry, K.S. and Mohan, P.M. (1996), Mechanism of metal ion biosorption by fungal biomass. *Biometals*, **9** (1), 21-28.

Abstract: Alkali extracted mycelial biomass from *Aspergillus niger*, referred to as Biosorb, was found to sequester metal ions (Cd2+, Cu2+, Zn2+, Ni2+ and Co2+) efficiently both from dilute and concentrated solutions upto 10% of its weight (w/w). Sequestration of metal ions from a mixture was also efficient but with attendant antagonisms. The kinetics of metal binding by Biosorb indicated that it is a rapid process and about 70-80% of the metal is removed from solution in 5 min followed by a slower rate, The mechanism of metal binding is shown to be due to exchange of calcium and magnesium ions of the Biosorb during which equimolar concentrations of both the ions were released into the medium, following this an efficient procedure for the regeneration and reuse of Biosorb was standardized by washing the biosorbent with calcium and magnesium solution (0.1 M). Biosorbents prepared from Neurospora, Fusarium and Penicillium also exhibited similar mechanisms for metal ion binding, though they had a lower metal binding capacity when compared with Biosorb, Chemical modification of carboxylic acid functional groups of the Biosorb resulted in loss of 90% of metal binding capacity which could not be restored even on regeneration, The significance of this finding on the metal sequestration mechanisms of microbial biosorbents is discussed.

Keywords: Accumulation, Aspergillus, Bacillus-Subtilis, Biosorbent, Biosorption, Cadmium, Calcium, Cell-Wall, Cobalt, Copper, Decontamination, Magnesium, Metal Ions, Microorganisms, Neurospora-Crassa, Nickel-Resistant Strains, Recovery, Uranium

Criado, J.J., Garcia-Moreno, M.C., Macias, R.R., Marin, J.J.G., Medarde, M. and Rodriguez-Fernandez, E. (1999), Synthesis and characterization of sodium *cis*-dichlorochenodeoxycholylglycinato(*O,N*) platinum(II)-Cytostatic activity. *BioMetals*, **12** (3), 283-290.

Full Text: [B\BioMetals12, 283.pdf](B/BioMetals12,%20283.pdf)

Abstract: With a view to using bile acids as shuttles for delivering platinum-related cytostatic drugs to liver tumors, a chenodeoxycholylglycinato(CDCG)-derivative of platinum(II) has been synthesized. The complex-named Bamet-M2-was chemically characterized by elemental analysis, FT-IR, NMR, FAB-MS, and UV spectroscopy. The results indicate the following composition: C26H42N2O5Cl2NaPt(II), the metal Pt(II) being bound to two Cl-and one bidentate CDCG moiety, i.e., Na[Pt CDCG(N, O) Cl2]. The compound is highly soluble (up to 20 mM) in water and (up to 35 mM) in ethanol, methanol and DMSO. Hydrolysis was investigated because this is assumed to be an important step in intracellular activation and interaction with DNA of this type of compounds. The reaction kinetics of this complex in aqueous solution show unusual behaviour, the substitution process with the displacement of two Cl-was almost instantaneous, and the resulting species were found to be very stable. Kinetic studies carried out in the presence of different NaCl concentrations (up to 500 mM) revealed similar fast and nonreversible aquations of Bamet-M2. This contrasts with the slow aquation of cisplatin in extracellular-line solutions (i.e., at high NaCl concentrations) as compared with fast hydrolysis in cells. This difference may partly account for the low cytostatic activity observed here for Bamet-M2 against several tumor cell-lines.

Keywords: Antitumor, Bile Acids, Cancer, Metal Complexes, Ray Crystal-Structure, Liver Organotropic Complex, Growth-Inhibitory Activity, Tumor In-Vivo, Bile-Acids, DNA-Interaction, NMR-Spectra, Ligands, Cisplatin

Pradhan, S. and Rai, L.C. (2001), Biotechnological potential of Microcystis sp in Cu, Zn and Cd biosorption from single and multimetallic systems. *BioMetals*, **14** (1), 67-74.

Full Text: [B\BioMetals14, 67.pdf](B/BioMetals14,%2067.pdf)

Abstract: This paper provides information on biosorption of Cu, Zn and Cd by Microcystis sp. in single, bi and trimetallic combination. Highest biosorption of Cu followed by Zn and Cd in single as well as in mixtures containing two or three metals was noticed. The order of inhibition of Cu, Zn and Cd biosorption in bi and trimetallic combinations was suggestive of screening or competition for the binding sites on the cell surface. This observation was reconfirmed by Freundlich adsorption isotherm. Kf values were maximum for Cu (Kf = 45.18), followed by Zn (Kf = 16.71), and Cd (Kf = 15.63) in single metallic system. The Kf values for each test metal was reduced in solution containing more than one metal. Further, the reduction in biosorption of each metal ion due to presence of other metal ion was of greater magnitude at relatively higher concentrations of interfering metal ion. The biosorption of Cu at saturation was less affected when secondary metal (Cd or Zn) was added in the medium. Above results suggest that Microcystis holds great potential for metal biosorption from mixture. *Copyright © 2001 Kluwer Academic Publishers All rights reserved*

Keywords: *Microcystis* sp., Biosorption, Cu, Zn, Cd, Adsorption Isotherm, Bimetallic and Trimetallic Combinations, Heavy-Metals, *Rhizopus-Arrhizus*, Ion-Exchange, Marine-Algae, Sorption, Biomass, Adsorption, Cu(II), Copper, Zinc

# Title: Biometrics

Full Journal Title: Biometrics

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Currie, D.J. (1982), Estimating Michaelis-Menten parameters - Bias, variance and experimental-design. *Biometrics*, **38** (4), 907-919.

? Ruppert, D., Cressie, N. and Carroll, R.J. (1989), A transformation weighting model for estimating Michaelis-Menten parameters. *Biometrics*, **45** (2), 637-656.

# Title: Biometrika

Full Journal Title: [Biometrika](http://uk.jstor.org/journals/00063444.html)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0006-3444

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Dublin, L.I. and Lotka, A.J. (1939), Twenty-five years of health progress. *Biometrika*, **30** (3-4), 469-470.

Full Text: [-1959\Biometrika30, 469.pdf](-1959/Biometrika30,%20469.pdf)

Blunck, M. and Mommsen, T.P. (1978), Systematic-errors in fitting linear transformations of Michaelis-Menten equation. *Biometrika*, **65** (2), 363-368.

Full Text: [B\Biometrika65, 36.pdf](B/Biometrika65,%2036.pdf)

Abstract: Systematic errors caused by some methods of estimating the parameters of a rectangular hyperbola are discussed using a second-order Taylor expansion. Effects of nontrivial weighting factors, sample size and types of error in the data are analysed.

? Jefferys, W.H. (1990), Robust estimation when more than one variable per equation of condition has error. *Biometrika*, **77** (3), 597-607.

Full Text: [1990\Biometrika77, 597.pdf](1990/Biometrika77,%20597.pdf)

Abstract: It is well known that, in the errors-in-variables estimation problem, the results will have unnecessary asymptotic bias unless the algorithm is properly formulated. Similar difficulties can be expected with robust estimation techniques that are based on extending least squares to a noneuclidean metric. This paper presents an algorithm for robust estimation for the nonlinear model errors-in-variableS CASE. THE PROPERTIES of THE ESTIMATES PRODUCED BY THE ALGORITHM ARE investigated, and a numerical example using data on galaxies is given.

Keywords: Errors in Variables, Maximum Likelihood, Robust Estimation

# Title: Bioorganic & Medicinal Chemistry

Full Journal Title: [Bioorganic & Medicinal Chemistry](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5220&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=f76de48e741033f0bd89f07c68763d08)

ISO Abbreviated Title: Bioorg. Med. Chem.

JCR Abbreviated Title: Bioorgan Med Chem

ISSN: 0968-0896

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Pergamon-Elsevier Science Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 2.185 (2003)

Chemistry, Medicinal: Impact Factor 2.185 (2003)

Chemistry, Organic: Impact Factor 2.185 (2003)

Matsuda, H., Ninomiya, K., Shimoda, H. and Yoshikawa, M. (2002), Hepatoprotective principles from the flowers of *Tilia argentea* (Linden): Structure requirements of tiliroside and mechanisms of action. *Bioorganic & Medicinal Chemistry*, **10** (3), 707-712.

Full Text: [B\Bio Med Che10, 707.pdf](B/Bio%20Med%20Che10,%20707.pdf)

Abstract: The methanolic extract from the flowers of Tilia argentea (linden) was found to show a hepatoprotective effect against D-galactosamine (D-GalN)/lipopolysaccharide (LPS)-induced liver injury in mice. By bioassay-guided separation using in vitro D-GalN-induced damage to hepatocytes, five flavonol glycosides were isolated as the hepatoprotective constituents of the methanolic extract. Tiliroside. the principal flavonol glycoside. strongly inhibited serum GPT and GOT elevations at doses of 25-100 mg/kg (p.o.) in D-GalN/LPS-treated mice. By comparing the inhibitory effects of tiliroside with those of its components alone. the kaempferol 3-O-beta-D-glucopyranoside moiety was found to be essential for the activity, and its effect was suggested to depend on the inhibition of tumor necrosis factor-alpha (TNF-alpha) production. decreased sensitivity of hepatocytes to TNF-alpha. and on the protection of hepatocytes against D-GalN. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Tumor-Necrosis-Factor, Chinese Bupleuri-Radix, Galactosamine, Constituents, Glycosides, Injury, Alpha, Roots, Mice

# Title: Biophysical Journal

Full Journal Title: Biophysical Journal

ISO Abbreviated Title: Biophys. J.

JCR Abbreviated Title: Biophys J

ISSN: 0006-3495

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Biophysical Society

Publisher Address: 9650 Rockville Pike, Bethesda, MD 20814-3998

Subject Categories:

Biophysics: Impact Factor

? Wilkinson, A., Morowitz, H.J. and Lund, W. (1976), An automated adsorption-isotherm device. *Biophysical Journal*, **16** (3), 193-197.

Full Text: [1960-80\Bio J16, 193.pdf](1960-80/Bio%20J16,%20193.pdf)

Abstract: A device is described for the automated determination of the water adsorption isotherms of biological materials. The vapor pressure and weight of the adsorbate are measured directly with appropriate transducers, and equilibrium is defined on the basis of constant pressure. The accuracy of the device, determined on two samples with well-known water binding properties, is -5%. Automation is achieved by electronic control.

? Wilkinson, D.A., Morowitz, H.J. and Prestegard, J.H. (1977), Hydration of phosphatidylcholine - adsorption-isotherm and proton nuclear magnetic-resonance studies. *Biophysical Journal*, **20** (2), 169-179.

Full Text: [1960-80\Bio J20, 169.pdf](1960-80/Bio%20J20,%20169.pdf)

Abstract: Adsorption-desorption isotherms were obtained for water binding by 1,2-dimyristoylphosphatidylcholine in the temperature range 15’-35°C. The isotherms were analyzed by Brunauer et al.’s (BET) theory and also a polarization theory, the latter being more successful in fitting the data. There was some evidence for a change in the surface field of the lipid bilayer around 25°C. Proton T, and T2 measurements were used to obtain a log-normal molecular correlation time distribution for water protons in these systems. This distribution was compared with the isotherm data to effect a description of several classes of water molecules.

Notes: highly cited

? Johnson, M.L., Correia, J.J., Yphantis, D.A. and Halvorson, H.R. (1981), Analysis of data from the analytical ultra-centrifuge by non-linear least-squares techniques. *Biophysical Journal*, **36** (3), 575-588.

Full Text: [1981\Bio J36, 575.pdf](1981/Bio%20J36,%20575.pdf)

Abstract: Least-squares analysis of experimental data from the analytical ultracentrifuge is discussed in detail, with particular attention to the use of interference optics in studying nonideal self-associating macromolecular systems. Several examples are given that describe the application of the technique, the expected precision of the results, and some of its limitations. A FORTRAN IV computer program is available from the authors.

? Skryma, R., Prevarskaya, N., Dufy Barbe, L. and Dufy, B. (1997), Novel potassium conductance in androgen-sensitive prostate cancer cell line, LNCaP: Involvement in cell proliferation. *Biophysical Journal*, **72** (2), THP35.

Full Text: 1997\Bio J71, THP35.pdf

Kosmidis, K., Karalis, V., Argyrakis, P. and Macherasy, P. (2004), Michaelis-Menten kinetics under spatially constrained conditions: Application to mibefradil pharmacokinetics. *Biophysical Journal*, **87** (3), 1498-1506.

Full Text: [B\Bio J87, 1498.pdf](B/Bio%20J87,%201498.pdf)

Abstract: Two different approaches were used to study the kinetics of the enzymatic reaction under heterogeneous conditions to interpret the unusual nonlinear pharmacokinetics of mibefradil. Firstly, a detailed model based on the kinetic differential equations is proposed to study the enzymatic reaction under spatial constraints and in vivo conditions. Secondly, Monte Carlo simulations of the enzyme reaction in a two-dimensional square lattice, placing special emphasis on the input and output of the substrate were applied to mimic in vivo conditions. Both the mathematical model and the Monte Carlo simulations for the enzymatic reaction reproduced the classical Michaelis-Menten (MM) kinetics in homogeneous media and unusual kinetics in fractal media. Based on these findings, a time-dependent version of the classic MM equation was developed for the rate of change of the substrate concentration in disordered media and was successfully used to describe the experimental plasma concentration-time data of mibefradil and derive estimates for the model parameters. The unusual nonlinear pharmacokinetics of mibefradil originates from the heterogeneous conditions in the reaction space of the enzymatic reaction. The modified MM equation can describe the pharmacokinetics of mibefradil as it is able to capture the heterogeneity of the enzymatic reaction in disordered media.

Keywords: Fluorescence Correlation Spectroscopy, Carrier-Mediated Transport, Monte-Carlo Simulations, Fractal Kinetics, Anomalous Diffusion, Drug-Release, Segregation, Percolation, Binding, Matrix

# Title: Biopolimery i Kletka

Full Journal Title: Biopolimery i Kletka

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0233-7657

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Tanatar, N., V. (1990), The scientometric analysis of the state and trends of the development of a scientific problem the biosensor problem as an example. *Biopolimery i Kletka*, **6** (3), 5-14.

# Title: Biopolymers

Full Journal Title: [Biopolymers](http://www3.interscience.wiley.com/journal/28380/home)

ISO Abbreviated Title: Biopolymers

JCR Abbreviated Title: Biopolymers

ISSN: 0006-3525

Issues/Year: 30

Journal Country/Territory: United States

Language: Multi-Language

Publisher: John Wiley & Sons Inc

Publisher Address: 111 River St, Hoboken, NJ 07030

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 2.372 / (2002)

Biophysics: Impact Factor 2.372 / (2002)

Notes: highly cited

? Crothers, D.M. (1968), Calculation of binding isotherms for heterogeneous polymers. *Biopolymers*, **6** (4), 575-584.

Full Text: [1960-80\Biopolymers6, 575.pdf](1960-80/Biopolymers6,%20575.pdf)

Abstract: The matrix method of statistical mechanics is used to calculate equilibria for the binding of small molecules to polymers. When there is only one kind of binding site the problem is simple; some examples are given for illustrative purposes. If, however, the binding sites are not all equivalent and the bound molecules interact or interfere with each other, the problem is no longer trivial, being formally analogous with calculation of the helix-coil transition equilibrium in a heterogeneous polypeptide. Particular difficulties arise when the sequence of binding sites is aperiodic; most naturally occurring materials fall in this class. The purpose of this paper is to point out that problems of this type are readily solved with good accuracy by use of random-number methods on a high-speed digital computer. One such calculation is presented for illustration. The methods developed are applicable to such systems as the binding of actinomycin, Hg-, and acridine dyes to DNA.

? Nossal, R. and Ninham, B. (1970), Kinetic equations for surface adsorption. *Biopolymers*, **9** (1), 103-111.

Full Text: [1960-80\Biopolymers9, 103.pdf](1960-80/Biopolymers9,%20103.pdf)

Abstract: We investigate the time-dependent solution of a set of equations used to approximate the binding of flexible polymers to the surface of suspended targets. The equations account, for the possibility that the first adsorption step can be a rate limiting step. Rate constants for other steps of adsorption and desorption are proportional to the number of free and occupied polymer binding sites, respectively.

# Title: Biopolymers and Cell

Full Journal Title: [Biopolymers and Cell](http://www.biopolymers.org.ua/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Tanatar, N.V. (1990), The scientometric analysis of the state and trends of the development of a scientific problem the biosensor problem as an example. *Biopolymers and Cell*, **6** (3), 5-14.

Abstract: The analysis of information file formed on the abstract journals was used to assess the state and trends of the development of biosensor studies. The biosensor problem has determined three integrated parameters subsequently referred to as: the substance under study, bioreceptor and sensor. The classifier based on this structure has allowed performing a fonnalistic description of the subject-matter of publications and made it possible to form the publication matrices. The subsequent mathematical data processing has shown that just now there are 35 main trends for further research. Following groups for their formalistic classification are possible: the casual trends, the trends to be completed, the developing ones, the intensively developing trends and new ones.

# Title: Bioprocess and Biosystems Engineering

Full Journal Title: [Bioprocess and Biosystems Engineering](http://www.springeronline.com/sgw/cda/frontpage/0,11855,5-175-70-1082330-0,00.html)

ISO Abbreviated Title: Bioprocess. Biosyst. Eng.

JCR Abbreviated Title: Bioproc Biosyst Eng

ISSN: 1615-7591

Issues/Year: 12

Journal Country/Territory: Germany

Language: English

Publisher: Springer-Verlag

Publisher Address: 175 Fifth Ave, New York, NY 10010

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 0.323 / (2002)

Engineering, Chemical: Impact Factor 0.323 / (2002)

? Shivarova, N., Zlateva, P., Atanasov, B., Christov, A., Peneva, N., Guerginova, M. and Alexieva, Z. (1999), Phenol utilization by filamentous yeast *Trichosporon cutaneum*. *Bioprocess and Biosystems Engineering*, **20** (4), 325-328.

Full Text: [1999\Bio Bio Eng20, 325.pdf](1999/Bio%20Bio%20Eng20,%20325.pdf)

Abstract: The investigated strain Trichosporon cutaneum shows well expressed capability for metabolizing high concentrations of phenol, up to 1 g/l, utilizing it as the sole carbon source for the growth and development of the population. The data reported, prove the good perspectives for its application in protecting the environment from phenol pollution. No data about modelling the process of cultivation of Trichosporon cutaneum in phenol media is available in scientific literature up to now. The mathematical model, reported here, consists of two nonlinear differential equations, describing cell growth and substrate consumption. The unknown parameters are estimated following the method of Hooke and Jeeves. A number of simulation investigations are carried out. They prove the adequacy of the model and its applicability in further studies on the processes of growth and phenol uptake of Trichosporon cutaneum.

Keywords: Candida-Tropicalis, Continuous Culture, Glucose, Degradation, Acetate

Cho, D.H. and Kim, E.Y. (2003), Characterization of Pb2+ biosorption from aqueous solution by *Rhodotorula glutinis*. *Bioprocess and Biosystems Engineering*, **25** (5), 271-277.

Full Text: [B\Bio Bio Eng25, 271.pdf](B/Bio%20Bio%20Eng25,%20271.pdf)

Abstract: The yeast *Rhodotorula glutinis* was examined for its ability to remove Pb2+ from aqueous solution. Within 10 min of contact, Pb2+ sorption reached nearly 80% of the total Pb2+ sorption. The optimum initial pH value for removal of Pb2+ was 4.5-5.0. The percentage sorption increased steeply with the biomass concentration up to 2 g/l and thereafter remained more or less constant. Temperature in the range 15-45°C did not show any significant difference in Pb2+ sorption by *R. glutinis*. The light metal ions such as Na+, K+, Ca2+, and Mg2+ did not significantly interfere with the binding. The Langmuir sorption model provided a good fit throughout the concentration range. The maximum Pb2+ sorption capacity qmax and Langmuir constant b were 73.5 mg/g of biomass and 0.02 l/mg, respectively. The mechanism of Pb2+ removal by *R. glutinis* involved biosorption by direct biosorptive interaction with the biomass through ion exchange and precipitation by phosphate released from the biomass.

Keywords: *Rhodotorula glutinis*, Biosorption, Pb2+, Phosphate, Precipitation, Heavy-Metals, *Saccharomyces-cerevisiae*, *Pseudomonas-aeruginosa*, Removal, Cadmium, Yeast, Uranium, Microorganisms, Mechanisms, Ramigera

? Ralla, K., Sohling, U., Riechers, D., Kasper, C., Ruf, F. and Scheper, T. (2010), Adsorption and separation of proteins by a smectitic clay mineral. *Bioprocess and Biosystems Engineering*, **33** (7), 847-861.

Full Text: [2010\Bio Bio Eng33, 847.pdf](2010/Bio%20Bio%20Eng33,%20847.pdf)

Abstract: The adsorption of proteins by a smectitic clay mineral was investigated. The clay used in this study is a mixture of montmorillonite and amorphous SiO2. Due to the high porosity the montmorillonite units are accessible for protein adsorption. The amorphous silica prevents the montmorillonite from swelling and allows column packing. Protein adsorption was performed at different pH under static conditions. Furthermore, static capacities were determined. The material reveals high adsorption capacities for proteins under static conditions (270-408 mg/g), whereby proteins are mainly adsorbed via electrostatic interactions. The Freundlich isotherm is suggested as an adsorption model. For desorption a pH shift was found to be most effective. Binding and elution of human serum albumin and ovalbumin were tested under dynamic conditions. Dynamic capacities of about 40 mg/g for ovalbumin at 764 cm/h were found. The clay mineral provides suitable properties for the application as cost-efficient, alternative separation material.

Keywords: Adsorption, Adsorption Capacities, Albumin, Alternative, Application, Bovine Serum-Albumin, Charged Biomolecules, Clay, Clay Mineral, Column, Cost-Efficient, Cottonseed Oil, Desorption, Dynamic, Elution, Freundlich, Freundlich Isotherm, High-Affinity, High-Salt Conditions, Human, Human Serum Albumin, Ion-Exchange Chromatography, Isotherm, Metal-Ions, Model, Montmorillonite, Montmorillonite, pH, Porosity, Protein, Protein Adsorption, Proteins, Rheological Properties, Separation, Serum, Silica, Smectite, Swelling, White Wines

? Durmaz-Sam, S., Sayar, N.A., Topal-Sarikaya, A. and Sayar, A.A. (2011), Biosorption of Ni(II) by *Schizosaccharomyces pombe*: kinetic and thermodynamic studies. *Bioprocess and Biosystems Engineering*, **34** (8), 997-1005.

Full Text: [2011\Bio Bio Eng34, 997.pdf](2011/Bio%20Bio%20Eng34,%20997.pdf)

Abstract: The potential of the dried yeast, wild-type Schizosaccharomyces pombe, to remove Ni(II) ion was investigated in batch mode under varying experimental conditions including pH, temperature, initial metal ion concentration and biosorbent dose. Optimum pH for biosorption was determined as 5.0. The highest equilibrium uptake of Ni(II) on S. pombe, q(e), was obtained at 25ºC as 33.8 mg g-1. It decreased with increasing temperature within a range of 25-50ºC denoting an exothermic behaviour. Increasing initial Ni(II) concentration up to 400 mg L-1 also elevated equilibrium uptake. No more adsorption took place beyond 400 mg L-1. Equilibrium data fitted better to Langmuir model rather than Freundlich model. Sips, Redlich-Peterson, and Kahn isotherm equations modelled the investigated system with a performance not better than Langmuir. Kinetic model evaluations showed that Ni(II) biosorption process followed the pseudo-second order rate model while rate constants decreased with increasing temperature. Gibbs free energy changes (Δ*G*º) of the system at 25, 30, 35 and 50ºC were found as -1.47E + 4, -1.49E + 4, -1.51E + 4, and -1.58E + 4 J mol-1, respectively. Enthalpy change (Δ*H*º) was determined as -2.57E + 3 J mol-1 which also supports the observed exothermic behaviour of the biosorption process. Entropy change (Δ*S*º) had a positive value (40.75 J mol-1 K-1) indicating an increase in randomness during biosorption process. Consequently, S. pombe was found to be a potential low-cost agent for Ni(II) in slightly acidic aqueous medium. In parallel, it has been assumed to act as a separating agent for Ni(II) recovery from its aqueous solution.

Keywords: Adsorption, Adsorption Isotherms, Aqueous-Solutions, Aspergillus-Niger, Biosorbent, Biosorption, Concentration, Equilibrium, Freundlich, Heavy-Metals, Isotherm, Kinetic, Kinetic Model, Langmuir, Metal Ion, Nickel(II) Ions, Penicillium-Chrysogenum, pH, Process Kinetics And Thermodynamics, Removal, Rhizopus-Arrhizus, Saccharomyces-Cerevisiae, Schizosaccharomyces Pombe, Temperature, Thermodynamic, Uptake

# Title: Bioprocess Engineering

Full Journal Title: [Bioprocess Engineering](http://www.springerlink.com/content/1615-7605/)

ISO Abbreviated Title: Bioprocess Eng.

JCR Abbreviated Title: Bioprocess Eng

ISSN: 0178-515X

Issues/Year: 12

Journal Country/Territory: Germany

Language: English

Publisher: Springer Verlag

Publisher Address: 175 Fifth Ave, New York, NY 10010

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 0.673, 88/134 (2000), Impact Factor 0.426, 107/131 (2001), Impact Factor

Engineering, Chemical: Impact Factor 0.730, 32/110 (1999), Impact Factor 0.673, 34/117 (2000), Impact Factor 0.426, 74/123 (2001), Impact Factor 0693, 51/126 (2002)

? Petrozzi, S. and Dunn, I.J. (1994), Biological cyanide degradation in aerobic fluidized-bed reactors - Treatment of almond seed waste-water. *Bioprocess Engineering*, **11** (1), 29-38.

Full Text: [1994\Bio Eng11, 29.pdf](1994/Bio%20Eng11,%2029.pdf)

Abstract: The continuous aerobic transformation of synthetic cyanide waste-water, amygdalin solutions and almond seed extract containing cyanide was investigated in several fluidized bed reactors. Various inocula consisting of activated sludge or soil slurry were used. Successful inoculation was achieved with simple soil slurry. No significant influence was found between the performance of the systems inoculated with a cyanide contaminated soil and a garden soil. The performance and stability of the reactors with respect to degradation rate were tested for a range of cyanide loading conditions, with feed containing only cyanide, and with different additional carbon sources, as well as various C:N ratios at a hydraulic retention time of 24 h. No growth with cyanide as the sole source of carbon and nitrogen was observed. The system with lactate as the organic C-source was capable of operating at cyanide concentrations of 16o ppm cyanide with a conversion rate of 0.125 kg cyanide/m3 d. Ammonia was the end product and the effluent concentration was 0.5 ppm CN-. The systems with ethanol as the organic C-source could degrade only 0.05 kg cyanide/m3 d, whose feed concentration was 60 ppm cyanide. Amygdalin, an organic cyanide-containing compound present in stone fruit seeds, was fed as a model substrate. Degradation rates up to 1.2 kg COD/m3 d could be measured with no free or organically bound cyanide in the effluent. These rates were limited by oxygen transfer, owing to the large amount of degradable COD. The further investigations with almond seed extracts, confirmed the applicability of the aerobic process to treat food-processing waste streams having low concentrations of cyanide with high COD content.

Keywords: Activated Sludge, Coke Plant Wastewater, Cyanide, Degradation, Fluidized Bed, Wastewater

? De, S., Rao, P.R.N., Bhattacharyya, B.C. and Bandyopadhyay, M. (1995), Sorption of heavy-metals by 4 basidiomycetous fungi. *Bioprocess Engineering*, **12** (5), 273-277.

Full Text: [1995\Bio Eng12, 273.pdf](1995/Bio%20Eng12,%20273.pdf)

Abstract: Biosorptions of Pb2+, Cr6+, Cd2+ and Ni2+ were investigated, with special emphasis on the first one, using live and dead fungal mycelia. of the four fungi, namely Polyporus ostreiformis, Volvariella volvacea, Pleurotus sajor-caju and Phanerochaete chrysosporium, the last one was found to be most effective in Pb2+ removal. Total biosorption was effected in 6 days up to the Pb2+ concentration of 6 mg/l, with a specific uptake of 1.33 mg Pb2+/g dry cell mass. The removal of other three metals varied between 28.8-73.3% from a medium containing 4 mg/l of each of the metals.

Keywords: Phanerochaete-Chrysosporium, Lignin Peroxidase, Degradation, Cadmium, Nickel

? Osman, M.S. and Bandyopadhyay, M. (1996), Cadmium removal from water environment by a fungus Volveriella volvacea. *Bioprocess Engineering*, **14** (5), 249-254.

Full Text: [1996\Bio Eng14, 249.pdf](1996/Bio%20Eng14,%20249.pdf)

Abstract: Biosorption technique was used for removal of cadmium under different conditions from water environment using a biosorbent, Volveriella volvaceas, locally growing fruit bodies of mushroom. Effects of different parameters like pH, sorbent concentration, ionic strength on the removal efficiency of cadmium by V. volvacea were carried out in continuation with adsorption kinetics and equilibrium isotherm experiments. From the kinetics studies it was found that nearly 95% of the total cadmium removal was achieved from cadmium spiked distilled water within first 15 minutes. Isotherm data was best fitted to linearised Langmuir equation and the sorption capacity was found to be varying from 9.13 to 9.33 mg/g for different sizes of sorbent. The uptake of cadmium(II) is a function of pH of the solution and increases with the increasing pH. Increasing ionic strength and the presence of soluble complexing agents such as ethylene diamine tetraacetic acid (EDTA) decrease the sorption of cadmium(II). The presence of other diavalent cations like calcium and magnesium impedes the uptake of cadmium(II). The presence of chloride ion has no significant effect on cadmium(II) removal. The spent biosorbent can effectively be regenerated with acid and can then be reused.

Keywords: *Rhizopus-Arrhizus*, Biomass

Parajó, J.C., Domínguez, H. and Domínguez, J.M. (1996), Study of charcoal adsorption for improving the production of Xylitol from wood hydrolysates. *Bioprocess Engineering*, **16** (1), 39-43.

Full Text: [B\Bio Eng16, 39.pdf](B/Bio%20Eng16,%2039.pdf)

Abstract: Xylose-containing solutions, obtained from acid prehydrolysis of Eucalyptus wood, were treated with powdered charcoal in order to remove lignin-derived compounds that limit the potential of hydrolysates for making fermentation media. Both the kinetics and equilibrium of adsorption were modelled using equations reported in literature. Charcoal-pretreated hydrolysates were supplemented with nutrients and used for producing xylitol with the yeast Debaryomyces hansenii NRRL Y-7426. The susceptibility to fermentation of culture media made with this procedure was compared with those corresponding to media made from untreated wood hydrolysates or standard xylose solutions. The removal of lignin-derived compounds from hydrolysates was closely related with the efficiency of fermentation.

Keywords: Dilute Sulfuric-Acid, Pichia-Stipitis, Hemicellulose Hydrolysate, Ethanol Fermentation, Eucalyptus Wood, Disperse Dye, Prehydrolysis, Operation, Yeast

Barnfield Frej, A.K., Johansson, S. and Leijon, P. (1997), Expanded bed adsorption at production scale: Scale-up verification, process example and sanitization of column and adsorbent. *Bioprocess Engineering*, **16** (2), 57-63.

Full Text: [B\Bio Eng16, 57.pdf](B/Bio%20Eng16,%2057.pdf)

Abstract: Expanded bed adsorption is a technique for recovery of biomolecules directly from unclarified feedstocks. The work described here demonstrates that expanded bed adsorption is a scaleable technique. The methods used to test scaleability were “determination of degree of bed expansion”, “determination of axial dispersion” and “determination of protein breakthrough capacity”. The performance of a production scale expanded bed column with 600 mm diameter was tested using these methods and the results were found to be consistent with the results obtained from lab scale and pilot scale expanded bed columns.

The scaleability and function of the expanded bed technique was also tested by performing a “process example”: a purification mimicking a real process using a yeast culture spiked with bovine serum albumin as feedstock. The results show that the 600 mm diameter production scale column was as efficient as a 25 mm diameter lab scale column in recovering bovine serum albumin from the unclarified yeast culture. The production scale runs were fully automated using a software controlled system containing an adaptor position sensor and an adsorbent sensor.

A cleaning study was performed which showed that after use of a proper cleaning protocol, no surviving microorganisms could be detected in the column or in the adsorbent.

Keywords: Purification, Recovery, Proteins, Broth

Radwan, K.H. and Ramanujam, T.K. (1997), Studies on organic removal of 2,4-dichlorophenol wastewaters using a modified RBC. *Bioprocess Engineering*, **16** (4), 219-223.

Full Text: [B\Bio Eng16, 219.pdf](B/Bio%20Eng16,%20219.pdf)

Abstract: Phenolic compound wastes from a large number of industries big and small which are highly toxic and pose a direct threat to human and aquatic life are generally let into the rivers and coastal waters. 2,4-dichlorophenol is used in the manufacture of industrial and agricultural products such as pesticides, germicides, soil sterilants, seed disinfectants and antiseptics. A modified Rotating Biological Contactor (RBC) was used for the treatability studies of synthetic 2,4-dichlorophenolic (2,4 CP) wastewaters. The RBC used was a four stage laboratory model and the discs were modified by attaching porous netlon sheets to enhance biofilm area and volume. Synthetic wastewaters were prepared with influent concentrations from 40 to 200 mg/l of 2,4 CP. Four hydraulic loads were used in the range of 0.024 to 0.065 m3.m-2.d-1 and the organic loads used were in the range of 2 to 13 g 2,4 CP.m-2.d-1. The RBC was operated at a speed of 12 rpm. Effect of hydraulic loadings and influent 2,4-dichlorophenol concentration on 2,4-dichlorophenol removal were discussed and showed maximum organic removal at hydraulic loads of 0.024 and 0.046 m3.m-2.d-1. Also, a correlation plot between 2,4 CP applied and 2,4 CP removed was presented. A mathematical model was proposed using regression analysis.

Kapat, A. and Panda, T. (1997), pH and thermal stability studies of chitinase from *Trichoderma harzianum*: A thermodynamic consideration. *Bioprocess Engineering*, **16** (5), 269-272.

Full Text: [B\Bio Eng16, 269.pdf](B/Bio%20Eng16,%20269.pdf)

Abstract: The combined effect of pH and temperature on chitinase was investigated using response surface methodology. A central composite design for two variables was employed. The optimal pH and temperature for the least degree of deactivation were found out to be 5.4 and 24°C respectively. The deactivation rate constants and the half life of chitinase were estimated at different pH and temperature combinations. At the optimal pH of 5.4, the rate of the deactivation was found to be the least. Thermodynamic parameters, viz., ΔH°, ΔS°, ΔG° and activation energy of thermal deactivation of chitinase were calculated in the temperature range from 50°C to 60°C.

Kim, J.O. (1997), Gaseous TCE and PCE removal by an activated carbon biofilter. *Bioprocess Engineering*, **16** (6), 331-337.

Full Text: [B\Bio Eng16, 331.pdf](B/Bio%20Eng16,%20331.pdf)

Abstract: Gaseous trichloroethylene (TCE) and tetrachloroethylene (PCE) are emitted in the treatment of contaminated groundwaters with air stripping and/or the remediation of contaminated soils using vapor extraction techniques. This study investigated the application of biofiltration using cometabolic process to remediate gaseous TCE and PCE that are highly recalcitrant to biodegradation. The investigation was conducted using two specially built stainless steel columns, one for TCE and the other for PCE, packed with granular activated carbon (GAG) coated with phenol-oxidizing microorganisms at residence times of 1.5-7 min. Two activated carbon biofilters were fed with phenol at a specific concentration along with a nutrient solution to optimize the various catalyzed biochemical reactions.

The removal efficiency of gaseous TCE was 100% at a residence time of 7 min and average inlet concentration of 85 ppm. For gaseous PCE, 100% removal efficiency was obtained at residence times of 4-7 min and average concentrations of 47-84 ppm. It was found that phenol fed to the biofilters was completely utilized by the phenol-oxidizing microorganisms, as an indirect indicator of the microorganisms growth in the biofilters, throughout the period of the biofilter operation. Transformation yields of gaseous TCE and PCE were about 8-48 g of TCE/g of phenol and 6-25 g of PCE/g of phenol, depending on different residence times. It was found that adsorption by GAC and absorption by the influent nutrient solution were a minor negligible mechanism for TCE and PCE removal in the activated carbon biofilters.

Keywords: Trichloroethylene, Degradation, Kinetics, Phenol

? Leonhardt, F., Hortschansky, P., Drechsler, J. and Pohl, H.D. (1997), Separation of recombinant E-coli from culture broths by adsorption to modified carriers and controlled release of an expressed protein. *Bioprocess Engineering*, **17** (1), 23-29.

Full Text: [1997\Bio Eng17, 23.pdf](1997/Bio%20Eng17,%2023.pdf)

Abstract: Investigations were carried out concerning the considerate and selective separation of intact, product including recombinant E. coli cells from culture broths by adsorption. Adsorbents were synthesized on basis of porous glass ‘‘sIRAN’’ (Schott, Mainz) by chemical surface modification in order to adapt surface charge density and hydrophobicity to the surface behavior of the hosts. It is possible to accumulate up to 58 mg dry biomass per gram carrier by using the fixed bed circulation technique and by simultaneous dosage of small amounts of polycationic reagent Polyethyleneimine (PEI). The method is especially useful for the separation of shear stress sensible microorganisms. Preferred release of the recombinant product staphylokinase (SAK) from the cytoplasmatic space of the adsorbed cells was done by permeabilization of the cells and elution of the column with suitable agents. Thus, product enrichment was achieved simultaneously with the clearence of host cell proteins and other cell components or fragments.

Keywords: Adsorption, Agents, Behavior, Biomass, Cells, Chemical, Controlled Release, Culture, Density, Dosage, Dye-Binding, Enrichment, Escherichia-Coli, Hydrophobicity, Membrane, PEI, Porous, Protein, Proteins, Selective, Separation, Stress, Surface Modification

Bustard, M., Donnellan, N., Rollan, A. and McHale, A.P. (1997), Studies on the biosorption of uranium by a thermotolerant, ethanol-producing strain of Kluyveromyces marxianus. *Bioprocess Engineering*, **17** (1), 45-50.

Full Text: [B\Bio Eng17, 45.pdf](B/Bio%20Eng17,%2045.pdf)

Abstract: The ability of residual biomass from the thermotolerant ethanol-producing yeast strain Kluyveromyces marxianus IMB3 to function as a biosorbent for uranium has been examined. It was found that the biomass had an observed maximum biosorption capacity of 120 mg U/g dry weight of biomass. The calculated value for the biosorption maximum, obtained by fitting the data to the Langmuir model was found to be 130 mg U/g dry weight biomass. Maximum biosorption capacities were examined at a number of temperatures and both the observed and calculated values obtained for those capacities increased with increasing temperature. Decreasing the pH of the biosorbate solution resulted in a decrease in uptake capacity. When biosorption reactions were carried out using sea-water as the diluent it was found that the maximum biosorption capacity of the biomass increased significantly. Using transmission electron microscopy, uranium crystals were shown to be concentrated on the outer surface of the cell wall, although uranium deposition was also observed in the interior of the cell.

Keywords: *Saccharomyces-Cerevisiae*, *Rhizopus-Arrhizus*, Metal Pollution, Biomass, Accumulation, 45°C, Cadmium, IMB3, Mechanism, Removal

Bustard, M. and McHale, A.P. (1997), Biosorption of uranium by cross-linked and alginate immobilized residual biomass from distillery spent wash. *Bioprocess Engineering*, **17** (3), 127-130.

Full Text: [B\Bio Eng17, 127.pdf](B/Bio%20Eng17,%20127.pdf)

Abstract: Residual biomass from a whiskey distillery was examined for its ability to function as a biosorbent for uranium. Biomass recovered and lyophilised exhibited a maximum biosorption capacity of 165-170 mg uranium/g dry weight biomass at 15°C. With a view towards the development of continuous or semi-continuous flow biosorption processes it was decided to immobilize the material by (1) cross-linking with formaldehyde and (2) introducing that material into alginate matrices. Crosslinking the recovered biomass resulted in the formation of a biosorbent preparation with a maximum biosorption capacity of 185-190 mg/g dry weight biomass at 15°C. Following immobilization of biomass in alginate matrices it was found that the total amount of uranium bound to the matrix did not change with increasing amounts of biomass immobilized. It was found however, that the proportion of uranium bound to the biomass within the alginate-biomass matrix increased with increasing biomass concentration. Further analysis of these preparations demonstrated that the alginate-biomass matrix had a maximum biosorption capacity of 220 mg uranium/g dry weight of the matrix, even at low concentrations of biomass.

Keywords: Uranium, Biosorption, Distillery Spent Wash, Biomass, Non-Living, Immobilization, Alginate, Formaldehyde, Metal Pollution, Cadmium Uptake, Heavy-Metals, Marine-Algae

He, L.Z., Gan, Y.R. and Sun, Y. (1997), Adsorption-desorption of BSA to highly substituted dye-ligand adsorbent: Quantitative study of the effect of ionic strength. *Bioprocess Engineering*, **17** (5), 301-305.

Full Text: [B\Bio Eng17, 301.pdf](B/Bio%20Eng17,%20301.pdf)

Abstract: Cibacron Blue 3GA was immobilized on Sepharose CL-6B to obtain a highly substituted dye-ligand adsorbent which dye concentration was 17.4 µmol dye per gram wet gel. This adsorbent had a highly binding capacity for bovine serum albumin (BSA). The effects of ionic strength on the adsorption and desorption of BSA to the adsorbent were studied. Adsorption isotherms were expressed by the Langmuir model. The quantitative relationships between the model parameters and the ionic strength were obtained. The desorptions were performed by adding salt to the BSA solutions in which adsorption equilibria had been reached. Adding salt to the solution resulted in the desorption of the bound protein. It was found that the isotherm obtained from the desorption experiments agreed well to the isotherm obtained from the adsorption experiments at the same ionic strength. The result demonstrated that the adsorption of BSA to the highly substituted adsorbent was reversible.

Keywords: Cibacron Blue F3Ga, Cross-Flow Filtration, Affinity-Chromatography, Triazine Dyes, Binding, Proteins, Agarose, Enzymes

Soni, B.K. and Jain, M.K. (1997), Influence of pH on butyrate uptake and solvent fermentation by a mutant strain of *Clostridium acetobutylicum*. *Bioprocess Engineering*, **17** (6), 329-334.

Full Text: [B\Bio Eng17, 329.pdf](B/Bio%20Eng17,%20329.pdf)

Abstract: The effect of pH (between 4.4 and 6.6) on butyrate uptake by the mutant strain of Clostridium acetobutylicum was studied using the fermentation broth from fermenter-2 (solventogenic stage) of a two-fermenter continuous system. Low pH (< 4.6) adversely affected the overall metabolic activity as observed by low solvent production and carbohydrate consumption. Uptake of 4.0±0.5 g l-1 butyrate, under batch incubation at 30°C, was not inhibited at pH > 5.2, however, at pH < 5.2, a marked inhibition in butyrate uptake was noticed. A higher pH (e.g. pH 5.4) was required for the uptake of elevated concentration of externally added butyrate at 8.5±1.0 g l-1. Batch incubation at relatively higher temperatures (35°and 37°C) indicated a similar trend i.e., a pH of > 5.5 was required for uptake of > 8 g l-1 butyrate. Optimization studies for butyrate uptake by C. acetobutylicum suggested a direct correlation between minimum pH and butyrate concentration or temperature. The role of undissociated butyric acid appears to be critical in regulation of butyrate uptake.

Keywords: Acetone-Butanol Fermentation, Synthetic Medium, Improvement, Spin

Ruiz-Manríquez, A., Magaña, P.I., López, V. and Guzmán, R. (1998), Biosorption of Cu by *Thiobacillus ferrooxidans*. *Bioprocess Engineering*, **18** (2), 113-118.

Full Text: [B\Bio Eng18, 113.pdf](B/Bio%20Eng18,%20113.pdf)

Abstract: Current technologies for removal and recovery of both toxic and industrial interest metals usually produce wastes with high concentrations of those substances. They are an important source of environmental pollution, specially when they contain heavy metals. This is one of the most important environmental problems, and of the most difficult to solve. So far, there have been a number of studies considering the possibility of removing and recovering heavy metals from diluted solutions. These are due, principally, because of the commercial value of some metals as well as the environmental impact caused by them. The traditional methods for removing have several disadvantages when metals are present in concentrations lower than 100 mg/l. Biosorption, which uses biological materials as adsorbents, has been considered as an alternative method. In this work, several variables that affect the capacity for copper biosorption by T. ferrooxidans have been studied. Particularly, the effect of pH, chemical pretreatment, biomass concentration and temperature have been considered. Results indicate that a capacity as high as 119 mg of Cu/g of dry biomass can be obtained at a temperature of 25°C.

Keywords: Metals

? Bandyopadhyay, K., Das, D. and Maiti, B.R. (1998), Kinetics of phenol degradation using *Pseudomonas putida* MTCC 1194. *Bioprocess Engineering*, **18** (5), 373-377.

Full Text: [1998\Bio Eng18, 373.pdf](1998/Bio%20Eng18,%20373.pdf)

Abstract: Pseudomonas putida (MTCC 1194) has been used to degrade phenol in water in the concentration range 100-1000 ppm. The inhibition effects of phenol as substrate have become predominant above the concentration of 500 ppm (5.31 mmoles/dm3). The optimum temperature and initial pH required for maximum phenol biodegradation were 30°C and 7.00 respectively. From the degradation data the activation energy (E-a) was found to be equal to 13.8 kcal/g mole substrate reacted. The most suitable inoculum age and volume for highest phenol degradation were 12 hrs and 7% v/v respectively. Surfactants had negligible effect on phenol biodegradation process for this microorganism. Monod model has been used to interpret the free cell data on phenol biodegradation. The kinetic parameters have been estimated upto initial concentration of 5.31 mmoles/dm3. mu(max) and K-S gradually increased with higher concentration of phenol. However, beyond the phenol concentration of 5.31 mmoles/dm3, the inhibition became prominant. The mu(max) has been to be a strong function of initial phenol concentration. The simulated and the experimental phenol degradation profiles have good correspondence with each other.

Keywords: Activation, Activation Energy, Age, Biodegradation, Concentration, Degradation, Effects, Energy, Function, Inhibition, K-S, Kinetic, Kinetic Parameters, Microorganism, Model, MTCC-1194, Parameters, pH, Phenol, Phenol Biodegradation, Phenol Degradation, Process, Profiles, Pseudomonas, Pseudomonas Putida, Range, Substrate, Temperature, Water

Annadurai, G. and Sheeja, R.Y. (1998), Use of Box-Behnken design of experiments for the adsorption of Verofix Red using biopolymer. *Bioprocess Engineering*, **18** (6), 463-466.

Full Text: [B\Bio Eng18, 463.pdf](B/Bio%20Eng18,%20463.pdf)

Abstract: Box-Behnken design with three variables like temperature, pH and particle size at three different levels was studied to identify a significant correlation between the effect of these variables to the amount of dye adsorbed. The methodology identifies the principal experimental variables, which have the greatest effect on the adsorption process. The experimental values are in good agreement with predicted values, the correlation coefficient was found to 0.9250.

Keywords: Acid Dye, Removal, Equilibrium, Adsorbents

Sokolovská, I., Albasi, C., Riba, J.P. and Báleš, V. (1998), Production of extracellular lipase by Candida cylindracea CBS 6330. *Bioprocess Engineering*, **19** (3), 179-186.

Full Text: [B\Bio Eng19, 179.pdf](B/Bio%20Eng19,%20179.pdf)

Abstract: In this study we investigated the influences of aeration, substrate type and concentration on extracellular lipase production in a batch fermenter. The use of air enriched with pure oxygen is the most suitable for the Lipase production. Additionally, we found that the presence of fats in the culture broth did not affect the value of the volumetric mass transfer coefficient of oxygen in our system. Olive oil or oleic acid was used as carbon sources. In both cases, the maximal specific rate of growth, mu(max), was the same but the highest activity was obtained when 10 g/dm(3) of olive oil were used as an initial substrate concentration.

Keywords: Fermentation Behavior, Rugosa Cells, Fatty-Acids, Olive Oil, Esterification, Culture

Lodi, A., Solisio, C., Converti, A. and Del Borghi, M. (1998), Cadmium, zinc, copper, silver and chromium(III) removal from wastewaters by *Sphaerotilus natans*. *Bioprocess Engineering*, **19** (3), 197-203.

Full Text: [B\Bio Eng19, 197.pdf](B/Bio%20Eng19,%20197.pdf)

Abstract: Living cells of *Sphaerotilus natans* are used for heavy *metal’s* (Cd, Zn, Cu, Ag, and Cr) removal from aqueous solutions simulating the polluting power of acid industrial wastewaters. At low metal concentrations (<25 mg/l) this microorganism is able to remove within 8-15 days Cd, Zn, Cu, and Ag with excellent yields (from 81 to 99%) often increasing with starting metal concentration. The yield observed for Cr(III) removal, never exceeding 60%, is not appreciably influenced by the starting biomass level, in addition, the time necessary to reach the equilibrium concentration is always remarkably longer (>30 days) than for the other metals. At much higher concentrations, the removal of all the metals is strongly affected in terms of both yield reduction and increase in the time necessary to reach the equilibrium concentrations. Under the hypothesis of mass transfer limitation, the kinetic study of batch runs suggests that metal diffusion from the bulk to the surface of S. natans clumps could be responsible not only for the simple biosorption of the tested metallic micronutrients or abiotic metals, but even for the cell penetration by ions of biological significance, like Mg2+ and Fe3+.

Keywords: Activated-Sludge Process, Insoluble Metal Removal, Heavy-Metals, Behavior, Accumulation, Adsorption

Riordan, C. and McHale, A.P. (1999), Removal of lead from solution using non-living residual brewery yeast. *Bioprocess Engineering*, **19** (4), 277-280.

Full Text: [B\Bio Eng19, 277.pdf](B/Bio%20Eng19,%20277.pdf)

Abstract: A number of preparations of residual non-living brewery yeast were examined for their ability to remove lead from solution. Those preparations included washed and un-washed intact yeast and washed and un-washed homogenates of the yeast cells. Using biosorption isotherm analysis it was found that the washed and un-washed preparations of intact, non-living yeast exhibited maximum biosorption capacities for lead of 127 and 99 mg/g dry weight biomass, respectively. The washed and unwashed cell homogenates exhibited maximum biosorption capacities of 38 and 139 mg lead/g dry weight biomass, respectively. Since it had previously been shown that these preparations of biomass were capable of removing uranium from solution by combined biosorption and precipitation processes, it was decided to examine removal of lead from solution using a form of equilibrium dialysis in which the biomass was retained within a semi-permeable membrane during contact reactions. The results suggest that precipitation plays an important role during removal of lead from solution, and this is partially due to membrane-permeable substances released from the biomass into the membrane-excluded solution. The results demonstrate that removal of lead from solution by some of the yeast preparations used in this study involves combined biosorption and precipitation.

Keywords: Biosorption, Uranium

Bustard, M. and McHale, A.P. (1999), Biosorption of heavy metals by distillery-derived biomass. *Bioprocess Engineering*, **19** (5), 351-353.

Full Text: [B\Bio Eng19, 351.pdf](B/Bio%20Eng19,%20351.pdf)

Abstract: Biomass derived from the Old Bushmill’s Distillery Co. Ltd., Northern Ireland was harvested and examined for its ability to function as a biosorbent for metals such as Cu, Zn, Fe, Pb and Ag. Binding studies were carried out using biosorption isotherm analysis. Although the material had previously been shown to be capable of efficient U biosorption, its affinity for Cu, Zn, Fe was lower. However, binding studies with Pb demonstrated that it had a maximum biosorption capacity for that metal of 189 mg/g dry weight of the biomass. In addition, the biomass exhibited a maximum biosorption capacity of 59 mg/g dry weight for Ag and this compared very favourably with previously quoted values for other industrial sources of Saccharomyces cerevisiae. On the basis of the biosorption isotherm analyses carried out in this study, preference for this series of metals by the biomass was found to be Pb > U > Ag > Zn greater than or equal to Fe > Cu.

Keywords: *Saccharomyces-Cerevisiae*, Brewery Yeast, Uranium, Pollution

Bustard, M., McMullan, G. and McHale, A.P. (1999), Biosorption of textile dyes by biomass derived from Kluyveromyces marxianus IMB3. *Bioprocess Engineering*, **19** (6), 427-430.

Full Text: [B\Bio Eng19, 427.pdf](B/Bio%20Eng19,%20427.pdf)

Abstract: Since it had previously been found that biomass derived from the thermotolerant ethanol-producing yeast strain Kluyveromyces marxianus IMB3 exhibited a relatively high affinity for heavy metals it was decided to determine whether or not it might be capable of textile dye biosorption. To this end, biosorption isotherm analysis was carried out using the biomass together with commonly-used textile dyes including Remazol Black B, Remazol Turquoise Blue, Remazol Red, Remazol Golden Yellow and Cibacron Orange. Although the dyes Remazol Black B, Remazol Turquoise Blue and Remazol Red adhered to the Langmuir model, the remaining dyes failed to do so. The observed biosorption capacities at equilibrium dye concentrations of 100 mg/l. were compared and it was found that the biomass exhibited a significant affinity for each dye. The potential use of this biosorptive material in the bioremediation of textile processing effluents is discussed.

Keywords: Thermotolerant, Ethanol, Uranium

? Ferraz, A.I. and Teixeira, J.A. (1999), The use of flocculating brewer’s yeast for Cr(III) and Pb(II) removal from residual wastewaters. *Bioprocess Engineering*, **21** (5), 431-437.

Full Text: [1999\Bio Eng21, 431.pdf](1999/Bio%20Eng21,%20431.pdf)

Abstract: The use of inexpensive biosorbents to sequester heavy metals from aqueous solutions, is one of the most promising technologies being developed to remove these toxic contaminants from wastewaters. Considering this challenge, the viability of Cr(III) and Pb(II) removal from aqueous solutions using a flocculating brewer’s yeast residual biomass from a Portuguese brewing industry was studied. The influence of physicochemical factors such as medium pH, biomass concentration and the presence of a co-ion was characterised. Metal uptake kinetics and equilibrium were also analysed, considering different incubation temperatures. For both metals, uptake increased with medium pH, being maximal at 5.0. Optimal biomass concentration for the biosorption process was determined to be 4.5 g dry weight/l. In chromium and lead mixture solutions, competition for yeast binding sites was observed between the two metals, this competition being pH dependent. Yeast biomass showed higher selectivity and uptake capacity to lead. Chromium uptake kinetic was characterised as having a rapid initial step, followed by a slower one. Langmuir model describes well chromium uptake equilibrium. Lead uptake kinetics suggested the presence of mechanisms other than biosorption, possibly including its precipitation.

Keywords: Marine-Algae, Biosorption, Lead, Adsorption, Copper

Annadurai, G., Sheeja, R.Y., Balan, S.M., Murugesan, T. and Srinivasamoorthy, V.R. (1999), Factorial design of experiments in the determination of adsorption equilibrium constants for basic Methylene Blue using biopolymer. *Bioprocess Engineering*, **20** (1), 37-43.

Full Text: [B\Bio Eng20, 37.pdf](B/Bio%20Eng20,%2037.pdf)

Abstract: Equilibrium conditions in the adsorption of a basic dye on Chitosan were studied. The Factorial Design methods and Analysis of Variance have been applied in the experimental determination of adsorption equilibrium constants. Factorial design with three levels of temperature (30°C, 45°C, 60°C), pH (6.7, 8.1, 9.5), particle size (0.177 mm, 0.914 mm, 1.651 mm) was used in identification of significant effects and interactions in the calculation of the equilibrium constants. The dye adsorption capacity of chitosan was found to increase by decreasing the particle size and increasing temperature and pH. The methodology identifies the principal experimental variables, which have the greatest effect on the adsorption process.

Keywords: Color Removal, Activated Carbon, Adsorbents

Ghigliazza, R., Lodi, A. and Rovatti, M. (1999), Phosphorus removal in aerated stirred tank reactor. *Bioprocess Engineering*, **20** (3), 257-262.

Full Text: [B\Bio Eng20, 257.pdf](B/Bio%20Eng20,%20257.pdf)

Abstract: The possibility to obtain biological phosphorus removal in strictly aerobic conditions has been investigated. Experiments, carried out in a continuous stirred tank reactor (CSTR), show the feasibility to obtain phosphorus removal without the anaerobic phase. Reactor performance in terms of phosphorus abatement kept always higher then 65% depending on adopted sludge retention time (SRT). In fact increasing SRT from 5 days to 8 days phosphorus removal and reactor performance increase but overcoming this SRT value a decreasing in reactor efficiency was recorded.

Keywords: Phosphate, Model, Mcrt

Nagarajan, G. and Annadurai, G. (1999), Biodegradation of reactive dye (Verofix Red) by the white-rot fungus *Phanerochaete chrysosporium* using Box-Behnken experimental design. *Bioprocess Engineering*, **20** (5), 435-440.

Full Text: [B\Bio Eng20, 435.pdf](B/Bio%20Eng20,%20435.pdf)

Abstract: Biodegradation of reactive dye using the white rot fungus *Phanerochaete chrysosporium* was demonstrated by the disappearance of the colour of reactive dye. An increase in dye concentration showed decreased dye degradation, and maximum dye degradation and increased biomass was observed in medium amended with limited source of nitrogen. Increasing days showed increased biomass production as well as dye degradation. Box-Behnken design with three variables like dye concentration (200, 700 and 1200 mg/l), days (2, 6 and 10) and nitrogen concentration at three different levels (0.054, 0.081 and 0.108 g/l) were studied to identify a significant correlation between the effect of these variables on the amount of biodegradation of reactive dye. The methodology identifies the principal experimental variables, which have the greatest effect in the biodegradation process. The experimental values are in good agreement with predicted values, the correlation coefficient being 0.9988.

Keywords: Lignin Degradation, Color Removal, Acid Dye, Equilibrium, Adsorption, Adsorbents

? Vergnault, H., Mercier-Bonin, M. and Willemot, R.M. (2004), Physicochemical parameters involved in the interaction of *Saccharomyces cerevisiae* cells with ion-exchange adsorbents in expanded bed chromatography. *Biotechnology Progress*, **20** (5), 1534-1542.

Full Text: [2004\Bio Eng20, 1534.pdf](2004/Bio%20Eng20,%201534.pdf)

Abstract: Expanded bed adsorption (EBA) is an interesting primary technology allowing the adsorption of target proteins from unclarified feedstock in order to combine separation, concentration, and purification steps. However, interactions between cells and adsorbent beads during the EBA process can strongly reduce the performance of the separation. So, to minimize these interactions, the mechanisms of cell adsorption on the support were investigated. Adsorption kinetics of the baker’s yeast *Saccharomyces cerevisiae* on the anion exchanger Q Hyper Z were directly performed under real EBA operating conditions, in a lab-scale UpFront 10 column. The yeast was marketed either as rod-shaped pellets (type I yeast) or as spherical pellets (type II yeast). For both types, a complete series of experiments for determining the adsorption profile versus time was performed, varying the superficial velocity or the pH. In parallel, the surface physicochemical properties of the cells (surface charge and electron-donor and electron-acceptor components) and of the support were determined. First of all, whatever the yeast types, the relation between cell adsorption and bed expansion has been highlighted, demonstrating the important role of hydrodynamic. However, for the type II yeast cells, adsorption increased dramatically, compared to the type I, even though it was shown that both types exhibited the same surface charge. In fact, there were strong differences in the Lewis acidic and basic components of the two yeasts. These differences explain the variable affinity toward the support, which was characterized by a strong electron-donor and a weak electron-acceptor component. These observed behaviors agreed with the colloidal theory. This work demonstrates that all kinds of interaction between the cells and the support (electrostatic, Lifshitz-van der Waals, acid/base) have to be taken into account together with hydrodynamic characteristics inside the bed.

Keywords: Acceptor, Adsorption Chromatography, Affinity Purification, Broth, Design, Hydrophobicity, Microbial Adhesion, Protein, Recovery, *Saccharomyces Cerevisiae*, Surfaces

Suh, J.H., Yun, J.W. and Kim, D.S. (1999), Effect of pH on Pb2+ accumulation in Saccharomyces cerevisiae and Aureobasidium pullulans. *Bioprocess Engineering*, **20** (6), 471-474.

Full Text: [B\Bio Eng20, 471.pdf](B/Bio%20Eng20,%20471.pdf)

Abstract: The optimum pH conditions of Pb2+ accumulation in Saccharomyces cerevisiae and Aureobasidium pullulans were 4 similar to 5 and 6 similar to 7, respectively. The initial Pb2+ accumulation rates according to the increase of initial Pb2+ concentration and pH were increased both in S. cerevisie and A. pullulans. And the initial Pb2+ accumulation rate of A. pullulans was much higher than that of S. cerevisiae because of the difference of Pb2+ accumulation mechanism. The Pb2+ accumulation isotherm of S. cerevisae obeyed a fully competitive inhibition, whereas that of A. pullulans showed a mixed inhibition of competition and non-competition associated with the proton (H+) as an accumulation inhibitor.

Keywords: Heavy-Metals, Biosorption

Felse, P.A. and Panda, T. (1999), Studies on applications of chitin and its derivatives. *Bioprocess Engineering*, **20** (6), 505-512.

Full Text: [B\Bio Eng20, 505.pdf](B/Bio%20Eng20,%20505.pdf)

Abstract: Chitin, a homopolymer of N-acetylglucosamine, is obtained from a variety of sources. They form the structural component of fungal cell wall and plants. They are commercially obtained from shrimp and crab shell waste from the fishing industry. Recent advances in understanding the structure and properties of chitin and its derivatives has opened a lot of new avenues for its applications. Improvements in the properties of chitin for a particular application can be easily brought about by chemical modifications. The applicability of chitin in many areas and its easy manipulation has resulted in a considerable amount of research being done on the possible applications of chitinase.

Keywords: Drug-Release, Chitosan, Immobilization, Mechanisms, Hydrogels, Sorption, Xanthan, Wheat, Films, Fiber

Suh, J.H., Yun, J.W. and Kim, D.S. (1999), Effect of extracellular polymeric substances (EPS) on Pb2+ accumulation by *Aureobasidium pullulans*. *Bioprocess Engineering*, **21** (1), 1-4.

Full Text: [B\Bio Eng21, 1.pdf](B/Bio%20Eng21,%201.pdf)

Abstract: In Pb2+ accumulation by Aureobasidium pullulans, the time to reach an equilibrium state was not dependent on the initial cell dry weight. The Pb2+ accumulation capacity was increased from 56.9 to 215.6 mg Pb2+/g cell dry weight as the biomass was stored from 1 to 53 days, and correlated with the amount of excreted extracellular polymeric substances (EPS). It was observed that Pb2+ accumulated only on the surface of the intact cells of A. pullulans due to the existence of EPS, whereas Pb2+ penetrated into the inner cellular parts of the EPS-extracted cells.

Keywords: *Saccharomyces-Cerevisiae*, *Rhizopus-Arrhizus*, Metal-Ions, Biosorption, Biomass, Adsorption, Fungi, Cells

Suh, J.H., Yun, J.W. and Kim, D.S. (1999), Cation (K+, Mg2+, Ca2+) exchange in Pb2+ accumulation by Saccharomyces cerevisiae. *Bioprocess Engineering*, **21** (5), 383-387.

Full Text: [B\Bio Eng21, 383.pdf](B/Bio%20Eng21,%20383.pdf)

Abstract: The relationship between Pb2+ accumulation and cation (K+, Mg2+, Ca2+) release in Saccharomyces cerevisiae was extensively investigated. As Pb2+ accumulation proceeded, the release of cellular metal ions such as K+, Mg2+ and Ca2+ was concomitantly released within 24 h, thereafter Pb2+ penetrated into the inner cellular parts and consequently plasmolysis of the cell was observed by TEM analysis. Pb2+ accumulation process in S. cerevisiae after 24 h was metabolism-independent because of the absence of cell viability. As the cell storage time was prolonged, the released amount of K+ was markedly increased, while the amount of accumulated Pb2+ was nearly constant regardless of cell storage time and the time required to reach an equilibrium state was shortened. The autoclaved cells had less Pb2+ accumulation capacity than the untreated cells, and the amounts of released K+ and Mg2+ were very low due to the denaturation of cell surface and cell membrane.

Keywords: Biosorption, Biomass, Cadmium, Metals

Ferraz, A.I. and Teixeira, J.A. (1999), The use of flocculating brewer’s yeast for Cr(III) and Pb(II) removal from residual wastewaters. *Bioprocess Engineering*, **21** (5), 431-437.

Full Text: [B\Bio Eng21, 431.pdf](B/Bio%20Eng21,%20431.pdf)

Abstract: The use of inexpensive biosorbents to sequester heavy metals from aqueous solutions, is one of the most promising technologies being developed to remove these toxic contaminants from wastewaters. Considering this challenge, the viability of Cr(III) and Pb(II) removal from aqueous solutions using a flocculating brewer’s yeast residual biomass from a Portuguese brewing industry was studied. The influence of physicochemical factors such as medium pH, biomass concentration and the presence of a co-ion was characterised. Metal uptake kinetics and equilibrium were also analysed, considering different incubation temperatures. For both metals, uptake increased with medium pH, being maximal at 5.0. Optimal biomass concentration for the biosorption process was determined to be 4.5 g dry weight/l. In chromium and lead mixture solutions, competition for yeast binding sites was observed between the two metals, this competition being pH dependent. Yeast biomass showed higher selectivity and uptake capacity to lead. Chromium uptake kinetic was characterised as having a rapid initial step, followed by a slower one. Langmuir model describes well chromium uptake equilibrium. Lead uptake kinetics suggested the presence of mechanisms other than biosorption, possibly including its precipitation.

Keywords: Marine-Algae, Biosorption, Lead, Adsorption, Copper

Azzoni, A.R. and Miranda, E.A. (1999), Recovery of aprotinin from insulin industrial process effluent by affinity adsorption. *Bioprocess Engineering*, **21** (6), 553-560.

Full Text: [B\Bio Eng21, 553.pdf](B/Bio%20Eng21,%20553.pdf)

Abstract: Aprotinin is a protease inhibitor found in bovine organs and used as a valuable human therapeutic compound. In this work, a process for the recovery of aprotinin from insulin industrial process effluent via affinity adsorption on immobilized trypsin and chymotrypsin was developed. First, process conditions were set as a result of a study of the effects of pH and ionic strength on pure aprotinin adsorption and desorption utilizing an experimental design methodology. The best conditions obtained with immobilized trypsin as the ligand were adsorption at 0.018 M NaCl and pH 8.7 and desorption at 0.018 M NaCl and pH 2.1. For immobilized chymotrypsin, the best conditions were adsorption at 0.582 M NaCl and pH 8.0 and desorption at 0.582 M NaCl and pH 2.1. Recovery of the inhibitor from the effluent was carried out utilizing a two-step process: trypsin agarose adsorption followed by chymotrypsin-agarose adsorption. Analysis of the chromatographic fractions by trypsin and chymotrypsin inhibition and capillary electrophoresis assays strongly suggested that the recovered inhibitor is aprotinin.

Keywords: Pancreatic Trypsin-Inhibitor, Yeast

Srinivasan, S.V. and Murthy, D.V.S. (1999), Colour removal from bagasse-based pulp mill effluent using a white rot fungus. *Bioprocess Engineering*, **21** (6), 561-564.

Full Text: [B\Bio Eng21, 561.pdf](B/Bio%20Eng21,%20561.pdf)

Abstract: Colour removal of pulp plant effluent was studied using white rot fungus, Trametes (Coriolus) versicolor. The batch experiments were carried out using fungus in the form of mycelial pellets. In the present investigation, the effect of pH, concentrations of glucose (substrate), initial effluent colour and ammonium chloride (nutrient) on colour removal efficiency were studied. It was found that the maximum colour removal efficiency of 82.5% was obtained with an optimal glucose and ammonium chloride concentrations of 15 g/l and 0.5 g/l respectively at a pH of 4.5 without diluting the effluent.

Keywords: Bleach Plant Effluents, *Phanerochaete-Chrysosporium*, Continuous Decolorization, Trametes-Versicolor, Lignin, Aox

Manimekalai, R. and Swaminathan, T. (2000), Removal of hazardous compounds by lignin peroxidase from *Phanerochaete chrysosporium*. *Bioprocess Engineering*, **22** (1), 29-33.

Full Text: [B\Bio Eng22, 29.pdf](B/Bio%20Eng22,%2029.pdf)

Abstract: Phenolic compounds, which are present in many industrial wastewaters, have become a cause for worldwide concern due to their persistence, toxicity and health risks. Enzymatic approaches to remove phenol have been tried for some years as they have several advantages compared with the conventional methods. This paper reports some studies on the use of the white rot fungus Phanerochaete chrysosporium which produces the enzyme lignin peroxidases for the removal of phenol, chlorophenol, and dyes. Batch studies in Erylenmeyer flasks showed complete removal of phenol (500×10-3 kg/m3) in 30 h. It was also seen that phenol has a significant inhibitory effect on the biomass growth and the enzyme synthesis if added in the early stages of the growth. However, phenol was effectively removed when added after attaining the maximum enzyme activity. 90% of the dyes were removed in about three days, whereas only 62% of the added 4-chlorophenol was removed in about ten days.

Keywords: White-Rot Fungus, Azo Dyes, Degradation, Pentachlorophenol, Decolorization, Involvement, Oxidation

Valdman, E. and Leite, S.G.F. (2000), Biosorption of Cd, Zn and Cu by *Sargassum* sp waste biomass. *Bioprocess Engineering*, **22** (2), 171-173.

Full Text: [B\Bio Eng22, 171.pdf](B/Bio%20Eng22,%20171.pdf)

Abstract: Biosorption is becoming an important component in the integrated approach to the treatment of aqueous effluents. The economics of biomass technical applications are improved by using waste biomass instead of purposely produced biomass. Biomass derived from an alginate extraction industry - Sargassum sp. - was examined for its ability to function as a biosorbent for metals such as cadmium, zinc and copper. For use in column applications, biomass should be immobilized. To the algae reinforcement, the biomass was embedded in polyethleneimine (PEI), followed by glutaraldehyde crosslinking. Equilibrium Zn and Cu isotherms were analysed using the immobilization ratio that showed the best Cd performance. Either Freundlich or Langmuir models can describe the passive biosorption equilibrium of cadmium, zinc and cooper. The preference for this series of metals by the biomass was found to be Cd > Zn > Cu, with maximum uptake values of 157.8, 118.5 and 77.4 mg/g dry weight biomass for Cd, Zn and Cu. respectively. The metal binding capacity by nonliving biomass is an important quality for industrial use.

Keywords: Heavy-Metals

Sánchez, E., Borja, R., Weiland, P., Travieso, L. and Martín, A. (2000), Effect of temperature and pH on the kinetics of methane production, organic nitrogen and phosphorus removal in the batch anaerobic digestion process of cattle manure. *Bioprocess Engineering*, **22** (3), 247-252.

Full Text: [B\Bio Eng22, 247.pdf](B/Bio%20Eng22,%20247.pdf)

Abstract: A study of the effect of temperature and pH on the kinetics of methane production and organic nitrogen and phosphorus degradation in the anaerobic digestion process of cattle manure was carried out. Two laboratory-scale batch completely mixed reactors, operating at 35°C (mesophilic temperature), and other two, operating at 60°C (thermophilic temperature) were used. For each temperature selected, the influent pH values were 7.6 (initial pH of the waste used) and 7.0. The apparent kinetic constants of the biomethanization process increased 2.3 times when the initial pH of the influent was increased from 7.0 to 7.6 at mesophilic temperature. The values found at thermophilic temperature were similar. The kinetic constants of methane production decreased 2.6 and 7.2 times when the operating temperature increased from 35°C to 60°C for the experiments carried out at initial pH of 7.0 and 7.6, respectively. The methane yield coefficient (1 CH4 STP/g VS removed) also decreased when the temperature increased from 35°C to 60°C for the two initial pH values studied. This behaviour agreed with the major inhibition level observed at thermophilic temperature as a result of the higher organic nitrogen removal and ammonia nitrogen production observed at 60°C. Specifically, the specific rate constants for organic nitrogen removal and ammonia nitrogen production increased 3.6 and 12 times when the temperature was increased from 35°C to 60°C for the experiments carried out at initial pH values of 7.0 and 7.6, respectively. In the same way, the values of the kinetic constant for phosphorus removal were 44% and 80% higher than those obtained at 35 OC for the two initial pH values above-mentioned, respectively. Finally, the experimental values of organic nitrogen and phosphorus concentrations were reproduced with deviations equal to or less than 10% and 15% in every case, respectively.

Keywords: Thermophilic Digestion, Ammonia Inhibition, Cow Manure, Waste, Systems, Model

Kapdan, I., Kargi, F., McMullan, G. and Marchant, R. (2000), Comparison of white-rot fungi cultures for decolorization of textile dyestuffs. *Bioprocess Engineering*, **22** (4), 347-351.

Full Text: [B\Bio Eng22, 347.pdf](B/Bio%20Eng22,%20347.pdf)

Abstract: Four different white rot fungi cultures were used for decolorization of five different textile dyestuffs. Phanerochaeta chrysosporium 671.71, P. chrysosporium MUCL, Coriolus versicolor and C, versicolor MUCL cultures effectively decolorized Everzol Yellow 4GL, Everzol Red RBN, D. Orange K-GL, Everdirect Supra yellow PG and Everzol Turquoise Blue G textile dyestuffs in shake flasks within 9 days of incubation period. Decolorization efficiencies obtained with P. chrysosporium were above 90% for all dyestuffs tested. C. versicolor cultures resulted in varying degree of decolorization efficiencies between 34% and 100%.

Keywords: *Phanerochaete-Chrysosporium*, Trametes-Versicolor, Waste-Water, Azo Dyes, Effluent, Removal, Biodegradation, Adsorbents, Bioreactor

Ferreira-Dias, S., Ribeiro, M.H.L. and Lourenço, P.A.S. (2000), Modelling adsorption of impurities from a vegetable oil in organic solution: The use of blends of activated carbon and earths. *Bioprocess Engineering*, **22** (5), 407-412.

Full Text: [B\Bio Eng22, 407.pdf](B/Bio%20Eng22,%20407.pdf)

Abstract: In this study, the use of blends of activated powdered carbon and activated earths for the selective removal of several impurities (pigments, free fatty acids and oxidation products) directly from the solution of crude olive residue oil in n-hexane (miscella) was investigated.

The optimization of batch adsorption process was carried out in a 30% oil miscella (the usual miscella concentration) via the Response Surface Methodology as a function of both the amount of total adsorbent (TA) and the percentage of activated earths (E) used in these blends with carbon. Both the adsorption of pigments (chlorophylls and carotenoids) and hydroperoxides was significantly affect-ed by TA and E (linear and/or quadratic terms). In addition, an interaction effect (TA x E) was observed on the reduction of the residual content of these compounds. However, for final oxidation products (FOP), no interaction effect (TA x E) was observed and only the linear terms of TA and E showed to be significant on the response.

Tridimensional response surfaces, described by second order polynomials, were fitted to the experimental data points concerning the residual content of pigments and initial oxidation products in miscella. The adsorption of FOP was fitted to a flat surface.

In organic solution, the selective batch adsorption to the blends of activated earths and carbon occurs in the following order: chlorophylls > carotenoids > hydroperoxides > final oxidation products. In fact, the minimum values observed for residual contents of chlorophylls, carotenoids, hydroperoxides and final oxidation products, were, respectively, about 5, 11, 25 and 41%.

The addition of mixtures of carbon with earths directly to the miscella showed to be more efficient than carbon or earths alone, similar to the observation in a solvent free classical bleaching.

Keywords: Response-Surface Optimization, Concentrated Miscella System, Structured Lipids, Hexane Miscellas, Sesame Oil, Components, Isotherms, Design, Acid

Annadurai, G., Babu, S.R., Mahesh, K.P.O. and Murugesan, T. (2000), Adsorption and bio-degradation of phenol by chitosan-immobilized *Pseudomonas putida* (NICM 2174). *Bioprocess Engineering*, **22** (6), 493-501.

Full Text: [B\Bio Eng22, 493.pdf](B/Bio%20Eng22,%20493.pdf)

Abstract: Biodegradation of phenol by *Pseudomonas putida* (NICM 2174), a potential biodegradent of phenol has been investigated for its degrading potential under different conditions. *Pseudomonas putida* (NICM 2174) cells immobilized in chitosan were used to degrade phenol. Adsorption of phenol by the chitosan immobilized matrix Flayed an important role in reducing the toxicity of phenol. In the present work, results of the batch equilibrium adsorption of phenol on chitosan from its aqueous solution at different particle sizes (0.177 mm, 0.384 mm, 1.651 mm) and initial concentration of phenol (20, 40, 60, 80, 100, 120, 140, 160, 180, 200 mg/l) have been reported. The adsorption isotherms are described by Langmuir, Freundlich and Redlich-Peterson types of equations. These indicate favourable adsorption with chitosan. From the adsorption isotherms, the adsorption capacity, energy of adsorption, number of layers and the rate constants were evaluated. In batch kinetic studies the factors affecting the rate of biodegradation of phenol, were initial phenol concentration (0.100 g/l, 0.200 g/l, 0.300 g/l), temperature (30°C, 34°C, 38°C) and pH (7.0, 8.0, 9.0). Biodegradation kinetic data indicated the applicability of Lagergren equation. The process followed first order rate kinetics. The biodegradation data generally fit the Lagergren equation and the intraparticle diffusion rate equation from which adsorption rate constants, diffusion rate constants and diffusion coefficients were determined. Intraparticle diffusion was found to be the rate-limiting step. Cell growth contributed significantly to phenol removal rates especially when the degradation medium was supplemented with a utilizable carbon source.

Keywords: Activated Carbon, Heavy-Metals, Bioaccumulation, Microorganisms, Accumulation, Equilibrium, Particles, Removal

Celaya, R.J., Noriega, J.A., Yeomans, J.H., Ortega, L.J. and Ruiz-Manríquez, A. (2000), Biosorption of Zn(II) by Thiobacillus ferrooxidans. *Bioprocess Engineering*, **22** (6), 539-542.

Full Text: [B\Bio Eng22, 539.pdf](B/Bio%20Eng22,%20539.pdf)

Abstract: There have been a number of studies considering the possibility of removing and recovering heavy metals from diluted solutions. These are due, principally, because of the commercial value of some metals as well as in the environmental impact caused by them. The traditional methods for removing have several disadvantages when metals are present in concentrations lower than 100 mg/l. Biosorption, which uses biological materials as adsorbents, has been considered as an alternative method. In this work, variables like pH and biomass chemical pretreatment have been studied for its effect on the capacity for zinc biosorption by Thiobacillus ferrooxidans. Also, studies to determinate the time for zinc adsorption were carried out. Results indicate that a capacity as high as 82.61 mg of Zn(II)/g of dry biomass can be obtained at a temperature of 25°C and that the biosorption process occurs in a time of 30 min.

Keywords: Metals

Marques, P.A.S.S., Rosa, M.F. and Pinheiro, H.M. (2000), pH effects on the removal of Cu2+, Cd2+ and Pb2+ from aqueous solution by waste brewery biomass. *Bioprocess Engineering*, **23** (2), 135-141.

Full Text: [B\Bio Eng23, 135.pdf](B/Bio%20Eng23,%20135.pdf)

Abstract: An industrial strain of Saccharomyces cerevisiae collected from the waste of a brewing industry was used to remove lead, cadmium and copper from aqueous solutions (1 mM).

Metal removal efficiency by using either biomass suspension directly diluted into the metal solutions or biomass previously incubated and washed in distilled water was compared. In all experiments with unwashed biomass a shift in the medium pH from 4.5 to a final value in the 7.0-8.0 range occurred. This pH increase was responsible for a metal precipitation effect associated to the metal biosorption. A very different pH profile was observed when washed biomass was used leading to different removal profiles for Cd2+ and Pb2+ and a similar one for Cu2+. In the absence of biomass, medium components and/or the excreted intracellular products proved to interfere in the metal removal and to be responsible for 80% Pb2+ precipitation, in the pH 4.5-5.0 range.

To initial metal solution pH, leading to the lowest residual ion concentrations, after 96 h of contact with unwashed biomass and in the absence of pH adjustment, was 4.5-5.0. Continuous or stepwise adjustment of medium pH to this range during the process was unfavourable for metal removal, being the continuous adjustment the worst procedure. In this case, Cd2+ was not biosorbed and Cu2+ removal decreased from 76 to 33%. However, Pb2+ was always extensively removed (89%) and only slightly affected by pH control.

The global results suggest different removal mechanisms for each cation. Cu2+ was removed by both metal sorption and precipitation, due to the pH shift that occurred during the process, while Cd2+ removal showed to be completely dependent of this pH shift. Pb2+ was totally and quickly removed, by precipitation, in the presence of the biomass suspension and at pH 4.5. Moreover, the biosorbent changes occurring during the process played an important role in the metal removal when non-viable microbial biomass is used.

Keywords: Heavy-Metal Biosorption, *Saccharomyces-Cerevisiae*, Yeast Biomass, Biosorbent, Seaweed, Ethanol, Lead, Ions

Nava-Ramirez, C. and Gonzalez-Martinez, S. (2000), Phosphorus uptake kinetics in a biofilm sequencing batch reactor. *Bioprocess Engineering*, **23** (2), 143-147.

Full Text: [B\Bio Eng23, 143.pdf](B/Bio%20Eng23,%20143.pdf)

Abstract: Using data from previously reported experimental work, theoretical kinetic analysis of the aerobic uptake of phosphate is presented. The data obtained in biofilm sequencing batch laboratory reactor was adjusted with polynomial regression to fit a curve during the uptake phase and then analyzed with two kinetic models: Classical Michaelis-Menten and one considering the enzymes involved have allosteric character. Data from nine experimental runs, every one under different operational conditions, were analyzed. The results show that the experimental values used fit in the model of an allosteric enzyme or enzyme-complex with four-binding sites. Based on this consideration, a catalytic model of sequential interactions was obtained which allows the interpretation of the kinetic mechanisms involved in the process. The calculated phosphorus uptake rate values do not show significant differences from the experimental ones.

Keywords: Removal

Ujam, L.B., Clemmitt, R.H. and Chase, H.A. (2000), Cell separation by expanded bed adsorption: Use of ion exchange chromatography for the separation of *E. coli* and *S. cerevisiae*. *Bioprocess Engineering*, **23** (3), 245-250.

Full Text: [B\Bio Eng23, 245.pdf](B/Bio%20Eng23,%20245.pdf)

Abstract: In a wide variety of biotechnological and medical applications it is necessary to separate different cell populations from one another. A promising approach to cell separations is demonstrated to be the adoption of chromatographic techniques conducted in expanded beds. The high voidage between the adsorbent beads in an expanded bed allows for the efficient capture of particulate entities such as cells together with washing and subsequent elution without entrapment and loss. In addition, the combination of a gentle hydrodynamic environment, a high surface area and low mixing within the expanded bed make this technique highly favourable. A model system for the separation of two types of microbial cells using STREAMLINE DEAE adsorbent in expanded bed procedures has been investigated.

The use of a less selective ligand such as an ion exchange group, which is often characterised by gentle elution procedures, has been investigated as an alternative to affinity ligands whose strong binding characteristics can result in harsh elution procedures with consequent loss of yield and cell viability. Expanded bed experiments have demonstrated selective and high capacity capture of cells from feedstocks containing either a single type of cell or as a mixture of cells of Saccharomyces cerevisiae and Eschericia coli. The capture, washing and elution phases of the separation have been studied with respect to capacity, selectivity and yield of released cells. In these procedures, separation of cell types is achieved by the presence of multiple equilibrium stages within the expanded bed.

The results show the potential for carrying out cell separations in expanded beds as an alternative to immunomagnetic cell separations. The combination of these recently developed technologies promises to be a powerful, but economic technique for cell separations involving simple equipment that can readily be scaled up.

Keywords: Perfluorocarbon Emulsions, Affinity-Chromatography, Purification, Supports

Suh, J.H. and Kim, D.S. (2000), Effects of Hg2+ and cell conditions on Pb2+ accumulation by *Saccharomyces cerevisiae*. *Bioprocess Engineering*, **23** (4), 327-329.

Full Text: [B\Bio Eng23, 327.pdf](B/Bio%20Eng23,%20327.pdf)

Abstract: Pb2+ accumulation in Saccharomyces cerevisiae changed by Hg2+ and cell conditions. The accumulated Pb2+ amounts decreased from 0.22 to 0.02 mmol Pb2+/g cell dry weight by the existence of Hg2+. But the total metals accumulation (0.42 mmol metal ions/g cell dry weight) was not changed. The order of accumulated Pb2+ amounts (mg Pb2+/g cell dry weight) according to the cell conditions at an equilibrium state was shown as the original cell (260) > 5 times autoclaved cell for 15 min (150) > grinded cell after drying (100) > autoclaved cell for 5 min (30).

Keywords: Heavy-Metals, Biosorption, Biomass, Ions

Konovalova, V.V., Bryk, M.T., Nigmatullin, R.R., Gvozdyak, P.I. and Udilova, O.F. (2000), Biocatalytic membranes for ultrafiltration treatment of wastewater containing dyes. *Bioprocess Engineering*, **23** (6), 651-656.

Full Text: [B\Bio Eng23, 651.pdf](B/Bio%20Eng23,%20651.pdf)

Abstract: A possibility to prepare the biofunctional membranes showing the biocatalytic properties and use those in post-treatment of wastewater containing synthetic dyes have been established. Selected *Pseudomonas* mendocina and Bacillus subtilis cultures were used as biocatalysts for dye destruction. It has been established that cells in spore form are able to survive in N-methylpyrrolidone that allow to use method of polymer solution casting for membrane preparation. The optimal conditions for entrapping of whole cells of microorganisms into the polymer matrix have been determined. Membrane biocatalytic activity has been studied depending on method of casting solution preparation, biocatalyst loading and operating parameters. Dye destruction occurs both in membrane pores and on membrane surface. Membrane obtained provide discolouring of treated solutions (permeate). The dye concentration in retentate depends on the trans-membrane fluxes. The concentration in retentate need not be observed at relatively low fluxes (up to 20 l/m2 h).

Yu, Y.H. and Sun, B.X. (2001), Dye-ligand poly(GMA-TAIC-DVB) affinity adsorbent for protein adsorption. *Bioprocess Engineering*, **24** (1), 25-31.

Full Text: [B\Bio Eng24, 25.pdf](B/Bio%20Eng24,%2025.pdf)

Abstract: Macroporous poly(glycidyl methacrylate-triallyl isocyanurate-divinylbenzene) was prepared by a radical suspension copolymerization. Reaction of the copolymer with 2-hydroxyethyl amine was employed to obtain a hydrophilic matrix. An affinity dye, Cibacron blue 3GA, was then coupled covalently to prepare a novel macroporous affinity adsorbent. The surface and pore structure of the affinity adsorbent were examined by scanning electron micrography (SEM). SEM observations showed that the affinity adsorbent abounded in macropores. Bovine serum albumin (BSA) and lysozyme (Lys) were used as samples to examine the adsorption properties of the adsorbent. Under appropriate conditions, the affinity adsorbent had a capacity of 15.5 mg BSA/g and 22.3 mg Lys/g (wet adsorbent weight). The adsorbed proteins could be desorbed by increasing liquid phase ionic strength or by using a NaOH solution, and the adsorbent could be recycled for protein adsorption.

Keywords: Cibacron Blue 3GA, Affinity Adsorbent, Protein Adsorption, Cibacron Blue F3GA, Polystyrenic Matrices, Poly(Vinyl Alcohol), Purification, Chromatography, Antibodies, Sepharose

# Title: Bioremediation Journal

Full Journal Title: [Bioremediation Journal](http://www.ingentaconnect.com/content/tandf/bbrm;jsessionid=u9shgbatgq1h.henrietta)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1088-9868

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Admon, S., Green, M. and Avnimelech, Y. (2001), Biodegradation kinetics of hydrocarbons in soil during land treatment of oily sludge. *Bioremediation Journal*, **5** (3), 193-209.

Full Text: [2001\Bio J5, 193.pdf](2001/Bio%20J5,%20193.pdf)

Abstract: This study focuses on the processes influencing hydrocarbon residue persistence in soil, following land treatment of refinery oily sludge. Treating sludge applied to soil resulted in 70% to 90% degradation of total petroleum hydrocarbon (TPH) during 2 months, regardless of their initial concentrations (9 to 60 g/kg soil). Kinetic analyses performed on TPH degradation, in laboratory and field systems, revealed a degradation pattern characterized by two consecutive first-order kinetics reactions in all experimental settings. The first stage lasted about 3 weeks and was characterized by a temperature dependent rate constant of 0.047 day-1 at 24°C. That value was comparable to the rate constant obtained when combining the individual rate constants of the saturated, aromatic, asphaltene and polar fractions. The subsequent slower stage rate constant was 0.012 day-1, insensitive to temperature and to hydrocarbon composition. The transition between the two stages (about 21 days) was independent of the experimental temperature and the biodegradation extent during the first stage. It was concluded that the extent of residual accumulation in the soil was determined by the biodegradation efficiency during the first three weeks of treatment when biological processes dominated. During the following period, abiotic processes leading to reduced bioavailability of the TPH were limiting the degradation rate. Practically, as the first few weeks of treatment determine its efficiency, efforts to enhance the biological activity should be directed to that period.

? Memon, G.Z., Bhanger, M.I., Memon, J.R. and Akhtar, M. (2009), Adsorption of methyl parathion from aqueous solutions using mango kernels: Equilibrium, kinetic and thermodynamic studies. *Bioremediation Journal*, **13** (2), 102-106.

Full Text: Bio J13, 102.pdf

Abstract: The adsorption of methyl parathion from aqueous solutions by the low-cost and abundant adsorbent mango kernel was studied in a batch adsorption system. The adsorption was studied as a function of pH, contact time, initial pesticide concentration, adsorbent dose, and temperature. A maximum adsorption of 98% 1% was achieved. Physicochemical characterization of the adsorbent was carried out by EDXRF, BET, and CHNS analysis. Freundlich, Langmuir, and Dubinin-Radushkevich isotherms were employed to evaluate the adsorption capacity of the adsorbent. Lagergren, Morris-Weber, and Reichenberg equations were employed to study the kinetics of the adsorption process. Thermodynamic parameters H, S, and G were computed. The developed adsorption method was applied to real environmental samples.

Keywords: Adsorbent, Adsorption, Dye, Husk, Isotherms, Kinetics, Mango Kernel, Metal-Ions, Methyl Parathion, Peel, Pesticide, Removal, Thermodynamics, Water-Treatment

? Chowdhury, S. and Saha, P. (2010), Pseudo-second-order kinetic model for biosorption of Methylene blue onto tamarind fruit shell: Comparison of linear and nonlinear methods. *Bioremediation Journal*, **14** (4), 196-207.

Full Text: [2010\Bio J14, 196.pdf](2010/Bio%20J14,%20196.pdf)

Abstract: In this study, the sorption of methylene blue, a basic dye, onto tamarind fruit shell was studied by performing batch kinetic sorption experiments. The equilibrium kinetic data were analyzed using the pseudo-second-order kinetic model. A comparison between linear least squares method and nonlinear regression method of estimating the kinetic parameters was examined. Four pseudo-second-order kinetic linear equations were discussed. The coefficient of determination (r2), and the chi-square (2) test were employed as error analysis methods to determine the best-fitting equation. Kinetic parameters obtained from four kinetic linear equations using the linear method differed but they were the same when nonlinear method was used. Present investigation showed that by linear method a Type 1 expression very well represent the kinetic uptake of methylene blue onto tamarind fruit shell. Linear method was found to check only the hypothesis instead of verifying the kinetic model. Nonlinear regression method was found to be the more appropriate method to determine the rate kinetic parameters.

Keywords: Activated Carbon, Adsorption, Analysis, Aqueous-Solution, Basic Dye, Batch, Biosorption, Chi-Square, Comparison, Data, Dye, Equilibrium, Error, Error Analysis, Experiments, Expression, Heavy-Metals, Investigation, Kinetic, Kinetic Model, Kinetic Parameters, Kinetic Sorption, Linear Method, Malachite Green, Methods, Methylene Blue, Model, Nonlinear Method, Nonlinear Regression, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Regression, Removal, Sorption, Tamarind Fruit Shell, Thermodynamics, Tree Fern, Uptake

? Kousalya, G.N., Gandhi, M.R. and Meenakshi, S. (2010), Preparation of modified chitin for the removal of chromium(VI). *Bioremediation Journal*, **14** (4), 208-218.

Full Text: [2010\Bio J14, 208.pdf](2010/Bio%20J14,%20208.pdf)

Abstract: Chitin was chemically modified into various forms for enhancing chromium sorption. The modified forms of chitin, viz., protonated chitin (PC), carboxylated chitin (CC), and grafted chitin (GC), possessed enhanced chromium sorption capacities (SCs) of 2812, 3010, and 3770 mg/kg, respectively, than the raw chitin (C), which showed the SC of 2316 mg/kg. The sorption experiments were carried out in batch mode to optimize various influencing parameters, viz., contact time, pH, common ions, and temperature. The sorbents were characterized by Fourier transform infrared (FTIR) spectroscopy and scanning electron microscopy (SEM). The modified forms of chitin removes chromium by means of electrostatic adsorption coupled reduction and complexation. The adsorption data were fitted with Freundlich and Langmuir isotherms. The calculated values of thermodynamic parameters indicate the nature of chromium sorption. The dynamic studies demonstrated that the sorption process follows pseudo-second-order and intraparticle diffusion models. The suitability of these modified chitin has been tested with field sample collected from a nearby industrial area.

Keywords: Adsorption, Aqueous-Solution, Batch, Batch Mode, Chitin, Chitosan Beads, Chromium, Chromium(VI), Complexation, Composite, Cr(VI), Data, Diffusion, Dynamic, Dynamic Studies, Electron Microscopy, Equilibrium, Experiments, Field, Forms, Freundlich, FTIR, Grafted, Heavy-Metals, Hexavalent Chromium, Intraparticle Diffusion, Ions, Isotherm, Isotherms, Kinetics, Langmuir, Langmuir Isotherms, Mode, Models, Modified, pH, Preparation, Pseudo Second Order, Pseudo-Second-Order, Reduction, Removal, Scanning Electron Microscopy, SEM, Sorbents, Sorption, Sorption, Sorption Process, Spectroscopy, Temperature, Thermodynamic, Thermodynamic Parameters

? Basha, S., Murthy, Z.V.P. and Jha, B. (2011), Kinetics, isotherms, and thermodynamics of Hg(II) biosorption onto *Carica papaya*. *Bioremediation Journal*, **15** (1), 26-34.

Full Text: [2011\Bio J15, 26.pdf](2011/Bio%20J15,%2026.pdf)

Abstract: Carica papaya, a novel sorbent, was evaluated for sorption of Hg(II) from synthetic aqueous solutions using various pseudo-second order kinetic models as well as equilibrium sorption models. Batch kinetic and equilibrium experiments were carried out for the sorption of Hg(II) onto C. papaya at pH 6.5 and solid to liquid ratio (s/l) 1.0 g L-1. The kinetic data were fitted to second order models of Sobkowsk and Czerwinski, Ritchie, Blanchard, Ho and McKay, whereas Langmuir, Freundlich, and Redlich-Peterson models were used for the equilibrium data. A comparative study on both linear and nonlinear regression showed that the Sobkowsk and Czerwinski and Ritchie’s second order model were the same. Ho and McKay’s pseudo-second order model fitted well to the experimental data when compared with the other second order kinetic expressions. Langmuir isotherm parameters obtained from the four Langmuir linear equations by using linear method were dissimilar, but were the same when nonlinear method was used. Additionally, various thermodynamic parameters, such as G0, H0, and S0, were calculated. The negative values of Gibbs free energy (G0) and H0 confirmed the intrinsic nature of biosorption process and exothermic, respectively. The negative value of S0 showed the decreased randomness at the solid-solution interface during biosorption.

Keywords: Activated Carbon, Adsorption, Adsorption, Aqueous-Solutions, Basic-Dyes, Biosorption, Component Systems, Divalent Metal-Ions, Equilibrium, Freundlich, Heavy-Metals, Isotherm, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, Mathematical Modeling, Nonlinear, Nonlinear Method, pH, Removal, Sorption, Thermodynamic, Thermodynamic Parameters, Thermodynamics

? Anirudhan, T.S. and Radhakrishnan, P.G. (2011), Adsorptive removal and recovery of U(VI), Cu(II), Zn(II), and Co(II) from water and industry effluents. *Bioremediation Journal*, **15** (1), 39-56.

Full Text: [2011\Bio J15, 39.pdf](2011/Bio%20J15,%2039.pdf)

Abstract: Tamarind fruit shell (TFS) was converted to a cation exchanger (PGTFS-SP-COOH) having a carboxylate functional group at the chain end by grafting poly(hydroxyethylmethacrylate) onto TFS (a lignocellulosic residue) using potassium peroxydisulfate-sodium thiosulfate redox initiator, and in the presence of N, N ‘-methylenebisacrylamide as a cross-linking agent, followed by functionalization. The chemical modification was investigated using Fourier transform infrared (FTIR), X-ray diffraction (XRD), and potentiometric titrations. The feasibility of PGTFS-SP-COOH for the removal of heavy metals such as U(VI), Cu(II), Zn(II), and Co(II) ions from aqueous solutions was investigated by batch process. The optimum pH range for the removal of meal ions was found to be 6.0. For all the metal ions, equilibrium was attained within 2 h. The kinetic and isotherm data, obtained at optimum pH value 6.0, could be fitted with pseudo-second-order equation and Sips isotherm model, respectively. The Sips maximum adsorption capacity for U(VI), Cu(II), Zn(II), and Co(II) ions at 30ºC was found to be 100.79, 65.69, 65.97, and 58. 81 mg/g, respectively. Increase of ionic strength decreased the metal ion adsorption. Different wastewater samples were treated with PGTFS-SP-COOH to demonstrate its efficiency in removing metal ions from wastewater. The adsorbed metal ions on PGTFS-SP-COOH can be recovered by treating with 1.0 M NaCl + 0.5 M HCl for U(VI) ions and 0.2 M HCl for Cu(II), Co(II), and Zn(II) ions. Four adsorption/desorption cycles were performed without significant decrease in removal capacity. The results showed that PGTFS-SP-COOH developed in this study exhibited considerable adsorption potential for the removal of U(VI), Cu(II), Zn(II), and Co(II) ions from water and wastewaters.

Keywords: Adsorption, Aqueous-Solution, Biosorption, Co(II) Ions, Cu(II), Desorption, Equilibrium, Ftir, Functionalization, Graft Copolymerization, Heavy Metals, Hydrogels, Isotherm, Kinetic, Metal-Ions, Modified Cellulosics, pH, Recovery, Removal, Rice Husk, Separation, Sorption, Tamarind Fruit Shell, U(VI), Uranium, Waste-Water, Wastewater

? Rajeshkannan, R., Rajasimman, M. and Rajamohan, N. (2011), Sorption of Acid Blue 9 using *Hydrilla verticillata* biomass－Optimization, equilibrium, and kinetics studies. *Bioremediation Journal*, **15** (1), 57-67.

Full Text: [2011\Bio J15, 57.pdf](2011/Bio%20J15,%2057.pdf)

Abstract: In the present study, the parameters, temperature, adsorbent dose, contact time, adsorbent size, and agitation speed were optimized for Acid Blue 9 removal from aqueous medium by Hydrilla verticillata biomass using response surface methodology (RSM). The optimum conditions for maximum removal of Acid Blue 9 from an aqueous solution of 100 mg/L were as follows: temperature 30.63ºC, adsorbent dose 2.88 g/L, contact time 180 min, adsorbent size 120 mesh (0.124 mm), and agitation speed 237.39 rpm. At these optimized conditions, batch adsorption experiments were conducted to study the effect of pH and initial dye concentration for the removal of Acid Blue 9 dye. The optimum initial pH and initial dye concentration values for Acid Blue 9 removal were found to be 3.0 and 100 mg/L, respectively. Kinetic and equilibrium studies were carried out for the experimental results. From the kinetic studies it was found that pseudo-second-order kinetics suits the system well. From the equilibrium studies, the Freundlich isotherm fits the data well.

Keywords: Acid Blue 9, Adsorbents, Adsorption, Aqueous-Solutions, Batch, Biosorption, Dye, Equilibrium, Freundlich, Freundlich Isotherm, Hydrilla Verticillata, Isotherm, Kinetic, Kinetics, Optimization, pH, Phanerochaete-Chrysosporium, Removal, Rice-Husk, Sorption, Textile Dye Effluent

? Chowdhury, S., Misra, R., Kushwaha, P. and Das, P. (2011), Optimum sorption isotherm by linear and nonlinear methods for safranin onto alkali-treated rice husk. *Bioremediation Journal*, **15** (2), 77-89.

Full Text: [2011\Bio J15, 77.pdf](2011/Bio%20J15,%2077.pdf)

Abstract: Rice husk, a lignocellulosic by-product of the agroindustry, was treated with alkali and used as a low-cost adsorbent for the removal of safranin from aqueous solution in batch adsorption procedure. In order to estimate the equilibrium parameters, the equilibrium adsorption data were analyzed using the following two-parameter isotherms: Freundlich, Langmuir, and Temkin. A comparison of linear and nonlinear regression methods in selecting the optimum adsorption isotherm was applied on the experimental data. Six linearized isotherm models (including four linearized Langmuir models) and three nonlinear isotherm models are thus discussed in this paper. In order to determine the best-fit isotherm predicted by each method, seven error functions namely, coefficient of determination (r2), the sum of the squares of the errors (SSE), sum of the absolute errors (SAE), average relative error (ARE), hybrid fractional error-function (HYBRID), Marquardt’s percent standard deviation (MPSD), and the chi-square test (2) were used. It was concluded that the nonlinear method is a better way to obtain the isotherm parameters and the data were in good agreement with the Langmuir isotherm model.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Isotherm, Aqueous Solution, Aqueous-Solutions, Basic-Dyes, Batch, Batch Adsorption, Chi-Square, Coir Pith, Color Removal, Dye Removal, Equilibrium, Error Functions Linear Method, Experimental, Freundlich, Isotherm, Isotherm Models, Isotherm Parameters, Isotherms, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Linear, Low Cost, Low-Cost Adsorbent, Malachite-Green, Methods, Methylene-Blue, Model, Nonlinear, Nonlinear Method, Regression-Analysis, Removal, Rice Husk, Safranin, Sorption

? Chowdhury, S. and Das, P. (2011), Linear and nonlinear regression analyses for binary sorption kinetics of Methylene Blue and safranin onto pretreated rice husk. *Bioremediation Journal*, **15** (2), 99-108.

Full Text: [2011\Bio J15, 99.pdf](2011/Bio%20J15,%2099.pdf)

Abstract: This article extends the study of the comparison between linear and nonlinear forms of the two widely used kinetic models, namely, pseudo-first-order and pseudo-second-order, by considering the binary biosorption of the basic dyes methylene blue and safranin onto pretreated rice husk in a batch system. The present investigation showed that nonlinear forms of pseudo-first-order and pseudo-second-order models were more suitable than the linear forms for fitting the experimental data. The sorption process was found to follow the pseudo-second-order kinetics. The results suggest that it is not appropriate to use the linear method in determining the kinetic parameters of a particular kinetic model. The nonlinear method is a better way to obtain the kinetic parameters than the linear method and thus it should be primarily adopted to determine the kinetic parameters.

Keywords: Activated Carbon, Adsorption, Basic Dyes, Binary Biosorption, Biosorption, Dyes, Equilibrium, Heavy-Metals, Kinetic, Kinetic Model, Kinetic Models, Kinetics, Linear Method, Malachite Green, Methylene Blue, Model, Nonlinear, Nonlinear Method, Removal, Rice, Rice Husk, Sorption, Thermodynamics

# Title: Bioresource Technology

Full Journal Title: [Bioresource Technology](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=5692&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=ce4c9baaa8a727f1cf3b95f41302a4ae)

ISO Abbreviated Title: Bioresour. Technol.

JCR Abbreviated Title: Bioresource Technol

ISSN: 0960-8524

Issues/Year: 10

Journal Country/Territory: England

Language: English

Publisher: Elsevier Sci Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England

Subject Categories:

Agricultural Engineering: Impact Factor 0.890, 1/10 (2001), Impact Factor 1.289, 1/10 (2002), Impact Factor 1.382, 1/10 (2003), Impact Factor 1.387, 1/9 (2004); Impact Factor 1.863, 1/9 (2005); Impact Factor 2.180, 1/9 (2006); Impact Factor 3.103, 1/9 (2007); Impact Factor 4.253, 1/11 (2009); Impact Factor 4.365, 1/12 (2010)

Biotechnology & Applied Microbiology: Impact Factor 0.890, 73/131 (2001), Impact Factor 1.289, 56/131 (2002), Impact Factor 1.382, 59/132 (2003), Impact Factor 1.387, 66/133 (2004); Impact Factor 1.863, 58/139 (2005); Impact Factor 2.180, 52/140 (2006); Impact Factor 3.103, 33/138 (2007); Impact Factor 4.253, 21/150 (2009); Impact Factor 4.365, 23/160 (2010)

Energy & Fuels: Impact Factor 0.890, 17/66 (2001), Impact Factor 1.289, 7/63 (2002), Impact Factor 1.382, 6/62 (2003), Impact Factor 1.387, 7/61 (2004); Impact Factor 1.863, 8/63 (2005); Impact Factor 2.180, 5/62 (2006); Impact Factor 3.103, 4/64 (2007); Impact Factor 4.253, 4/70 (2009); Impact Factor 4.365, 9/79 (2010)

Low, K.S. and Lee, C.K. (1991), Cadmium uptake by the moss, *Calymperes delessertii*, Besch. *Bioresource Technology*, **38** (1), 1-6.

Full Text: [B\Bio Tec38, 1.pdf](B/Bio%20Tec38,%201.pdf)

Abstract: Studies were conducted to assess the capability of a moss, Calymperes delessertii Besch, in removing cadmium from solutions. In the batch experiments, parameters studied included pH, sorbent dosage, cadmium concentration, ionic strength, presence of other ions, temperature and contact time. In addition, a series of fixed-bed experiments was performed to study the flow system in an attempt to simulate industrial conditions. The bed depth service time (BDST) model proposed by Hutchins was successfully applied to the system. The results show that the moss is an efficient sorbent for cadmium from solution and that the mechanism of sorption is mainly an ion-exchange process.

Keywords: Moss, Cadmium, Aqueous Solution, Uptake, Absorption Characteristics, Removal

Namasivayam, C. and Ranganathan, K. (1992), Waste Fe3+/Cr3+ sludge as flocculant for the treatment of dairy waste-water. *Bioresource Technology*, **40** (3), 209-213.

Full Text: [B\Bio Tec40, 209.pdf](B/Bio%20Tec40,%20209.pdf)

Abstract: Variation in the characteristics of dairy wastewater with storage time is shown. The efficiency of Fe3+/Cr3+ sludge, a waste material from the wastewater treatment in the fertilizer industry, is compared with the conventional flocculants, ferric chloride and ferrous sulphate, in the treatment of dairy wastewater. The percentage removals of turbidity, BOD, COD, oil and grease and total phosphate were 81±5, 68±5, 70±5, 52±5 and 70±5 respectively, by 1.043 g dosage of sludge per litre of the effluent, and the pH of the treated water was 5.7.

Keywords: Dairy Waste-Water, Waste Fe3+/Cr3+ Sludge, Flocculation

Sangodoyin, A.Y. and Agbawhe, O.M. (1992), Environmental-study on surface and groundwater pollutants from abattoir effluents. *Bioresource Technology*, **41** (3), 193-200.

Full Text: [B\Bio Tec41, 193.pdf](B/Bio%20Tec41,%20193.pdf)

Abstract: Five typical slaughter houses in Ibadan, Nigeria, and their pollutant generation, as monitored by water-quality parameters in four adjacent streams and wells, were compared. Findings indicated that slaughter house waste generally has a high polluting strength with representative chemical oxygen demand (COD) and total solids (TS) values of 2410 mg/l and 13 100 mg/l, respectively. Whilst these and other parameters remained relatively high within 500 m of the discharge point, a decay, almost in exponential form, was observed beyond this point showing evidence of self-purification of receiving streams. Leachates and effluents from the abattoir sites were found to increase, in particular, the COD, Ca2+, Cl-and NO3-values of the underlying aquifer. The chemical composition of the groundwater approximately 250 m from the abattoir site was also found unsatisfactory as a raw water source for drinking purposes. In most cases, treatment of the solid component of the waste was confined to dumping, followed by land application. The paper offers some suggestions on methods for pollution-free slaughter house operations in a developing country. It also highlights the public health aspects of the processes involved.

Keywords: Environment, Abattoir, Effluents, Wastes, Groundwater, Surface Water, Nigeria, Pollution

Said, O.B., Shalmor, M.B. and Egila, J.N. (1993), A note on the binding of nickel and copper ions by cellulosic materials. *Bioresource Technology*, **43** (1), 63-65.

Full Text: [B\Bio Tec43, 63.pdf](B/Bio%20Tec43,%2063.pdf)

Abstract: Cellulosic materials of tropical origin — bambara nuts (*Voandzeia subterranea*) and rice husks (*Oryza sativa*) — were treated with copper and nickel ions and the adsorption behaviour studied. The amount of metal ion removed from solution depended on the metallic ion-substrate contact time, the ion concentration and ion type. The amount of adsorption of these divalent ions varied with the cellulosic material.

The cellulosic materials could bind substantial amounts of nickel and copper ions, and the amount of metal ion adsorbed per gram of the cellulose substrate increased with increase in initial ion concentration.

Keywords: Bambara Nut Husk, Rice Husk, Adsorption, Copper, Nickel, Contact Time

Bernal, M.P. and Lopez-Real, J.M. (1993), Natural zeolites and sepiolite as ammonium and ammonia adsorbent materials. *Bioresource Technology*, **43** (1), 27-33.

Full Text: [B\Bio Tec43, 27.pdf](B/Bio%20Tec43,%2027.pdf)

Abstract: Zeolite clinoptilolite is a natural mineral with ionexchange and gas-adsorption properties. Ammonium- and ammonia-adsorption processes were studied in the zeolite clinoptilolite and zeolite-like sepiolite minerals. Maximum adsorption capacities of both ammonium and ammonia were determined by fitting the experimental results of the adsoption isotherm to Langmuir and first-order models. Ammonium-adsorption capacities of the zeolites were from 8.149 to 15.169 mg N g−1, up to 10.3 times higher than that of sepiolite. Ammonium-adsorption capacity increased with the surface charge density of the material, due to the readily available exchange sites in the surface.

Ammonia-adsorption capacities of the zeolites were between 6.255 and 14.155 mg N g−1. Because of its large surface area, sepiolite had a capacity of ammonia adsorption three times higher than that of the ammonium ion. The complexity of the ammonia-adsorption process meant that no individual characteristics of the materials influenced directly the adsorption capacity. However, ammonia adsorption was enhanced on the ammonium adsorption in zeolites with relatively low surface charge density.

Keywords: Adsorption Isotherm, Ammonia, Ammonium, Langmuir Equation, Sepiolite, Zeolite Clinoptilolite

Low, K.S., Lee, C.K. and Lee, K.P. (1993), Sorption of copper by dye-treated oil-palm fibers. *Bioresource Technology*, **44** (2), 109-112.

Full Text: [B\Bio Tec44, 109.pdf](B/Bio%20Tec44,%20109.pdf)

Abstract: Both dye-treated and natural oil-palm fibres from a palm-oil mill were used to remove copper and related heavy metal cations from solutions. The sorption of copper for both types of fibres was studied under various conditions, the parameters being effect of pH, initial concentrations, presence of other metal cations and chelators. The results showed that dye coating had a pronounced effect on metal sorption. A comparative study on the uptake by the fibres of metal cations from electroplating wastes was also undertaken.

Keywords: Sorption, Copper Dye-Treated Oil-Palm Fiber, Batch Process, Electroplating Wastes

Diab, S., Kochba, M. and Avnimelech, Y. (1993), Development of a biofilter for turbid and nitrogen-rich irrigation water, B: Removal of phosphorus, algae and clay. *Bioresource Technology*, **44** (2), 137-140.

Full Text: [B\Bio Tec44, 137.pdf](B/Bio%20Tec44,%20137.pdf)

Abstract: A biofilter made out of chopped wheat straw was shown to be an effective system to remove nitrogen from waste-water, both due to nitrogen immobilization as well as to a nitrification-denitrification sequence (Lowengart, A., Diab, S., Kochba, M. & Avinmelech, Y. 1993. Development of a biofilter for turbid and nitrogen-rich irrigation water. A: Organic carbon degradation and nitrogen removal processes *Bioresource Technol.* 44, 131-5). The tested laboratory scale biofilter was made out of wheat straw, a substrate that has excellent hydraulic characteristics. The pores are large and the substrate has a very high hydraulic conductivity and a very low sensitivity to clogging. Yet, it has, apparently, a high reactive and effective surface area. Thus, it can be easily used for the biofiltration of turbid water.

The removal of phosphorus, clay and algae by the same biofilter is reported in this paper. Phosphorus was taken up by the growing microbial biomass, probably in parallel to the nitrogen immobilization process. Clay was removed very effectively from the water, due to its adsorption on the mucilaginous biofilm that developed on the degraded straw. The clay adsorption capacity was more than 170 mg clay/g straw. The removal of algae was also very effective. Moreover, the adsorbed algae provide an additional, ‘ever-lasting’ source of available organic carbon rich substrate, leading to the continual functioning of the biofilter. The straw biofilter seems to be an inexpensive, simple and efficient biofilter to reduce the levels of nitrogen, phosphorus, clay, algae and organic carbon in waste water used for irrigation.

Keywords: Water Treatment, Sewage Effluents, Nitrification, Immobilization, Turbidity, Algae, Phosphorus, Clay

Sharma, D.C. and Forster, C.F. (1994), A preliminary examination into the adsorption of hexavalent chromium using low-cost adsorbents. *Bioresource Technology*, **47** (3), 257-264.

Full Text: [B\Bio Tec47, 257.pdf](B/Bio%20Tec47,%20257.pdf)

Abstract: Four organic wastes were tested as potential adsorbents for hexavalent chromium. The results showed that this type of material could certainly be considered for this purpose with the best results being achieved at pH values of 1.5–3.0. The results showed that cellulosic materials which had been subjected to some degree of anaerobic biodegradation were better adsorbents than fresh cellulosic material.

Keywords: Low Cost Adsorbents, Hexavalent Chromium, Langmuir Adsorption, Freundlich Adsorption

Namasivayam, C. and Kadirvelu, K. (1994), Coirpith, an agricultural waste by-product, for the treatment of dyeing wastewater. *Bioresource Technology*, **48** (1), 79-81.

Full Text: [B\Bio Tec48, 79.pdf](B/Bio%20Tec48,%2079.pdf)

Abstract: The characteristics of dyeing wastewater are shown. Treatment of dyeing industry wastewater was carried out using carbonised coirpith as adsorbent as a function of agitation time, adsorbent dosage and pH. The efficiency of the carbonised coirpith, a waste material from the coir industry, is comparable with commercial activated carbon.

Keywords: Dyeing Waste-Water, Carbonized Coirpith Waste, Adsorption, pH Effect, Removal, Adsorbents, Slurry, Earth

Vázquez, G., Antorrena, G., González, J. and Doval, M.D. (1994), Adsorption of heavy metal ions by chemically modified *Pinus pinaster* bark. *Bioresource Technology*, **48** (3), 251-255.

Full Text: [1994\Bio Tec48, 251.pdf](1994/Bio%20Tec48,%20251.pdf)

Abstract: The ambient temperature adsorption of the metal cations Zn2+, Cu2+ and Pb2+ on Pinus pinaster bark pretreated with acidified formaldehyde solution, and particularly the influences of the pretreatment conditions and of the pH of the cation solution on the adsorption capacity of the bark, were investigated. The equilibrium data were satisfactorily fitted by Freundlich isotherms. The bark was an excellent adsorbent, suitable for removal of toxic ions from wastewater with efficiency comparable to commercially available adsorbents, but at a reduced cost.

Keywords: Adsorbent, Adsorbents, Adsorption, Aqueous-Solutions, Bark, Cation Exchange, Mercury, Metal, Metal Cations, Peanut Skins, pH, *Pinus-Pinaster* Bark, Removal, Water Treatment

Sharma, D.C. and Forster, C.F. (1994), The treatment of chromium wastewaters using the sorptive potential of leaf mould. *Bioresource Technology*, **49** (1), 31-40.

Full Text: [B\Bio Tec49, 31.pdf](B/Bio%20Tec49,%2031.pdf)

Abstract: Previous work has shown that a range of relatively low-cost organic materials can be used to absorb chromium ions from aqueous solution. The results of batch adsorption trials indicate that leaf mould also has the potential for use in this way. The optimum pH for the process was found to be 2.0, with the kinetics following a second-order reaction rate. Intraparticulate diffusion was not a rate-determining step at this pH.

Keywords: Low-Cost Adsorption, Leaf Mold, Hexavalent Chromium, Activated Carbon, Removal, Adsorption, Peat

Muraleedharan, T.R., Philip, L., Iyengar, L. and Venkobachar, C. (1994), Application studies of biosorption for monazite processing industry effluents. *Bioresource Technology*, **49** (2), 179-186.

Full Text: [B\Bio Tec49, 179.pdf](B/Bio%20Tec49,%20179.pdf)

Abstract: While studies on the potential of many biosorbents for heavy metal uptake have been reported, the results on scale-up are relatively scanty. Even in those papers where there is a report of reactor performance more emphasis is given to the metal uptake part and the critical issue of headloss development in columns is not touched upon. This paper presents the results of a scaleup study conducted with an established biosorbent, Ganoderma lucidum, for uptake of rare earth elements. The uptake as well as the reactor characteristics are discussed.

Keywords: Biosorption, Rare Earths, Packed-Bed Reactor, Head Loss Development

Matis, K.A. and Zouboulis, A.I. (1994), Waste microbial biomass for cadmium ion removal: Application of flotation for downstream separation. *Bioresource Technology*, **49** (3), 253-259.

Full Text: [B\Bio Tec49, 253.pdf](B/Bio%20Tec49,%20253.pdf)

Abstract: The uses of microorganisms, including live and dead bacterial biomass such as the actinomycetes, have been widely studied. In the present work flotation is proposed as the separation stage for harvesting suspended micro-organisms following biosorption of cadmium. The parameters investigated in batch mode were solution pH, ionic strength, use of a frother (ethanol) and a cationic collector (cetyl trimethylammonium bromide) and biomass elution by EDTA. The process was also compared with cadmium ion flotation. Promising results were obtained with dead Streptomyces biomass in dilute aqueous cadmium solutions.

Keywords: Streptomyces, Clavuligerus, Free Biomass Biosorption, Flotation, Recycle, Cadmium, Dilute Solutions, Biosorption

Viswanath, P. and Nand, K. (1994), Anaerobic digestion of silk industry wastes. *Bioresource Technology*, **49** (3), 273-276.

Full Text: [B\Bio Tec49, 273.pdf](B/Bio%20Tec49,%20273.pdf)

Abstract: In order to determine biogas potential of defatted silk worm pupae waste, anaerobic batch digestion was carried out in a 1-1 bioreactor and, based on the results, further experiments were conducted in a 20-l KVIC (Khadi and Village Industries Commission) type digester under semi-continuous feeding. The effect of seven loading rates was studied. The maximum yield of biogas (0.53 m3kg-1 volatile solids (VS) added) and methane (0.38 m3kg-1 VS added) was accomplished at a loading rate of 1 kg total solids (TS) m-3day-1. The methane content was as high as 70%. The hydraulic retention time (HRT) of 30-day digestion exhibited maximum yield of biogas and methane. Ammonia-nitrogen related inhibition of anaerobic digestion was observed. By appropriately adjusting the carbon and nitrogen ratio with carbonaceous substrate it may be possible to exploit the commercial potential of defatted silk worm pupae waste.

Keywords: Anaerobic Digestion, Silk Industry Waste, Biogas, Methane, Loading Rate, Hydraulic Retention Time

Verma, N. and Rehal, R. (1994), Bioscavenging of Cu(II) ions from aqueous solution with ricebran. *Bioresource Technology*, **49** (3), 277-278.

Full Text: [B\Bio Tec49, 277.pdf](B/Bio%20Tec49,%20277.pdf)

Abstract: The removal of copper ions from aqueous solution by ricebran as biosorbent was examined. Batch equilibration experiments conducted with alkali-treated ricebran showed 90.5% sorption within 1 h shaking at pH 7.2 with 100 ml of 50 ppm solution of Cu(II) ions and 1 g of ricebran. The Freudlich adsorption isotherm equation showed the measure of sorption capacity (K) to be 0.257.

Keywords: Heavy-Metal Ions, Removal

Low, K.S., Lee, C.K. and Leo, A.C. (1995), Removal of metals from electroplating wastes using banana pith. *Bioresource Technology*, **51** (2-3), 227-231.

Full Text: [B\Bio Tec51, 227.pdf](B/Bio%20Tec51,%20227.pdf)

Abstract: Banana pith (Musacea zingiberales) was evaluated for its ability to sorb metal ions from electroplating waste and synthetic solutions under both batch-and continuous-flow conditions. Sorption was both pH and concentration dependent with pH 4.5 being the optimum value. The equilibrium data followed the Langmuir isotherm model with maximum capacities of 8.55 and 13.46 mg/g for Cu in electroplating waste and synthetic solution respectively. Competitive studies showed that the affinity of metalsorption was in the order Pb(II) > Cu(II) > Ni(II) > Cr(III) > Zn(II). In the continuous-flow studies, breakthrough curves for Cu(II) and Ni(II) in the elctroplating waste were obtained at different bed depths and flow rates. Cu(II) was more satisfactorily sorbed on the banana pith than Ni(II).

Keywords: Sorption, Banana Pith, Electroplating Waste, Cu(II), Ni(II), Aqueous-Solution, Copper, Moss

Low, K.S., Lee, C.K. and Tan, K.K. (1995), Biosorption of basic dyes by water hyacinth roots. *Bioresource Technology*, **52** (1), 79-83.

Full Text: [B\Bio Tec52, 79.pdf](B/Bio%20Tec52,%2079.pdf)

Abstract: Laboratory investigations of the potential of the biomass of non-living, dried, roots of water hyacinth (*Eichhornia crassipes*) to remove two basic dyes, Methylene Blue and Victoria blue from aqueous solutions were conducted. Parameters studied included pH, sorbent dosage, contact time and initial concentrations. The Langmuir isotherm was found to represent the measured sorption data well. Maximum sorption capacities of water hyacinth roots for Methylene Blue and Victoria blue were 128.9 and 145.4 mg/g respectively. Water hyacinth roots could represent a cheap source of biosorbent for basic dyes as they are readily available in great abundance.

Keywords: Sorption, Methylene Blue, Victoria Blue, Water Hyacinth Roots, *Eichhornia crassipes*

Namasivayam, C. and Yamuna, R.T. (1995), Waste biogas residual slurry as an adsorbent for the removal of Pb(II) from aqueous solution and radiator manufacturing industry wastewater. *Bioresource Technology*, **52** (2), 125-131.

Full Text: [B\Bio Tec52, 125.pdf](B/Bio%20Tec52,%20125.pdf)

Abstract: Waste biogas residual slurry (BRS) was used for the adsorption of Pb(II) from aqueous solution, over a range of initial metal ion concentrations (20-100 mglitre-1), agitation times (5-70 min), adsorbent doses (0.4-5.0 glitre-1) and initial pH values (1.5-6.0). The amount of Pb(II) adsorbed (mgg-1 of adsorbent) increased with increases in the initial concentration of Pb(II). The applicability of the Lagergren rate equation was also investigated. The process of uptake of Pb(II) by BRS followed the Langmuir isotherm model and the adsorption capacity was 28 mgg-1. An almost quantitative removal of Pb(II) from a solution (50 ml) containing 100 mglitre-1 Pb(II) by 5.0 glitre-1 adsorbent was observed at an initial pH of 2.5. Application of BRS for the effective removal of Pb(II) from radiator manufacturing industry wastewater has been demonstrated.

Keywords: Biogas Residual Slurry, Pb(II), Adsorption, Waste-Water, Heavy-Metal Ions, Activated Carbon, Color Removal, Trace Amounts, Lead Ions, Adsorption, Cadmium, Copper, Sorption, Binding

Sharma, D.C. and Forster, C.F. (1995), Column studies into the adsorption of chromium(VI) using sphagnum moss peat. *Bioresource Technology*, **52** (3), 261-267.

Full Text: [B\Bio Tec52, 261.pdf](B/Bio%20Tec52,%20261.pdf)

Abstract: Previous batch studies have shown that moss peat is a potentially useful biosorbent for treating metal-contaminated wastewaters. This paper examines the use of peat for the continuous adsorption of hexavalent chromium in columns. Adsorption at two pH values, 2.0 and 2.5, was examined and two flow-rates were used at each pH value. The results show that both adsorption and reduction occurs in the columns and that the maximum adsorption capacity of hexavalent chromium (65.87 mg/g) was obtained at a pH value of 2.0 and a flow-rate of 80 ml/min. However, the higher flow rates also enhanced the reduction reactions in the columns. The data were also tested against the Bed-Depth-Service-Time model and it was found that, although the compliance was non-linear, the model was appropriate for design purposes. (C) 1995 Elsevier Science Ltd. All rights reserved.

Keywords: Moss Peat, Hexavalent Chromium, Continuous Adsorption, Bed-Depth-Service-Time

Kapoor, A. and Viraraghavan, T. (1995), Fungal biosorption: An alternative treatment option for heavy metal bearing wastewaters: A review. *Bioresource Technology*, **53** (3), 195-206.

Full Text: [B\Bio Tec53, 195.pdf](B/Bio%20Tec53,%20195.pdf)

Abstract: The common filamentous fungi can sorb heavy metals from aqueous solutions. The sorption of heavy metals, Cu, Zn, Cd, Pb, Fe, Ni, Ag, Th, Ra and U, by fungal biomass has been observed to varying extents. Fungal biosorption largely depends on parameters such as pH, metal ion and biomass concentration, physical or chemical pre-treatment of biomass, presence of various ligands in solution and to a limited extent on temperature. Fungal biosorption performs well in comparison to sorption on commercial ion-exchange resins, activated carbon and metal oxides. Limited data indicate the potential for regenerating the biomass. The cell-wall fraction of biomass plays an important role in the sorption of heavy metals. The mechanisms of biosorption are understood only to a limited extent. The potential of fungal biomass as sorbents is indicated by the available data and more research and development of the fungal biosorption technology is recommended.

Keywords: Biosorption, Adsorption, Heavy Metals, Fungi, Yeast and Regeneration, Review, *Rhizopus-Arrhizus* Biomass, Dilute Aqueous-Solutions, *Saccharomyces-Cerevisiae*, *Penicillium* Biomass, *Aspergillus-Niger*, Uranium VI, Competitive Adsorption, Cadmium Uptake, Copper Uptake, Removal

Fernadez, N.A., Chacin, E., Gutierrez, E., Alastre, N., Llamoza, B. and Forster, C.F. (1995), Adsorption of lauryl benzyl sulfonate on algae. *Bioresource Technology*, **54** (2), 111-115.

Full Text: [B\Bio Tec54, 111.pdf](B/Bio%20Tec54,%20111.pdf)

Abstract: The residue from the extraction of agar-agar from Gracilaria debilis was evaluated as a biosorbent for the removal of linear alkyl benzene sulphonate from aqueous solution. The adsorption was studied in batch systems at 25°C and at different pH values. A preliminary screening showed that the average size of the sorbent did not affect the adsorption characteristics. The isotherm equilibrium data were found to fit the Freundlich equation and the Freundlich constant ‘K’, which is a measure of the capacity of the sorbent, was found to decrease as the pH increased. Initial adsorption rates showed that, as the pH was increased, the initial adsorption rate decreased.

Keywords: Adsorption, Adsorption Rate, Affect, Algae, Algal Residue, Alkyl Benzene Sulfonate, Aqueous Solution, Batch, Benzene, Biomass, Biosorbent, Capacity, Effluents, Equilibrium, Equilibrium Data, Extraction, Freundlich, Freundlich Equation, Freundlich Isotherms, Ions, Isotherm, Linear Alkyl Benzene Sulphonate, Ph, Removal, Screening, Sorbent, Systems, Values

Lee, C.K., Low, K.S. and Kek, K.L. (1995), Removal of chromium from aqueous solution. *Bioresource Technology*, **54** (2), 183-189.

Full Text: [B\Bio Tec54, 183.pdf](B/Bio%20Tec54,%20183.pdf)

Abstract: Laboratory studies were conducted to assess the ability of natural moss and copper-coated moss to remove Cr(III) and Cr(VI) from aqueous solutions. Parameters investigated included pH, contact time, initial concentration, sorbent dosage and temperature. Application of the Langmuir isotherm to the systems yielded maximum sorption capacities of 18.9 and 7.1 mg/g for Cr(III) and Cr(VI), respectively. In addition, a series of flow studies was carried out using columns containing a mixture of natural and copper-coated moss. Results indicated that the treatment of aqueous solutions containing a mixture of Cr(III) and Cr(VI) using such a column is feasible.

Keywords: Chromium, Sorption, Natural Moss, Copper-Coated Moss, Isotherm, Adsorption, Carbon, Moss

Johns, M.R. (1995), Developments in wastewater treatment in the meat processing industry: A review. *Bioresource Technology*, **54** (3), 203-216.

Full Text: [B\Bio Tec54, 203.pdf](B/Bio%20Tec54,%20203.pdf)

Abstract: A review of progress in the treatment of wastewater from slaughterhouses is presented. Significant progress iii issues such as nutrient removal and high-rate anaerobic treatment are highlighted. Nevertheless, few data concerning waste minimisation and source reduction in slaughterhouses, which offers the most cost-effective route to waste management in the industry, exist. The information presented enables a better understanding of the problems encountered with the effluent from the industry and common pitfalls with its treatment.

Keywords: Slaughterhouse Wastewater, Wastewater Treatment, Minimisation, Nutrients, Activated-Sludge Treatment, Anaerobic-Digestion, Abattoir Wastewater, Rendering Waste, Water, Removal, Denitrification, Purification, Performance, Flotation

Namasivayam, C., Muniasamy, N., Gayatri, K., Rani, M. and Ranganathan, K. (1996), Removal of dyes from aqueous solutions by cellulosic waste orange peel. *Bioresource Technology*, **57** (1), 37-43.

Full Text: [B\Bio Tec57, 37.pdf](B/Bio%20Tec57,%2037.pdf)

Abstract: The adsorption of dyes such as Congo Red, procion orange and Rhodamine-B by waste orange peel was examined at different concentrations of dyes, adsorbent dosage, agitation time and pH. The adsorption obeyed both the Langmuir and Freundlich isotherms and the process of uptake followed first-order rate kinetics. Acidic pH was favourable for adsorption for all three dyes. Desorption studies showed that alkaline pH was efficient for desorption of all the dyes.

Keywords: Adsorbent, Adsorbents, Adsorption, Adsorption, Adsorption Isotherms, Biogas Residual Slurry, Color Removal, Congo Red, Congo Red, Desorption, Dyes, Equilibrium, Isotherms, Kinetics, Orange Peel, Peel, Procion Orange, Rate Constant, Rhodamine-B, Waste Orange Peel, Water

Xie, J.Z., Chang, H.L. and Kilbane II, J.J. (1996), Removal and recovery of metal ions from wastewater using biosorbents and chemically modified biosorbents. *Bioresource Technology*, **57** (2), 127-136.

Full Text: [B\Bio Tec57, 127.pdf](B/Bio%20Tec57,%20127.pdf)

Abstract: Biosorbents and chemically modified biosorbents were prepared and compared with commercial ion-exchange resins to determine their metal-binding capacity, the range of metals bound, the effects of pH, temperature, contact time, interference by common salts and the effect of multiple cycles of metal binding and elution. Biosorbents were prepared from microorganisms isolated from pristine and metal impacted (acid mine drainage) environments and included heterotrophs, methanotrophs, algae, sulfate reducers and exopolysaccharide-producing cultures. The chemical modifications examined included encapsulation in polysulfone resin, acid, alkali, carbon disulfide, phosphorus oxychloride, anhydrous formamide, sodium thiosulfate, sodium chloroacetic acid and phenysulfonate treatments. A culture isolated from an acid mine drainage impacted sire, IGTM17, produced biosorbent material with about three-fold higher metal-binding capacity than other biosorbents examined in this study. Encapsulation in polysulfone resin of whole cultures of exopolysaccharide-producing cultures was shown to be effective in producing biosorbent, whereas the encapsulation of purified exopolysaccharide was unsuccessful. Treatments with sodium chloroacetic acid, carbon disulfide, phosphorus oxychloride and sodium thiosulfate resulted in biosorbents with as much as 33, 74, 133 and 155% improvements in metal-binding capacity, respectively, however the performance of most chemically treated biosorbents deteriorated ripen repeated use (multiple cycles of metal binding and elution). Some chemical treatments produced biosorbents capable of binding anions. The binding of Au+3 Cd+2, Co+2, Cr+3, Cu+2, Hg+2, Ni+2, Pb+2, Se+2, Sr+2, V+2, Zn+2, AsO2-1, CrO4-2, MoO4-2 and WO4-2 was investigated. gated. All of these ions could be removed from aqueous solutions by biosorbents under some conditions and the selective sorption of particular cations or anions from mixtures of ions by some biosorbents was observed. The elution of metals bound to biosorbents was investigated wing various concentrations of hydrochloric acid, thiourea, citrate, ammonia, nitrilotriacetic acid and ethylenediamine tetraacetic acid. Selective elution conditions were demonstrated to allow the recovery of individual metals from mixtures.

Keywords: Biosorbents, Heavy Metals, Ion Exchange, Recovery, Bacterial Extracellular Polymers, Activated-Sludge, *Zoogloea-Ramigera*, Biosorption, Accumulation, Uranium, Biomass, Cells

Parajo, J.C., Dominguez, H. and Dominguez, J.M. (1996), Charcoal adsorption of wood hydrolysates for improving their fermentability: Influence of the operational conditions. *Bioresource Technology*, **57** (2), 179-185.

Full Text: [B\Bio Tec57, 179.pdf](B/Bio%20Tec57,%20179.pdf)

Abstract: Xylose solutions, obtained by acid hydrolysis of Eucalyptus wood were subjected to treatments with charcoal to remove lignin-derived compounds that can exert an inhibitory effect on subsequent fermentation stages. The effects of three operational variables (hydrolysate concentration, hydrolysate: charcoal ratio and adsorption time) on the concentrations of xylose, acetic acid and phenolics were considered. Additional experiments were performed with hydrolysates concentrated to a third of the initial volume to evaluate the effects of temperature, pH and hydrolysate: charcoal ratio (using a broader range of ratios) on the adsorption process. Raw and charcoal-treated hydrolysates were used as fermentation media for xylitol production by the yeast Debaryomyces hansenii Treatments with a hydrolysate: charcoal ratio of 205 g/g were sufficient for fermentation to occur, a higher charge of adsorbent did not result in significant improvements. Copyright (C) 1996 Elsevier Science Ltd.

Keywords: Acid Hydrolysis, Debaryomyces Hansenii, Eucalyptus, Fermentation, Hemicelluloses, Xylitol, Xylose, Sugar-Cane Bagasse, D-Xylose, Xylitol Production, Pichia-Stipitis, Hemicellulose Hydrolysate, Candida-Guilliermondii, Ethanol-Production, Pachysolen-Tannophilus, Fermentation, Hydrolyzate

Miranda, M.P., Benito, G.G., San Cristobal, N. and Nieto, C.H. (1996), Color elimination from molasses wastewater by *Aspergillus niger*. *Bioresource Technology*, **57** (3), 229-235.

Full Text: [B\Bio Tec57, 229.pdf](B/Bio%20Tec57,%20229.pdf)

Abstract: Color elimination by *Aspergillus niger* from wastewater from molasses alcoholic fermentation was studied. The influences of the nutrient concentrations, initial pH and carbon source on this color elimination were analyzed. It worked in a discontinuous process in shaken cultures and in a continuous process in a bubble reactor. During the batch process, through all experiments the maximal color elimination was attained after 3 or 4 days in the culture. Batch processes showed a maximal color elimination of 69% when MgSO4, KH2PO4, NH4NO3 and a carbon source were added to the wastewater. The continuous process, with the same nutrient concentrations, showed less color removal and the decolorization activity was maintained for only 4 days. (C) 1996 Elsevier Science Ltd. All rights reserved.

Aderhold, D., Williams, C.J. and Edyvean, R.G.J. (1996), The removal of heavy-metal ions by seaweeds and their derivatives. *Bioresource Technology*, **58** (1), 1-6.

Full Text: [B\Bio Tec58, 1.pdf](B/Bio%20Tec58,%201.pdf)

Abstract: The abilities of different species of seaweeds and their derivatives to remove a range of heavy metals from solution under standard laboratory conditions were determined. The three species of brown seaweeds were Ecklonia maxima, Lessonia flavicans and Durvillea potatorum. The two seaweed derivatives produced by commercial seaweed processing were alginate fibres and dealginated seaweed waste. The abilities of these biomasses to sequester the heavy-metal ions copper, nickel, lead, zinc and cadmium from solution under constant agitation were compared The effect of the presence of more than one metal ion in solution was investigated in order to determine whether any competition effects might have affected metal-ion uptake. The metal-removal capacity of these seaweeds and their derivatives is discussed in the light of the economic and environmental aspects of using such a wastewater-treatment system on an industrial scale. Copyright (C) 1996 Elsevier Science Ltd.

Keywords: Biosorption, Heavy Metals, Seaweed, Alginate, Pollution Control, Waste Biomasses

Eromosele, I.C., Eromosele, C.O., Orisakiya, J.O. and Okufi, S. (1996), Binding of chromium and copper ions from aqueous solutions by shea butter (*Butyrospermum parkii*) seed husks. *Bioresource Technology*, **58** (1), 25-29.

Full Text: [B\Bio Tec58, 25.pdf](B/Bio%20Tec58,%2025.pdf)

Abstract: The adsorption of Cu(II) and Cr(III) ions from aqueous solution by shea butter (*Butyrospermum parkii*) seed husks has been investigated. The amount of ions adsorbed by the husks was dependent on the contact time, the initial metal ion concentration and temperature. The adsorption isotherms showed distinct features, exhibiting maxima and then minima at critical contact time of about 40 min. The rates of sorption, k, of Cull ions at different temperatures were low, that is not greater than 10.4×10-3 min-1 with half-times, tin ranging from 67 to 693 min. The effects of agitation and counter-ion on the sorption process were investigated. Sorption was enhanced by a factor of 2 by agitation bur was independent of its speed. For the counter-ions, sorption of Cu(II) ion from aqueous solution of different salts was in the order CuCl2>CuSO4>Cu (NO3)2 at low substrate-ion contact times. Addition of isopropanol to aqueous solutions of Cu(II) and Cr(III) ions enhanced the amount of Cu(II) ion adsorbed by the seed husks but depressed that of the Cr(III) ion. Carboxymethylation of the seed husk reduced its adsorptive capacity for CI(III) ion by 60%.

Keywords: Modified Cellulosic Materials, Lead Ions, Cadmium, Removal, Zinc, Adsorption, Copper, Chromium, Ions, Aqueous Solutions, Shea Butter Seed Husks

? Yu, H.Q., Gu, G.W. and Song, L.P. (1996), The effect of fill mode on the performance of sequencing-batch reactors treating various wastewater. *Bioresource Technology*, **58** (1), 49-55.

Full Text: [1996\Bio Tec58, 49.pdf](1996/Bio%20Tec58,%2049.pdf)

Abstract: The performance of sequencing-batch reactors (SBRs) for the treatment of three kinds of wastewater (synthetic phenolic wastewater, synthetic wastewater containing polyvinyl alcohol (PVA), and effluent from a coke-plant-wastewater treatment system) was investigated. Under low-strength phenol conditions, the performance of the SBR with unaerated fill was superior to the SBR with aerated fill in which filamentous bacteria developed. However at high influent phenol concentrations, the SBR with unaerated fill accumulated phenol during the fill period to concentrations inhibitory to microorganisms. Fill mode had no significant influence on the performance of SBRs treating PVA-containing wastewater For the SBRs treating the effluent from a coke-plant-wastewater treatment system, fill mode had no significant impact on the performance of SBRs with respect to organic carbon removal and sludge settleability, but an operating mode which incorporated two anoxic periods, one ahead of the aeration and one after the aeration, was better than other operating modes in terms of nitrogen removal. Copyright (C) 1996 Elsevier Science Ltd.

Keywords: Activated-Sludge, Anoxic, Biological Treatment, Coke Plant Wastewater, Coke-plant Wastewater, Denitrification, Fill Mode, Phenol, PVA, SBR, Treatment, Wastewater, Water

Notes: highly cited

Banat, I.M., Nigam, P., Singh, D. and Marchant, R. (1996), Microbial decolorization of textile-dye-containing effluents: A review. *Bioresource Technology*, **58** (3), 217-227.

Full Text: [B\Bio Tec58, 217.pdf](B/Bio%20Tec58,%20217.pdf)

Abstract: Water-pollution control is presently one of the major areas of scientific activity. While coloured organic compounds generally impart only a minor fraction of the organic load to wastewater, their colour renders them aesthetically unacceptable. Effluent discharge from textile and dyestuff industries to neighbouring water bodies and wastewater treatment systems is currently causing significant health concerns to environmental regulatory agencies. Colour removal, in particular, has recently become of major scientific interest, as indicated by the multitude of related research reports. During the past two decades, several physico-chemical decolorization techniques have been reported, few, however, have been accepted by the textile industries. Their lack of implementation has been largely due to high cost, low efficiency and inapplicability to a wide variety of dyes. The ability of microorganisms to carry out dye decolorization has received much attention. Microbial decolorization and degradation of dyes is seen as a cost-effective method for removing these pollutants from the environment. Recent fundamental work has revealed the existence of a wide variety of microorganisms capable of decolorizing an equally wide range of dyes. In this review we have examined biological decolorization of dyes used in textile industries and report on progress and limitations. (C) 1996 Elsevier Science Ltd. All rights reserved.

Keywords: Microbial Decolorization, Colour Removal, Dyes, Textile Effluent, Azo Dyes, Wastewater Treatment

Esteghlalian, A., Hashimoto, A.G., Fenske, J.J. and Penner, M.H. (1997), Modeling and optimization of the dilute-sulfuric-acid pretreatment of corn stover, poplar and switchgrass. *Bioresource Technology*, **59** (2-3), 129-136.

Full Text: [B\Bio Tec59, 129.pdf](B/Bio%20Tec59,%20129.pdf)

Abstract: Lignocellulosic biomass may be used as a potential renewable feedstock for biochemical production of ethanol as an alternative transportation fuel. However, cellulose, which is the major source of fermentable sugars in these materials, is protected by a network of lignin and hemicellulose. The dilute-sulfuric-acid pretreatment removes this protecting shield and makes the cellulose more susceptible to enzymatic digestion. In this study, three lignocellulosic feedstocks (i.e. corn stover, poplar and switchgrass) were pretreated with dilute sulfuric acid (0.6, 0.9 and 1.2% w/w) at relatively high temperatures (140, 160 and 180°C) in a Parr batch reactor. The hydrolysis of hemicellulose to its monomeric constituents and possible degradation of these monomers were modeled by a series of first-order reactions. The kinetic parameters of two mathematical models for predicting the percentage of xylan remaining in the substrate after pretreatment and the net xylose yield in the liquid stream were determined using the actual acid concentration in the reactor after accounting for the neutralization effect of the substrates.

Keywords: Dilute-Acid Pretreatment, Corn Stover, Poplar, Switchgrass, Acid Hydrolysis, Lignocellulosic Biomass

Chen, J.P. (1997), Batch and continuous adsorption of strontium by plant root tissues. *Bioresource Technology*, **60** (3), 185-189.

Full Text: [B\Bio Tec60, 185.pdf](B/Bio%20Tec60,%20185.pdf)

Abstract: Strontium (Sr) ions in aqueous solutions could be adsorbed by root tissue powders of Amaranthus spinosus, a common weed found in the fields. The adsorption isotherm could be fitted by either the Langmuir or the Freundlich model with the maximum adsorption capacity being 12.89 mg/g from the Langmuir isotherm. The maximum adsorption capacity of the biosorbent decreased with increasing temperature, whereas alkaline pretreatment enhanced the adsorption capacity 1.9 fold. Alginate gel beads (1 mm diameter) containing the root tissue powders were prepared and packed in a column for continuous adsorption/desorption of Sr in solution. Efficient desorption of Sr could be carried out with 0.1 m CaCl2 to give a concentrated Sr solution with 94% recovery. (C) 1997 Elsevier Science Ltd. All rights reserved.

Keywords: Adsorption, Strontium, Plant Root Tissue, Biosorption

Pérez, R.R., Benito, G.G. and Miranda, M.P. (1997), Chlorophenol degradation by Phanerochaete chrysosporium. *Bioresource Technology*, **60** (3), 207-213.

Full Text: [B\Bio Tec60, 207.pdf](B/Bio%20Tec60,%20207.pdf)

Abstract: Degradation of chlorophenols by P. chrysosporium in static cultures has been studied. The influences of mycelium acclimation, co-substrate concentration and nitrogen source on phenol degradation were analyzed. With non-acclimated mycelium the maximal concentrations degraded were 150 ppm of o-chorophenol and 100 ppm of the isomers m- and p-chlorophenol. The substituted ortho-position on the aromatic ring was the preferred attack position. Meta- and para-positions were less reactive and resulted in a slower degradation rate than the ortho position. Nevertheless, with acclimated mycelium, an increase in the ability to degrade chlorophenol and a higher reactivity in meta- and pam-positions were observed (degraded chlorophenol increased by up to 70% for the o-isomer and 50% for the m- and p-isomers with respect to non-acclimated mycelium). A decrease in glucose concentration caused a decrease in chlorophenol degradation rare. Twelve days were needed for complete degradation of o-chlorophenol with 10 g/l of glucose and 22 days when glucose concentration was decreased to 2.5 g/l. The reduction of ammonium tartrate caused a greater lag time, but not a decrease in chlorophenol degradation rate. Replacement of ammonium tartrate by ammonium chloride caused a decrease in chlorophenol degradation rate. (C) 1997 Elsevier Science Ltd.

Keywords: Phanerochaete Chrysosporium, Chlorophenol Isomers, Degradation, Polychlorinated-Biphenyls, Anaerobic Biodegradation, Reductive Dechlorination, Pentachlorophenol, Microorganisms, Mineralization, Metabolism, Culture, Sludge, Fresh

Low, K.S. and Lee, C.K. (1997), Quaternized rice husk as sorbent for reactive dyes. *Bioresource Technology*, **61** (2), 121-125.

Full Text: [B\Bio Tec58, 121.pdf](B/Bio%20Tec58,%20121.pdf)

Abstract: A study on the sorption of hydrolyzed Reactive Blue 2 by quaternized rice husk showed that the binding capacity of the sorbent was not suppressed by dyebath conditions of high concentration of electrolytes. Its sorption capacity decreased with increasing concentration of NaOH. Complete regeneration of dye-coated quaternized rice husk was not possible under base treatment, suggesting chemisorption of dye molecules on the sorbent material. The physical stability of the quaternized rice husk was examined by treating it with various concentrations of NaOH solution. Results showed that no dissolution of sorbent occurred even in 1 M NaOH solution. (C) 1997 Published by Elsevier Science Ltd.

Keywords: By-Products, Capacity, Cost, Dissolution, Natural Adsorbents, Quaternized Rice Husk, Reactive Dyes, Regeneration, Removal, Sorption, Stability, Treatment

Kapoor, A. and Viraraghavan, T. (1997), Heavy metal biosorption sites in *Aspergillus niger*. *Bioresource Technology*, **61** (3), 221-227.

Full Text: [B\Bio Tec61, 221.pdf](B/Bio%20Tec61,%20221.pdf)

Abstract: *Aspergillus niger* is capable of removing heavy metals such as lead, cadmium and copper from aqueous solutions. The role played by various functional groups in the cell wall of *A. Niger* in biosorption of lead cadmium and copper was investigated The biomass was subjected to chemical treatments to modify the functional groups, carboxyl, amino and phosphate, to study their role in biosorption of metal ions. The modifications of the functional groups which resulted from these chemical treatments were examined with infrared spectroscopy. It was found that esterification of carboxyl and methylation of amine groups present in the cell wall of *A. Niger* significantly decreased biosorption of the heavy metals studied. These findings suggest that carboxylate and amine groups are important in metal ion biosorption on *A. Niger* biomass. Phosphate groups and the lipids fraction of the biomass did not play a significant role in biosorption of the metal ions studied. Biosorption of lead and cadmium displaced Ca2+, Mg2+ and K+ ions present on the biomass surface, indicating that biosorption rook place as a result of an ion-exchange process.

Keywords: Chemical Modification, *Ganoderma-Lucidum*, *Rhizopus-Arrhizus*, Aqueous-Solutions, Fungal Biomass, Mechanism, Removal, Biosorbents, Cadmium, Binding, Biosorption, *Aspergillus niger*, Mechanism, Lead, Cadmium, Copper

Namasivayam, C. and Kadirvelu, K. (1998), Activated carbons prepared from coir pith by physical and chemical activation methods. *Bioresource Technology*, **62** (3), 123-127.

Full Text: [B\Bio Tec62, 123.pdf](B/Bio%20Tec62,%20123.pdf)

Abstract: Coir pith, a by-product from coir fibre industries was used as a raw material to prepare activated carbons by physical and chemical activation methods. The physico-chemical characteristics of activated carbons obtained by different methods are reported. (C) 1997 Elsevier Science Ltd.

Keywords: Coir Pith, Activated Carbon, Physical, Chemical and Steam Activation, Characteristics, Industry Waste-Water, Peanut Hull Carbon, Agricultural Waste, Aqueous-Solution, Adsorption, Removal

Mishra, S.P., Tiwari, D., Dubey, R.S. and Mishra, M. (1998), Biosorptive behaviour of casein for Zn2+, Hg2+ and Cr3+: Effects of physico-chemical treatments. *Bioresource Technology*, **63** (1), 1-5.

Full Text: [B\Bio Tec63, 1.pdf](B/Bio%20Tec63,%201.pdf)

Abstract: The uptake behaviour of milk protein (casein) for some heavy metal toxic ions [Zn2+, Hg2+ and Cr3+] was investigated by employing the ‘radiotracer technique’. The effects of various physico-chemical treatments were investigated in order to explain the sequestering behaviour of this biomass. In a single batch equilibrium experiment a decrease in adsorptive concentration (10-2-10-8 molL-1) and increase in temperature (293-323 K) and pH (ca 3-10) specifically increased the uptake of the metal ions. The uptake followed a first-order rate law and obeyed the Freundlich isotherm. Changes in standard enthalpy and activation energy involved during the biosorption were deduced for these systems. Also, desorption experiments showed that no significant desorption took place.

Keywords: Metal-Ions, Adsorption, Biomass, Radiotracer, Titanate, Mercury, Removal, Biosorption, Heavy Metals, Casein, Freundlich Isotherm, Temperature, Desorption, pH

Kapoor, A. and Viraraghavan, T. (1998), Biosorption of heavy metals on *Aspergillus niger*: Effect of pretreatment. *Bioresource Technology*, **63** (2), 109-113.

Full Text: [B\Bio Tec63, 109.pdf](B/Bio%20Tec63,%20109.pdf)

Abstract: The effect of pretreatment of *Aspergillus niger* biomass on biosorption of lead, cadmium, copper and nickel was studied. Pretreatment of live *A. Niger* biomass using sodium hydroxide, formaldehyde, dimethyl sulphoxide and detergent resulted in significant improvements in biosorption of lend, cadmium and copper in comparison with live *A. Niger* cells. Pretreatment of *A. Niger* reduced biosorption of nickel as compared to live cells.

Keywords: Fungal Biomass, Removal, Biosorption, *Aspergillus niger*, Pretreatment, Lead, Cadmium, Copper, Nickel

Torres, E., Cid, A., Herrero, C. and Abalde, J. (1998), Removal of cadmium ions by the marine diatom *Phaeodactylum tricornutum* bohlin accumulation and long-term kinetics of uptake. *Bioresource Technology*, **63** (3), 213-220.

Full Text: [B\Bio Tec63, 213.pdf](B/Bio%20Tec63,%20213.pdf)

Abstract: The marine diatom Phaeodactylum tricornutum Bohlin was exposed to different cadmium concentrations (1-100 mgl-1) for 4 days. The amount of cadmium removed was recorded, with particular attention paid to long-term uptake kinetics, and to the cellular location of cadmium. Cadmium accumulation occurred at all concentrations assayed. The EC50 of cadmium to P. tricornutum was 22.39 mgl-1 after 4 days of exposure. Cadmium uptake followed a saturation kinetic at cadmium concentrations greater than or equal to 25 mgl-1. However, at lower cadmium concentrations, the uptake of this metal followed a linear trend for all days of culture. At cadmium concentrations in the medium lower than 25 mgl-1, P. tricornutum removed cadmium mainly within the cell. At higher cadmium concentrations, the amount of cadmium removed by adsorption to the cell surface was higher than intracellular cadmium, because of the toxic effects of cadmium on P. tricornutum cells. This toxicity reduced the cadmium accumulation within the cells.

Keywords: Unicellular Algae, Zinc, Microalgae, Toxicity, Copper, Cadmium, Removal, Marine Diatom, Accumulation, Kinetics

Couteau, D. and Mathaly, P. (1998), Fixed-bed purification of ferulic acid from sugar-beet pulp using activated carbon: Optimization studies. *Bioresource Technology*, **64** (1), 17-25.

Full Text: [B\Bio Tec64, 17.pdf](B/Bio%20Tec64,%2017.pdf)

Abstract: Selective binding on a wood-based, chemically-activated carbon was considered following extensive enzymic hydrolysis of a sugar-beet pulp pectic extract. Adsorption and ethanolic elution were investigated, aiming at quantitative extraction and recovery of the released ferulic acid, at minimal cost and according to a given production rate. The effects of key operating parameters on the required amounts of adsorbent and eluent were assessed, and the prerequisites for optimal management of successive cycles were identified. Competition effects were analyzed, with special attention to residual feruloylated oligosaccharides. Complete saturation before regeneration was shown to yield the highest adsorption selectivity, desorption efficiency and purity of ferulic acid (~50%). Crystallization from the eluate was achieved, allowing further purification of this phenolic compound for applications as a bioactive antioxidant or as a flavour precursor

Keywords: Ferulic Acid, Purification, Sugar-Beet Pulp, Upgrading, Activated Carbon, Adsorption, Desorption, Competition Effect, Fixed Bed, Optimization

Namasivayam, C., Prabha, D. and Kumutha, M. (1998), Removal of Direct Red and acid Brilliant Blue by adsorption on to banana pith. *Bioresource Technology*, **64** (1), 77-79.

Full Text: [B\Bio Tec64, 77.pdf](B/Bio%20Tec64,%2077.pdf)

Abstract: The adsorption of Direct Red and acid Brilliant Blue by waste banana pith was investigated by varying the agitation time, dye concentration, adsorbent dose and pH. The adsorption followed both Langmuir and Freundlich isotherms. The adsorption capacity was 5.92 and 4.42 mgdye per gram of the adsorbent for direct red and acid Brilliant Blue, respectively. Adsorption of dye followed first-order kinetics. An acidic pH was favourable for the adsorption of both dyes. An alkaline pH was favourable for desorption of the dyes.

Keywords: Biogas Waste Slurry, Aqueous-Solutions, Equilibrium, Water, Dyes, Acid Brilliant Blue, Adsorption Isotherm, Desorption, Direct Red, Kinetics, pH, Waste Banana Pith

Navasivayam, C. (1998), Biosorbents for metal ions. *Bioresource Technology*, **64** (2), 161.

Full Text: [B\Bio Tec64, 161.pdf](B/Bio%20Tec64,%20161.pdf)

Tsai, W.T., Chang, C.Y. and Lee, S.L. (1998), A low cost adsorbent from agricultural waste corn cob by zinc chloride activation. *Bioresource Technology*, **64** (3), 211-217.

Full Text: [B\Bio Tec64, 211.pdf](B/Bio%20Tec64,%20211.pdf)

Abstract: A series of activated carbons were prepared from agricultural waste corn cob by the chemical activation with zinc chloride (ZnCl2). The effect of process variables such as pyrolysis temperature, soaking time and ZnCl2/corn cob ratio (impregnation ratio) of the production of adsorbent was examined. The most important parameter in the chemical activation of corn cob with ZnCl2 was found to be the impregnation ratio. The percentage of micropore was observed to decrease at higher impregnation ratios. The pyrolysis (or activation) temperature is another important variable, which had a significant effect on the pore surface area evolution. Under the experimental conditions investigated, the temperature of 773 K was found to be the optimal condition for producing high surface area carbons with ZnCl2 activation. This study showed that the ZnCl2 activation of corn cob was suitable for the preparation of activated carbons which are essentially microporous. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Activated Carbon, Corn Cob, Zinc Chloride, Chemical Activation, Physical Characteristics

Hassen, A., Saidi, N., Cherif, M. and Boudabous, A. (1998), Effects of heavy metals on *Pseudomonas aeruginosa* and *Bacillus thuringiensis*. *Bioresource Technology*, **65** (1-1), 73-82.

Full Text: [B\Bio Tec65, 73.pdf](B/Bio%20Tec65,%2073.pdf)

Abstract: The biosorption of the heavy metals most frequently found in polluted environments by *Pseudomonas aeruginosa* and *Bacillus thuringiensis* was studied. The effects of these metals on bacterial growth, quantity of dry cells, ammonium assimilation, pigment production, and protein synthesis were investigated. At lower concentrations than the minimal inhibitory concentration (MIC), the metals partially limited bacterial growth and caused an inhibition proportional to the metal concentration applied. The production of bacterial biomass varied according to the nature and concentration of the metals, and to the bacterial strain studied. The biosorption of metals by P. aeruginosa and B. thuringiensis was variable. Mercury and copper appeared to be the elements most adsorbed by bacteria. Citrate noticeably increased the biosorption of chromium by P. aeruginosa (0.07–45.9%) and copper by B. thuringiensis (18.7–33.8%). Metallic cations exerted variable effects on protein synthesis. Zinc stimulated protein synthesis in P. aeruginosa, and cadmium inhibited it significantly in B. thuringiensis. Mercury and cobalt, at concentrations below the MIC, always inhibited the synthesis of pigments in P. aeruginosa. The strong interactions of mercury and copper with organic matter suggest that these undesirable elements might be removed from the environment by bacterial trapping and sequestration. A better understanding of the different forms of metals actually existing in polluted environments (speciation) would be of great interest.

Keywords: Heavy Metals, Biosorption, Cell Mass, Proteins, Pigments, *Pseudomonas Aeruginosa*, *Bacillus Thuringiensis*

Singh, A.K. and Pandeya, S.B. (1998), Modelling uptake of cadmium by plants in sludge-treated soils. *Bioresource Technology*, **66** (1), 51-58.

Full Text: [B\Bio Tec66, 51.pdf](B/Bio%20Tec66,%2051.pdf)

Abstract: Laboratory and greenhouse experiments were conducted to formulate predictive models for the uptake of cadmium by Jelly bean (Phaseolus vulgaris L.), grown in sludge-treated soils, on the basis of soil and plant-root properties. The values of the porous system self-diffusion co-efficient (Dp) of cadmium fulvic acid complexes in soils were higher than those when Cd was applied as inorganic salts. Pot experiments were conducted with ten sewage sludge-treated old alluvium, non-calcareous, non-saline (Vertisol) soils of Patna wherein a Jelly bean crop was grown after soil treatment with 0 and 5 mg kg−1 isotopically tagged and organically complexed Cd. The results indicated that the application of Cd through Cd-FA in soils did not influence the dry matter yield and root radius (r0), root density (LV) and half distance between the roots (rh) of the crop, though it significantly increased the concentration of Cd in the plants and its uptake by the crop. The soil organic carbon content, cation exchange capacity, clay content, pH and EC were used to predict uptake of Cd by the crop. The root parameters and porous system self-diffusion co-efficient of Cd-FA in soils were able to predict the Cd uptake by the crop with very high levels of confidence. The modified form of the mathematical model of Baldwin et al. (1973) (Plant Soil, **38**, 1973, 621-35) was found to be useful in predicting the rate of uptake of Cd by Jelly bean grown in sludge-treated soils. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Organic Matter Complexes, Radio Isotopes, Fulvic Acid (FA), Diffusion Co-Efficient

Cartón, A., Benito, G.G., Rey, J.A. and de la Fuente, M. (1998), Selection of adsorbents to be used in an ethanol fermentation process. Adsorption isotherms and kinetics. *Bioresource Technology*, **66** (1), 75-78.

Full Text: [B\Bio Tec66, 75.pdf](B/Bio%20Tec66,%2075.pdf)

Abstract: Adsorption equilibrium assays were carried out in order to find adsorbents selective for ethanol to use in a fermentation process. Three hydrophobic adsorbents-- silicalite, ZSM-5 and CMS-5A -- were tested, Results of adsorption equilibrium at 298 K of ethanol, glucose, fructose and glycerol from aqueous solutions of each single solute are given. Ethanol adsorption isotherms were described by Langmuir-type equations. Some kinetic assays of ethanol adsorption are also presented. The results obtained appear to be useful for practitioners on the fermentation-processes field. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Ethanol Adsorption, CMS-5A, Silicalite, ZSM-5

Singh, A.K. and Pandeya, S.B. (1998), Sorption and release of cadmium-fulvic acid complexes in sludge treated soils. *Bioresource Technology*, **66** (2), 119-127.

Full Text: [B\Bio Tec66, 119.pdf](B/Bio%20Tec66,%20119.pdf)

Abstract: A batch experiment was conducted with ten sludge treated soils wherein soils were equilibrated with various amounts of 115Cd tagged Cd-fulvic acid (FA) for time intervals upto 72 h. The equilibrium models, including the Langmuir, two-surface Langmuir and Freundlich models and kinetic models including irreversible zero, first, second, two rate constant equation, second approximate and Elovich models, were evaluated for their ability to describe the retention of Cd-FA in sludge treated soils. The relationship between the amount of Cd-FA retained by soil and the concentration of Cd-FA in soil solution was described by either two-surface Langmuir or Freundlich models. The maximum sorption capacity of Cd-FA in soils at two sites of reaction obtained from the two-surface Langmuir adsorption isotherm equation was found to be positively correlated with the organic matter content and cation exchange capacity of the soils. In general, none of the equations describing the order of reaction could explain the data over the entire time and concentration ranges studied. The Elovich equation provided the best fit of the data indicating, thereby, that the sorption of Cd-FA might be due to complex reactions involving more than one site of reaction with different rates and energetics. The desorption of Cd-FA sequentially through 0.5 M Ca(NO3)2 and 0.005 M KCl showed that a significant fraction of the Cd-FA complex retained by the soil was released to the solution but that some irreversible retention of Cd-FA occurred. The possible mechanisms of retention of Cd-FA in soils are discussed. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Adsorption Phenomena, Cation Exchange Capacity, Freundlich, Kinetics, Langmuir Equation, Metal-Complexes, Organic Matter, Sludge, Soil Pollution, Sorption, Two-Surface Langmuir

Eromosele, I.C. and Abare, L.D. (1998), Sorption of iron and zinc ions from non-aqueous solution by shea butter (*butyrospermum parkii*) seed husks. *Bioresource Technology*, **66** (2), 129-132.

Full Text: [B\Bio Tec66, 129.pdf](B/Bio%20Tec66,%20129.pdf)

Abstract: Studies have been conducted on the equilibrium and dynamic adsorption of Fe(II) and Zn(II) ions from aqueous and non-aqueous (methanol-water and isopropanol-water) solutions of the ions by shea butter (Butyrospermum parkii) seed husks. The equilibrium sorption of Fe(II) and Zn(II) ions at 30°C was enhanced by methanol in a 50% (v/v) mixture of methanol-water solution of the ions, but depressed by the same volume mixture of isopropanol-water.

The rate of equilibrium sorption, k, for Fe(II) ion from 50% (v/v) isopropanol-water and methanol-water mixtures showed a negative temperature dependence in the range 30-50°C, yielding values which were not higher than 1.35×10−3 min−1 at 30°C in the latter mixture and a corresponding t of 513 min. For Zn(II) ion, k showed a positive temperature dependence in the solvent mixtures with values of up to 3.0×10−3 min−1 at 70°C in 50% (v/v) isopropanol-water mixture.

The dynamic sorption of Zn(II) and Fe(II) ions from aqueous solutions at 30°C increased with initial metal ion concentration in the range 50-100 ppm, yielding values for the amount of ion sorbed of 2.42 and 2.44 mg/g sorbent, respectively, at 100 ppm.

The values for dynamic sorption of Fe(II) and Zn(II) ions at 30°C from aqueous solution and from the non-aqueous solutions were comparable. However, the values for dynamic sorption of Fe(II) and Zn(II) ions from the same solutions at 30°C were much higher than the ones for equilibrium sorption by factors of up to 2 and 15, respectively. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Adsorption, Iron, Zinc, Ions, Non-Aqueous Solutions, Shea Butter Seed Husks

Peternele, W.S., Winkler-Hechenleitner, A.A. and Pineda, E.A.G. (1999), Adsorption of Cd(II) and Pb(II) onto functionalized formic lignin from sugar cane bagasse. *Bioresource Technology*, **68** (1), 95-100.

Full Text: [B\Bio Tec68, 95.pdf](B/Bio%20Tec68,%2095.pdf)

Abstract: The effects of temperature, pH and ionic strength on adsorption of Cd(II) and Pb(II) onto carboxymethylated lignin from sugar cane bagasse have been studied. Adsorption equilibrium data obtained using the batch technique were fitted to the Langmuir model. A factorial design showed that the most important variables are temperature and ionic strength for the Pb(II) adsorption in single and binary system respectively. For both metals, maximum binding capacity decreased with the ionic strength increase. Increasing pH the Pb(II) adsorption is enhanced. Carboxymethylated lignin adsorbed Pb(II) selectively at pH 6.0, 30°C and 0.1 mol dm-3 of ionic strength. (C) 1999 Elsevier Science Ltd. All rights reserved.

Keywords: Carboxymethylated Lignin, Cadmium, Lead

Low, K.S., Lee, C.K. and Ng, A.Y. (1999), Column study on the sorption of Cr(VI) using quaternized rice hulls. *Bioresource Technology*, **68** (2), 205-208.

Full Text: [B\Bio Tec68, 205.pdf](B/Bio%20Tec68,%20205.pdf)

Abstract: The potential of quaternized rice hulls in removing Cr(VI) from synthetic solution, chrome electroplating waste and wood preservative waste was investigated in column experiments. Increase in column bed depth resulted in a longer service time at Ct/Co = 0.5 breakthrough. The presence of SO42-, which is commonly present in the wastes, interfered with the sorption process and resulted in earlier breakthrough. The sorption process was flow-rate independent within the scope of this study. In the regeneration study, Cr(VI) could be recovered almost quantitatively by eluting with a 0.5 M NaOH solution and the column could be used repeatedly for at least five cycles. (C) 1998 Elsevier Science Ltd. All rights reserved.

Keywords: Sorption, Desorption, Cr(VI), Quaternized Rice Hulls, Column Study, Removal, Peat

Pendyal, B., Johns, M.M., Marshall, W.E., Ahmedna, M. and Rao, R.M. (1999), Removal of sugar colorants by granular activated carbons made from binders and agricultural by-products. *Bioresource Technology*, **69** (1), 45-51.

Full Text: [B\Bio Tec69, 45.pdf](B/Bio%20Tec69,%2045.pdf)

Abstract: Twenty-four granular activated carbons (GACs) made from mixtures of four binders (coal tar, sugarcane molasses, sugar beet molasses, corn syrup) and three agricultural by-products (rice hulls, rice straw, sugarcane bagasse) were evaluated for their ability to remove sugar colorants (molasses color removal, sugar decolorization). These properties were compared to the same properties of two commercial reference carbons. GACs made from sugarcane bagasse, in general, possessed the best ability to remove sugar colorants and were closest to the reference carbons in this regard. In fact, the four highest ranked GACs all used bagasse as a feedstock along with four different binders. Therefore, the ability to remove sugar colorants appears to be by-product dependent with the binder playing a minor role. (C) 1999 Elsevier Science Ltd. All rights reserved.

Keywords: Activated Carbon, Binders, Agricultural By-Products, Sugar Decolorization

Matheickal, J.T. and Yu, Q.M. (1999), Biosorption of lead(II) and copper(II) from aqueous solutions by pre-treated biomass of Australian marine algae. *Bioresource Technology*, **69** (3), 223-229.

Full Text: [B\Bio Tec69, 223.pdf](B/Bio%20Tec69,%20223.pdf)

Abstract: Chemically modified biomass of marine algae can effectively remove heavy metals from waste water. Australian marine algae (*Durvillaea potatorum* and Ecklonia radiata) based biosorbents (DP95Ca and ER95Ca) were developed and studied for their heavy metal removal properties from aqueous solutions. A two stage modification process substantially improved the leaching characteristics of the biomass. Batch equilibrium experiments showed that the maximum adsorption capacities of DP95Ca for lead and copper were 1.6 and 1.3 mmol/g, respectively. The corresponding values for ER95Ca were 1.3 and 1.1 mmol/g. These capacities are comparable with those of commercial ion exchange resins and are much higher than those of natural zeolites and powdered activated carbon. The heavy metal uptake process was found to be rapid with 90% of the adsorption completed in about 10 min in batch conditions. Heavy metal adsorption was observed at pH values as low as 2.0 and maximum adsorption was obtained approximately at a pH of 4.5. Both biosorbents were effective in removing lead and copper in the presence of chelating agents and other light metal ions in waste water.

Keywords: Heavy-Metal Biosorption, Removal, Cadmium, Biosorbent, Biosorption, Lead, Copper, Marine Algae, *Durvillaea potatorum*, Ecklonia Radiata

Marshall, W.E., Wartelle, L.H., Boler, D.E., Johns, M.M. and Toles, C.A. (1999), Enhanced metal adsorption by soybean hulls modified with citric acid. *Bioresource Technology*, **69** (3), 263-268.

Full Text: [B\Bio Tec69, 263.pdf](B/Bio%20Tec69,%20263.pdf)

Abstract: A method was developed to enhance metal ion adsorption of soybean hulls for wastewater treatment using copper ion (Cu2+) as a typical metal ion. Hulls, extracted with 0.1 N NaOH, were modified with different citric acid (CA) concentrations (0.1-1.2 M) at 120°C for 90 min. CA-modified hulls had adsorption capacities for Cu2+ from 0.68 to 2.44 mmoles/g, which was much higher than for unmodified hulls (0.39 mmoles/g). The total negative charge for these hulls also increased with increasing CA concentration and was about twice the copper ion adsorption capacity at all CA concentrations. The need for NaOH (base) extraction (BE) before CA modification was examined. CA-modified, non-extracted (NE) and CA-modified, BE hulls were compared for adsorption kinetics and adsorption capacity. Base extraction resulted in modified hulls with faster adsorption kinetics and slightly lower adsorption capacity for copper ion than NE hulls. For BE, CA-modified hulls, increasing the temperature from 25°C to 60°C appeared to have no effect on the rate of copper ion removal from solution. CA modification of soybean hulls greatly enhanced metal ion removal and resulted in a product with possible commercial potential for metal ion remediation.

Keywords: Agricultural By-Products, Ion-Exchange Properties, Granular Activated Carbons, Soy Oil Components, Adsorbents, Citrate, Modified Soybean Hulls, Copper Adsorption, Citric Acid, Sodium Hydroxide

Notes: highly cited

Kapoor, A., Viraraghavan, T. and Cullimore, D.R. (1999), Removal of heavy metals using the fungus *Aspergillus niger*. *Bioresource Technology*, **70** (1), 95-104.

Full Text: [B\Bio Tec70, 95.pdf](B/Bio%20Tec70,%2095.pdf)

Abstract: There is a need to develop technologies that can remove toxic heavy metal ions found in wastewaters. Microorganisms are known to remove heavy metal ions from water. In this study the potential of the fungus *Aspergillus niger* to remove lead, cadmium, copper and nickel ions was evaluated. *A. Niger* biomass pretreated by boiling in D.N NaOH solution for 15 min exhibited higher lead, cadmium and copper removal capacities than did live biomass. Live *A. Niger* biomass was found to be more effective in the removal of nickel than biomass which had been boiled in 0.1N NaOH solution for 15 min. The pH of the solution strongly affected the degree of biosorption of heavy metal ions on biomass pretreated by boiling in 0.1N NaOH solution. Biosorption of metal ions was inhibited at pH 3.0, and sharply increased when the pH of the solution was increased to 4.0. Biosorption of lead and cadmium reached equilibrium in 5 h, and equilibrium was reached in 6 and 8 h for copper and nickel, respectively. Biosorption of heavy metals on pretreated biomass followed the Freundlich and Langmuir adsorption models, except at pH 4.0 for lead, cadmium and copper and at pH 5.0 for nickel. The removal of lead, cadmium and copper ions by pretreated *A. Niger* biomass was higher than the removal obtained using granular activated carbon (F-400). Removals of lead, cadmium and copper ions were lower when present together in solution in comparison with the removals obtained when these metal ions were present individually in solution. The biosorbed metal ions were effectively eluted by 0.05N HNO3 solution. After eluting, the biosorbed metal ions biomass was regenerated by washing with deionized water and then contacted with a solution containing 0.1M of Ca2+, Mg2+ and K+ ions before further adsorption tests. The pretreated *A. Niger* biomass could be used for five cycles of biosorption-elution of biosorbed ion-regeneration of biomass. This research showed that fungal biosorption had a potential to be used in the removal of heavy metal ions from wastewaters.

Keywords: Aqueous-Solutions, Cadmium(II), Biosorption, Adsorption, *Aspergillus niger*, Biosorption, Cadmium, Copper, Lead, Nickel, Isotherms

Puranik, P.R. and Paknikar, K.M. (1999), Influence of co-cations on biosorption of lead and zinc: A comparative evaluation in binary and multimetal systems. *Bioresource Technology*, **70** (3), 269-276.

Full Text: [B\Bio Tec70, 269.pdf](B/Bio%20Tec70,%20269.pdf)

Abstract: The influence of co-cations (cadmium, copper, cobalt and nickel) on lead and zinc biosorption by *Streptoverticillium cinnamoneum* and *Penicillium Chrysogenum* in binary and multimetal systems was evaluated. The metal sorption capacity of *S. cinnamoneum* was higher than *P. chrysogenum* for all the metals tested. Both the biomasses exhibited preferential uptake of lead in a multimetal situation. Even though mutual inhibition was seen for all binary systems containing zinc, systems containing lead exhibited unequal inhibition. The extent of metal sorption was dependent on metal chemistry, affinity for binding sites and the type of metal binding. In multimetal systems, *S. cinnamoneum* and *P. chrysogenum* exhibited preferential sorption orders: Pb2+>Zn2+=Cu2+>Cd2+>Ni2+>Co2+ and Pb2+>Cu2+>Zn2+>Cd2+>Ni2+>Co2+. The order of metal biosorption in a multimetal system could be predicted well on the basis of Langmuir parameters evaluated in binary metal systems. (C) 1999 Elsevier Science Ltd. All rights reserved.

Keywords: Streptoverticillium Cinnamoneum, *Penicillium Chrysogenum*, Cation Competition, Lead, Zinc, Binary and Multimetal System

Viswanathan, R., Gothandapani, L. and Kailappan, R. (2000), Water absorption and swelling characteristics of coir pith particle board. *Bioresource Technology*, **71** (1), 93-94.

Full Text: [B\Bio Tec71, 93.pdf](B/Bio%20Tec71,%2093.pdf)

Abstract: The water absorption and swelling characteristics along the surface and thickness were determined for particle boards made from coir pith of 0.4, 0.8, 1.2 and 2.1 mm average particle sizes using phenol–formaldehyde and urea–formaldehyde resins. The water absorption, swelling along surface and thickness ranged from 30% to 133%, 0.7% to 3.7% and 24% to 112.6%, respectively. The water absorption and swelling were least for the board made from largest-size particles and phenol–formaldehyde resin. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Coir Pith, Particle Board, Water Absorption, Swelling in Water

Ahmedna, M., Marshall, W.E. and Rao, R.M. (2000), Surface properties of granular activated carbons from agricultural by-products and their effects on raw sugar decolorization. *Bioresource Technology*, **71** (2), 103-112.

Full Text: [B\Bio Tec71, 103.pdf](B/Bio%20Tec71,%20103.pdf)

Abstract: Granular activated carbons (GACs) were produced from sugarcane bagasse combined with one of two binders (corn syrup, coal tar) by physical activation and from pecan shells by physical and chemical activation. GACs were evaluated for their physical (hardness, bulk density), chemical (ash, pH), surface (surface area, pore size distribution, surface chemistry), and adsorption properties (molasses color removal, sugar decolorization) and compared with two commercial reference carbons. Results showed that larger surface area, a well-developed macro- and mesoporosity, and a minimal surface charge were desirable in GACs designed for sugar decolorization. Steam activation of pecan shells carbon was the only by-product-activation combination that produced GAC with all the above three desirable characteristics of a good sugar decolorizer. Chemical activation of pecan shells yielded GACs with high surface area and adequate pore size distribution but with large surface charge. In contrast, sugarcane bagasse-based GACs exhibited low surface areas and unsatisfactory physical/chemical properties.

Keywords: Sugar Decolorization, Activated Carbons, Agricultural By-Products, Surface Properties, Surface Chemistry

Ahmedna, M., Marshall, W.E. and Rao, R.M. (2000), Production of granular activated carbons from select agricultural by-products and evaluation of their physical, chemical and adsorption properties. *Bioresource Technology*, **71** (2), 113-123.

Full Text: [B\Bio Tec71, 113.pdf](B/Bio%20Tec71,%20113.pdf)

Abstract: Representative samples of soft, low density, group 1 (rice straw, rice hulls, sugarcane bagasse) and hard, high density, group 2 agricultural by-products (pecan shells) were converted into granular activated carbons (GACs). GACs were produced from group 1 and 2 materials by physical activation or from group 2 materials by chemical activation. Carbons were evaluated for their physical (hardness, bulk density), chemical (ash, conductivity, pH), surface (total surface area), and adsorption properties (molasses color removal, sugar decolorization) and compared with two commercial reference carbons. The results show that the type of by-product, binder, and activation method determine the properties of GACs. Regardless of the binder, sugarcane bagasse showed a better potential than rice straw or rice hulls as precursor of GACs with the desirable properties of a sugar decolorizing carbon. Pecan shells produced GACs that were closest to the reference carbons in terms of all the properties investigated. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Sugar Decolorization, Activated Carbons, Agricultural By-Products, Chemical Properties, Physical Properties, Adsorption Properties

Kumar, A., Rao, N.N. and Kaul, S.N. (2000), Alkali-treated straw and insoluble straw xanthate as low cost adsorbents for heavy metal removal: Preparation, characterization and application. *Bioresource Technology*, **71** (2), 133-142.

Full Text: [B\Bio Tec71, 133.pdf](B/Bio%20Tec71,%20133.pdf)

Abstract: Heavy metal removal using alkali-treated straw (ATS) and insoluble straw xanthate (ISX) is reported. Insoluble straw xanthate consisting of 4.1% total sulfur is also applied for the removal of various metal ions simultaneously. Potentiometric data of alkali-treated straw and xanthated straw indicated polyfunctionality of these materials. Diffuse Reflectance IR (DRIFT) spectra of ISX exhibited peaks characteristic of xanthate groups on straw. Removal of Cr3+ from aqueous solutions using ATS and ISX followed the Langmuir adsorption model and both the materials have shown significant chromium removal efficiencies (>80%). In the case of chromate and dichromate, pore adsorption preceded the surface adsorption. Detailed spectroscopic (DRIFT & EPR) and sodium release studies conducted using ISX suggest that Cr3+ is removed through the adsorption-exchange mechanism involving alkoxide or xanthate groups. Xanthate groups bind Cr3+ aqua complex through unidentate monosulfur chelation. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Insoluble Straw Xanthate, Heavy Metals, Adsorption-Exchange, Chelation

Liu, D.H., Jiang, W.S., Liu, C.J., Xin, C.H. and Hou, W.Q. (2000), Uptake and accumulation of lead by roots, hypocotyls and shoots of Indian mustard [*Brassica juncea* (L.)]. *Bioresource Technology*, **71** (3), 273-277.

Full Text: [B\Bio Tec71, 273.pdf](B/Bio%20Tec71,%20273.pdf)

Abstract: The effects of different concentrations of lead nitrate on root, hypocotyl and shoot growth of Indian mustard (*Brassica juncea* var. *Megarrhiza*), and the uptake and accumulation of Pb2+ by its roots, hypocotyls and shoots were investigated in the present study. The concentrations of lead nitrate (Pb(NO3)2) used were in the range of 10−5–10−3 M. Root growth decreased progressively with increasing concentration of Pb2+ in solutions. The seedlings exposed to 10−3 M Pb exhibited substantial growth reduction and produced chlorosis. *Brassica juncea* has considerable ability to remove Pb from solutions and accumulate it. The Pb content in roots of *B. juncea* increased with increasing solution concentration of Pb2+. The amount of Pb in roots of plants treated with 10−4, 10−3 and 10−5 M Pb2+ were 184-, 37- and 6-fold, respectively, greater than that of roots of the control plant. However, the plants transported and concentrated only a small amount of Pb in their hypocotyls and shoots, except for the group treated with 10−3 M Pb2+. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Brassica Juncea L, Uptake, Accumulation, Pb2+

Eromosele, I.C. and Bayero, S.S. (2000), Adsorption of chromium and zinc ions from aqueous solutions by cellulosic graft copolymers. *Bioresource Technology*, **71** (3), 279-281.

Full Text: [B\Bio Tec71, 279.pdf](B/Bio%20Tec71,%20279.pdf)

Abstract: Cellulosic graft copolymers were prepared by the reaction of bast fibers of the kenaf plant (Hibiscus cannabinus) with acrylonitrile and methacrylonitrile monomers in aqueous media initiated by the eerie ion-toluene redox pair. The cellulose-polyacrylonitrile (Cell-PAN) and cellulose-polymethacrylonitrile (Cell-PMAN) graft copolymers were used for the removal of Zn(II) and Cr(III) ions from aqueous solutions at 30°C. Zn(II) ion was more sorbed than Cr(III) ion by both copolymers by an average factor of 1.80±0.40. For each metal ion, the Cell-PAN graft copolymer was a more effective sorbent than the Cell-PMAN derivative. The amount of ion sorbed decreased with an increase in percentage graft and over the range 38-149% of the graft the amounts of Zn(II) and Cr(III) ions sorbed by Cell-PAN decreased by 44% and 56%, respectively.

Keywords: Parkii Seed Husks, Copper Ions, Lead Ions, Binding, Cadmium, Sorption, Iron, Cellulosic Graft Copolymers, Adsorption, Zinc, Chromium, Ions, Aqueous Solutions

Salinas, E., de Orellano, M.E., Rezza, I., Martinez, L., Marchesvky, E. and de Tosetti, M.S. (2000), Removal of cadmium and lead from dilute aqueous solutions by *Rhodotorula rubra*. *Bioresource Technology*, **72** (2), 107-112.

Full Text: [B\Bio Tec72, 107.pdf](B/Bio%20Tec72,%20107.pdf)

Abstract: Removal of cadmium (Cd) and lead (Pb) from dilute aqueous solution (5-40 mg/l) by the yeast Rhodotorula rubra was examined. The influence of pH and temperature of the solution and the state of the cells (viable and nonviable biomass) on heavy metal removal were studied. The uptake of Cd and Pb was significantly affected by the initial pH of the solution. At low pH the removal of Cd and Pb decreased while the removal of the metals increased with increasing pH. The optimum initial pH values were 4-4.5 and 5.5-6 for uptake of Pb and Cd, respectively. The effect of temperature was different on each metal. For Pb uptake the increase in temperature (25°C to 37°C) was adverse while Cd uptake increased with temperature. A Langmuir sorption model was used to evaluate the sorption behaviour of the yeast and Langmuir parameters were obtained. Metal uptakes at equilibrium residual concentrations of 10 mg/l (q (10)) were also calculated for comparison with other biosorbents. The q (10) value for Cd or Pb uptake by rubra biomass was higher than the q (10) value reported for Saccharomyces cereviseae or fungal biomass. Desorption was carried out with either 0.1 M EDTA or 0.1 M HCl. The maximum amount of Cd was desorbed in 10 mi 0.1 M EDTA, while desorption efficiency of 0.1 M HCl was lower. In Pb desorption tests there was no difference between the two elutants.

Keywords: *Saccharomyces-Cerevisiae*, Heavy-Metals, Biosorption, Soil, Adsorption, Cadmium, Lead, Yeasts, Rhodotorula Rubra

Zorpas, A.A., Constantinides, T., Vlyssides, A.G., Haralambous, I. and Loizidou, M. (2000), Heavy metal uptake by natural zeolite and metals partitioning in sewage sludge compost. *Bioresource Technology*, **72** (2), 113-119.

Full Text: [B\Bio Tec72, 113.pdf](B/Bio%20Tec72,%20113.pdf)

Abstract: A major limitation of land application of sewage sludge compost is the potential high heavy metal content due to the metal content of the original sludge. Zeolites may be useful as metal scavengers in metal-rich sludges. The natural zeolite, clinoptilolite has the ability to take up heavy metals (Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn). The aim of the reported work was to determine the metal forms most readily taken up by a natural zeolite when used as a bulking material during the composting process. Using a sequential extraction procedure in the raw sludge and in the final products after 150 days of maturity, the heavy metal content was associated with five fractions, the exchangeable, the carbonate, the reducible, the organic and the residual. It was found that a significant percentage of the metals not taken up by the zeolite was associated with the residual fraction, which is considered an inert form. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Sewage Sludge Composting, Metal Uptake, Natural Zeolite, Clinoptilolite, Metals Partitioning

Hasan, S., Ali Hashim, M. and Gupta, B.S. (2000), Adsorption of Ni(SO4) on Malaysian rubber-wood ash. *Bioresource Technology*, **72** (2), 153-158.

Full Text: [B\Bio Tec72, 153.pdf](B/Bio%20Tec72,%20153.pdf)

Abstract: The possible use of wood ash as an adsorbent of nickel sulphate from dilute solutions and the effect of operating parameters were investigated in this study. The rate constants of adsorption were determined at different concentrations and temperatures. The applicability of the first-order reversible equation and an empirical kinetic model were tested to understand the kinetics of nickel sulphate removal at different concentrations. Pore diffusion was found as the rate-controlling step. The Langmuir and Freundlich isotherms were applied to find out the adsorption parameters. The activation energy of adsorption was −11.54 kJ mol−1. The value of the enthalpy change was Δ*H*=−10.35 kcal mol−1.

Keywords: Wood-Ash, Adsorption, Kinetics, Activation Energy

Nigam, P., Armour, G., Banat, I.M., Singh, D. and Marchant, R. (2000), Physical removal of textile dyes from effluents and solid-state fermentation of dye-adsorbed agricultural residues. *Bioresource Technology*, **72** (3), 219-226.

Full Text: [B\Bio Tec72, 219.pdf](B/Bio%20Tec72,%20219.pdf)

Abstract: Three agricultural residues, wheat straw, wood chips and corn-cob shreds were tested for their ability to adsorb individual dyes and dye mixtures in solutions. Up to 70-75% colour removal was achieved from 500 ppm dye solutions at room temperature using corn-cob shreds and wheat straw. Increasing the temperature had little effect on the adsorption capacity of the residues. The resulting dye-adsorbed residues were found to be suitable substrates for solid-state fermentation (SSF) by two white-rot fungi, Phanerochaete chrysosporium and Coriolus versicolor. Both strains grew uninhibited and produced a maximum protein content of 16, 25 and 35 g and 19, 23 and 50 g in SSF of 100 g dry weight wood chips, corn-cob shreds and wheat straw, respectively, supplemented with ammonical nitrogen to give a C: N ratio of 20: 1. This approach provides preliminary results for the remediation of textile effluent and the conversion of agricultural residues into soil conditioner.

Keywords: Adsorption, Azo, By-Products, Carbon Source, Color Removal, Coriolus Versicolor, Corn Cobs, Corncob, Decolorization, Dye, Dyes, Effluent, Growth, Industry, Phanerochaete Chrysosporium, Phanerochaete-Chrysosporium, Remediation, Removal, Selection, Soil, Solid State Fermentation, Textile Dyes, Wheat Straw, White Rot Fungi, White-Rot Fungi, Wood, Wood Chips

Ranganathan, K. (2000), Chromium removal by activated carbons prepared from Casurina equisetifolia leaves. *Bioresource Technology*, **73** (2), 99-103.

Full Text: [B\Bio Tec73, 99.pdf](B/Bio%20Tec73,%2099.pdf)

Abstract: Casurina equisetifolia leaves were carbonised and activated after treatment with sulphuric acid (1: 1), phosphate salt (10%) or zinc chloride (25%), at different temperatures. Prepared activated carbons were used to remove Cr(VI) from wastewater and the conditions optimised for most effective carbons. The equilibrium data fitted well with the Freundlich adsorption isotherm. Desorption studies shaw that 65-80% of adsorbed chromium could be desorbed by alkali followed by acid treatments. Recycling of the carbons could be carried out without change in the adsorption efficiency. The carbons were also tested for the removal of chromium(VI) and total chromium from plating effluents.

Keywords: Chromium, Adsorption, Activated Carbons, Recycling, Plating Wastewater

Wong, J.P.K., Wong, Y.S. and Tam, N.F.Y. (2000), Nickel biosorption by two chlorella species, *C. Vulgaris* (a commercial species) and *C. Miniata* (a local isolate). *Bioresource Technology*, **73** (2), 133-137.

Full Text: [B\Bio Tec73, 133.pdf](B/Bio%20Tec73,%20133.pdf)

Abstract: The present study compared the efficiency of two unicellular green algae, *Chlorella vulgaris* (a commercial species from Carolina Biological Supplies Company) and WW1 (an indigenous species isolated from a local sewage treatment works, tentatively identified as *Chlorella miniata*) in removing Ni2+ from nickel solutions with concentration ranges similar to that in electroplating effluents. The Ni2+ removal efficiency of *C. Vulgaris* (around 33-41%) was significantly lower than that of WW1 (more than 99%) in nickel solutions from 10 to 40 µgml-1. The maximum Ni2+ uptake by *C. Vulgaris* and WW1 under the present batch experiment was 641.76 and 1367.62 µgg-1, respectively. According to Langmuir adsorption isotherms the nickel adsorption capacity of WW1 (2985.07 µgg-1) was two times greater than that of *C. Vulgaris* (1282.05 µgg-1). These results demonstrated that WW1 was a more powerful Ni2+ biosorbent than *C. Vulgaris*. In both species, most Ni2+ in solution was sequestered by the algal cells within the first few minutes of treatment. The cellular Ni2+ concentration increased with the concentrations of nickel in solution. After treating Ni-containing wastewater for 24 h, both species were still capable of cell division, but the growth rate was reduced in proportion to the concentrations of nickel in the wastewaters.

Keywords: Metal-Ions, Removal, Biomass, Lead, Ni, Toxicity, Heavy Metals, Kinetics, Adsorption Isotherms, Industrial Waste

Kadirvelu, K., Palanival, M., Kalpana, R. and Rajeswari, S. (2000), Activated carbon from an agricultural by-product, for the treatment of dyeing industry wastewater. *Bioresource Technology*, **74** (3), 263-265.

Full Text: [B\Bio Tec74, 263.pdf](B/Bio%20Tec74,%20263.pdf)

Abstract: Dyeing industry wastewater was employed for treatment by activated carbon prepared from coconut tree sawdust, at different agitation times, carbon dose and pH. The physico-chemical characteristics of this activated carbon were determined. The adsorption equilibrium for colour removal was reached within 60 min. In general, pH did not have any significant effect on colour removal. Removal of colour, chemical oxygen demand (COD), biological oxygen demand (BOD), total solids and total hardness increased with increase in carbon dose. The use of carbon would be economical, since sawdust is a waste product and available in large quantities, especially in India.

Keywords: Removal, Water, Adsorption, Dyes, Dyeing Industry Wastewater, Carbonised Coconut Tree Sawdust, Adsorption, pH Effect, Agitation Time

Wang J.L., Qian, Y., Horan, N. and Stentiford, E. (2000), Bioadsorption of pentachlorophenol (PCP) from aqueous solution by activated sludge biomass. *Bioresource Technology*, **75** (2), 157-161.

Full Text: [B\Bio Tec75, 157.pdf](B/Bio%20Tec75,%20157.pdf)

Abstract: The adsorption behavior of pentachlorophenol (PCP) from aqueous solution to activated sludge biomass was quantitatively characterized in this paper. The effects of the initial pH value and biomass concentration on bioadsorption were investigated. The Freundlich adsorption isotherm was applied to describe the biosorption processes and the isotherm constants were evaluated. The experimental results indicated that the initial pH value and biomass concentration are important parameters affecting the adsorption capacity that increased with decreasing biomass concentration (in the range less than 5 g/l) and pH (between 6 and 8). Both the biomass concentration and pH value only affected the capacity constant *K*F of the Freundlich equation while the intensity constant *n* remained constant.

Keywords: Pentachlorophenol, Priority Pollutant, Bioadsorption, Activated Sludge

Senthilkumaar, S., Bharathi, S., Nithyanandhi, D. and Subburam, V. (2000), Biosorption of toxic heavy metals from aqueous solutions. *Bioresource Technology*, **75** (2), 163-165.

Full Text: [B\Bio Tec75, 163.pdf](B/Bio%20Tec75,%20163.pdf)

Abstract: Biowaste obtained from the fruit juice industry (FR) was used as biosorbent for the removal of toxic heavy metals (Hg(II), Pb(II), Cd(II), Cu(II), Zn(II) and Ni(II)). Phosphated FR (P-FR) was prepared by treatment of FR with phosphorous (V) oxychloride. Biosorption of a metal was dependent on the intial pH of the aqueous solution. An efficient removal was obtained with P-FR at low pH. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Biowaste, Adsorption, Heavy Metals

Toles, C.A.. Marshall, W.E., Wartelle, L.H. and McAloon, A. (2000), Steam- or carbon dioxide-activated carbons from almond shells: Physical, chemical and adsorptive properties and estimated cost of production. *Bioresource Technology*, **75** (3), 197-203.

Full Text: [B\Bio Tec75, 197.pdf](B/Bio%20Tec75,%20197.pdf)

Abstract: A series of steam- or carbon dioxide (CO2)-activated, granular activated carbons (GACs) were made from almond shells using six different activation or activation/oxidation conditions for each series. Unoxidized/oxidized pairs of GACs were compared among treatments and to two commercial GACs in order to determine the relative value of the carbons. Comparative terms included yield, surface area, attrition, surface charge, copper ion (Cu2+) uptake, adsorption of a mixture of six polar and non-polar organic compounds and an estimated cost of carbon production. of the six conditions investigated for steam activation, two treatments consisting of a 1 h pyrolysis at either 700°C or 800°C, followed by a 2 h activation at 800°C with the introduction of water at a rate of 7.0 ml/min were the best overall performing unoxidized/oxidized pairs in terms of copper ion or organics adsorption, respectively. of the six conditions investigated for carbon dioxide activation, a treatment consisting of a 1 h pyrolysis at 700°C, followed by a 2 h activation at 800°C using a 75% CO2/25% N2 gas mixture was the best overall performing unoxidized/oxidized pair. Our estimated costs of production indicate that steam-activated, unoxidized and oxidized carbons appear to be the most economical GACs to manufacture and also the most economical for removal of copper ions and organic compounds.

Gryglewicz, S. Grabas, K. and Gryglewicz, G. (2000), Use of vegetable oils and fatty acid methyl esters in the production of spherical activated carbons. *Bioresource Technology*, **75** (3), 213-218.

Full Text: [B\Bio Tec75, 213.pdf](B/Bio%20Tec75,%20213.pdf)

Abstract: The possibility of using vegetable oils, i.e., rapeseed oil, soybean oil, linseed oil, tung oil, castor oil and dehydroxylated castor oil, and the fatty acid methyl esters (FAMEs) obtained from them, for the agglomeration of bituminous coals was investigated. Both vegetable oils and FAMEs were found to be suitable bridging liquids for the production of spherical agglomerates-precursor of spherical activated carbons. By replacing the petroleum and coal derivatives commonly used in coal granulation with liquids of natural origin the environmental nuisance in the production of activated carbon can be reduced. Coal agglomerates produced using vegetable oils and FAME, and subjected to carbonisation and activation with steam became spherical activated carbons characterised by well-developed porous structures, marked mechanical strength, and good sorption properties determined by the standard tests of Methylene blue and iodine adsorption from aqueous solutions.

Keywords: Activated Carbon, Agglomeration, Fatty Acid Methyl Ester, Vegetable Oil

Bonelli, P.R., Della Rocca, P.A., Cerrella, E.G. and Cukierman, A.L. (2001), Effect of pyrolysis temperature on composition, surface properties and thermal degradation rates of Brazil Nut shells. *Bioresource Technology*, **76** (1), 15-22.

Full Text: [B\Bio Tec76, 15.pdf](B/Bio%20Tec76,%2015.pdf)

Abstract: Changes in chemical and surface characteristics of Brazil Nut shells (*Bertholletia excelsa*) due to pyrolysis at different temperatures (350°C, 600°C, 850°C) were examined. For this purpose, proximate and ultimate analyses, physical adsorption measurements of N2 (−196°C) and CO2 (25°C) as well as samples visualisation by scanning electronic microscopy (SEM) were performed. Appreciable differences in the residue characteristics, depending markedly on the pyrolysis temperature, were observed. Release of volatile matter led to the development of pores of different sizes. Progressive increases in micropore development with increasing pyrolysis temperature took place, whereas a maximum development of larger pores occurred at 600°C. Furthermore, kinetics measurements of Brazil Nut shells pyrolysis from ambient temperature up to 900°C were performed by non-isothermal thermogravimetric analysis. A model taking into account the significant changes in the residue during pyrolysis, through an increase in the activation energy with temperature and solid conversion, were found to properly fit the kinetics data over the wide range of degradation investigated.

Keywords: Biomass Pyrolysis, Brazil Nut Shells, Char Characterization, Pyrolysis Kinetics

Kadirvelu, K., Thamaraiselvi, K. and Namasivayam, C. (2001), Removal of heavy metals from industrial wastewaters by adsorption onto activated carbon prepared from an agricultural solid waste. *Bioresource Technology*, **76** (1), 63-65.

Full Text: [B\Bio Tec76, 63.pdf](B/Bio%20Tec76,%2063.pdf)

Abstract: Activated carbon was prepared from coirpith by a chemical activation method and characterized. The adsorption of toxic heavy metals, Hg(II), Pb(II), Cd(II), Ni(II), and Cu(II) was studied using synthetic solutions and was reported elsewhere. In the present work the adsorption of toxic heavy metals from industrial wastewaters onto coirpith carbon was studied. The percent adsorption increased with increase in pH from 2 to 6 and remained constant up to 10. As coirpith is discarded as waste from coir processing industries, the resulting carbon is expected to be an economical product for the removal of toxic heavy metals from industrial wastewaters. (C) 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Coirpith Carbon, Adsorption, Heavy Metals, Carbon Concentration, pH

Say, R., Denizli, A. and Arıca, M.Y. (2001), Biosorption of cadmium(II), lead(II) and copper(II) with the filamentous fungus *Phanerochaete chrysosporium*. *Bioresource Technology*, **76** (1), 67-70.

Full Text: [B\Bio Tec76, 67.pdf](B/Bio%20Tec76,%2067.pdf)

Abstract: The biosorption from artificial wastewaters of heavy metals (Cd(II), Pb(II) and Cu(II)) onto the dry fungal biomass of *Phanerochaete chryosporium* was studied in the concentration range of 5–500 mg l−1. The maximum absorption of different heavy metal ions on the fungal biomass was obtained at pH 6.0 and the biosorption equilibrium was established after about 6 h. The experimental biosorption data for Cd(II), Pb(II) and Cu(II) ions were in good agreement with those calculated by the Langmuir model. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Cadmium(II), Lead(II), Copper(II), Heavy Metals, Fungal Biomass, Biosorption, Phanerochaete Chrysosporium

Price, M.S., Classen, J.J. and Payne, G.A. (2001), *Aspergillus niger* absorbs copper and zinc from swine wastewater. *Bioresource Technology*, **77** (1), 41-49.

Full Text: [B\Bio Tec77, 41.pdf](B/Bio%20Tec77,%2041.pdf)

Abstract: Wastewater from swine confined-housing operations contains elevated levels of copper and zinc due to their abundance in feed. These metals may accumulate to phytotoxic levels in some agricultural soils of North Carolina due to land application of treated swine effluent. We evaluated fungi for their ability to remove these metals from wastewater and found *Aspergillus niger* best suited for this purpose. *A. Niger* was able to grow on plates amended with copper at a level five times that inhibitory to the growth of *Saccharomyces cerevisiae*. We also found evidence for internal absorption as the mechanism used by *A. Niger* to detoxify its environment of copper, a property of the fungus that has not been previously exploited for metal bioremediation. In this report, we show that *A. Niger* is capable of removing 91% of the copper and 70% of the zinc from treated swine effluent. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Copper, Zinc, Bioremediation, Wastewater, Absorption, Fungi, *Aspergillus niger*

Robinson, T., McMullan, G., Marchant, R. and Nigam, P. (2001), Remediation of dyes in textile effluent: A critical review on current treatment technologies with a proposed alternative. *Bioresource Technology*, **77** (3), 247-255.

Full Text: [B\Bio Tec77, 247.pdf](B/Bio%20Tec77,%20247.pdf)

Abstract: The control of water pollution has become of increasing importance in recent years. The release of dyes into the environment constitutes only a small proportion of water pollution, but dyes are visible in small quantities due to their brilliance. Tightening government legislation is forcing textile industries to treat their waste effluent to an increasingly high standard. Currently, removal of dyes from effluents is by physio-chemical means. Such methods are often very costly and although the dyes are removed, accumulation of concentrated sludge creates a disposal problem. There is a need to find alternative treatments that are effective in removing dyes from large volumes of effluents and are low in cost, such as biological or combination systems. This article reviews the current available technologies and suggests an effective, cheaper alternative for dye removal and decolourisation applicable on large scale. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Textile Dyes, Dye Decolourisation, Chemical, Physical and Biological Treatments, White-Rot Fungi, Solid State Fermentation (SSF), Residual Brewery Yeast, White-Rot Fungi, Sp Strain BN6, Reactive Dyes, Color Removal, Azo Dyes, Natural Adsorbents, Aqueous-Solutions, Waste-Water, Microbial Decolorization

Thompson, G., Swain, J., Kay, M. and Forster, C.F. (2001), The treatment of pulp and paper mill effluent: A review. *Bioresource Technology*, **77** (3), 275-286.

Full Text: [B\Bio Tec77, 275.pdf](B/Bio%20Tec77,%20275.pdf)

Abstract: The manufacture of paper generates significant quantities of wastewater, as high as 60 m3/tonne of paper produced. The raw wastewaters from paper and board mills can be potentially very polluting. Indeed, a recent survey within the UK industry has found that their chemical oxygen demands can be as high as 11000 mg/l. This paper reviews the processes involved in paper making and examines the effects which they could have on the environment. It also evaluates the treatment processes which are used to minimise these effects. In line with the majority of UK practice, it focuses mainly on aerobic biological treatment and, in particular, on the activated sludge process. This means that there is an in-depth discussion about the problems associated with filamentous bacteria and sludge “bulking”. The paper also discusses the way in which anaerobic digestion can be applied to the treatment of liquid wastes from the manufacture of paper. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Paper and Board Mills, Wastewater Treatment, Activated Sludge, Anaerobic Digestion, Activated-Sludge Bulking, High-Strength Pulp, Waste-Water Reuse, Sequencing Batch Reactors, Dissolved Air Flotation, Full-Scale Evaluation, Poly-P Accumulation, Biological Treatment, Anaerobic Treatment, Sulfate Reduction

Demeyer, A., Nkana, J.C.V. and Verloo, M.G. (2001), Characteristics of wood ash and influence on soil properties and nutrient uptake: An overview. *Bioresource Technology*, **77** (3), 287-295.

Full Text: [B\Bio Tec77, 287.pdf](B/Bio%20Tec77,%20287.pdf)

Abstract: Wood industries and power plants generate enormous quantities of wood ash. Disposal in landfills has been for long a common method for removal. New regulations for conserving the environment have raised the costs of landfill disposal and added to the difficulties for acquiring new sites for disposal. Over a few decades a number of studies have been carried out on the utilization of wood ashes in agriculture and forestry as an alternative method for disposal. Because of their properties and their influence on soil chemistry the utilization of wood ashes is particularly suited for the fertility management of tropical acid soils and forest soils. This review principally focuses on ash from the wood industry and power plants and considers its physical, chemical and mineralogical characteristics, its effect on soil properties, on the availability of nutrient elements and on the growth and chemical composition of crops and trees, as well as its impact on the environment. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Wood Ash, Soil Properties, Nutrient Uptake, Calcium-Carbonate Equivalence, Fired Boiler Ash, Forest Soils, Coniferous Forest, Agricultural Land, Microbial Biomass, Water Chemistry, Liming Material, Amended Soils, Fly-Ash

Vaughan, T., Seo, C.W. and Marshall, W.E. (2001), Removal of selected metal ions from aqueous solution using modified corncobs. *Bioresource Technology*, **78** (2), 133-139.

Full Text: [B\Bio Tec78, 133.pdf](B/Bio%20Tec78,%20133.pdf)

Abstract: The objective of this study was to convert corncobs to metal ion adsorbents for wastewater treatment. Ground corncobs were modified with either 0.6 M citric acid (CA) or 1.0 M phosphoric acid (PA) to help improve their natural adsorption capacity. The effect of a combination of wash and modification treatment was tested for corncob adsorption efficiency with five different metal ions (cadmium, copper, lead, nickel, zinc) individually or in a mixed solution containing each metal at a 20 mM concentration. Results were compared to those of commercial resins Amberlite IRC-718, Amberlite 200, Duolite GT-73 and carboxymethylcellulose (CMC). Modified corncobs showed the same adsorption efficiency as Duolite GT-73 for cadmium, copper, nickel and zinc ions and had greater adsorption than CMC for nickel and zinc ions. For mixed metals, the modified corncobs exhibited the same adsorption efficiency as Duolite GT-73 for cadmium and copper ions and the same or higher adsorption than Amberlite IRC-718 for lead ions. Adsorption capacities of modified samples were compared to those of Amberlite IRC-718, Amberlite 200 and Duolite GT-73. Commercial resins generally had higher adsorption capacities than modified corncobs. However, the adsorption capacity of modified corncobs for copper and lead ions was equivalent to Duolite GT-73, but was lower than for Amberlite IRC-718 or Amberlite 200. Depending on the specific metal ion and the presence or absence of other metal ions, chemically modified corncobs were at least equivalent in adsorption properties to all of the commercial cation exchange resins examined in this study. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Agricultural By-Products, Adsorbents

Gove, L., Cooke, C.M., Nicholson, F.A. and Beck, A.J. (2001), Movement of water and heavy metals (Zn, Cu, Pb and Ni) through sand and sandy loam amended with biosolids under steady-state hydrological conditions. *Bioresource Technology*, **78** (2), 171-179.

Full Text: [B\Bio Tec78, 171.pdf](B/Bio%20Tec78,%20171.pdf)

Abstract: New guidelines for using biosolids in UK agriculture favour the use of enhanced treated biosolids, such as dried and composted cakes, due to concerns about the potential for transfer of pathogens into the food chain. However, there is a need to ensure that their use is environmentally acceptable and does not increase the risk to potable water supplies or the food chain from other contaminants such as heavy metals and xenobiotic organic chemicals. The objective of this study was to determine whether the use of composted and dried mesophilic anaerobically digested dewatered (MADD) biosolids would increase the risk of heavy metal leaching from cultivated horizons when compared to more conventionally used MADD cake. Three biosolids (MADD sewage sludge cake-fresh, dried and composted) were mixed with a sand (typic quartzipsamments. %OM = 3.0. pH = 6.5) or a sandy loam (typic hapludalf, %OM = 4.8, pH = 7.6) at an application rate equivalent to 250 kg N/ha/y resulting in loadings of approximately Zn: 6 µg, Cu: 2 µg, Ph. 5 µg and Ni: 0.2 µg/g of soil dry weight basis. These amended soils were repacked into columns (0.4 m by 0.1 m internal diameter) and leaching of Zn, Cu, Pb and Ni was investigated following application of two 24 h simulated rainfall events of 4.5 mm/h. Water balance data and the use of conservative tracers (Cl-and Br-) showed that the hydrological regimes of each core were comparable and, thus, unlikely to account for differences in metal leaching observed. Although no significant difference (P = 0.05) was observed between biosolid amended and control soils, those amended with composted sludge consistently gave higher loss of all metals than did the control soils. Total losses of metals from compost amended soil over the two rainfall events were in the ranges, Zn: 20.5-58.2, Cu: 9.0-30.5, Pb: 24.251.2 and Ni: 16.0-39.8 µg metal/kg amended soil, compared with Zn: 16.4-41.1, Cu: 6.2-25.3, Pb: 16.9-41.7, and Ni: 3.7-25.4 µg metal/kg soil from the control soils. Losses of Zn, Cu, Ph and Ni from fresh MADD cake amended soils (19.8-41.3, 3.2-25.8, 21.6-51.6 and 7.6-36.5 µg metal/kg amended soil, respectively) and from dry MADD cake amended soils (10.7-36.7, 1.8-23.8, 21.2-51.2 and 6.8-39.2 µg metal/kg amended soil, respectively) were similar to the controls. Generally, quantities of metals leached followed the order Zn = ph > Cu > Ni, which was consistent with the levels of metals in the original sludge/soil mixtures. These results suggest that composting or drying MADD biosolids is unlikely to increase the risk of groundwater contamination when compared to the use of MADD cake, therefore, the changes in UK sludge use in agriculture guidelines are satisfactory in this respect. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Biosolids, Sewage Sludge, Compost, Leaching, Heavy Metals, Zinc, Copper, Lead, Nickel, Groundwater, Agriculture, Soil, Sewage-Sludge, Soils, Mobility, Cadmium

? Amor, L., Kennes, C. and Veiga, M.C. (2001), Kinetics of inhibition in the biodegradation of monoaromatic hydrocarbons in presence of heavy metals. *Bioresource Technology*, **78** (2), 181-185.

Full Text: [2001\Bio Tec78, 181.pdf](2001/Bio%20Tec78,%20181.pdf)

Abstract: The toxicity and inhibitory effects of heavy metals such as cadmium, nickel and zinc on alkylbenzene removal were evaluated with a Bacillus strain. The kinetics of alkylbenzene biodegradation with the different heavy metals at various concentrations were modeled using the Andrews equation which yielded a good fit between model and experimental data. Additional experiments undertaken with a Pseudomonas sp. in presence of nickel confirmed a good fit between experimental data and the Andrews model for this strain as well. The heavy metals inhibition constants (K-i) were calculated for different combinations of volatile organic compounds (VOC) and heavy metals. The present approach provides a method for evaluating and quantifying the inhibition effect of heavy metals on the biodegradation of pollutants by specific microbial strains. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Bacillus, Benzene, Biodegradation, Bioremediation, Cadmium, Concentrations, Cultures, Degradation, Effects, Ethylbenzene, Experimental Data, Growth, Heavy Metals, Hydrocarbons, Inhibition, Kinetics, Metals, Microbial, Model, Modeling, Nickel, Organic, Organic Compounds, Performance, Pollutants, Pseudomonas, *Pseudomonas* sp, Removal, Resistance, Sludge, Toluene, Toluene, Toxicity, VOC, Volatile, Volatile Organic Compounds, Xylene, Xylene, Zinc

Brown, P.A., Brown, J.M. and Allen, S.J. (2001), The application of kudzu as a medium for the adsorption of heavy metals from dilute aqueous wastestreams. *Bioresource Technology*, **78** (2), 195-201.

Full Text: [B\Bio Tec78, 195.pdf](B/Bio%20Tec78,%20195.pdf)

Abstract: This study assessed the use of kudzu (*Pueraria lobata ohwi*) as a medium for the capture of copper, cadmium, acid zinc from low concentration solutions. The rate and extent of uptake was studied using a system of standardized batch adsorbers under steady-state and transient-rate conditions. All plant components were tested. Residual metals analyses were performed on an ICP-AES/OES (Optima 3000 DV). The Langmuir, Freundlich, and Redlich-Peterson isotherms were determined, the Langmuir isotherm was found to best represent the data for copper and cadmium uptake. The Redlich-Peterson best represented the data for zinc. Kudzu was determined to be an effective adsorbent for removal of heavy metals, Though its capacity for metals removal is less than commercial grade ion exchange resins, it could be used at much lower cost, and may find application in the treatment of dilute mixed-matrix metal wastestreams, such as urban runoff, where the application of resins would be expensive and subject to premature poisoning by interfering contaminants. (C) 2001 Elsevier Science Ltd. Ail rights reserved.

Keywords: Adsorption Capacity, Adsorption Isotherms, Heavy Metals, Wastewater Treatment, Low Cost Adsorbents, Waste-Water, Sorption, Cadmium, Peat

Chou, K.S., Tsai, J.C. and Lo, C.T. (2001), The adsorption of Congo red and vacuum pump oil by rice hull ash. *Bioresource Technology*, **78** (2), 217-219.

Full Text: [B\Bio Tec78, 217.pdf](B/Bio%20Tec78,%20217.pdf)

Abstract: Rice hull ash (RHA) of large surface area was obtained by acid wash and then calcination at 600°C for 4 h. The white ash was then mixed with kaolin and starch ro make pellet adsorbents with reasonable strength to be utilized in a packed column. Both ash and pellet samples showed good adsorption capacities toward the organic substances in wastewater. Furthermore, the surface nature of the white ash and pellet adsorbent could be modified through either hydration or esterification reactions. Corresponding changes in silanol concentrations were successfully correlated to changes in adsorption capacity toward either Congo red or vacuum pump oil molecules. (C) 2001 Elsevier Science Ltd. Ail rights reserved.

Keywords: Rice Hull Ash, Pellet Adsorbent, Surface Modification, Husk Ash, Silica

Yan, G.Y. and Viraraghavan, T. (2001), Heavy metal removal in a biosorption column by immobilized *M. rouxii* biomass. *Bioresource Technology*, **78** (3), 243-249.

Full Text: [B\Bio Tec78, 243.pdf](B/Bio%20Tec78,%20243.pdf)

Abstract: *Mucor rouxii* biomass was immobilized in a polysulfone matrix. The spherical immobilized biomass beads were packed in a column. The biosorption column was able to remove metal ions such as Pb, Cd, Ni and Zn not only from single-component metal solutions but also from multi-component metal solutions. Column kinetics for metal removal were described by the Thomas model. For single-component metal solutions, the metal removal capacities of the beads for Pb, Cd, Ni and Zn were 4.06, 3.76, 0.36 and 1.36 mg/g, respectively. For a multi-component metal solution containing Cd, Ni and Zn, the capacities were 0.36, 0.31 and 0.40 mg/g for Cd, Ni and Zn, respectively. The adsorbed metal ions were easily desorbed from the beads with 0.05N HNO3 solution. After acid desorption and regeneration with deionized water, the beads could be reused to adsorb metal ions at a comparable capacity. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: *Rhizopus-Arrhizus*

Son, Y.H., Hwang, J.W., Kim, Z.S., Lee, W.K. and Kim, J.S. (2001), Allometry and biomass of Korean pine (Pinus koraiensis) in central Korea. *Bioresource Technology*, **78** (3), 251-255.

Full Text: [B\Bio Tec78, 251.pdf](B/Bio%20Tec78,%20251.pdf)

Abstract: Aboveground tree biomass of Korean pine (Pinus koraiensis Sieb. et Zucc.) was determined for a natural forest of Korean pine and mixed deciduous trees and seven age classes of plantation forests in central Korea. Regression analyses of the dry weights of stem wood, stem bark, branches, and needles versus diameter at breast height were used to calculate regression equations of the form of log Y = a + b log X. Biomass of Korean pine in the mixed forest was 118 Mg ha-1, and biomass in the plantations was linearly related to stand age, ranging from 52.3 Mg ha-1 in 11 to 20-year-old stands to 317.9 Mg ha-1 in 71 to 80-year-old stands. The proportions of stem wood and stem bark in the total aboveground biomass decreased with stand age while those of branch and needle increased. Specific leaf area of Korean pine ranging from 35.2 to 52.1 cm2 g-1 was significantly different among crown positions and needle ages, in general, lower crown position and current needles had the greatest surface area per unit dry weight. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Aboveground Biomass, Allometric Regression Equation, Korean Pine, Natural Forest, Pinus Koraiensis, Plantation, Specific Leaf Area, Leaf-Area, Douglas-Fir, Plantation, Nitrogen

Lister, S.K. and Line, M.A. (2001), Potential utilisation of sewage sludge and paper mill waste for biosorption of metals from polluted waterways. *Bioresource Technology*, **79** (1), 35-39.

Full Text: [B\Bio Tec79, 35.pdf](B/Bio%20Tec79,%2035.pdf)

Abstract: The adsorption of cadmium, copper(II), lead and zinc ions from aqueous solution by sewage sludge, paper mill waste (PMW) and composted PMW was investigated along with the influence of pre-treatment on composted PMW. Langmuir adsorption isotherms were fitted where appropriate. Sewage sludge was the most effective biosorbent of the waste products for all metal ions examined, adsorbing, for example, up to 39.3 mg/g of Pb at an initial concentration of 77.8 mg/l. PMW was a less effective biosorbent than sewage sludge. However, it was found that composting the PMW resulted in an increase in metal uptake capacity and both sewage sludge and composted PMW have potential for low-cost remediation of high leachate wastewaters. The desorption of metal ions from PMW compost was most effective using 0.1 N H2SO4 and 1 mM nitrilotriacetic acid(NTA). (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Sewage Sludge, Metal Adsorption, Paper Mill Waste, Heavy Metals, Aqueous-Solutions, Graft-Copolymers, Ions, Adsorption, Chromium

Bai, R.S. and Abraham, T.E. (2001), Biosorption of Cr(VI) from aqueous solution by *Rhizopus nigricans*. *Bioresource Technology*, **79** (1), 73-81.

Full Text: [B\Bio Tec79, 73.pdf](B/Bio%20Tec79,%2073.pdf)

Abstract: The study was aimed to quantify the Cr sorption ability of powdered biomass of *Rhizopus nigricans* at the best operating conditions. The influence of solution pH, agitation, Cr(VI) concentration, biomass dosage, contact time, biomass particle size and temperature were studied. The optimum pH for biosorption of Cr(VI) was found to be 2.0. Higher adsorption percentage was noted at lower initial concentrations of Cr ions, while the adsorption capacity of the biomass increased with increasing concentration of ions. Optimum biomass dosage was observed as 0.5% (w/v). More than 75% of the ions were removed within 30 min of contact and maximum removal was obtained after 8 h. Biomass particles of smaller size (90 μm) gave maximum adsorption (99.2%) at 100 mg/l concentration. The adsorption capacity increased with increase in temperature and agitation speed and the optimum were determined as 45°C at 120 rpm. Freundlich and Langmuir isotherms were used to evaluate the data and the regression constants were derived. The adsorption rate constant values (*K*ad) were calculated for different initial concentration of Cr ions and the sorption was found to be higher at lower concentration (100 mg/l) of metal ion. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, *Rhizopus nigricans*, Metal Adsorption, Adsorption Isotherm, Freundlich, Langmuir

Suh, J.H., Kim, D.S. and Song, S.K. (2001), Inhibition effect of initial Pb2+ concentration on Pb2+ accumulation by *Saccharomyces cerevisiae* and *Aureobasidium pullulans*. *Bioresource Technology*, **79** (1), 99-102.

Full Text: [B\Bio Tec79, 99.pdf](B/Bio%20Tec79,%2099.pdf)

Abstract: Pb2+ accumulation by *Saccharomyces cerevisiae* and *Aureobasidium pullulans* was inhibited by the initial Pb2+ concentration. In the case of *S. cerevisiae*, as initial Pb2+ concentrations increased, the accumulated Pb2+ per unit cell dry weight at equilibrium and the time required to reach an equilibrium state increased at low initial Pb2+ concentration. On the contrary, the accumulated Pb2+ decreased at high initial Pb2+ concentration at all pH values. The inhibition effect of initial Pb2+ concentration was delayed by the decrease of pH. However, the maximal Pb2+ accumulation capacity of *S. cerevisiae* was almost constant regardless of pH values. In the case of *A. pullulans*, the time required to reach an equilibrium state was independent of the initial Pb2+ concentration. The maximal Pb2+ accumulation capacity of *A. pullulans* decreased according to the decrease of pH values. However, the initial Pb2+ concentration needed to reach maximal Pb2+ accumulation amount was almost constant. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Bioaccumulation, Inhibition Effect, Initial Pb2+ Concentration, Saccharomyces Cerevisiae, Aureobasidium Pullulans

Fu, Y.Z. and Viraraghavan, T. (2001), Fungal decolorization of dye wastewaters: A review. *Bioresource Technology*, **79** (3), 251-262.

Full Text: [B\Bio Tec79, 251.pdf](B/Bio%20Tec79,%20251.pdf)

Abstract: In recent years, there has been an intensive research on fungal decolorization of dye wastewater. It is becoming a promising alternative to replace or supplement present treatment processes. This paper examines various fungi, living or dead cells, which are capable of decolorizing dye wastewaters, discusses various mechanisms involved, reports some elution and regeneration methods for fungal biomass, summarizes the present pretreatment methods for increasing the biosorption capacity of fungal biomass-, discusses the effect of various factors on decolorization. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Bleach-Plant Effluents, White-Rot Fungus, *Phanerochaete-Chrysosporium*, Color Removal, Waste-Water, Catalyzed Decolorization, Trametes-Versicolor, *Aspergillus-Niger*, Lignin Peroxidase, Polymeric Dyes

Selvi, K., Pattabhi, S. and Kadirvelu, K. (2001), Removal of Cr(VI) from aqueous solution by adsorption onto activated carbon. *Bioresource Technology*, **80** (1), 87-89.

Full Text: [B\Bio Tec80, 87.pdf](B/Bio%20Tec80,%2087.pdf)

Abstract: Activated carbon (AC) prepared from coconut tree sawdust was used as an adsorbent for the removal of Cr(VI) from aqueous solution. Batch mode adsorption studies were carried out by varying agitation time, initial Cr(VI) concentration, carbon concentration and pH. Langmuir and Freundlich adsorption isotherms were applied to model the adsorption data. Adsorption capacity was calculated from the Langmuir isotherm and was 3.46 mg/g at an initial pH of 3.0 for the particle size 125–250μm. The adsorption of Cr(VI) was pH dependent and maximum removal was observed in the acidic pH range. Desorption studies were carried out using 0.01–1 M NaOH solutions. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Adsorption, Cr(VI), Agricultural Solid Waste, Adsorption Isotherms, Desorption

Arıca, M.Y., Kaçar, Y. and Genç, Ö. (2001), Entrapment of white-rot fungus *Trametes versicolor* in Ca-alginate beads: Preparation and biosorption kinetic analysis for cadmium removal from an aqueous solution. *Bioresource Technology*, **80** (2), 121-129.

Full Text: [B\Bio Tec80, 121.pdf](B/Bio%20Tec80,%20121.pdf)

Abstract: The biosorption of cadmium ions onto entrapped *Trametes versicolor* mycelia has been studied in a batch system. The maximum experimental biosorption capacities for entrapped live and dead fungal mycelia of *T. versicolor* were found as 102.3±3.2 mg Cd(II) g-1 and 120.6±3.8 mg Cd(II) g-1, respectively, Biosorption equilibrium was established in about 1 h and biosorption was well described by the Langmuir and Freundlich biosorption isotherms. The change in the biosorption capacity with time was found to fit the pseudo-second-order equation. Since the biosorption capacities were relatively high for both entrapped live and dead forms, those fungal forms could be considered as suitable biosorbents for the removal of cadmium in wastewater-treatment systems. The biosorbents were reused in three consecutive adsorption/desorption cycles without a significant loss in the biosorption capacity. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Cadmium, Heavy Metal, Ca-Alginate, Entrapment, Biosorption, Trametes Versicolor, Heavy-Metal Biosorption, *Phanerochaete-Chrysosporium*, *Rhizopus-Arrhizus*, *Aspergillus-Niger*, Biomass, Immobilization, Mechanisms, Sorption, Mycelium, *Ramigera*

? González, G., Herrera, G., García, M.T. and Peña, M. (2001), Biodegradation of phenolic industrial wastewater in a fluidized bed bioreactor with immobilized cells of *Pseudomonas putida*. *Bioresource Technology*, **80** (2), 137-142.

Full Text: [2001\Bio Tec80, 137.pdf](2001/Bio%20Tec80,%20137.pdf)

Abstract: The paper presents the main results obtained from the study of the biodegradation of phenolic industrial wastewaters by a pure culture of immobilized cells of Pseudomonas putida ATCC 17484. The experiments were carried out in batch and continuous mode. The maximum degradation capacity and the influence of the adaptation of the microorganism to the substrate were studied in batch mode. Industrial wastewater with a phenol concentration of 1000 mg/l was degraded when the microorganism was adapted to the toxic chemical. The presence in the wastewater of compounds other than phenol was noted and it was found that Pseudomonas putida was able to degrade these compounds. In continuous mode, a fluidized-bed bioreactor was operated and the influence of the organic loading rate on the removal efficiency of phenol was studied. The bioreactor showed phenol degradation efficiencies higher than 90%, even for a phenol loading rate of 0.5 g phenol/l d (corresponding to 0.54 g TOC/l d). (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Activated-Sludge, Adaptation, Batch, Batch Mode, Biodegradation, Bioreactor, Capacity, Cells, Chemical, Concentration, Culture, Degradation, Efficiency, Fluidized Bed, Immobilized, Immobilized Cells, Industrial, Industrial Wastewater, Kinetics, Loading, Microorganism, Organic, Organic Loading Rate, Paper, Phenol, Phenol Degradation, Phenolic, Pseudomonas, Pseudomonas Putida, Removal, Removal Efficiency, Substrate, Toxic, Wastewater, Wastewaters, Water

Calvo, L.F., Otero, M., Morán, A. and García, A.I. (2001), Upgrading sewage sludges for adsorbent preparation by different treatments. *Bioresource Technology*, **80** (2), 143-148.

Full Text: [B\Bio Tec80, 143.pdf](B/Bio%20Tec80,%20143.pdf)

Abstract: Addressing the adequate management of sludges produced at sewage plants is becoming a fundamental need as a consequence of the high production volumes, both current and forecasted, of this byproduct. European waste-treatment policies consider reuse of sludges as one of the preferred actions, along those lines this study proposes using sewage sludges as adsorbents for pollutants contained in wastewaters. As potential adsorbents, sludges dried at 105°C, dried and pyrolyzed, or dried and chemically activated were tried. As adsorbate, Methylene blue was used in order to characterize the adsorption capacity of the different materials. Although surface areas corresponding to pyrolyzed and chemically activated sludges were around 80 and 390 m(2)/g, respectively, both these materials exhibited poor levels of Methylene blue adsorption which may have been due to their high proportions of micropores. Sludges only dried. on the contrary, showed significant Methylene blue adsorption capacities. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Sludges, Wastewaters, Methylene Blue, Adsorption, Municipal Waste-Water, Activated-Sludge

Iqbal, M., Saeed, A. and Akhtar, N. (2001), Petiolar felt-sheath of palm: A new biosorbent for the removal of heavy metals from contaminated water. *Bioresource Technology*, **80** (3), 151-153.

Full Text: [B\Bio Tec80, 151.pdf](B/Bio%20Tec80,%20151.pdf)

Abstract: Biosorption of heavy metals such as Pb2+, Ni2+, Cd2+, Cu2+, Cr3+ and Zn2+ by petiolar felt-sheath of palm (PFP) from contaminated water was examined. PFP was found to efficiently remove all the toxic metal ions with selectivity order of Pb2+ > Cd2+ > Cu2+ > Zn2+ > Ni2+ > Cr3+. The uptake was rapid, with more than 70% completed within 15 min. The bound metal ions were successfully desorbed and the PFP fibrous-biomass remained effective after several adsorption-desorption cycles. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, Petiolar Felt-Sheath, Palm, Heavy Metals, Waste-Water, Adsorbents

Juang, R.S., Wu, F.C. and Tseng, R.L. (2001), Solute adsorption and enzyme immobilization on chitosan beads prepared from shrimp shell wastes. *Bioresource Technology*, **80** (3), 187-193.

Full Text: [B\Bio Tec80, 187.pdf](B/Bio%20Tec80,%20187.pdf)

Abstract: The equilibrium and kinetics of adsorption of reactive dye RR222 and Cu2+, and the activity of immobilization of acid phosphatase, on highly swollen chitosan beads were examined at 30°C. The chitosan was prepared from shrimp shell wastes and was cross-linked with different dosages of glutaraldehyde or glyoxal (100-80,000 mg/l). It was shown that the amounts of solute adsorption and the immobilization capacity of acid phosphatase on cross-linked chitosan beads were substantially affected by their degree of cross-linking. The cross-linking rate of chitosan with glutaraldehyde could be described by a pseudo-second-order equation and the cross-linking equilibrium by the Freundlich equation. This provided an experimental method to control the degree of cross-linking of chitosan beads. Finally, the activity and lifetime of the immobilized enzyme were measured to evaluate the application potential. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Chitosan Beads, Shrimp Shell Wastes, Cross-Linking, Adsorption, Dye, Cu(II), Immobilization, Acid Phosphatase, Tyrosinase Reaction, Aqueous-Solutions, Chelating-Agents, Metal-Ions, Removal, Chitin, Derivatives, Sorption, Water, Dyes

Pethkar, A.V., Kulkarni, S.K. and Paknikar, K.M. (2001), Comparative studies on metal biosorption by two strains of *Cladosporium cladosporioides*. *Bioresource Technology*, **80** (3), 211-215.

Full Text: [B\Bio Tec80, 211.pdf](B/Bio%20Tec80,%20211.pdf)

Abstract: Two strains of a fungus, *Cladosporium cladosporioides* 1 and *C. cladosporioides* 2 showed different metal biosorption properties. Strain 1 showed preferential sorption of gold and silver, while strain 2 could bind metals such as copper and cadmium in addition to gold and silver. Strain 1 had a cell-wall hexosamine content of 0.1%. X-ray photoelectron spectroscopy (XPS) and Fourier transform infra-red spectroscopy (FTIR) analyses indicated that nitrogen was not involved in metal biosorption by the strain. In strain 2 the cell-wall hexosamine content was 150 times that of strain 1. These results indicated that hexosamine was responsible for non-specific metal binding while cell-wall polymers other than hexosamines had a role in conferring selectivity in precious-metal binding.

Keywords: Cladosporium Cladosporioides, Biosorption, Gold, Silver, Mechanism, Cell-Wall Analysis, FTIR, XPS

Rajeshwarisivaraj, Sivakumar, S., Senthilkumar, P. and Subburam, V. (2001), Carbon from Cassava peel, an agricultural waste, as an adsorbent in the removal of dyes and metal ions from aqueous solution. *Bioresource Technology*, **80** (3), 233-235.

Full Text: [B\Bio Tec80, 233.pdf](B/Bio%20Tec80,%20233.pdf)

Abstract: Cassava (*Manihot esculenta*) is a short lived erect perennial shrub, planted vegetatively from hard wood stem cuttings. It is an important crop across a wide range of tropical environments and is a significant component of cropping systems. Cassava peel is an agricultural waste from the food processing industry. Activated carbons prepared from waste cassava peel employing physical and chemical methods were tested for their efficiency in the removal of dyes and metal ions from aqueous solution. While both of these were efficient as adsorbents for dyes and metal ions, the material impregnated with H3PO4 showed higher efficiency than the heat treated materials.

Keywords: Activation, Adsorbent, Adsorbents, Adsorption, Cassava, Dyes, Heavy Metals, Metal, Metal Ions, Removal, Waste, Water, Wood

Diao, Y.L., Walawender, W.P. and Fan, L.T. (2002), Activated carbons prepared from phosphoric acid activation of grain sorghum. *Bioresource Technology*, **81** (1), 45-52.

Full Text: [B\Bio Tec81, 45.pdf](B/Bio%20Tec81,%2045.pdf)

Abstract: The production of activated carbons from grain sorghum with phosphoric acid activation has been studied by means of two processes, i.e., one-stage and two-stage. The former comprises simultaneous carbonization and activation after impregnation, the latter, the carbonization of the precursor at 300°C for 15 min, followed by the activation of the resultant char after impregnation with phosphoric acid. The preparation conditions, e.g., activation duration, phosphoric acid concentration, and activation temperature, have been varied to determine the optimal processing conditions. The optimal activation conditions for the highest surface areas have been determined to be 600 and 500°C with a phosphoric acid concentration of 35% for the one-stage and two-stage processes, respectively. The two-stage process has been found to greatly enhance the porosity development, especially the microporosity. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Sorghum, Activated Carbon, Impregnation, Adsorption, Porosity, Pore-Size Distribution, Density-Functional Theory, Porosity, Nitrogen, Wood

Kadirvelu, K., Senthilkumar, P., Thamaraiselvi, K. and Subburam, V. (2002), Activated carbon prepared from biomass as adsorbent: Elimination of Ni(II) from aqueous solution. *Bioresource Technology*, **81** (1), 87-90.

Full Text: [B\Bio Tec81, 87.pdf](B/Bio%20Tec81,%2087.pdf)

Abstract: Activated carbon (AC) prepared from waste Parthenium was used to eliminate Ni(II) from aqueous solution by adsorption. Batch mode adsorption experiments are carried out, by varying contact time, metal ion concentration, carbon concentration, pH and desorption to assess kinetic and equilibrium parameters. They allowed initial adsorption coefficient, adsorption rate constant and maximum adsorption capacities to be computed. The adsorption data were modeled by using both Langmuir and Freundlich classical adsorption isotherms. The adsorption capacity (Q(0)) calculated from the Langmuir isotherm was 54.35 mg Ni(II)/g of AC at initial pH of 5.0 and 20°C, for the particle size 250-500 mum. Increase in pH from 2 to 10 increased percent removal of metal ion. The regeneration by HCl of Ni(II)-saturated carbon by HCl, allowed suggestion of an adsorption mechanism by ion-exchange between metal ion and H+ ions on the AC surfaces. Quantitative recovery of Ni(II) was possible with HCl. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Activated Carbon, Metal Ion, Adsorption, Kinetics, Isotherms, pH, Desorption, Agricultural By-Products, Heavy-Metals, Waste-Water, Coirpith Carbon, Removal, Adsorption, Nickel, Sorption, Cu(II)

Iqbal, M., Saeed, A. and Akhtar, N. (2002), Petiolar felt-sheath of palm: A new biosorbent for the removal of heavy metals from contaminated water. *Bioresource Technology*, **81** (2), 151-153.

Full Text: [B\Bio Tec81, 151.pdf](B/Bio%20Tec81,%20151.pdf)

Abstract: Biosorption of heavy metals such as Pb2+, Ni2+, Cd2+, Cu2+, Cr3+ and Zn2+ by petiolar felt-sheath of palm (PFP) from contaminated water was examined. PFP was found to efficiently remove all the toxic metal ions with selectivity order of Pb2+>Cd2+>Cu2+>Zn2+>Ni2+>Cr3+. The uptake was rapid, with more than 70% completed within 15 min. The bound metal ions were successfully desorbed and the PFP fibrous–biomass remained effective after several adsorption–desorption cycles.

Keywords: Biosorption, Petiolar Felt-Sheath, Palm, Heavy Metals

Yesilada, O., Cing, S. and Asma, D. (2002), Decolourisation of the textile dye Astrazon Red FBL by *Funalia trogii* pellets. *Bioresource Technology*, **81** (2), 155-157.

Full Text: [B\Bio Tec81, 155.pdf](B/Bio%20Tec81,%20155.pdf)

Abstract: The effects of various conditions such as initial pH, dye concentrations, amount of pellet, temperature and agitation on decolourising activity of Funalia trogii were investigated. These, except initial pH, were all found to be important for dye decolourising activity of F. trogii. The decolourisation of the dye involved adsorption of the dye compound by fungal pellets at the initial stage, followed by the decolourisation through microbial metabolism. Heat-killed pellets were also tested for their ability to decolourise Astrazon Red dye. These pellets adsorbed the dye and 55% decolourisation was obtained in 24 h. But at the second cycle there was only 24% decolourisation. Our observation showed that Astrazon Red dye decolourisation by heat-killed pellets was mainly due to biosorption. The longevity of the decolourisation activity of F. trogii pellets was also investigated in repeated batch mode. Variations in the amount of pellet increased % decolourisation and stability of pellets. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Textile Dye, Dye, White Rot Fungi, *Funalia Trogii*, Decolourisation, White-Rot Fungus, Mill Waste-Water, Orange-II, Decolorization, Versicolor, Effluents, Biodegradation, Immobilization

Sternberg, S.P.K. and Dorn, R.W. (2002), Cadmium removal using *Cladophora* in batch, semi-batch and flow reactors. *Bioresource Technology*, **81** (3), 249-255.

Full Text: [B\Bio Tec81, 249.pdf](B/Bio%20Tec81,%20249.pdf)

Abstract: This study presents the results of using viable algae to remove cadmium from a synthetic wastewater. In batch and semi-batch tests, a local strain of Cladophora algae removed 80-94% of the cadmium introduced. The flow experiments that followed were conducted using non-local Cladophora parriaudii. Results showed that the alga removed only 12.7(±6.4)% of the cadmium introduced into the reactor, Limited removal was the result of insufficient algal quantities and poor contact between the algae and cadmium solution. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Cadmium, Bioremoval, Bioremediation, Cladophora, Macro-Algae, Heavy-Metals, Accumulation, Biosorption, Adsorption, Glomerata, Crispata, Chromium, Biomass, Cobalt, Lead

Baik, W.Y., Bae, J.H., Cho, K.M. and Hartmeier, W. (2002), Biosorption of heavy metals using whole mold mycelia and parts thereof. *Bioresource Technology*, **81** (3), 167-170.

Full Text: [B\Bio Tec81, 167.pdf](B/Bio%20Tec81,%20167.pdf)

Abstract: Biosorption of heavy metals was carried out using whole mycelia and selected components of *Aspergillus niger*, *Rhizopus oryzae* and *Mucor rouxii*. Binding of copper, cadmium, nickel and zinc was considerably improved by treating the cell wall fraction with 4 M NaOH at 121°C. Chitosan contributed most to the biosorptive capacity. 0.96 mmol copper was bound by 1 g of the treated mycelium of M rouxii DSM 1191. (C) 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, Heavy Metals, Cell Wall, Mycelia, *Aspergillus niger*, *Rhizopus Oryzae*, *Mucor Rouxii*, Chitosan, *Rhizopus-Arrhizus*, Mechanism

Ishikawa, S.I., Suyama, K., Arihara, K. and Itoh, M. (2002), Uptake and recovery of gold ions from electroplating wastes using eggshell membrane. *Bioresource Technology*, **81** (3), 201-206.

Full Text: [B\Bio Tec81, 201.pdf](B/Bio%20Tec81,%20201.pdf)

Abstract: The animal byproduct, hen eggshell membrane (ESM), was evaluated for its ability to sorb gold ions (dicyanoaurate(I) and tetrachloroaurate(III)) from solutions and electroplating wastewater. The gold uptake was dependent on pH, temperature and co-ions present in the solutions, with pH 3.0 being the optimum value. The equilibrium data followed the Langmuir isotherm model with maximum capacities of 147 mg Au(I)/g dry weight and 618 mg Au(III)/g, respectively. Desorption of sorbed gold(I) with 0.1 mol/l NaOH resulted in no changes of the biosorbent gold uptake capacity through five consecutive sorption/desorption cycles. In column experiments, selective recovery of gold from electroplating wastewater containing various metal ions was noted. The affinity of metal sorption was in the order Au >Ag > Co > Cu > Pb > Ni > Zn. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Eggshell Membrane, Gold, Uptake, Recovery, Biosorption, Electroplating Waste

Fu, Y. and Viraraghavan, T. (2002), Dye biosorption sites in *Aspergillus niger*. *Bioresource Technology*, **82** (2), 139-145.

Full Text: [B\Bio Tec82, 139.pdf](B/Bio%20Tec82,%20139.pdf)

Abstract: *Aspergillus niger* is capable of removing dyes from an aqueous solution. In the study, the roles played by three major functional groups: carboxyl, amino and phosphate, and the lipid fraction in the biomass of *A. Niger* in biosorption of four dyes, Basic Blue 9, Acid Blue 29, Congo Red and Disperse Red 1, were investigated. These functional groups in *A. Niger* were chemically modified individually to determine their contribution to the biosorption of dyes. It was found that biosorption of dyes was influenced by the functional groups in the fungal biomass and the chemical structure of the dyes.

Keywords: *Aspergillus niger*, Biosorption, Functional Groups, Basic Blue 9, Acid Blue 29, Congo Red, Disperse Red 1

Mezzanotte, V., Bolzacchini, E., Orlandi, M., Rozzi, A. and Rullo, S. (2002), Anaerobic removal of linear alcohol ethoxylates. *Bioresource Technology*, **82** (2), 151-156.

Full Text: [B\Bio Tec82, 151.pdf](B/Bio%20Tec82,%20151.pdf)

Abstract: The present paper deals with a laboratory-scale study of anaerobic treatment of two commercial mixtures (LS2, LT7) of alcohol ethoxylates with 8–14 carbon atoms and 2 and 7 ethoxy groups. Tests were carried out in batch, with a 2 g l−1 single dose, and in semibatch, with daily 0.2 g l−1 doses. The behaviour of the tested mixtures was different: anaerobic sludge adsorption was the main removal process for LS2, while adsorption was less significant and biodegradation was more important for LT7. These differences appeared to be mainly related to the ethoxy portion length determining the extent of biodegradability and adsorption.

Keywords: Wastewater Treatment, Non-Ionic Surfactants, Linear Alcohol Ethoxylates, Anaerobic Digestion, Biodegradation, Adsorption

Vázquez, G., González-Álvarez, J., Freire, S., López-Lorenzo, M. and Antorrena, G. (2002), Removal of cadmium and mercury ions from aqueous solution by sorption on treated *Pinus pinaster* bark: Kinetics and isotherms. *Bioresource Technology*, **82** (3), 247-251.

Full Text: [B\Bio Tec82, 247.pdf](B/Bio%20Tec82,%20247.pdf)

Abstract: Formaldehyde pretreated *Pinus pinaster* bark was used to sorb Cd2+ and Hg2+ from aqueous solutions. The sorption kinetics showed hyperbolic dependence of the proportion of cation adsorbed on time, and the sorption isotherms were satisfactorily fitted by Freundlich equations, with *k* and *n* values showing Hg2+ to be more efficiently sorbed than Cd2+. Except for low cation concentrations, for which sorption was practically total at all initial pH ≥ 6, sorption increased in this range, in keeping with a mechanism based on ion exchange with the hydroxyl protons of ring B of the procyanidin units of the tannins in the bark.

Keywords: Mercury, Cadmium, Adsorption, Kinetics, Pinus Pinaster Bark

Vasudevan, P., Padmavathy, V. and Dhingra, S.C. (2002), Biosorption of monovalent and divalent ions on baker’s yeast. *Bioresource Technology*, **82** (3), 285-289.

Full Text: [B\Bio Tec82, 285.pdf](B/Bio%20Tec82,%20285.pdf)

Abstract: Biosorption of monovalent ions Na+ and K+, by deactivated protonated yeast (*Saccharomyces cerevisiae*) at controlled pH, was compared with biosorption of divalent ions Ca2+ and Mg2+ to help to understand the underlying binding mechanisms. The adsorption for monovalent ions was accompanied by H+ release. Divalent ions were sorbed by proton displacement, and also an additional mode not accompanied by release of H+. The sorption uptake of both monovalent and divalent metal ions increased with pH in the range 3-7 peaking at 6.75. Equilibrium sorption isotherms at pH = 6.75 showed that the total maximum biosorptive capacity for metal ions decreased in the following order: Ca>Mg>Na ≥ K.

Keywords: Adsorption, Alginate, Baker’s Yeast, Biomass, Biosorption, Cobalt, Exchange, Mechanism, Mechanism, Metal Ions, Metal-Ions, Rhizopus-Arrhizus, *Saccharomyces Cerevisiae*, Saccharomyces-Cerevisiae, Uranium, Wastewater Treatment, Yeast

de França, F.P., Tavares, A.P.M. and da Costa, A.C.A. (2002), Calcium interference with continuous biosorption of zinc by *Sargassum* sp. (Phaeophyceae) in tubular laboratory reactors. *Bioresource Technology*, **83** (2), 159-163.

Full Text: [B\Bio Tec83, 159.pdf](B/Bio%20Tec83,%20159.pdf)

Abstract: The zinc biosorptive capacity of the brown seaweed *Sargassum* sp. (Phaeophyceae) was studied in the presence or absence of competing calcium ions, using a continuous system with tubular fixed-bed reactors. In order to detect the effect of calcium on zinc biosorption, a 130 mg/l zinc solution was used, and calcium was added at 50–340 mg/l. The potential zinc biosorptive capacity of the biomass was markedly influenced by the presence of ionic calcium. Zinc sorption decreased with increasing calcium concentrations, as expressed by zinc uptake rates. Calcium was effectively recovered only during the initial stages of the process, as expressed by the decrease in its uptake rates. Calcium uptake rates were also much higher than zinc uptake rates, indicating that calcium was preferentially recovered when compared to zinc. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, Calcium, Environment, *Sargassum sp.*, Seaweed, Zinc

Orlando, U.S., Baes, A.U., Nishijima, W. and Okada, M. (2002), A new procedure to produce lignocellulosic anion exchangers from agricultural waste materials. *Bioresource Technology*, **83** (3), 195-198.

Full Text: [B\Bio Tec83, 195.pdf](B/Bio%20Tec83,%20195.pdf)

Abstract: Two lignocellulosic agricultural waste materials (LCM), sugarcane bagasse (BG) and rice hull (RH), were converted into weak-base anion exchanger and evaluated for their exchanger capacity For nitrate. Pure cellulose (PC) and pure alkaline lignin (PL) were also used as reference materials to elucidate possible reactivity in LCM. Epoxy and amino groups were introduced into BG. RH, PC and PL substrates after the reaction with epichlorohydrin and dimethylamine in the presence of pyridine and an organic solvent N,N-dimethylformamide (DMF). Amino group incorporation into cellulose decreased with the presence of water in the reaction mixture and increased with the reaction time and presence of a catalyst (pyridine). The highest maximum nitrate exchange capacity (Qmax) and yields of the prepared exchangers was obtained from PL (1.8 mmol g-1 and 412.5%), followed by BG (1.41 mmol g-1 and 300%), PC (1.34 mmol g-1 and 166%) and RH (1.32 mmol g-1 and 180%). The proposed synthetic procedure was effective in modifying PL. PC and LCM chemically resulting in a higher yield and nitrate removal capacity. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Agricultural Wastes, Anion Exchangers, Nitrate, Pure Alkaline Lignin, Pure Cellulose, Sugarcane Bagasse, Rice Hull, Residues

Tarlan, E., Dilek, F.B. and Yetis, U. (2002), Effectiveness of algae in the treatment of a wood-based pulp and paper industry wastewater. *Bioresource Technology*, **84** (1), 1-5.

Full Text: [B\Bio Tec84, 1.pdf](B/Bio%20Tec84,%201.pdf)

Abstract: In this study, the ability of algae to treat a wood-based pulp and paper industry wastewater was investigated. Tests were performed in batch reactors seeded with a mixed culture of algae. Under different lighting and initial wastewater strength conditions, changes in COD, AOX and color contents of reactors were followed with time. Algae were found to remove up to 58% of COD, 84% of color and 80% of AOX from pulp and paper industry wastewaters. No remarkable differences were observed in COD and color when light intensity and wastewater strength were changed, while AOX removals were strongly affected. Algal species identification studies revealed that some green algae (*Chlorella*) and diatom species were dominant in the treatment. The study also showed that algae grew mixotrophically, while the main mechanism of color and organics removal from pulping effluents was partly metabolism and partly metabolic conversion of colored and chlorinated molecules to non-colored and non-chlorinated molecules. Adsorption onto algal biomass was not so effective.

Keywords: Pulp and Paper Industry, Wastewater Treatment, Algae, Color Removal, AOX removal

Ng, C., Losso, J.N., Marshall, W.E. and Rao, R.M. (2002), Physical and chemical properties of selected agricultural byproduct-based activated carbons and their ability to adsorb geosmin. *Bioresource Technology*, **84** (2), 177-185.

Full Text: [B\Bio Tec84, 177.pdf](B/Bio%20Tec84,%20177.pdf)

Abstract: The objectives of this study were to evaluate selected physical and chemical properties of agricultural byproduct-based activated carbons made from pecan shells and sugarcane bagasse, and compare those properties to a commercial coal-based activated carbon as well as to compare the adsorption efficiency of these carbons for geosmin. Comparison of the physical and chemical properties of pecan shell- and bagasse-based carbons to the commercial carbon, Calgon Filtrasorb 400, showed that pecan shell carbon, but not the bagasse carbon, compared favorably to Filtrasorb 400, especially in terms of surface area, bulk density, ash and attrition. A carbon dosage study done in a model system showed the amount of geosmin adsorbed to be greater for Filtrasorb 400 and the bagasse-based carbon at low carbon concentrations than for the pecan shell carbons, but geosmin adsorption was similar in all carbons at higher carbon dosages. Application of the Freundlich isotherm model to the adsorption data showed that carbons made by steam activation of pecan shells or sugarcane bagasse had geosmin adsorption characteristics most like those of the commercial carbon. In terms of physical, chemical and adsorptive properties, steam-activated pecan shell carbon most resembled the commercial carbon and has the potential to replace Filtrasorb 400 in applications involving removal of geosmin from aqueous environments.

Keywords: Activated Carbon, Pecan Shells, Sugarcane Bagasse, Geosmin, Freundlich Model

Pérez-Rama, M., Alonso, J.A., López, C.H. and Vaamonde, E.T. (2002), Cadmium removal by living cells of the marine microalga *Tetraselmis suecica*. *Bioresource Technology*, **84** (3), 265-270.

Full Text: [B\Bio Tec84, 265.pdf](B/Bio%20Tec84,%20265.pdf)

Abstract: Cadmium removal by living cells of the marine microalga *Tetraselmis suecica* was tested in cultures exposed to different cadmium concentrations (0.6, 3, 6, 15, 30 and 45 mg/l). The EC50 for growth was 7.9 mg Cd/l after six days of exposure. The cadmium removed was proportional to the concentration of this metal in the medium and it was dependent on the time of exposure, cultures with higher cadmium concentration removed a higher amount of this metal. In cultures exposed to 0.6 mg/l, *T. suecica* cells removed 98.1% of added cadmium with 0.392×10−6 μg Cd/cell, whereas in cultures with 45 mg/l only 7.7% was removed with 16.052×10−6 μg Cd/cell. The highest amount of cadmium removed per liter of culture was observed in cultures exposed to 6 mg/l, with 3.577 mg/l of cadmium. After six days of incubation, the higher proportion of cadmium was bioaccumulated intracellularly in all cultures except in 45 mg/l cultures, the percentage of intracellular cadmium being always more than 50%. The highest percentage of bioadsorbed cadmium (60.1%) was found in cells of cultures with the highest cadmium concentration (45 mg/l). Furthermore, a relation between intracellular cadmium and the concentration of sulfhydryl groups was observed.

Keywords: Microalga, *Tetraselmis Suecica*, Cadmium Removal, Bioaccumulation, Biosorption, Sulfhydryl Groups

Demirbaş, E., Kobya, M., Öncel, S. and Şencan, S. (2002), Removal of Ni(II) from aqueous solution by adsorption onto hazelnut shell activated carbon: Equilibrium studies. *Bioresource Technology*, **84** (3), 291-293.

Full Text: [B\Bio Tec84, 291.pdf](B/Bio%20Tec84,%20291.pdf)

Abstract: Activated carbon prepared from hazelnut shell was used as an adsorbent for the removal of Ni(II) from aqueous solution. Batch mode adsorption studies were carried out by varying initial metal ion concentration, agitation speed, temperature and particle size. A contact time of 180 min was required to reach equilibrium. The equilibrium data were analysed using the Langmuir, Freundlich and Temkin isotherms. The characteristic parameters for each isotherm were determined. The Langmuir isotherm provided the best correlation for Ni(II) onto the activated carbon. Thermodynamical parameters revealed that the adsorption of Ni(II) is exothermic in nature.

Keywords: Adsorption, Low-Cost Adsorbent, Isotherm, Nickel Ions, Hazelnut Shell

? Robinson, T., Chandran, B. and Nigam, P. (2002), Studies on desorption of individual textile dyes and a synthetic dye effluent from dye-adsorbed agricultural residues using solvents. *Bioresource Technology*, **84** (3), 299-301.

Full Text: [2002\Bio Tec84, 299.pdf](2002/Bio%20Tec84,%20299.pdf)

Abstract: Two solvents, A and B (A: methanol, chloroform, water in the ratio 1: 1: 1; B: 50% methanol), were used to extract textile dyes adsorbed onto substrates for the purpose of future analyses of the amount of dyes degraded through solid state fermentation (SSF) using white rot fungi. Barley husk, apple pommace and corncob were separately soaked in five different dye solutions and a synthetic textile effluent, A maximum value of 93% desorption of Cibacron Red from corncob was achieved using solvent A. Barley husk was the only substrate from which the synthetic textile effluent could be desorbed, with 82% being recovered using solvent A. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Natural Adsorbents, Removal, Color, Cost

Robinso, T., Chandran, B., Naidu, G.S. and Nigam, P. (2002), Studies on the removal of dyes from a synthetic textile effluent using barley husk in static-batch mode and in a continuous flow, packed-bed, reactor. *Bioresource Technology*, **85** (1), 43-49.

Full Text: [B\Bio Tec85, 43.pdf](B/Bio%20Tec85,%2043.pdf)

Abstract: The adsorption of five reactive dyes in a synthetic textile dye effluent onto barley husks has been studied in static-batch mode and in a continuous flow, packed-bed, reactor (CFPBR). Effective adsorption, thermodynamics and various initial concentrations (C0) were studied for static batch conditions. The effect of C0 and retention time (tau), by varying height and weight of packing, along with the kinetics of dye adsorption in CFPBR, were studied. The Langmuir isotherm was used to predict saturation capacities. The barley husks were found to remove 8 mg g-1 of dyes at C0 100 mg 1-1 in CFPBR with a residence of 11 min, with 90%, adsorption being achieved. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Acid Dye, Adsorption, Barley Husks, Batch Mode, Cadmium, Color, Column, Continuous Biosorption, Continuous Flow Packed Bed Reactor, Dyes, Effluent, Langmuir, Microbial Decolorization, Natural Adsorbents, Parameters, Removal, Sorption, Textile Dyes, Wood

Tangaromsuk, J., Pokethitiyook, P., Kruatrachue, M. and Upatham, E.S. (2002), Cadmium biosorption by *Sphingomonas paucimobilis* biomass. *Bioresource Technology*, **85** (1), 103-105.

Full Text: [B\Bio Tec85, 103.pdf](B/Bio%20Tec85,%20103.pdf)

Abstract: Among microorganisms isolated in Bangkok, the gram-negative bacterium Sphingomonas paucimobilis exhibited the greatest cadmium tolerance. It was able to survive in the medium containing cadmium as high as 200 mg/l. However, concentrations of cadmium at 25-200 mg/l inhibited its growth. The biosorption properties for cadmium of this bacterial biomass and the effects of environmental factors (i.e., biosorbent type, initial pH and biosorbent concentration) on the cadmium biosorption were explored. The results showed that the cadmium removal capacity of living cells was markedly higher than that of nonliving cells. Cadmium biosorption by S. paucimobilis biomass was also affected by the initial pH and biosorbent concentration. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Cadmium, Sphingomonas Paucimobilis, Biosorption, Biosorbent, Living Cells, Nonliving Cells, Exopolysaccharide, Metals, Water

Robinson, T., Chandran, B. and Nigam, P. (2002), Effect of pretreatments of three waste residues, wheat straw, corncobs and barley husks on dye adsorption. *Bioresource Technology*, **85** (2), 119-124.

Full Text: [B\Bio Tec85, 119.pdf](B/Bio%20Tec85,%20119.pdf)

Abstract: The removal of dyes (Cibacron Yellow C-2R, Cibacron Red C-2G, Cibacron Blue C-R, Remazol Black B and Remazol Red RB) from an aqueous solution has been discussed by adsorption which was examined on three different low cost pretreated agricultural residues viz., wheat straw, corncob and barley husk. The pretreatments were carried out in order to delignify, or to increase the surface area of the sorbents, and to study their effect on the rate and effective adsorption of dyes. Steam, alkali, ammonia steeping and milling were the pretreatments employed and compared with the untreated sorbents. A higher percentage of dye removal was achieved at a faster rate by the milled samples proving milling to be a better and more cost effective treatment, except for barley husk which had a higher percentage removal for the control. (C) 2002 Published by Elsevier Science Ltd.

Keywords: Dye Adsorption, Isotherms, Kinetics, Pretreatments, Solid-State Fermentation, Color Removal, Natural Adsorbents, Textile Effluents, Peat

Ng, C., Losso, J.N., Marshall, W.E. and Rao, R.M. (2002), Freundlich adsorption isotherms of agricultural by-product-based powdered activated carbons in a geosmin–water system. *Bioresource Technology*, **85** (2), 131-135.

Full Text: [B\Bio Tec85, 131.pdf](B/Bio%20Tec85,%20131.pdf)

Abstract: The present study was designed to model the adsorption of geosmin from water under laboratory conditions using the Freundlich isotherm model. This model was used to compare the efficiency of sugarcane bagasse and pecan shell-based powdered activated carbon to the efficiency of a coal-based commercial activated carbon (Calgon Filtrasorb 400). When data were generated from Freundlich isotherms, Calgon Filtrasorb 400 had greater geosmin adsorption at all geosmin concentrations studied than the laboratory produced steam-activated pecan shell carbon, steam-activated bagasse carbon, and the CO2-activated pecan shell carbon. At geosmin concentrations<0.07 μg/l for the phosphoric acid-activated pecan shell carbon and below 0.08 μg/l for a commercially produced steam-activated pecan shell carbon obtained from Scientific Carbons, these two carbons had a higher calculated geosmin adsorption than Filtrasorb 400. While the commercial carbon was more efficient than some laboratory prepared carbons at most geosmin concentrations, the results indicate that when the amount of geosmin was below the threshold level of human taste (about 0.10 μg/l), the phosphoric acid-activated pecan shell carbon and the Scientific Carbons sample were more efficient than Filtrasorb 400 at geosmin removal.

Keywords: Activated Carbon, Pecan Shells, Sugarcane Bagasse, Geosmin, Freundlich Model, Adsorption Isotherm

Ucun, H., Bayhan, Y.K., Kaya, Y., Cakici, A. and Algur, O.F. (2002), Biosorption of chromium(VI) from aqueous solution by cone biomass of *Pinus sylvestris*. *Bioresource Technology*, **85** (2), 155-158.

Full Text: [B\Bio Tec85, 155.pdf](B/Bio%20Tec85,%20155.pdf)

Abstract: Biosorption of chromium(VI) on to cone biomass of Pinus sylvestris was studied with variation in the parameters of pH, initial metal ion concentration and agitation speed. The biosorption of Cr(VI) was increased when pH of the solution was decreased from 7.0 to 1.0. The maximum chromium biosorption occurred at 150 rpm agitation. An increase in chromium/biomass ratio caused a decrease in the biosorption efficiency. The adsorption constants were found from the Freundlich isotherm at 25°C. The cone biomass, which is a readily available biosorbent, was found suitable for removing chromium from aqueous solution. (C) 2002 Published by Elsevier Science Ltd.

Keywords: Biosorption, Chromium(VI), Heavy Metal, Wastewater Treatment, Cone, Pinus Sylvestris, *Z-Ramigera*, Adsorption, Removal, Mixtures, Cadmium, Mercury

Rao, J.R. and Viraraghavan, T. (2002), Biosorption of phenol from an aqueous solution by *Aspergillus niger* biomass. *Bioresource Technology*, **85** (2), 165-171.

Full Text: [B\Bio Tec85, 165.pdf](B/Bio%20Tec85,%20165.pdf)

Abstract: Phenols in trace quantities are usually present in the treated effluent of many wastewater-treatment plants. Phenol contamination of drinking water even at 1 μg/l concentration can cause significant taste and odor problems. This study investigates the use of non-viable pretreated cells of *Aspergillus niger* to remove phenol from an aqueous solution. Five types of non-viable pretreated *A. Niger* biomass powders were used as a biosorbent to remove phenol present in an aqueous solution at a concentration of 1000 µg/l. Sulfuric acid-treated non-viable biomass powder, which was the most effective, was used as a biosorbent in a further study. The maximum removal of phenol was observed at an initial pH of 5.1 for the sulfuric acid-treated biomass. The adsorption of phenol by pretreated *A. Niger* biomass was best described by the Brunauer Emmet Teller model. Desorption of phenol using distilled deionized water was found to be approximately 5% suggesting a strong biosorption by the biomass. Sulfuric acid-treated biomass beads developed through immobilization in polysulphone were used in a column study. Approximately 66% of phenol was removed in the column operated at an initial pH of 5.1 and an initial concentration of 1000 μg/l of phenol.

Keywords: Biosorption, *Aspergillus niger*, Organics, Beads, Pretreatment

Rajeshwarisivaraj and Subburam, V. (2002), Activated parthenium carbon as an adsorbent for the removal of dyes and heavy metal ions from aqueous solution. *Bioresource Technology*, **85** (2), 205-206.

Full Text: [B\Bio Tec85, 205.pdf](B/Bio%20Tec85,%20205.pdf)

Abstract: Parthenium hysterophorous (L) is a perennial weed distributed all over the country. Carbonized parthenium activated with conc. H2SO4 and ammonium persulphate was effective in the removal of dyes, heavy metals and phenols. Variation in the percentage removal of adsorbates was observed with increase in the contact time. Among the adsorbates tested, the affinity of the activated parthenium carbon was highest for Hg2+, Methylene Blue and Malachite Green. (C) 2002 Published by Elsevier Science Ltd.

Keywords: Waste-Water

Nuhoglu, Y., Malkoc, E., Gurses, A. and Canpolat, N. (2002), The removal of Cu(II) from aqueous solutions by *Ulothrix zonata*. *Bioresource Technology*, **85** (3), 331-333.

Full Text: [B\Bio Tec85, 331.pdf](B/Bio%20Tec85,%20331.pdf)

Abstract: In, this work, adsorption of copper(II) ions on alga has been studied by using batch adsorption techniques. The equilibrium biosorption level was determined as a function of contact time at several initial metal ion concentrations. The effect of adsorbent concentration on the amount adsorbed was also investigated. The experimental adsorption data were fitted to the Langmuir adsorption model. The free energy change (ΔG°) for the adsorption process was found to be -12.60 kJ/mol. The results indicated that the biomass of Ulothrix zonala is a suitable biosorbent for both the removal and recovery of heavy metals from wastewater. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, Algae, Copper, Adsorption Isotherms, *Saccharomyces-Cerevisiae*, Cadmium Biosorption, Marine-Algae, Heavy-Metal, Biomass, Ions, Adsorption, Alginate, Column, Copper

Ajmal, M., Rao, R.A.K., Anwar, S., Ahmad, J. and Ahmad, R. (2003), Adsorption studies on rice husk: Removal and recovery of Cd(II) from wastewater. *Bioresource Technology*, **86** (2), 147-149.

Full Text: [B\Bio Tec86, 147.pdf](B/Bio%20Tec86,%20147.pdf)

Abstract: Adsorption behaviour of Ni(II), Zn(II), Cd(II) and Cr(VI) on untreated and phosphate-treated rice husk (PRH) showed that adsorption of Ni(II) and Cd(II) was greater when PRH was used as an adsorbent. Sorption of Cd(II) was dependent on contact time, concentration, temperature, adsorbent doses and pH of the solution. The Langmuir constants and thermodynamic parameters have been calculated at different temperatures. It was found that recovery of Cd(II) from synthetic wastewater by column operation was better than a batch process.

Keywords: Phosphate Treated Rice Husk, Langmuir Isotherm, Adsorption Dynamics

Bai, R.S. and Abraham, T.E. (2003), Studies on chromium(VI) adsorption-desorption using immobilized fungal biomass. *Bioresource Technology*, **87** (1), 17-26.

Full Text: [B\Bio Tec87, 17.pdf](B/Bio%20Tec87,%2017.pdf)

Abstract: The aim of this study was to investigate the Cr(VI) biosorption potential of immobilized *Rhizopus nigricans* and to screen a variety of non-toxic desorbing agents, in order to find out possible application in multiple sorption-desorption cycles. The biomass was immobilized by various mechanisms and evaluated for removal of Cr(VI) from aqueous solution, mechanical stability to desorbents, and reuse in successive cycles. The finely powdered biomass, entrapped in five different polymeric matrices viz. calcium alginate, polyvinyl alcohol (PVA), polyacrylamide, polyisoprene, and polysulfone was compared for biosorption efficiency and stability to desorbents. Physical immobilization to polyurethane foam and coir fiber was less efficient than polymer entrapment methods. of the different combinations (%, w/v) of biomass dose compared for each matrix, 8% (calcium alginate), 6% (polyacrylamide and PVA), 12% (polyisoprene), and 10% (polysulfone) were found to be the optimum. The Cr sorption capacity (mg Cr/g sorbent) of all immobilized biomass was lesser than the native, powdered biomass. The Cr sorption capacity decreased in the order of free biomass (119.2) > polysulfone entrapped (101.5) > polyisoprene immobilized (98.76) > PVA immobilized (96.69) > calcium alginate entrapped (84.29) > polyacrylamide (45.56), at 500 mg/I concentration of Cr(VI). The degree of mechanical stability and chemical resistance of the immobilized systems were in the order of polysulfone > polyisoprene > PVA > polyacrylamide > calcium alginate. The bound Cr(VI) could be eluted successfully using 0.01 N NaOH, NaHCO3, and Na2CO3. The adsorption data for the native and the immobilized biomass was evaluated by the Freundlich isotherm model. The successive sorption-desorption studies employing polysulfone entrapped biomass indicated that the biomass beads could be regenerated and reused in more than 25 cycles and the regeneration efficiency was 75-78%. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, *Rhizopus nigricans*, Desorption, Immobilization, Heavy Metal, Freundlich Isotherm, Hexavalent Chromium, *Saccharomyces-Cerevisiae*, Heavy-Metals, *Rhizopus-Arrhizus*, Biosorption, Removal, Copper, Ions, Alginate, Uranium, Cr(VI)

Sağ, Y., Tatar, B. and Kutsal, T. (2003), Biosorption of Pb(II) and Cu(II) by activated sludge in batch and continuous-flow stirred reactors. *Bioresource Technology*, **87** (1), 27-33.

Full Text: [B\Bio Tec87, 27.pdf](B/Bio%20Tec87,%2027.pdf)

Abstract: Biosorption of Pb(II) and Cu(II) ions in single component and binary systems was studied using activated sludge in batch and continuous-.ow stirred reactors. In biosorption experiments, the activated sludge in three di.erent phases of the growth period was used: growing cells, resting cells, dead or dried cells. Because of the low adsorption capacity of the non-viable activated sludge especially in the case of Pb(II) ions, biosorption of the Cu(II) and Pb(II) ions from the binary mixtures was carried out by using the resting cells. The biosorption data .tted better with the Freundlich adsorption isotherm model. Using a mathematical model based on continuous system mass balance for the liquid phase and batch system mass balance for the solid phase, the forward rate constants for biosorption of Pb(II) and Cu(II) ions were 0.793 and 0.242 l (mmol min)-1, respectively. 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Biosorption, Lead, Copper, Activated Sludge, Batch Stirred Reactor, Continuous-flow Stirred Reactor

Kadirvelu, K., Kavipriya, M., Karthika, C., Radhika, M., Vennilamani, N. and Pattabhi, S. (2003), Utilization of various agricultural wastes for activated carbon preparation and application for the removal of dyes and metal ions from aqueous solutions. *Bioresource Technology*, **87** (1), 129-132.

Full Text: [B\Bio Tec87, 129.pdf](B/Bio%20Tec87,%20129.pdf)

Abstract: Activated carbons were prepared from the agricultural solid wastes, silk cotton hull, coconut tree sawdust, sago waste, maize cob and banana pith and used to eliminate heavy metals and dyes from aqueous solution. Adsorption of all dyes and metal ions required a very short time and gave quantitative removal. Experimental results show all carbons were effective for the removal of pollutants from water. Since all agricultural solid wastes used in this investigation are freely, abundantly and locally available, the resulting carbons are expected to be economically viable for wastewater treatment. (C) 2002 Elsevier Science Ltd. All rights reserved

Keywords: Activated Carbon, Activated Carbons, Adsorption, Agricultural Solid Wastes, Dyes, Heavy Metals, Ni(II), Preparation, Removal, Sawdust, Wastewater, Water

Laufenberg, G., Kunz, B. and Nystroem, M. (2003), Transformation of vegetable waste into value added products: (A) the upgrading concept, (B) practical implementation. *Bioresource Technology*, **87** (2), 167-198.

Full Text: [B\Bio Tec87, 167.pdf](B/Bio%20Tec87,%20167.pdf)

Abstract: Waste can contain many reusable substances of high value. Depending on there being an, adequate technology this residual matter can be converted into commercial products either as raw material for secondary processes, as operating supplies or as ingredients of new products. Numerous valuable substances in food production are suitable for separation and recycling. at the end of their life cycle, even though present separation and recycling processes are not absolutely cost efficient.

In Part A a need statement is visualised-based on a holistic concept of food production-for the vegetable industry, recording occurrence, quantities and utilisation of the residual products. A literature survey, covering more than 160 articles from all over the world, plus our own investigations summarises the latest knowledge in the above-mentioned field and outline prospects for future economic treatment of vegetable ‘co-products’.

The main goal of a clean production process is demonstrated by three practical implementations in Part B:

1. Upgrading of vegetable residues for the production of novel types of products: multifunctional food ingredients in fruit juice and bakery goods.

2. Bioconversion via solid-state fermentation: vegetable residues as an exclusive substrate for the generation of fruity food flavours.

3. Conversion of vegetable residues into operating supplies: bioadsorbents for waste water treatment.

The investigations are promising with regard to future application in the mentioned industrial branch. The outlined concept can be naturally transferred to several areas of industrial food production. The intentions of this research area are located at the development of techniques, which fulfil the conditions of environmental protection with costs to a minimum. The prospect of several new niche markets is worthwhile indeed. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Green Productivity, Vegetable Waste Treatment, Clean Production, Valuable Substances, Bioadsorbents, Upgrading, Recycling, Bioflavours, Multifunctional Food Ingredient, Review, Solid-State Fermentation, Sugar-Beet Pulp, Granular Activated Carbons, Potential Food Ingredient, Divalent Metal-Cations, Dietary Fiber, Apple Pomace, Ceratocystis-Fimbriata, Aqueous-Solutions, Orange Peel

Rozada, F., Calvo, L.F., García, A.I., Martín-Villacorta, J. and Otero, M. (2003), Dye adsorption by sewage sludge-based activated carbons in batch and fixed-bed systems. *Bioresource Technology*, **87** (3), 221-230.

Full Text: [B\Bio Tec87, 221.pdf](B/Bio%20Tec87,%20221.pdf)

Abstract: The present research work deals with the production of activated carbons by chemical activation and pyrolysis of sewage sludges. The adsorbent properties of these sewage sludges based activated carbons were studied by liquid-phase adsorption tests. Dyes removal from colored wastewater being a possible application for sludge based adsorbents, Methylene blue and saphranine removing from solution was studied. Pure and binary adsorption assays were performed in batch and fixed bed systems. In all cases studied, the adsorbents produced from sewage sludges were able to adsorb both the compounds considered here. Nevertheless, time required for reaching equilibrium, adsorptive capacity and fixed bed characteristic parameters were different for these two compounds. Methylene blue adsorption occurred faster than that of saphranine, and it was preferably adsorbed when treating binary solutions. It could be concluded that the sewage sludge-based activated carbons may be promising for dyes removal from aqueous streams.

Keywords: Sewage Sludge, Activated Carbons, Chemical Activation, Liquid-Phase Adsorption, Batch, Fixed Bed

? Latkar, M., Swaminathan, K. and Chakrabarti, T. (2003), Kinetics of anaerobic biodegradation of resorcinol catechol and hydroquinone in upflow fixed film-fixed bed reactors. *Bioresource Technology*, **88** (1), 69-74.

Full Text: [2003\Bio Tec88, 69.pdf](2003/Bio%20Tec88,%2069.pdf)

Abstract: Biodegradation of resorcinol, catechol and hydroquinone under anaerobic conditions was studied in identical upflow fixed film-fixed bed reactors. Kinetic constants; V-max (maximum substrate utilization rate) and K-s (Monod’s half saturation constant) were determined for the three compounds using Lineweaver-Burk plot. V-max for resorcinol was highest, followed by catechol and then by hydroquinone. When both resorcinol and catechol were fed to the resorcinol-acclimated reactor, resorcinol degradation was inhibited by catechol. The inhibition was of the uncompetitive type and V-max for resorcinol was reduced by catechol. (C) 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Anaerobic, Anaerobic Fixed Film-Fixed Bed Reactors, Biodegradation, Carbon Filter, Catechol, Degradation, Hydroquinone, Inhibition, K-S, Matrices, Mono, Phenol, Reactor, Resorcinol, Saturation, Substrate, Utilization, V-Max

Allen, S.J., Gan, Q., Matthews, R. and Johnson, P.A. (2003), Comparison of optimised isotherm models for basic dye adsorption by kudzu. *Bioresource Technology*, **88** (2), 143-152.

Full Text: [B\Bio Tec88, 143.pdf](B/Bio%20Tec88,%20143.pdf)

Abstract: This study assesses the use of dried (5% w/w moisture) kudzu (*Peuraria lobata ohwi*) as an adsorbent medium for the removal of two basic dyes, Basic Yellow 21 and Basic Red 22, from aqueous solutions. The extent of adsorption was measured through equilibrium sorption isotherms for the single component systems. Equilibrium was achieved after 21 days. The experimental isotherm data were analysed using Langmuir, Freundlich, Redlich–Peterson, Temkin and Tóth isotherm equations. A detailed error analysis was undertaken to investigate the effect of using different error criteria for the determination of the single component isotherm parameters. The performance of the kudzu was compared with an activated carbon (Chemviron F-400). Kudzu was found to be an effective adsorbent for basic dye colour removal, though its capacity for colour removal was not as high as an activated carbon, the potential appeared to exist to use it as an alternative to activated carbon where carbon cost was prohibitive.

Keywords: Kudzu, Adsorption, Isotherms, Basic Dye

Akhtar, N., Saeed, A. and Iqbal, M. (2003), *Chlorella sorokiniana* immobilized on the biomatrix of vegetable sponge of *Luffa cylindrica*: A new system to remove cadmium from contaminated aqueous medium. *Bioresource Technology*, **88** (2), 163-165.

Full Text: [B\Bio Tec88, 163.pdf](B/Bio%20Tec88,%20163.pdf)

Abstract: A new sorption system of microalgal cells immobilized on the biostructural matrix of *Luffa cylindrica* for sequestering cadmium is reported. Free and immobilized *Chlorella sorokiniana* removed cadmium from 10 mg l−1 solution at the efficiency of 92.7% and 97.9% respectively. Maximum cadmium sorption was observed to be 39.2 mg g−1 at equilibrium (*C*eq) of 112.8 mg l−1 by immobilized microalgal biomass as compared to 33.5 mg g−1 at *C*eq of 116.5 mg l−1 by free biomass from initial concentration of 150 mg l−1. In continuous liquid flow column, the cadmium sorption capacity of immobilized *C. sorokiniana* was 192 mg g−1, which was 73.2% of the total metal passed in 51.5 l. Metal desorption with 0.1 M HCl was 100% and the desorbed immobilized system was reusable with a similar efficiency in the subsequent cycle.

Keywords: Biosorption, *Chlorella Sorokiniana*, Luffa Sponge, Immobilization, Cadmium, Wastewater Treatment

Axtell, N.R., Sternberg, S.P.K. and Claussen, K. (2003), Lead and nickel removal using *Microspora* and *Lemna minor*. *Bioresource Technology*, **89** (1), 41-48.

Full Text: [B\Bio Tec89, 41.pdf](B/Bio%20Tec89,%2041.pdf)

Abstract: Aquatic plants can remove heavy metal contamination from the surrounding water. This study examined the ability of *Microspora* (a macro-alga) and *Lemna minor* (an aquatic plant) to remove soluble lead and nickel under various laboratory conditions. Microspora was tested in a batch and semi-batch process for lead removal. L. minor was tested in a batch process with lead and nickel to examine the potential competition between metals for adsorption. The Microspora was exposed to 39.4 mg/l of lead over 10 days. Results show up to 97% of the lead was removed in the batch process and 95% in the semi-batch process. Initial concentrations below 50 mg/l (a dose that kills the algae) had no effect on the final concentration. The L. minor was exposed to lead and nickel using a full 3(2) factorial experimental design (nine experiments, plus replications). Initial lead concentrations were 0.0, 5.0, and 10.0 mg/l, and nickel concentrations were 0.0, 2.5, and 5.0 mg/l in the experiment. Overall, L. minor removed 76% of the lead, and 82% of the nickel. No synergistic/antagonistic effect was noted for the multiple metal experiments, in terms of metal removal. (C) 2003 Elsevier Science Ltd. All rights reserved.

Keywords: Bioremoval, Phytoremediation, Heavy-Metals, Polluted Water, Cadmium, Plants, Biosorption, Cladophora, Duckweed, Biomass, Algae

Bansode, R.R., Losso, J.N., Marshall, W.E., Rao, R.M. and Portier, R.J. (2003), Adsorption of metal ions by pecan shell-based granular activated carbons. *Bioresource Technology*, **89** (2), 115-119.

Full Text: [B\Bio Tec89, 115.pdf](B/Bio%20Tec89,%20115.pdf)

Abstract: The present investigation was undertaken to evaluate the adsorption effectiveness of pecan shell-based granular activated carbons (GACs) in removing metal ions (Cu2+, Pb2+, Zn2+) commonly found in municipal and industrial wastewater. Pecan shells were activated by phosphoric acid, steam or carbon dioxide activation methods. Metal ion adsorption of shell-based GACs was compared to the metal ion adsorption of a commercial carbon, namely, Calgon’s Filtrasorb 200. Adsorption experiments were conducted using solutions containing all three metal ions in order to investigate the competitive effects of the metal ions as would occur in contaminated wastewater. The results obtained from this study showed that acid-activated pecan shell carbon adsorbed more lead ion and zinc ion than any of the other carbons, especially at carbon doses of 0.2–1.0%. However, steam-activated pecan shell carbon adsorbed more copper ion than the other carbons, particularly using carbon doses above 0.2%. In general, Filtrasorb 200 and carbon dioxide-activated pecan shell carbons were poor metal ion adsorbents. The results indicate that acid- and steam-activated pecan shell-based GACs are effective metal ion adsorbents and can potentially replace typical coal-based GACs in treatment of metal contaminated wastewater. (C) 2003 Elsevier Science Ltd. All rights reserved.

Keywords: Granular Activated Carbon, Pecan Shells, Freundlich Model, Copper, Lead, Zinc

Garg, V.K., Gupta, R., Yadav, A.B. and Kumar, R. (2003), Dye removal from aqueous solution by adsorption on treated sawdust. *Bioresource Technology*, **89** (2), 121-124.

Full Text: [B\Bio Tec89, 121.pdf](B/Bio%20Tec89,%20121.pdf)

Abstract: Formaldehyde treated and sulphuric acid treated saw dusts were used to adsorb malachite green at varying dye concentration, adsorbent dose, pH and agitation time. Similar experiments were conducted with laboratory grade activated carbon to compare the results. The adsorption efficiency of sulphuric acid treated sawdust (SD) was higher than formaldehyde treated SD. The adsorption followed first order rate expression and Lagergren equation. An initial pH in the range of 6–9 was favorable for the dye removal by both the adsorbents. Dilute solutions were effectively decolorized by the adsorbents. It is proposed that in batch or stirred tank reactors, both adsorbents can be an attractive option for dye adsorption. (C) 2003 Elsevier Science Ltd. All rights reserved.

Keywords: Sawdust, Formaldehyde, Sulphuric Acid, Dye, Batch Mode, Adsorption

Arıca, M.Y., Arpa, Ç., Kaya, B., Bektaş, S., Denizli, A. and Genç, Ö. (2003), Comparative biosorption of mercuric ions from aquatic systems by immobilized live and heat-inactivated *Trametes versicolor* and *Pleurotus sajur-caju*. *Bioresource Technology*, **89** (2), 145-154.

Full Text: [B\Bio Tec89, 145.pdf](B/Bio%20Tec89,%20145.pdf)

Abstract: *Trametes versicolor* and *Pleurotus sajur-caju* mycelia immobilized in Ca-alginate beads were used for the removal of mercuric ions from aqueous solutions. The sorption of Hg(II) ions by alginate beads and both immobilized live and heat-killed fungal mycelia of *T. versicolor* and *P. sajur-caju* was studied in the concentration range of 0.150–3.00 mmol dm-3. The biosorption of Hg(II) increased as the initial concentration of Hg(II) ions increased in the medium. Maximum biosorption capacities for plain alginate beads were 0.144±0.005 mmol Hg(II)/g, for immobilized live and heat-killed fungal mycelia of *T. versicolor* were 0.171±0.007 mmol Hg(II)/g and 0.383±0.012 mmol Hg(II)/g respectively, whereas for live and heat-killed *P. sajur-caju*, the values were 0.450±0.014 mmol Hg(II)/g and 0.660±0.019 mmol Hg(II)/g respectively. Biosorption equilibrium was established in about 1 h and the equilibrium adsorption was well described by Langmuir and Freundlich adsorption isotherms. Between 15 and 45 °C the biosorption capacity was not affected and maximum adsorption was observed between pH 4.0 and 6.0. The alginate-fungus beads could be regenerated using 10 mmol dm-3 HCl solution, with up to 97% recovery. The biosorbents were reused in five biosorption–desorption cycles without a significant loss in biosorption capacity. Heat-killed *T. versicolor* and *P. sajur-caju* removed 73% and 81% of the Hg(II) ions, respectively, from synthetic wastewater samples.

Keywords: Hg(II), Alginate Beads, Entrapment, Biosorption, *Trametes versicolor*, *Pleurotus sajur-caju*

Selvaraj, K., Manonmani, S. and Pattabhi, S. (2003), Removal of hexavalent chromium using distillery sludge. *Bioresource Technology*, **89** (2), 207-211.

Full Text: [B\Bio Tec89, 207.pdf](B/Bio%20Tec89,%20207.pdf)

Abstract: Batch mode experiments were conducted to study the removal of hexavalent chromium from aqueous and industrial effluent using distillery sludge. Effects of pH, contact time, initial concentration and adsorbent dosage on the adsorption of Cr(VI) were studied. The data obeyed Langmuir and Freundlich adsorption isotherms. The Langmuir adsorption capacity was found to be 5.7 mg/g. Freundlich constants *K*f and *n* were 2.05 [mg/g(L/mg)*n*] and 3.9, respectively. Desorption studies indicated the removal of 82% of the hexavalent chromium. The efficiency of adsorbent towards the removal of chromium was also tested using chromium-plating wastewater. (C) 2003 Elsevier Science Ltd. All rights reserved.

Keywords: Distillery Sludge, Hexavalent Chromium, Adsorption of Cr(VI) and Recovery of Cr(VI), Electroplating Effluent

Vasudevan, P., Padmavathy, V. and Dhingra, S.C. (2003), Kinetics of biosorption of cadmium on Baker’s yeast. *Bioresource Technology*, **89** (3), 281-287.

Full Text: [B\Bio Tec89, 281.pdf](B/Bio%20Tec89,%20281.pdf)

Abstract: In the present study the kinetics of biosorption of cadmium(II) ions by deactivated protonated yeast converted to sodium form was investigated for different initial concentrations of the metal ion (10–100 ppm) and different sorbent dosages (0.1–2.0 g) at a pH of 6.5. The adsorption process occurred in four distinct steps and the rates for these steps decreased sequentially. The rate of cadmium uptake in each case was pseudo-second-order with respect to metal ion concentration. The amount sorbed at equilibrium was found to be directly proportional to the initial metal ion concentration divided by the sorbent mass.

Keywords: Aqueous-Solutions, Biosorption, Cadmium, Chitosan, Chlorrela-Vulgaris, Equilibrium, Heavy-Metal Ions, Isotherm, Kinetics, Model, Removal, Saccharomyces-Cerevisiae, Sorption, Waste-Water, Wastewater Treatment, Yeast

Aoyama, M. (2003), Comment on “Biosorption of chromium(VI) from aqueous solution by cone biomass of *Pinus sylvestris*”. *Bioresource Technology*, **89** (3), 317-318.

Full Text: [B\Bio Tec89, 317.pdf](B/Bio%20Tec89,%20317.pdf)

Keywords: Activated Carbon, Hexavalent Chromium, Removal, Leaves, Cr(VI)

Ozdemir, G., Ozturk, T., Ceyhan, N., Isler, R. and Cosar, T. (2003), Heavy metal biosorption by biomass of *Ochrobactrum anthropi* producing exopolysaccharide in activated sludge. *Bioresource Technology*, **90** (1), 71-74.

Full Text: [B\Bio Tec90, 71.pdf](B/Bio%20Tec90,%2071.pdf)

Abstract: The removal of chromium, cadmium and copper, toxic metals of high environmental priority due to their toxicity, from dilute aqueous solutions has been studied in the present work, applying a dead exopolysaccharide producing bacterium, *Ochrobactrum anthropi*, isolated from activated sludge. Particularly, the effect of pH, metal concentration and the effects of contact time were considered. Optimum adsorption pH values of chromium(VI), cadmium(II) and copper(II) were 2.0, 8.0 and 3.0 respectively. Experimental results also showed the influence of initial metal concentration on the metal uptake for dried biomass. Both the Freundlich and Langmuir adsorption models were suitable for describing the short-term biosorption of chromium(VI), cadmium(II) and copper(II) by *O. anthropi*.

Keywords: Waste Water Treatment, *Ochrobactrum Anthropi*, Biosorption, Chromium, Cadmium, Copper

Bansode, R.R., Losso, J.N., Marshall, W.E., Rao, R.M. and Portier, R.J. (2003), Adsorption of volatile organic compounds by pecan shell- and almond shell-based granular activated carbons. *Bioresource Technology*, **90** (2), 175-184.

Full Text: [B\Bio Tec90, 175.pdf](B/Bio%20Tec90,%20175.pdf)

Abstract: The objective of this research was to determine the effectiveness of using pecan and almond shell-based granular activated carbons (GACs) in the adsorption of volatile organic compounds (VOCs) of health concern and known toxic compounds (such as bromo-dichloromethane, benzene, carbon tetrachloride, 1,1,1-trichloromethane, chloroform, and 1,1-dichloromethane) compared to the adsorption efficiency of commercially used carbons (such as Filtrasorb 200, Calgon GRC-20, and Waterlinks 206C AW) in simulated test medium. The pecan shell-based GACs were activated using steam, carbon dioxide or phosphoric acid. An almond shell-based GAC was activated with phosphoric acid. Our results indicated that steam- or carbon dioxide-activated pecan shell carbons were superior in total VOC adsorption to phosphoric acid-activated pecan shell or almond shell carbons, inferring that the method of activation selected for the preparation of activated carbons affected the adsorption of VOCs and hence are factors to be considered in any adsorption process. The steam-activated, pecan shell carbon adsorbed more total VOCs than the other experimental carbons and had an adsorption profile similar to the two coconut shell-based commercial carbons, but had greater adsorption than the coal-based commercial carbon. All the carbons studied adsorbed benzene more effectively than the other organics. Pecan shell, steam-activated and acid-activated GACs showed higher adsorption of 1,1,1-trichloroethane than the other carbons studied. Multivariate analysis was conducted to group experimental carbons and commercial carbons based on their physical, chemical, and adsorptive properties. The results of the analysis conclude that steam-activated and acid-activated pecan shell carbons clustered together with coal-based and coconut shell-based commercial carbons, thus inferring that these experimental carbons could potentially be used as alternative sources for VOC adsorption in an aqueous environment.

Keywords: Granular Activated Carbons, Pecan Shells, Almond Shells, Volatile Organic Compounds

Crini, G. (2003), Studies on adsorption of dyes on beta-cyclodextrin polymer. *Bioresource Technology*, **90** (2), 193-198.

Full Text: [B\Bio Tec90, 193.pdf](B/Bio%20Tec90,%20193.pdf)

Abstract: Beta-cyclodextrin (beta-CD) polymers are used for the removal of various dyes from aqueous solutions. Three insoluble polymers with different degrees of beta-CD were used. Results of adsorption experiments showed that these polymers exhibited high sorption capacities toward dyes. The mechanism of adsorption was both physical adsorption and hydrogen bonding due to the polymer and the formation of an inclusion complex due to the beta-CD molecules through host-guest interactions. (C) 2003 Elsevier Ltd. All rights reserved.

Keywords: Cyclodextrin, Dyes, Adsorption, Sorbents, Polymers, Activated Carbon, Sorption Properties, Textile Effluents, Aqueous-Solutions, Acid Dyes, Removal, Water, Waste, Decolorization, Wastewaters

Meunier, N., Laroulandie, J., Blais, J.F. and Tyagi, R.D. (2003), Cocoa shells for heavy metal removal from acidic solutions. *Bioresource Technology*, **90** (3), 255-263.

Full Text: [B\Bio Tec90, 255.pdf](B/Bio%20Tec90,%20255.pdf)

Abstract: The development of economic and efficient processes for the removal of heavy metals present in acidic effluents from industrial sources or decontamination technologies has become a priority. The purpose of this work was to study the efficiency with which cocoa shells remove heavy metals from acidic solutions (pH 2) and to investigate how the composition of these solutions influences heavy metal uptake efficiency. Adsorption tests were conducted in agitated flasks with single-metal solutions (0.25 mM Al, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb and Zn), multi-metal solution (comprised of 0.25 mM of each of the cations above) and an effluent obtained from chemical leaching of metal-contaminated soil, in the presence of different cocoa shell concentrations (5–40 g/l). Results from the single-metal solution assays indicated that the fixation capacity of heavy metals by cocoa shells followed a specific order: Pb > Cr > Cd = Cu = Fe > Zn = Co > Mn = Ni = Al. Cocoa shells are particularly efficient in the removal of lead from very acidic solutions (*q*max = 6.2 mg Pb/g, pHi = 2.0 and *T* = 22 °C). The presence of other metals and cations in solution did not seem to affect the recovery of lead. It was also observed that the maximum metal uptake was reached in less than 2 h. This research has also demonstrated that the removal of metals caused a decline in solution proton concentration (pH increase) and release of calcium, magnesium, potassium and sodium from the cocoa shells.

Keywords: Adsorption, Leaching, Cocoa Shells, Metal, Soil, Lead, Acid, Ion-Exchange

Abia, A.A., Horsfall, Jr., M. and Didi, O. (2003), The use of chemically modified and unmodified cassava waste for the removal of Cd, Cu and Zn ions from aqueous solution. *Bioresource Technology*, **90** (3), 345-348.

Full Text: [B\Bio Tec90, 345.pdf](B/Bio%20Tec90,%20345.pdf)

Abstract: The use of different chemically modified cassava waste biomass for the enhancement of the adsorption of three metal ions Cd, Cu and Zn from aqueous solution is reported in this paper. Treating with different concentrations of thioglycollic acid modified the cassava waste biomass.

The sorption rates of the three metals were 0.2303 min−1 (Cd2+), 0.0051 min−1 (Cu2+), 0.0040 min−1 (Zn2+) and 0.109 min−1 (Cd2+), 0.0069 min−1 (Cu2+), 0.0367 min−1 (Zn2+) for 0.5 and 1.00 M chemically modified levels, respectively. The adsorption rates were quite rapid and within 20–30 min of mixing, about 60–80% of these ions were removed from the solutions by the biomass and that chemically modifying the binding groups in the biomass enhanced its adsorption capacity towards the three metals. The results further showed that increased concentration of modifying reagent led to increased incorporation, or availability of more binding groups, in the biomass matrix, resulting in improved adsorptivity of the cassava waste biomass. The binding capacity study showed that the cassava waste, which is a serious environmental nuisance, due to foul odour released during decomposition, has the ability to adsorb trace metals from solutions.

Keywords: Modified Cassava Wastes, Metal Removal, Phytofiltration, Sorption, Trace Metals

Zeroual, Y., Moutaouakkil, A., Dzairi, F.Z., Talbi, M., Chung, P.U., Lee, K. and Blaghen, M. (2003), Biosorption of mercury from aqueous solution by *Ulva lactuca* biomass. *Bioresource Technology*, **90** (3), 349-351.

Full Text: [B\Bio Tec90, 349.pdf](B/Bio%20Tec90,%20349.pdf)

Abstract: The mercury biosorption onto non-living protonated biomass of *Ulva lactuca*, as an alternative method for mercury removal from aqueous solutions, was investigated. Batch equilibrium tests showed that at pH 3.5, 5.5 and 7 the maxima of mercury uptake values, according to Langmuir adsorption isotherm, were 27.24, 84.74 and 149.25 mg/g, respectively. The ability of Ova lactuca biomass to adsorb mercury in fixed-bed column, was investigated as well. The influence of column bed height, flow rate and effluent initial concentration of metal was studied. The adsorbed metal ions were easily desorbed from the algal biomass with 0.3 N H2SO4 solution. After acid desorption and regeneration with distilled water, the biomass could be reused for other biosorption assays with similar performances. (C) 2003 Elsevier Ltd. All rights reserved.

Keywords: Biosorption, Mercury Removal, *Ulva Lactuca*, Fixed-Bed Column, Heavy-Metals, Bed Column, Recovery, Removal, Cu

? Ambrósio, S.T. and Campos-Takaki, G.M. (2004), Decolorization of reactive azo dyes by *Cunninghamella elegans* UCP 542 under co-metabolic conditions. *Bioresource Technology*, **91** (1), 69-75.

Full Text: [2004\Bio Tec91, 69.pdf](2004/Bio%20Tec91,%2069.pdf)

Abstract: The inappropriate disposal of dyes in wastewater constitutes an environmental problem and can cause damage to the ecosystem. Alternative treatments have been reported that fungi are particularly effective in the decolorization of textile effluents. The decolorization of dyes with different molecular structures by Cunninghamella elegans was evaluated under several media conditions. The decolorization procedures consisted of adding 72 h of mycelium into the culture medium containing either orange or reactive black or reactive red or a mixture of these dyes in the presence or absence of sucrose and/or peptone. The decolorization profile was highly dependent upon the incubation time, the molecular structure of the dye and presence or absence of co-substrates. The presence of sucrose or both sucrose and peptone significantly increased the decolorization of the solutions, however, the presence of only the nitrogen source suppressed it. The ultraviolet spectra of the solutions before and after decolorization suggested the occurrence of biodegradation in addition to the biosorption of the dyes. All tested dyes, except for the reactive black, caused inhibition of respiration of Escherichia coli, which suggested that toxic metabolites were produced. (C) 2003 Elsevier Ltd. All rights reserved.

Keywords: Azo-Dyes, Biodegradation, Biodegradation, Biosorption, Decolorization, Dye, Environmental-Conditions, Enzymes, Escherichia Coli, Fungi, Phanerochaete-Chrysosporium, Textile Dyes, Textile Dyes, Toxicity, Versicolor, Wastewater, Wastewaters, Water, Zygomycetes

Chao, A.C., Shyu, S.S., Lin, Y.C. and Mi, F.L. (2004), Enzymatic grafting of carboxyl groups on to chitosan–to confer on chitosan the property of a cationic dye adsorbent. biomass. *Bioresource Technology*, **91** (3), 157-162.

Full Text: [B\Bio Tec91, 157.pdf](B/Bio%20Tec91,%20157.pdf)

Abstract: Chitosan (CTS) is a good adsorbent for dyes but lacks the ability to adsorb cationic dyes. In this study, chitosan was modified to posses the ability to adsorb cationic dyes from water. Four kinds of phenol derivatives: 4-hydroxybenzoic acid (BA), 3,4-dihydroxybenzoic acid (DBA), 3,4-dihydroxyphenyl-acetic acid (PA), hydrocaffeic acid (CA) were used individually as substrates of tyrosinase to graft onto chitosan. FTIR analysis provided supporting evidence of phenol derivatives being grafted. The grafting amounts of these phenol derivatives onto chitosan were examined by the adsorption of an anionic dye (amaranth) and reached a plateau value. The final contents of carboxyl groups in chitosan (mmol carboxyl groups per kg chitosan) were measured as 46.36 for BA, 70.32 for DBA, 106.44 for PA, and 113.15 for CA. These modified chitosans were used in experiments on uptake of the cationic dyes crystal violet (CV) and bismarck brown Y (BB) by a batch adsorption technique at pH 7 for CV and at pH 9 for BB and 30 °C. Langmuir type adsorption was found, and the maximum adsorption capacities for both dyes were increased with the following order CTS-CA > CTS-PA > CTS-DBA > CTS-BA.

Keywords: Tyrosinase, Enzymatic Grafting, Chitosan, Cationic Dyes Adsorption, Membrane Chromatography, Mushroom Tyrosinase, Aqueous-Solutions, Acid Hydrogels, Reactive Dyes, Adsorption, Deacetylation, Purification, Oxidation, Removal

Cruz, C.C.V., da Costa, A.C.A., Henriques, C.A. and Luna, A.S. (2004), Kinetic modeling and equilibrium studies during cadmium biosorption by dead *Sargassum* sp. biomass. *Bioresource Technology*, **91** (3), 249-257.

Full Text: [B\Bio Tec91, 249.pdf](B/Bio%20Tec91,%20249.pdf)

Abstract: A basic investigation on the removal of cadmium(II) ions from aqueous solutions by dead *Sargassum* sp. was conducted in batch conditions. The influence of different experimental parameters, initial pH, shaking rate, sorption time, temperature and initial concentrations of cadmium ions on cadmium uptake was evaluated. Results indicated that cadmium uptake could be described by the Langmuir adsorption model, being the monolayer capacity negatively affected with an increase in temperature. Analogously, the adsorption equilibrium constant decreased with increasing temperature. The kinetics of the adsorption process followed a second-order adsorption, with characteristic constants increasing with increasing temperature. Activation energy of biosorption could be calculated as equal to 10 kcal/mol. The biomass used proved to be suitable for removal of cadmium from dilute solutions. Its maximum uptake capacity was 120 mg/g. It can be considered an optimal result when compared to conventional adsorbing materials. Thus *Sargassum* sp. has great potential for removing cadmium ions especially when concentration of this metal is low in samples such as wastewater streams.

Keywords: Cadmium, Biosorption, Kinetic, Equilibrium, *Sargassum* sp.

Bishnoi, N.R., Bajaj, M., Sharma, N. and Gupta, A. (2004), Adsorption of Cr(VI) on activated rice husk carbon and activated alumina. *Bioresource Technology*, **91** (3), 305-307.

Full Text: [B\Bio Tec91, 305.pdf](B/Bio%20Tec91,%20305.pdf)

Abstract: The possible use of activated rice husk and activated alumina as the adsorbents of Cr(VI) from synthetic solutions and the effect of operating parameters were investigated. The activated rice husk carbon was prepared thermally in two sizes 0.3 and 1.0 mm. The maximum removal of Cr(VI) occurred at pH 2 by activated rice husk and at pH 4 by activated alumina. The amounts of Cr(VI) adsorbed increased with increase in dose of both adsorbents and their contact time. The Freundlich isotherm was applied.

Keywords: Activated Rice Husk Carbon (ARH), Activated Alumina (AA), Adsorption, Chromium(VI), Freundlich Isotherm

Kobya, M. (2004), Removal of Cr(VI) from aqueous solutions by adsorption onto hazelnut shell activated carbon: Kinetic and equilibrium studies. *Bioresource Technology*, **91** (3), 317-321.

Full Text: [B\Bio Tec91, 317.pdf](B/Bio%20Tec91,%20317.pdf)

Abstract: The adsorption Cr(VI) from aqueous solutions onto hazelnut shell activated carbon was carried out by varying the parameters such as pH, initial Cr(VI) concentration and temperature. The experimental data fitted well to the pseudo first-order kinetic model and then the rate constants were evaluated. The Langmuir isotherm provided the best correlation for Cr(VI) onto the activated carbon. Adsorption capacity was calculated from the Langmuir isotherm as 170 mg/g at an initial pH of 1.0 for the 1000 mg/l Cr(VI) solution. Thermodynamic parameters were evaluated and the adsorption is endothermic showing monolayer adsorption of Cr(VI).

Keywords: Adsorption, Cr(VI) Ion, Hazelnut Shell, Kinetics and Equilibrium

Garg, V.K., Gupta, R., Kumar, R. and Gupta, R.K. (2004), Adsorption of chromium from aqueous solution on treated sawdust. *Bioresource Technology*, **92** (1), 79-81.

Full Text: [B\Bio Tec92, 79.pdf](B/Bio%20Tec92,%2079.pdf)

Abstract: The adsorption of Cr(VI) from aqueous solutions on formaldehyde treated sawdust (SD) and sulphuric acid treated sawdust carbon (SDC) of Indian Rosewood, a timber industry waste, was studied at varying Cr(VI) concentrations, adsorbent dose, pH and agitation time. Similar experiments were conducted with commercially available coconut based activated carbon to compare the results. The Cr(VI) adsorption efficiency on SDC was higher than SD. The adsorption followed first order rate expression and Lagergren equation. An initial pH of 3.0 was most favorable for Cr(VI) removal by both the adsorbents. Maximum Cr(VI) was sequestered from the solution within 60 min after the beginning for every experiment. It is proposed that SDC and SD can be potential adsorbents for Cr(VI) removal from dilute solutions.

Keywords: Cr(VI), Formaldehyde, Sulphuric Acid, Sawdust, Adsorption, Batch Mode

Melo, J.S. and D’souza, S.F. (2004), Removal of chromium by mucilaginous seeds of *Ocimum basilicum*. *Bioresource Technology*, **92** (2), 151-155.

Full Text: [B\Bio Tec92, 151.pdf](B/Bio%20Tec92,%20151.pdf)

Abstract: Polysaccharides bound to bacteria or in isolated form have been shown to bind heavy metals. A limitation of this technology can be overcome by immobilization. In view of this *Ocimum basilicum* seeds which swell upon wetting could serve as natural immobilized source of agriculturally-based polysaccharides. The seeds consist of an inner hard core and a pectinous fibrillar outer layer. Pretreating the seeds with acid, alkali, periodate or boiling in water was found to alter the metal binding capacity. of the various treatments given, seeds boiled in water were found to be superior in terms of mechanical stability and exhibited fairly optimal Cr(VI) uptake kinetics. The maximum adsorption capacity as calculated from the Langmuir isotherm was 205 mg Cr/g dry seeds. Biosorption of Cr(VI) was found to be pH dependent with maximum uptake at pH 1.5 wherein sorption was not affected by the presence of other metal ions such as Cd2+, Cu2+, Ca2+ and Na+. Seeds were used in a packed bed reactor for the continuous removal of Cr(VI). Thus *O. basilicum* seeds may have application as a potential bioresource in tropical countries such as India where they are widely available.

Keywords: Mucilaginous Seeds, *Ocimum Basilicum*, Biosorption, Chromium, Pectin, Agriculturally-Based Biosorbent, Exopolysaccharides

Keskinkan, O., Goksu, M.Z.L., Basibuyuk, M. and Forster, C.F. (2004), Heavy metal adsorption properties of a submerged aquatic plant (*Ceratophyllum demersum*). *Bioresource Technology*, **92** (2), 197-200.

Full Text: [B\Bio Tec92, 197.pdf](B/Bio%20Tec92,%20197.pdf)

Abstract: Heavy metals can be adsorbed by living or non-living biomass. Submerged aquatic plants can be used for the removal of heavy metals. In this paper, lead, zinc, and copper adsorption properties of *Ceratophyllum demersum* (Coontail or hornwort) were investigated and results were compared with other aquatic submerged plants. Data obtained from the initial adsorption studies indicated that *C. demersum* was capable of removing lead, zinc, and copper from solution. The metal biosorption was fast and equilibrium was attained within 20 min. Data obtained from further batch studies conformed well to the Langmuir Model. Maximum adsorption capacities (*q*max) onto *C. demersum* were 6.17 mg/g for Cu(II), 13.98 mg/g for Zn(II) and 44.8 mg/g for Pb(II). Kinetics of adsorption of zinc, lead and copper were analysed and rate constants were derived for each metal. It was found that the overall adsorption process was best described by pseudo second-order kinetics. The results showed that this submerged aquatic plant *C. demersum* can be successfully used for heavy metal removal under dilute metal concentration.

Keywords: Aquatic Plants, Biosorption, Heavy Metals, Langmuir Model, Pseudo Second-Order

Louli, V., Ragoussis, N. and Magoulas, K. (2004), Recovery of phenolic antioxidants from wine industry by-products. *Bioresource Technology*, **92** (2), 201-208.

Full Text: [B\Bio Tec92, 201.pdf](B/Bio%20Tec92,%20201.pdf)

Abstract: The recovery process of the phenolic compounds contained in the wine industry by-products and their antioxidant activity were examined in this work. To this purpose, a combined process of liquid and supercritical solvent extraction was employed. At first the effect of various process parameters of the liquid solvent extraction––the type of solvent and the pretreatment of the raw material (composition (skins, seeds, stems) and crushing)––on the antioxidant activity of the extract was examined. It was shown that an extract of a higher antioxidant activity was obtained by using ethyl acetate as solvent and raw material free of stems. These extracts were further treated with supercritical carbon dioxide (SC CO2) at various extraction pressures, which resulted in their significant enrichment in phenolic compounds and the improvement of their antioxidant and organoleptic properties, especially at pressures higher than 100 bar. The antioxidant activity of the products was determined by using the Rancimat method, as well as a simple and not time-consuming free radical method. It was proved that both the ethyl acetate extracts and those treated with SC CO2 had antioxidant activity comparable to that of antioxidants commonly used in industry, that is butylhydroxytoluene (BHT), a synthetic antioxidant, and Rosemary extract, a widely known natural one.

Keywords: Phenolic Compounds, Wine Industry By-Product, Liquid Extraction, Antioxidant Activity, Supercritical CO2

Daud, W.M.A.W. and Ali, W.S.W. (2004), Comparison on pore development of activated carbon produced from palm shell and coconut shell. *Bioresource Technology*, **93** (1), 63-69.

Full Text: [B\Bio Tec93, 63.pdf](B/Bio%20Tec93,%2063.pdf)

Abstract: A series of experiments were conducted to compare the pore development in palm-shell and coconut-shell-based activated carbons produced under identical experimental conditions. Carbonization and activation processes were carried out at 850 °C using a fluidized bed reactor. Within the range of burn-off studied, at any burn-off, the micropore and mesopore volumes created in palm-shell-based activated carbon were always higher than those of coconut-shell-based activated carbon. On macropore volume, for palm-shell-based activated carbon, the volume increased with increase in burn-off up to 30% and then decreased. However, for coconut-shell-based activated carbon, the change in macropore volume with burn-off was almost negligible but the absolute macropore volume decreased with burn-off.

Keywords: Activated Carbon, Palm Shell, Coconut Shell, Pore Development

Acemioğlu, B. (2004), Removal of Fe(II) ions from aqueous solution by Calabrian pine bark wastes. *Bioresource Technology*, **93** (1), 99-102.

Full Text: [B\Bio Tec93, 99.pdf](B/Bio%20Tec93,%2099.pdf)

Abstract: The ability of Calabrian pine bark wastes (*Pinus brutia* Ten) for the removal of Fe(II) ions from aqueous solution at different concentrations and temperatures at a fixed pH was investigated. While the amounts of Fe(II) ions adsorbed onto the bark increased with increasing concentration, it increased slightly with increasing the temperature. Kinetics studies showed that adsorption process followed the first-order kinetic model as well as intra-particle diffusion kinetics. Adsorption isotherm followed both Langmuir and Freundlich models. And it was determined that the adsorption was favorable from a dimensionless factor, *R*L. Furthermore, the thermodynamic parameters demonstrated that the removal of Fe(II) by the bark was a physical process.

Keywords: Adsorption Isotherms Kinetics, Thermodynamic Parameters, Fe(II) Removal, Calabrian Pine Bark Wastes, Activated Carbon, Adsorption, Lignin, Water, Wollastonite, Equilibrium, Copper(II), Cadmium, Zinc, Lead

Ho, Y.S. (2004), “Kinetic modeling and equilibrium studies during cadmium biosorption by dead Sargassum sp biomass” by Cruz, C.C.V., da Costa, A.C.A., Henriques, C.A., Luna, A.S. *Bioresource Technology*, **93** (3), 321-323.

Full Text: [B\Bio Tec93, 321.pdf](B/Bio%20Tec93,%20321.pdf) [B\Bio Tec-Ho.pdf](B/Bio%20Tec-Ho.pdf) [B\Bio Tec-Ho1.pdf](B/Bio%20Tec-Ho1.pdf) [B\Bio Tec-Ho2.pdf](B/Bio%20Tec-Ho2.pdf)

Keywords: Fungus Aspergillus-Niger, Sugarcane Bagasse Pith, Sphagnum Moss Peat, Aqueous-Solution, Activated Carbons, Sorption Kinetics, Heavy-Metals, Dye Removal, Basic-Dyes, Congo-Red

Acar, F.N. and Malkoc, E. (2004), The removal of chromium(VI) from aqueous solutions by *Fagus orientalis* L. *Bioresource Technology*, **94** (1), 13-15.

Full Text: [B\Bio Tec94, 13.pdf](B/Bio%20Tec94,%2013.pdf)

Abstract: The removal of chromium(VI) from aqueous solution under different conditions using an adsorbent was investigated. This adsorbent is Beech (*Fagus orientalis* L.) sawdust studied by using batch techniques. Batch studies indicated that the percent adsorption decreased with increasing initial concentration of chromium(VI). A contact time of 80 min was found to be optimum. Maximum chromium(VI) removal was observed near a pH of 1.0. Adsorption conformed to the Freundlich and Langmuir isotherms.

Keywords: Chromium(VI), Adsorption, Sawdust, Adsorption Isotherms

Inbaraj, B.S. and Sulochana, N. (2004), Carbonised jackfruit peel as an adsorbent for the removal of Cd(II) from aqueous solution. *Bioresource Technology*, **94** (1), 49-52.

Full Text: [B\Bio Tec94, 49.pdf](B/Bio%20Tec94,%2049.pdf)

Abstract: The fruit of the jack (*Artocarpus heterophyllus*) is one of the popular fruits in India, where the total area under this fruit is about 13,460 ha. A significant amount of peel (approximately 2714–11, 800 kg per tree per year) is discarded as agricultural waste, as apart from its use as a table fruit, it is popular in many culinary preparations. Treatment of jackfruit peel with sulphuric acid produced a carbonaceous product which was used to study its efficiency as an adsorbent for the removal of Cd(II) from aqueous solution. Batch experiments were performed as a function of process parameters, agitation time, initial metal concentration, adsorbent concentration and pH. Kinetic analyses made with Lagergren pseudo-first-order, Ritchie second-order and modified Ritchie second-order models showed better fits with modified Ritchie second-order model. The Langmuir–Freundlich (Sips equation) model best defined the experimental equilibrium data among the three isotherm models (Freundlich, Langmuir and Langmuir–Freundlich) tested. Taking a particular metal concentration, the optimum dose and pH required for the maximum metal removal was established. A complete recovery of the adsorbed metal ions from the spent adsorbent was achieved by using 0.01 M HCl.

Keywords: Adsorption, Jackfruit Peel, Cadmium, Kinetic Modeling, Isotherm Modelling

Bansode, R.R., Losso, J.N., Marshall, W.E., Rao, R.M. and Portier, R.J. (2004), Pecan shell-based granular activated carbon for treatment of chemical oxygen demand (COD) in municipal wastewater. *Bioresource Technology*, **94** (2), 129-135.

Full Text: [B\Bio Tec94, 129.pdf](B/Bio%20Tec94,%20129.pdf)

Abstract: The present investigation was undertaken to compare the adsorption efficiency of pecan shell-based granular activated carbon with the adsorption efficiency of the commercial carbon Filtrasorb 200 with respect to uptake of the organic components responsible for the chemical oxygen demand (COD) of municipal wastewater. Adsorption efficiencies for these two sets of carbons (experimental and commercial) were analyzed by the Freundlich adsorption model. The results indicate that steam-activated and acid-activated pecan shell-based carbons had higher adsorption for organic matter measured as COD, than carbon dioxide-activated pecan shell-based carbon or Filtrasorb 200 at all the carbon dosages used during the experiment. The higher adsorption may be related to surface area as the two carbons with the highest surface area also had the highest organic matter adsorption. These results show that granular activated carbons made from agricultural waste (pecan shells) can be used with greater effectiveness for organic matter removal from municipal wastewater than a coal-based commercial carbon.

Keywords: Granular Activated Carbons, Pecan Shell, Chemical Oxygen Demand, Municipal Wastewater

Li, P.F., Mao, Z.Y., Rao, X.J., Wang, X.M., Min, M.Z., Qiu, L.W. and Liu, Z.L. (2004), Biosorption of uranium by lake-harvested biomass from a cyanobacterium bloom. *Bioresource Technology*, **94** (2), 193-195.

Full Text: [B\Bio Tec94, 193.pdf](B/Bio%20Tec94,%20193.pdf)

Abstract: The aim of this work was to study some basic aspects of uranium biosorption by powdered biomass of lake-harvested cyanobacterium water-bloom, which consisted predominantly of *Microcystis aeruginosa*. The optimum pH for uranium biosorption was between 4.0 and 8.0. The batch sorption reached the equilibrium within 1 h. The isotherm fitted the Freundlich model well. Although the Langmuir model fitted the experiment data well at pH 3.0, 5.0 and 7.0, it did not fit at pH 9.0 and 11.0 at all. This implies that different biosorption mechanisms may be involved at different pH values. 0.1 N HCl was effective in uranium desorption. The results indicated that the naturally abundant biomass of otherwise nuisance cyanobacterium bloom exhibited good potential for application in removal of uranium from aqueous solution.

Keywords: Biosorption, *Microcystis Aeruginosa*, Cyanobacterium Water-Bloom, Uranium, Freundlich, Langmuir, Adsorption Isotherm, Desorption

Peña-Castro, J.M., Martínez-Jerónimo, F., Esparza-García, F. and Cañizares-Villanueva, R.O. (2004), Heavy metals removal by the microalga *Scenedesmus incrassatulus* in continuous cultures. *Bioresource Technology*, **94** (2), 219-222.

Full Text: [B\Bio Tec94, 219.pdf](B/Bio%20Tec94,%20219.pdf)

Abstract: The microalga *Scenedesmus incrassatulus* was grown under continuous regime in the presence of chromium(VI), cadmium(II) and copper(II), as single metal species and as mixtures of two or three metals, in a laboratory scale system. We used an artificial wastewater with low free ion activities (as determined by MINEQL+) due to the presence of EDTA (a strong chelating agent) but with total concentrations not suitable for acceptable environments. Chromium(VI) and cadmium(II) had positive interaction that increased the removal percentages of both these metals, we could not, however, detect any interaction with copper(II). *S. incrassatulus* was able to remove all the tested metals to some extent (25–78%), but bivalent metals were not removed as efficiently as reported in batch cultures, probably due to the high pH values there recorded. Chromium(VI) was more efficiently removed in continuous cultures than in batch culture, because the uptake of chromate could be favored by actively growing algae.

Keywords: Heavy Metals, Bioremediation, Microalgae, Water Pollution Control

Bingol, A., Ucun, H., Bayhan, Y.K., Karagunduz, A., Cakici, A. and Keskinler, B. (2004), Removal of chromate anions from aqueous stream by a cationic surfactant-modified yeast. *Bioresource Technology*, **94** (3), 245-249.

Full Text: [B\Bio Tec94, 245.pdf](B/Bio%20Tec94,%20245.pdf)

Abstract: The removal of chromate anions (CrO42−) from aqueous solution by a cationic surfactant-modified yeast was studied in a batch system. Cetyl trimethyl ammonium bromide (CTAB) was used for biomass modification, it substantially improved the biosorption efficiency. The influences of solution pH, CrO42− anion concentrations and biomass concentration on the biosorption efficiency were investigated. The biosorption of chromate anions by modified yeast was strongly affected by pH. The optimum pH for biosorption of CrO42− by modified yeast was 4.5–5.5. Zeta potential values of modified and unmodified yeast were determined at various pH values. Concentrations ranging from 5.2 to 208 mg/l Cr(VI) were tested and the biosorptive removal efficiency of the metal ions from aqueous solution was more than 99.5%. Freundlich and Langmuir isotherms were used to evaluate the data and the regression constants were determined.

Keywords: Chromate Anions (CrO42−), Biosorption, Cetyl Trimethyl Ammonium Bromide (CTAB), Wastewater Treatment, Surfactant, Yeast (*Saccharomyces cerevisiae*)

Inthorn, D., Singhtho, S., Thiravetyan, P. and Khan, E. (2004), Decolorization of basic, direct and reactive dyes by pre-treated narrow-leaved cattail (*Typha angustifolia* Linn.). *Bioresource Technology*, **94** (3), 299-306.

Full Text: [B\Bio Tec94, 299.pdf](B/Bio%20Tec94,%20299.pdf)

Abstract: The efficiency of basic, direct and reactive dye removal from water by narrow-leaved cattail (NLC) powder treated with distilled water (DW-NLC), 37% formaldehyde + 0.2 N sulfuric acid (FH-NLC), or 0.1 N sodium hydroxide (NaOH-NLC) at various pH levels (3, 5, 7, and 9) was tested. Desorption of the adsorbed dyes was also investigated. The type of NLC treatment and pH of the dye solution had little effect on removal of basic dyes, and efficiencies ranged from 97% to 99% over the range of pH used. Over a wide range of pH levels, all types of treated cattail powder had negative charges and probably attracted the basic dyes possessing positive charges. Efficiency of removal by the three NLC treatments ranged from 37% to 42% for direct dyes and from 22% to 54% for direct dyes at pH 7. The pH of the dye solution had substantial effects on the efficiency of removal in direct and reactive dyes. Dye removal was highest at pH 3, with 99% for a direct dye (Sirius Red Violet RL) and 96% for a reactive dye (Basilen Red M-5B). There was mutual attraction between negatively charged direct dye molecules and positively charged molecules on the surface of the FH-treated cattail. In tests of desorption of dyes from cattail in distilled water, the desorption percentage for FH-NLC after adsorbing basic, direct and reactive dyes was 6%, 10% and 35%, respectively, which indicated a chemisorption mechanism for basic and direct dyes and some physiosorption for reactive dyes.

Keywords: Narrow-Leaved Cattail, Adsorption, Desorption, Dye removal

Kim, D.S. (2004), Pb2+ removal from aqueous solution using crab shell treated by acid and alkali. *Bioresource Technology*, **94** (3), 345-348.

Full Text: [B\Bio Tec94, 345.pdf](B/Bio%20Tec94,%20345.pdf)

Abstract: In order to investigate the process of Pb2+ removal by crab shell, the effects of pretreatment of crab shell with acid and alkali on Pb2+ removal by crab shell were examined. In acid treatment of crab shell with HCl for the demineralization of crab shell, Ca2+ and Mg2+ in crab shell were largely extracted during the acid treatment and the Pb2+ removal by acid treated crab shell was very low. The total released Ca2+ and Mg2+ amounts in the alkali treated crab shell during Pb2+ removal were not greatly different from those in the untreated crab shell. However, the times to reach an equilibrium state were quite shortened by alkali treatment and the reason was explained by transmission electron microscope.

Keywords: Crab Shell, Pb2+ Removal, Acid and Alkali Treatment, TEM, Ion Exchange, Removal Rate

Mizuta, K., Matsumoto, T., Hatate, Y., Nishihara, K. and Nakanishi, T. (2004), Removal of nitrate-nitrogen from drinking water using bamboo powder charcoal. *Bioresource Technology*, **95** (3), 255-257.

Full Text: [B\Bio Tec95, 255.pdf](B/Bio%20Tec95,%20255.pdf)

Abstract: The adsorption effectiveness of bamboo powder charcoal (BPC), made from the residual of Moso bamboo manufacturing, in removing nitrate-nitrogen from water has been investigated. Commercial activated carbon (CAC) was also used to compare the effectiveness of adsorption in removal of nitrate-nitrogen. The adsorption effectiveness of BPC was higher than that of CAC, regardless of the concentration of nitrate-nitrogen, in the range of 0–10 mg/l. The effect of temperature on adsorption by BPC and CAC in the range of 10–20 °C was also investigated. From the results, it was found that the temperature dependency of the adsorption effectiveness of BPC was weaker than that of CAC. This fact indicates that BPC can be an attractive option for the in situ treatment by adsorption of nitrate-nitrogen-contaminated underground and surface water.

Keywords: Moso Bamboo, Nitrate-Nitrogen, Adsorption, Langmuir Model, Temperature Dependency

Jeon, C., Yoo, Y.J. and Hoell, W.H. (2005), Environmental effects and desorption characteristics on heavy metal removal using carboxylated alginic acid. *Bioresource Technology*, **96** (1), 15-19.

Full Text: [2005\Bio Tec96, 15.pdf](2005/Bio%20Tec96,%2015.pdf)

Abstract: Effects of ionic strength and organic materials on copper ion uptake capacity using carboxylated alginic acid which showed very high metal ion uptake capacity were investigated. The ionic strength only had a slight effect on the decrease of copper ion uptake capacity regardless of NaCl concentration. And, the effect of organic materials such as NTA (nitrilotriaceticacid) and sodium hypophosphite on the copper ion uptake capacity was negligible. When the lead ion adsorbed on carboxylated alginic acid was desorbed by NTA, which showed high desorption efficiency, the best optimum concentration of NTA was about 0.01 M. Also desorption efficiency decreased, however, concentration factor increased as *S*/*L* ratio which is defined as the ratio of adding amount of adsorbed and volume of desorbing agent increased. In sequential adsorption and desorption cycles, the lead uptake capacity on carboxylated alginic acid was relatively maintained through cycles 1–5.

Keywords: Biosorption, Ionic Strength, Desorption, Adsorption, Heavy Metal

Denizli, A., Cihangir, N., Tüzmen, N. and Alsancak, G. (2005), Removal of chlorophenols from aquatic systems using the dried and dead fungus *Pleurotus sajor caju*. *Bioresource Technology*, **96** (1), 59-62.

Full Text: [2005\Bio Tec96, 59.pdf](2005/Bio%20Tec96,%2059.pdf)

Abstract: In this study, the potential use of the fungus *Pleurotus sajor caju* to remove phenols (i.e., phenol, *o*-chlorophenol, *p*-chlorophenol and 2,4,6-trichlorophenol) from aqueous solutions was evaluated. Biosorption of phenol or chlorophenols reached equilibrium in 4 h. The maximum adsorptions of phenol and chlorophenols onto the *Pleurotus sajor caju* were 0.95 mmol/g for phenol, 1.24 mmol/g for *o*-chlorophenol, 1.47 mmol/g for *p*-chlorophenol and 1.89 mmol/g for 2,4,6-trichlorophenol. The affinity order was as follows: 2,4,6-trichlorophenol > *p*-chlorophenol > *o*-chlorophenol > phenol. Phenol and chlorophenols bindings onto *Pleurotus sajor caju* were clearly pH dependent. The adsorption of phenol and chlorophenols increased with increasing pH. Desorption was achieved using methanol solution (30%, v/v). *Pleurotus sajor caju* biomass is suitable for reuse for more than five cycles without noticeable loss of adsorption capacity.

Keywords: Chlorophenols, Fungal Biomass, Biosorption, Organic Pollutants, *Pleurotus sajor caju*

Göksungur, Y., Üren, S. and Güvenç, U. (2005), Biosorption of cadmium and lead ions by ethanol treated waste baker’s yeast biomass. *Bioresource Technology*, **96** (1), 103-109.

Full Text: [2005\Bio Tec96, 103.pdf](2005/Bio%20Tec96,%20103.pdf)

Abstract: The biosorption of cadmium and lead ions from artificial aqueous solutions using waste baker’s yeast biomass was investigated. The yeast cells were treated with caustic, ethanol and heat for increasing their biosorption capacity and the highest metal uptake values (15.63 and 17.49 mg g−1 for Cd2+ and Pb2+, respectively) were obtained by ethanol treated yeast cells. The effect of initial metal concentration and pH on biosorption by ethanol treated yeast was studied. The Langmuir model and Freundlich equation were applied to the experimental data and the Langmuir model was found to be in better correlation with the experimental data. The maximum metal uptake values (*q*max, mg g−1) were found as 31.75 and 60.24 for Cd2+ and Pb2+, respectively. Competitive biosorption experiments were performed with Cd2+ and Pb2+ together with Cu2+ and the competitive biosorption capacities of the yeast biomass for all metal ions were found to be lower than in non-competitive conditions.

Keywords: Adsorption Isotherms, Aqueous-Solution, Biosorbents, Biosorption, Cadmium, Chromium(VI), Fungal Biomass, Heavy-Metals, Lead, Mixtures, Recovery, Removal, *Saccharomyces Cerevisiae*, Saccharomyces-Cerevisiae, Toxic Metals

? Tremier, A., de Guardia, A., Massiani, C., Paul, E. and Martel, J.L. (2005), A respirometric method for characterising the organic composition and biodegradation kinetics and the temperature influence on the biodegradation kinetics, for a mixture of sludge and bulking agent to be co-composted. *Bioresource Technology*, **96** (2), 169-180.

Full Text: [2005\Bio Tec96, 169.pdf](2005/Bio%20Tec96,%20169.pdf)

Abstract: A respirometric method was set up to study kinetics of biological reactions involved in the treatment of organic wastes-sludge mixed with pine barks-by composting. Oxygen consumption rates of this type of mixture were monitored during 10-20 days, using a 101 respirometric cell kept at constant temperature and moisture. Oxygen consumption kinetics were modelled and organic matter composition was characterised as biomass, easily-biodegradable, slowly-biodegradable and non-biodegradable organic matter. The influence of temperature on kinetics was tested. Results show that this respirometric method is a useful tool for the characterisation of solid organic matter biodegradability and for the modelling of the biological kinetics of the composting process. (C) 2004 Elsevier Ltd. All rights reserved.

Keywords: Biodegradability, Biodegradation, Biodegradation Kinetics, Biomass, Characterisation, Composition, Composting, Consumption, Kinetics, Matter, Microbial Activity, Mixture, Model, Modelling, Moisture, Organic, Organic Matter, Organic Matter Characterisation, Pine, Process, Respirometry, Simulation, Sludge, Stability, Temperature, Treatment

Sumathi, K.M.S., Mahimairaja, S. and Naidu, R. (2005), Use of low-cost biological wastes and vermiculite for removal of chromium from tannery effluent. *Bioresource Technology*, **96** (3), 309-316.

Full Text: [2005\Bio Tec96, 309.pdf](2005/Bio%20Tec96,%20309.pdf)

Abstract: Biological wastes (sawdust, rice husk, coirpith and charcoal) and a naturally occurring mineral (vermiculite) have been tested for their effectiveness in removing Cr from tannery effluent through batch and column experiments. The adsorption capacities of the substrates were also evaluated using isotherm tests and computing distribution co-efficient. The sawdust exhibited a higher adsorption capacity (*k*=1482 mg kg−1), followed by coirpith (*k* = 159 mg kg−1). The biosorbent and mineral vermiculite in columns were found very effective in removing Cr from tannery effluent. About 94% removal of Cr was achieved by a column of coirpith, and equally (93%) by a column containing a mixture of coirpith and vermiculite. This study showed that biological wastes are potential adsorbents of Cr, which could be successfully used to reduce the Cr concentrations in tannery effluent.

Keywords: Chromium, Low-Cost Biological Wastes, Biosorbents, Vermiculite, Freundlich Adsorption Isotherm, Distribution Co-Efficient, Tannery Effluent

Lanciotti, R., Gianotti, A., Baldi, D., Angrisani, R., Suzzi, G., Mastrocola, D. and Guerzoni, M.E. (2005), Use of *Yarrowia lipolytica* strains for the treatment of olive mill wastewater. **96** (3), 317-322.

Full Text: [2005\Bio Tec96, 317.pdf](2005/Bio%20Tec96,%20317.pdf)

Abstract: The principal aim of this research was to evaluate the ability of different *Yarrowia lipolytica* strains, having different origin, to grow in olive mill wastewater (OMW) and reduce its COD level. All the strains were able to grow in undiluted OMW, the comparison between the data obtained in a semi-synthetic medium and in OMW suggests that lipases with different specificity can be produced in relation to the medium composition.

Under the adopted conditions, the reduction of the OMW COD values varied from 1.47% and 41.22% of the initial value. Some strains determined a significant reduction of polyphenol content, while other ones caused its apparent increase. Moreover, some *Y. lipolytica* strains, isolated from chilled foods, produced the highest citric acid concentrations. These results evidenced that some *Y. lipolytica* strains are good candidates for the reduction of the pollution potential of OMW and for the production of enzymes and metabolites such as lipase and citric acid.

Keywords: *Yarrowia Lipolytica*, Olive Mill Wastewater, Pollution Reduction, COD, Polyphenols, Lipases, Citric Acid

Wei, Q.F. Mather, R.R. and Fotheringham, A.F. (2005), Oil removal from used sorbents using a biosurfactant. *Bioresource Technology*, **96** (3), 331-334.

Full Text: [2005\Bio Tec96, 331.pdf](2005/Bio%20Tec96,%20331.pdf)

Abstract: Oil spills impose serious damage on the environment. Mechanical recovery by the help of oil sorbents is one of the most important countermeasures in oil spill response. Most sorbents, however, end up in landfills or in incineration after a single use. These options either produce another source of pollution or increase the oil recovery cost. In this study a biosurfactant was used to clean used oil sorbents. This use of biosurfactants is new. Washing parameters tested included sorbent type, washing time, surfactant dosage and temperature. It was found that with biosurfactant washing more than 95% removal of the oil from sorbents was achieved, depending on the washing conditions. Biosurfactants were found to have considerable potential for recycling the used sorbents.

Keywords: Oil Spills, Biosurfactant, Oil Sorbents, ESEM

Kartal, S.N. and Imamura, Y. (2005), Removal of copper, chromium, and arsenic from CCA-treated wood onto chitin and chitosan. *Bioresource Technology*, **96** (3), 389-392.

Full Text: [2005\Bio Tec96, 389.pdf](2005/Bio%20Tec96,%20389.pdf)

Abstract: Chitin and chitosan are naturally abundant biopolymers which are of interest to research concerning the sorption of metal ions since the amine and hydroxyl groups on their chemical structures act as chelation sites for metal ions. This study evaluates the removal of copper, chromium, and arsenic elements from chromated copper arsenate (CCA)-treated wood via biosorption by chitin and chitosan. Exposing CCA-treated sawdust to various amounts of chitin and chitosan for 1, 5, and 10 days enhanced removal of CCA components compared to remediation by deionized water only. Remediation with a solution containing 2.5 g chitin for 10 days removed 74% copper, 62% chromium, and 63% arsenic from treated sawdust. Remediation of treated sawdust samples using the same amount of chitosan as chitin resulted in 57% copper, 43% chromium, and 30% arsenic removal. The results suggest that chitin and chitosan have a potential to remove copper element from CCA-treated wood. Thus, these more abundant natural amino polysaccharides could be important in the remediation of waste wood treated with the newest formulations of organometallic copper compounds and other water-borne wood preservatives containing copper.

Keywords: Chitin, Chitosan, Copper, Chromium, Arsenic, CCA Wood Preservative, Remediation, Waste Wood

Ngah, W.S.W., Ab Ghani, S. and Kamari, A. (2005), Adsorption behaviour of Fe(II) and Fe(III) ions in aqueous solution on chitosan and cross-linked chitosan beads. *Bioresource Technology*, **96** (4), 443-450.

Full Text: [2005\Bio Tec96, 443.pdf](2005/Bio%20Tec96,%20443.pdf)

Abstract: A batch adsorption system was applied to study the adsorption of Fe(II) and Fe(III) ions from aqueous solution by chitosan and cross-linked chitosan beads. The adsorption capacities and rates of Fe(II) and Fe(III) ions onto chitosan and cross-linked chitosan beads were evaluated. Chitosan beads were cross-linked with glutaraldehyde (GLA), epichlorohydrin (ECH) and ethylene glycol diglycidyl ether (EGDE) in order to enhance the chemical resistance and mechanical strength of chitosan beads. Experiments were carried out as function of pH, agitation period, agitation rate and concentration of Fe(II) and Fe(III) ions. Langmuir and Freundlich adsorption models were applied to describe the isotherms and isotherm constants. Equilibrium data agreed very well with the Langmuir model. The kinetic experimental data correlated well with the second-order kinetic model, indicating that the chemical sorption was the rate-limiting step. Results also showed that chitosan and cross-linked chitosan beads were favourable adsorbers.

Keywords: Chitosan Beads, Cross-Linked Chitosan Beads, Adsorption Capacities, Adsorption Rates, Adsorption Isotherm

Işık, M. and Sponza, D.T. (2005), Effects of alkalinity and co-substrate on the performance of an upflow anaerobic sludge blanket (UASB) reactor through decolorization of Congo Red azo dye. *Bioresource Technology*, **96** (5), 633-643.

Full Text: [2005\Bio Tec96, 633.pdf](2005/Bio%20Tec96,%20633.pdf)

Abstract: The effect of substrate (glucose) concentrations and alkalinitiy (NaHCO3) on the decolorization of a synthetic wastewater containing Congo Red (CR) azo dye was performed in an upflow anaerobic sludge blanket (UASB). Color removal efficiencies approaching 100% were obtained at glucose-COD concentrations varying between 0 and 3000 mg/l. The methane production rate and total aromatic amine (TAA) removal efficiencies were found to be 120 ml per day and 43%, respectively, while the color was completely removed during glucose-COD free operation of the UASB reactor. The complete decolorization of CR dye under co-substrate free operation could be attributed to TAA metabolism which may provide the electrons required for the cleavage of azo bond in CR dye exist in the UASB reactor. No significant differences in pH levels (6.6–7.4), methane production rates (2000–2700 ml/day) and COD removal efficiencies (82–90%) were obtained for NAHCO3 concentrations ranging between 550 and 3000 mg/l. However, decolorization efficiency remained at 100% with decreasing NaHCO3 concentrations as low as 250 mg/l in the feed. An alkalinity/COD ratio of 0.163 in the feed was suggested for simultaneous optimum COD and color removal.

Keywords: Azo Dye, UASB, Glucose-COD, Alkalinity, Decolorization, Aromatic Amines, Color

Tsai, W.T., Hsien, K.J., Chang, Y.M. and Lo, C.C. (2005), Removal of herbicide paraquat from an aqueous solution by adsorption onto spent and treated diatomaceous earth. *Bioresource Technology*, **96** (6), 657-663.

Full Text: [2005\Bio Tec96, 657.pdf](2005/Bio%20Tec96,%20657.pdf)

Abstract: A spent diatomaceous earth from the beer brewery has been tentatively activated by sodium hydroxide at about 100 °C. The resulting product was used as a novel adsorbent for the adsorption of herbicide paraquat from an aqueous solution in a continuously stirred adsorber and batch flasks, respectively. The results showed that the adsorption process could be well described by the pseudo-second-order reaction model. From the view of the negatively charged surface of diatomaceous earth and cationic property of paraquat, the results were also reasonable to be explained by physical adsorption in the ion-exchange process under the effects of pH and temperature. Further, it was found that the Freundlich model appeared to fit the isotherm data better than the Langmuir model.

Keywords: Spent Diatomaceous Earth, Base-Activation, Adsorption, Paraquat, Kinetic Modeling, Isotherm

Lima, I.M. and Marshall, W.E. (2005), Granular activated carbons from broiler manure: Physical, chemical and adsorptive properties. *Bioresource Technology*, **96** (6), 699-706.

Full Text: [2005\Bio Tec96, 699.pdf](2005/Bio%20Tec96,%20699.pdf)

Abstract: Broiler manure produced at large concentrated facilities poses risks to the quality of water and public health. This study utilizes broiler litter and cake as source materials for granular activated carbon production and optimizes conditions for their production. Pelletized manure samples were pyrolyzed at 700 °C for 1 h followed by activation in an inert atmosphere under steam at different water flow rates, for a period ranging from 15 to 75 min. Carbon physical and adsorptive properties were dependent on activation time and quantity of steam used as activant, yields varied from 18% to 28%, surface area varied from 253 to 548 m2/g and copper ion adsorption varied from 0.13 to 1.92 mmol Cu2+/g carbon. Best overall performing carbons were steam activated for 45 min at 3 ml/min. Comparative studies with commercial carbons revealed the broiler cake-based carbon as having the highest copper ion efficiency.

Keywords: Activated Carbon, Broiler Manure, Copper Ion Remediation

Özacar, M. and Şengil, İ.A. (2005), Adsorption of metal complex dyes from aqueous solutions by pine sawdust. *Bioresource Technology*, **96** (7), 791-795.

Full Text: [2005\Bio Tec96, 791.pdf](2005/Bio%20Tec96,%20791.pdf)

Abstract: An attempt to alleviate the problem caused by the presence of metal complex dyes, mostly used in textile industries, in the textile effluents was undertaken. The effects of adsorbent particle size, pH, adsorbent dose, contact time and initial dye concentrations on the adsorption of metal complex dyes by pine sawdust was investigated. Acidic pH was favorable for the adsorption of metal complex dyes. A contact time of 120 min was required to reach the equilibrium. The experimental isotherm data were analyzed using the Langmuir, Freundlich and Temkin equations. The equilibrium data fit well the Langmuir isotherm. The monolayer adsorption capacities are 280.3 and 398.8 mg dye per g of pine sawdust for Metal Complex Blue and Metal Complex Yellow, respectively. The results indicate that pine sawdust could be employed as low-cost alternative to commercial activated carbon in aqueous solution for the removal of metal complex dyes.

Keywords: Metal Complex Dye, Pine Sawdust, Adsorption Isotherms, Adsorption Capacity

? Foglar, L., Briški, F., Sipos, L. and Vuković, M. (2005), High nitrate removal from synthetic wastewater with the mixed bacterial culture. *Bioresource Technology*, **96** (8), 879-888.

Full Text: [2005\Bio Tec96, 879.pdf](2005/Bio%20Tec96,%20879.pdf)

Abstract: The applicability of the mixed bacterial culture, originated from two-stage anaerobic-aerobic industrial yeasts production wastewater treatment plant for high rate denitrification processes was investigated. After acclimation to nitrate, the dominant strains were Pseudomonas and Paracoccus sp. Complete denitrification with low accumulation of nitrite-N (0.1 mg/l) was found in synthetic wastewater, obeying a zero-order reaction with respect to nitrate and a first-order reaction with respect to biomass concentration. Denitrification was then monitored in the continuous-flow stirred reactor at different hydraulic retention time, HRT (62-28h) in order to achieve the optimal HRT. Nitrate was completely removed during following 45days, at 25°C with HRT, which we reduced from 62 to 28h. Yet still, at 28h HRT, high average specific denitrification rate of 142 mg NO3--N/g VSS h was obtained. (C) 2004 Elsevier Ltd. All rights reserved.

Keywords: Continuous Flow Denitrifying Reactor, Denitrification, Kinetic Model, Mixed Bacterial Culture, Nitrite Accumulation, Denitrification Processes, Pseudomonas-Fluorescens, Denitrifying Bacteria, Nitrite Accumulation, Population-Dynamics, Aerated Reactor, Bed Reactor, Methanol, Reduction, Kinetics

Gulen, J., Aroguz, A.Z. and Dalgın, D. (2005), Adsorption kinetics of azinphosmethyl from aqueous solution onto pyrolyzed Horseshoe sea crab shell from the Atlantic Ocean. *Bioresource Technology*, **96** (10), 1169-1174.

Full Text: [2005\Bio Tec96, 1169.pdf](2005/Bio%20Tec96,%201169.pdf)

Abstract: The adsorption behavior of azinphosmethyl on pyrolyzed Horseshoe Crab (Limulus polyphemus) outer shell, as a residue, from the Atlantic Ocean, collected along the Maine coast, USA, has been studied with regards to its kinetic and equilibrium conditions, taking into account adsorbate concentrations of 2×10−3, 4×10−3, 6×10−3, and 8×10−3, as well as temperatures of 30°C, 40°C, 50°C, and 60°C. The yield of adsorption of azinphosmethyl from aqueous solution ranged from 56.1% to 61% with temperature increasing. Kinetic studies showed that adsorption rate decreased as the initial azinphosmethyl concentration increased. It was found, that the adsorption reaction obeyed first-order kinetics. The overall rate constants were estimated for different temperatures. The activation energy for adsorption was about 1.52 kJ mol−1, which implies that azinphosmethyl mainly adsorbed physically onto Horseshoe Crab outer shell.

Langmuir and Freundlich isotherms were applied to the experimental data and isotherm constants were calculated. The thermodynamic parameters ΔG0, ΔH0 and ΔS0 for the adsorption reaction were evaluated based on equilibrium data and in connection with this result the thermodynamic aspects of adsorption reaction were discussed. The adsorption was found to be endothermic in nature. The adsorbent used in this study proved highly efficient for the removal of azinphosmethyl.

Keywords: Azinphosmethyl, Adsorption Kinetic, Freundlich Isotherm, Langmuir Isotherm, Horseshoe Crab, Shell

Liu, Y., Zhang, T. and Fang, H.H.P. (2005), Microbial community analysis and performance of a phosphate-removing activated sludge. *Bioresource Technology*, **96** (11), 1205-1214.

Full Text: [2005\Bio Tec96, 1205.pdf](2005/Bio%20Tec96,%201205.pdf)

Abstract: The microbial community of a phosphate-removing activated sludge was analyzed according to the extracted 16S rDNA sequences. The sludge, which accumulated 5.6% P by weight, was obtained from a sequencing batch reactor treating a fatty-acid rich wastewater containing 108 mg l−1 total organic carbon (TOC), 14.0 mg l−1 N and 16.2 mg l−1 P. The reactor at 25 °C and pH 7.6 removed over 96% TOC and 99.9% P from the wastewater. According to the 16S rDNA analysis of the 114 clones developed, the sludge had a diverse population, mainly comprising *Proteobacteria* (71.0%) and the *Cytophaga Flavobacterium Bacteroides* group (23.7%), plus a few species of *Planctomycetales* (2.6%), *Verrucomicrobiales* (1.8%) and Firmicutes (0.9%). of the 114 clones, 36 (31.6%) were closely affiliated with *Acinetobacter*. However, *Acinetobacter* did not accumulate phosphate judging from the images of sludge samples hybridized with an *Acinetobacter*-specific probe and stained with a phosphate-specific dye. The identities of the phosphate-removing bacteria remain unclear.

Keywords: *Acinetobacter*, Dapi, Fish, Phosphate, Wastewater, 16S rDNA

Parab, H., Joshi, S., Shenoy, N., Verma, R., Lali, A. and Sudersanan, M. (2005), Uranium removal from aqueous solution by coir pith: Equilibrium and kinetic studies. *Bioresource Technology*, **96** (11), 1241-1248.

Full Text: [2005\Bio Tec96, 1241.pdf](2005/Bio%20Tec96,%201241.pdf)

Abstract: Basic aspects of uranium adsorption by coir pith have been investigated by batch equilibration. The influence of different experimental parameters such as final solution pH, adsorbent dosage, sorption time, temperature and various concentrations of uranium on uptake were evaluated. Maximum uranium adsorption was observed in the pH range 4.0–6.0. The Freundlich and Langmuir adsorption models were used for the mathematical description of the adsorption equilibrium. The equilibrium data fitted well to both the equilibrium models in the studied concentration range of uranium (200–800 mg/l) and temperatures (305–336 K). The coir pith exhibited the highest uptake capacity for uranium at 317 K, at the final solution pH value of 4.3 and at the initial uranium concentration of 800 mg/l. The kinetics of the adsorption process followed a second-order adsorption. The adsorbent used proved to be suitable for removal of uranium from aqueous solutions. 0.2 N HCl was effective in uranium desorption. The results indicated that the naturally abundant coir pith of otherwise nuisance value exhibited considerable potential for application in removal of uranium from aqueous solution.

Keywords: Uranium, Adsorption, Coir Pith, Equilibrium, Isotherm, Kinetics

Ho, Y.S., Chiu, W.T. and Wang, C.C. (2005), Regression analysis for the sorption isotherms of basic dyes on sugarcane dust. *Bioresource Technology*, **96** (11), 1285-1291.

Full Text: [2005\Bio Tec96, 1285.pdf](2005/Bio%20Tec96,%201285.pdf) [B\Bio Tec-Ho5.pdf](B/Bio%20Tec-Ho5.pdf)

Abstract: The sorption of three basic dyes, named basic violet 10, basic violet 1, and basic green 4, from aqueous solutions onto sugarcane dust was studied. The results revealed the potential of sugarcane dust, a waste material, to be a low-cost sorbent. Equilibrium isotherms were analyzed using the Langmuir, the Freundlich, and the three-parameter Redlich–Peterson isotherms. In order to determine the best-fit isotherm for each system, two error analysis methods were used to evaluate the data: the linear coefficient of determination and the Chi-square statistic test for determination of a non-linear model. Results indicated that the Chi-square test provided a better determination for the three sets of experimental data.

Keywords: Sugarcane, Adsorption, Biosorption, Isotherm, Basic Dye, Chi-Square, Alternative Determination Method, Agricultural Solid-Waste, Aqueous-Solutions, Activated Carbon, Coir Pith, Removal, Adsorption, Equilibrium, Water, Residues, Effluents

Ho, Y.S. (2005), Effect of pH on lead removal from water using tree fern as the sorbent. *Bioresource Technology*, **96** (11), 1292-1296.

Full Text: [2005\Bio Tec96, 1292.pdf](2005/Bio%20Tec96,%201292.pdf) [B\Bio Tec-Ho4.pdf](B/Bio%20Tec-Ho4.pdf), [B\Bio Tec-Ho3.pdf](B/Bio%20Tec-Ho3.pdf)

Abstract: The sorption of lead from water onto an agricultural by-product, tree fern, was examined as a function of pH. The sorption processes were carried out using an agitated and baffled system. Pseudo-second-order kinetic analyses were performed to determine the rate constant of sorption, the equilibrium sorption capacity, and the initial sorption rate. Application of the pseudo-second-order kinetics model produced very high coefficients of determination. Results showed the efficiency of tree fern as a sorbent for lead. The optimum pH for lead removal was between 4 and 7, with pH 4.9 resulting in better lead removal. Ion exchange occurred in the initial reaction period. In addition, a relation between the change in the solution hydrogen ion concentration and equilibrium capacity was developed and is presented.

Keywords: Activated Carbon, Adsorption, Agricultural By-Product, Biosorption, Biosorption, Capacity, Change, Copper, Efficiency, Equilibrium, Exchange, Function, Heavy-Metals, Ion Exchange, Kinetic, Kinetics, Lead, Lead Removal, Metal-Ions, Model, pH, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Removal, Rights, Sorbent, Sorption, Sorption Capacity, Tree Fern, Water

? Fujita, Y., Hata, T., Nakamaru, M., Iyo, T., Yoshino, T. and Shimamura, T. (2005), A study of boron adsorption onto activated sludge. *Bioresource Technology*, **96** (12), 1350-1356.

Full Text: [2005\Bio Tec96, 1350.pdf](2005/Bio%20Tec96,%201350.pdf)

Abstract: Boron adsorption onto activated sludge was investigated using bench-scale reactors under simulated wastewater treatment conditions. Two experiments, continuous flow and batch, were performed. Boron concentrations were determined by means of inductively coupled plasma mass spectrometry. The results of the continuous-flow experiment indicated that a small amount of boron accumulated on the activated sludge and its concentration in the sludge depended on the nature of the biota in the sludge. Freundlich and Langmuir isotherm plots generated using the data from the batch experiment indicated that boron was adsorbed onto rather than absorbed into the sludge. The Freundlich constants, *k* and *1*/*n*, were determined to be 26 mg/kg and 0.87. These values indicate that activated sludge has a limited capacity for boron adsorption and thus utilization of the excess sludge for farmland may not be toxic to plant at least boron concern.

Keywords: Boron, Wastewater, Adsorption Isotherm, Activated Sludge

? Mohapatra, H. and Gupta, R. (2005), Concurrent sorption of Zn(II), Cu(II) and Co(II) by *Oscillatoria angustissima* as a function of pH in binary and ternary metal solutions. *Bioresource Technology*, **96** (12), 1387-1398.

Full Text: [2005\Bio Tec96, 1387.pdf](2005/Bio%20Tec96,%201387.pdf)

Abstract: This paper reports biosorption of Zn(II), Cu(II) and Co(II) onto *O. angustissima* biomass from single, binary and ternary metal solutions, as a function of pH and metal concentrations via Central Composite Design generated by statistical software package Design Expert® 6.0. The experimental design revealed that metal interactions could be best studied at lower pH range i.e. 4.0–5.0, which facilitates adequate availability of all the metal ions. The sorption capacities for single metal decreased in the order Zn(II) > Co(II) > Cu(II). In absence of any interfering metals, at pH 4.0 and an initial metal concentration of 0.5 mM in the solution, the adsorption capacities were 0.33 mmol/g Zn(II), 0.26 mmol/g Co(II) and 0.12 mmol/g Cu(II). In a binary system, copper inhibited both Zn(II) and Co(II) sorption but the extent of inhibition of former was greater than the latter, sorption values being 0.14 mmol/g Zn(II) and 0.27 mmol/g Co(II) at initial Zn(II) and Co(II) concentration of 1.5 mM each, pH 4.0 and 1 mM Cu(II) as the interfering metal. Zn(II) and Co(II) were equally antagonistic to each others sorption, Zn(II) and Co(II) sorption being 0.23 and 0.24 mmol/g, respectively, at initial metal concentration of 1.5 mM each, pH 4.0 and 1 mM interfering metal concentration. In contrast, Cu(II) sorption remained almost unaffected at lower concentrations of the competing metals. Thus, in binary system inhibition dominance observed was Cu(II) > Zn(II), Cu(II) > Co(II) and Zn(II) “ Co(II), due to this the biosorbent exhibited net preference/affinity for Cu(II) sorption over Zn(II) or Co(II). Hence, the affinity series showed a trend of Cu(II) > Co(II) > Zn(II).

In a ternary system, increasing Co(II) concentration exhibited protection against the inhibitory effect of Cu(II) on Zn(II) sorption. On the other hand, the inhibitory effect of Zn(II) and Cu(II) on Co(II) sorption was additive. The model equation for metal interactions was found to be valid within the design space.

Keywords: Single Sorption, Binary Sorption, Ternary Sorption, Zinc, Copper, Cobalt, Multimetal, pH, Biosorption

? Shukla, S.R. and Pai, R.S. (2005), Adsorption of Cu(II), Ni(II) and Zn(II) on modified jute fibres. *Bioresource Technology*, **96** (13), 1430-1438.

Full Text: [2005\Bio Tec96, 1430.pdf](2005/Bio%20Tec96,%201430.pdf)

Abstract: The potential of a lignocellulosic fibre, jute, was assessed for adsorption of heavy metal ions like Cu(II), Ni(II) and Zn(II) from their aqueous solutions. The fibre was also used as adsorbent after chemically modifying it by two different techniques viz, loading of a dye with specific structure, C.I. Reactive Orange 13, and oxidising with hydrogen peroxide. Both the modified jute fibres gave higher metal ion adsorption. Thus, the dye loaded jute fibres showed metal ion uptake values of 8.4, 5.26 and 5.95 mg/g for Cu(II), Ni(II) and Zn(II), respectively, while the corresponding values for oxidised jute fibres were 7.73, 5.57 and 8.02 mg/g, as against 4.23, 3.37 and 3.55 mg/g for unmodified jute fibres. Adsorption isotherm models indicated best fit for Langmuir model for the modified jute fibres. The adsorption values decreased with lowering of pH. The desorption efficiency, regenerative and reuse capacity of these adsorbents were also assessed for three successive adsorption–desorption cycles. The adsorptive capacity was retained only when the caustic soda regeneration is carried out as an intermediate step after desorption. Possible mechanism has been given.

Keywords: Adsorption, Chelation, Heavy Metal, Jute Fibres, Langmuir, Reactive Dye

? Padilha, F.P., de França, F.P. and da Costa, A.C.A. (2005), The use of waste biomass of *Sargassum* sp. for the biosorption of copper from simulated semiconductor effluents. *Bioresource Technology*, **96** (13), 1511-1517.

Full Text: [2005\Bio Tec96, 1511.pdf](2005/Bio%20Tec96,%201511.pdf)

Abstract: Seaweed *Sargassum* sp. biomass proved to be useful for the recovery of ionic copper from highly concentrated solutions simulating effluents from semiconductor production. In the case of solutions containing copper in the form of chloride, sulphate and nitrate salts, the best pH for the recovery of copper was 4.5. It was observed that copper biosorption from copper nitrate solutions was higher than the recovery of copper from copper chloride or sulphate solutions. The continuous system used was constituted of four column reactors filled with the biomass of *Sargassum* sp. and showed high operational stability. Biomass of *Sargassum* sp. in the reactors was gradually saturated from the bottom to the top of each column reactor. The biomass of *Sargassum* sp. in the first column was saturated first, followed by a gradual saturation of the remaining columns due to the pre-concentration caused by the biomass in the first column. The biomass of *Sargassum* in the bioreactors completely biosorbed the ionic copper contained in 63 L of copper sulphate solution, 72 L of copper chloride solution and 72 L of copper nitrate solution, all the solutions containing copper at 500 mg/L. Effluents produced after biosorption presented copper concentrations less than 0.5 mg/L.

Keywords: Biosorption, Semiconductor Effluents, *Sargassum*, Fixed-Bed Reactors

? Kobya, M., Demirbas, E., Senturk, E. and Ince, M. (2005), Adsorption of heavy metal ions from aqueous solutions by activated carbon prepared from apricot stone. *Bioresource Technology*, **96** (13), 1518-1521.

Full Text: [2005\Bio Tec96, 1518.pdf](2005/Bio%20Tec96,%201518.pdf)

Abstract: Apricot stones were carbonised and activated after treatment with sulphuric acid (1:1) at 200 °C for 24 h. The ability of the activated carbon to remove Ni(II), Co(II), Cd(II), Cu(II), Pb(II), Cr(III) and Cr(VI) ions from aqueous solutions by adsorption was investigated. Batch adsorption experiments were conducted to observe the effect of pH (1–6) on the activated carbon. The adsorptions of these metals were found to be dependent on solution pH. Highest adsorption occurred at 1–2 for Cr(VI) and 3–6 for the rest of the metal ions, respectively. Adsorption capacities for the metal ions were obtained in the descending order of Cr(VI) > Cd(II) > Co(II) > Cr(III) > Ni(II) > Cu(II) > Pb(II) for the activated carbon prepared from apricot stone (ASAC).

Keywords: Apricot stone, Adsorption, Heavy Metals,Aqueous Solution, pH

? Rahman, I.A., Saad, B., Shaidan, S. and Sya Rizal, E.S. (2005), Adsorption characteristics of malachite green on activated carbon derived from rice husks produced by chemical–thermal process. *Bioresource Technology*, **96** (14), 1578-1583.

Full Text: [2005\Bio Tec96, 1578.pdf](2005/Bio%20Tec96,%201578.pdf)

Abstract: Phosphoric acid (H3PO4) and sodium hydroxide (NaOH) treated rice husks, followed by carbonization in a flowing nitrogen were used to study the adsorption of malachite green (MG) in aqueous solution. The effect of adsorption on contact time, concentration of MG and adsorbent dosage of the samples treated or carbonized at different temperatures were investigated. The results reveal that the optimum carbonization temperature is 500 °C in order to obtain adsorption capacity that is comparable to the commercial activated carbon for the husks treated by H3PO4. It is interesting to note that MG adsorbed preferably on carbon-rich than on silica rich-sites. It is found that the behaviour of H3PO4 treated absorbent followed both the Langmuir and Freundlich models while NaOH treated best fitted to only the Langmuir model.

Keywords: Adsorption, Malachite Green, Activated Rice Husks

? Ozdemir, G., Ceyhan, N. and Manav, E. (2005), Utilization of an exopolysaccharide produced by *Chryseomonas luteola* TEM05 in alginate beads for adsorption of cadmium and cobalt ions. *Bioresource Technology*, **96** (15), 1677-1682.

Full Text: [2005\Bio Tec96, 1677.pdf](2005/Bio%20Tec96,%201677.pdf)

Abstract: Cadmium and cobalt adsorption from aqueous solution onto calcium alginate, sodium alginate with an extracellular polysaccharide (EPS) produced by the activated sludge bacterium *Chryseomonas luteola* TEM05 and immobilized *C. luteola* TEM05 was studied. In addition, solutions containing both of these ions were prepared and partial competitive adsorption of these mixtures was investigated. Metal adsorption onto gel beads was carried out at pH 6.0 and 25 °C. The maximum adsorption capacities determined by fitting Langmuir isotherms to the data for calcium alginate, calcium alginate + EPS, calcium alginate + *C. luteola* TEM05 and calcium alginate + EPS + *C. luteola* TEM05 were 45.87, 55.25, 49.26, 51.81 mg g−1 for Co(II) and 52.91, 64.10, 62.5, 61.73 mg g−1 for Cd(II), respectively.

The biosorption capacity of the carrier for both metal ions together in competition was lower than those obtained when each was present alone.

Keywords: *Chryseomonas Luteola*, Biosorption, Cadmium, Cobalt, Extracellular Polysaccharide, Alginate

? Temmink, H. and Grolle, K. (2005), Tertiary activated carbon treatment of paper and board industry wastewater. *Bioresource Technology*, **96** (15), 1683-1689.

Full Text: [2005\Bio Tec96, 1683.pdf](2005/Bio%20Tec96,%201683.pdf)

Abstract: The feasibility of activated carbon post-treatment of (biologically treated) wastewater from the paper and board industry was investigated, the goal being to remove refractory organic pollutants and produce water that can be re-used in the production process. Because closing water-circuits in the paper and board industry results in higher water temperatures, the effect of the temperature on activated carbon treatment was also investigated. Batch and column adsorption tests showed that activated carbon provides an excellent removal of cationic demand and color related compounds, the two most important representatives of organic compounds that have to be removed. Unexpectedly, higher water temperatures enhanced the performance of activated carbon. However, the treatment costs, mainly determined by transport and regeneration of the carbon, were very high. At long contact times between the wastewater and the carbon the occurrence of biodegradation was observed. Biological regeneration of the carbon may therefore provide a means to reduce the treatment costs, but a practical application requires further research.

Keywords: Activated Carbon, Paper Wastewater, Color, Cationic Demand

? Quan, Z.X., Jin, Y.S., Yin, C.R., Lee, J.J. and Lee, S.T. (2005), Hydrolyzed molasses as an external carbon source in biological nitrogen removal. *Bioresource Technology*, **96** (15), 1690-1695.

Full Text: [2005\Bio Tec96, 1690.pdf](2005/Bio%20Tec96,%201690.pdf)

Abstract: Hydrolyzed molasses was evaluated as an alternative carbon source in a biological nitrogen removal process. To increase biodegradability, molasses was acidified before thermohydrolyzation. The denitrification rate was 2.9–3.6 mg N/g VSS h with hydrolyzed molasses, in which the percentage of readily biodegradable substrate was 47.5%. To consider the hydrolysate as a carbon source, a sequencing batch reactor (SBR) was chosen to treat artificial municipal wastewater. During the 14 days (28 cycles) of operation, the SBR using hydrolyzed molasses as a carbon source showed 91.6±1.6% nitrogen removal, which was higher than that using methanol (85.3±2.0%). The results show that hydrolyzed molasses can be an economical and effective external carbon source for the nitrogen removal process.

Keywords: Carbon source, Denitrification, Hydrolyzed Molasses, Sequencing Batch Reactor

? Lodeiro, P., Cordero, B., Barriada, J.L., Herrero, R. and Sastre de Vicente, M.E. (2005), Biosorption of cadmium by biomass of brown marine macroalgae. *Bioresource Technology*, **96** (16), 1796-1803.

Full Text: [2005\Bio Tec96, 1796.pdf](2005/Bio%20Tec96,%201796.pdf)

Abstract: Five different brown seaweeds, *Bifurcaria bifurcata*, *Saccorhiza polyschides*, *Ascophyllum nodosum*, *Laminaria ochroleuca* and *Pelvetia caniculata* were studied for their ability to remove cadmium from aqueous solution.

Kinetics of cadmium adsorption by all the algae were relatively fast, with 90% of total adsorption occurring in less than 1 h. These experiments could be accurately described by a pseudo-second-order rate equation, obtaining values between 1.66×10−3 and 9.92×10−3 g/mg min for the sorption rate constant *k*.

Several equilibrium adsorption isotherms were obtained for the quantitative description of cadmium uptake. The use of the Langmuir isotherm led to values between 64 and 95 mg/g for *q*max and between 0.036 and 0.094 L/mg for *b*. The effect of pH on biosorption was also studied.

Acid–base properties of algae were studied by potentiometry to determine p*K* values (from 3.54 to 3.98) and the total number of acid groups.

Keywords: Biosorption, Cadmium, Marine Macroalgae, Kinetics, Equilibrium, Acid–Base Properties

? Chung, Y.C., Lin, Y.Y. and Tseng, C.P. (2005), Removal of high concentration of NH3 and coexistent H2S by biological activated carbon (BAC) biotrickling filter. *Bioresource Technology*, **96** (16), 1812-1820.

Full Text: [2005\Bio Tec96, 1812.pdf](2005/Bio%20Tec96,%201812.pdf)

Abstract: High efficiency of NH3 and H2S removal from waste gases was achieved by the biotrickling filter. Granular activated carbon (GAC), inoculated with *Arthrobacter oxydans* CH8 for NH3 removal and *Pseudomonas putida* CH11 for H2S removal, was used as packing material. Under conditions in which 100% H2S was removed, extensive tests to eliminate high concentrations of NH3 emission—including removal characteristics, removal efficiency, and removal capacity of the system—were performed. The results of the Bed Depth Service Time (BDST) experiment suggested that physical adsorption of NH3 gas by GAC was responsible for the first 10 days, after which NH3 gas was biodegraded by inoculated microorganisms. The dynamic steady state between physical adsorption and biodegradation was about two weeks. After the system achieved equilibrium, the BAC biotrickling filter exhibited high adaptation to shock loading, elevated temperature, and flow rate. Greater than 96% removal efficiency for NH3 was achieved during the 140-day operating period when inlet H2S loading was maintained at 6.25 g-S/m3/h. During the operating period, the pH varied between 6.5 and 8.0 after the physical adsorption stage, and no acidification or alkalinity was observed. The results also demonstrated that NH3 removal was not affected by the coexistence of H2S while gas retention time was the key factor in system performance. The retention time of at least 65 s is required to obtain a greater than 95% NH3 removal efficiency. The critical loading of NH3 for the system was 4.2 g-N/m3/h, and the maximal loading was 16.2 g-N/m3/h. The results of this study could be used as a guide for further design and operation of industrial-scale systems.

Keywords: Biotrickling Filter, Activated Carbon, Hydrogen Sulfide, Ammonia

? Banerjee, S. and Dastidar, M.G. (2005), Use of jute processing wastes for treatment of wastewater contaminated with dye and other organics. *Bioresource Technology*, **96** (17), 1919-1928.

Full Text: [2005\Bio Tec96, 1919.pdf](2005/Bio%20Tec96,%201919.pdf)

Abstract: A study was conducted to examine the potential of jute processing waste (JPW) for the treatment of wastewater contaminated with dye and other organics generated from various activities associated with jute cultivation and fibre production. Adsorption studies in batch mode have been conducted using dye solution as an adsorbate and JPW as an adsorbent. A comparative adsorption study was made with standard adsorbents such as powdered and granular activated carbon (PAC and GAC, respectively). A maximum removal of 81.7% was obtained with methylene blue dye using JPW as compared to 61% using PAC and 40% using GAC under similar conditions. The adsorption potential of JPW was observed to be dependent on various parameters such as type of dye, initial dye concentration, pH and dosage of adsorbent. The batch sorption data conformed well to the Langmuir and Freundlich isotherms. However, lower BOD (33.3%) and COD (13.8%) removal from retting effluent was observed using JPW as compared to 75.6% BOD removal and 71.1% COD removal obtained with GAC. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Jute Processing Waste, Dye Solution, Retting Effluent, Batch Sorption, Langmuir and Freundlich Isotherms, Wastewaters, Biomass

? Sarin, V. and Pant, K.K. (2006), Removal of chromium from industrial waste by using eucalyptus bark. *Bioresource Technology*, **97** (1), 15-20.

Full Text: [2006\Bio Tec97, 15.pdf](2006/Bio%20Tec97,%2015.pdf)

Abstract: Several low cost biomaterials such as baggase, charred rice husk, activated charcoal and eucalyptus bark (EB) were tested for removal of chromium. All the experiments were carried out in batch process with laboratory prepared samples and wastewater obtained from metal finishing section of auto ancillary unit. The adsorbent, which had highest chromium(VI) removal was EB. Influences of chromium concentration, pH, contact time on removal of chromium from effluent was investigated. The adsorption data were fitted well by Freundlich isotherm. The kinetic data were analyzed by using a first order Lagergren kinetic. The Gibbs free energy was obtained for each system and was found to be −1.879 kJ mol−1 for Cr(VI) and −3.885 kJ mol−1 for Cr(III) for removal from industrial effluent. The negative value of Δ*G*0 indicates the feasibility and spontaneous nature of adsorption. The maximum removal of Cr(VI) was observed at pH 2. Adsorption capacity was found to be 45 mg/g of adsorbent, at Cr(VI) concentration in the effluent being 250 mg/l. A waste water sample containing Cr(VI), Cr(III), Mg, and Ca obtained from industrial unit showed satisfactory removal of chromium. The results indicate that eucalyptus bark can be used for the removal of chromium.

Keywords: Adsorption, Eucalyptus Bark (EB), Hexavalent Chromium, Lagregren Kinetic, Freundlich Isotherm

? Zulkali, M.M.D., Ahmad, A.L. and Norulakmal, N.H. (2006), *Oryza sativa* L. husk as heavy metal adsorbent: Optimization with lead as model solution. *Bioresource Technology*, **97** (1), 21-25.

Full Text: [2006\Bio Tec97, 21.pdf](2006/Bio%20Tec97,%2021.pdf)

Abstract: The effects of initial concentration of lead, temperature, biomass loading and pH were investigated for an optimized condition of lead uptake from the aqueous solution. The optimization process was analyzed using Central Composite Face-Centered Experimental Design in Response Surface Methodology (RSM) by Design Expert Version 5.0.7 (StatEase, USA). The design was employed to derive a statistical model for the effect of parameters studied on the removal of lead ion from aqueous solution. The coefficient of determination, *R*2 was found to be 92.36%. The initial concentration of 50.0 mg/L, temperature of 60 °C, biomass loading of 0.2 g and pH of 5.0 had been found to be the optimum conditions for the maximum uptake of lead ions in 98.11% batch mode. Under the optimum conditions, the lead uptake was attained to be circa 8.60 mg/g.

Keywords: Response Surface Methodology, Lead, Adsorption, Rice Husk

? Chattopadhyay, S.N., Pan, N.C. and Day, A. (2006), Reuse of reactive dyes for dyeing of jute fabric. *Bioresource Technology*, **97** (1), 77-83.

Full Text: [2006\Bio Tec97, 77.pdf](2006/Bio%20Tec97,%2077.pdf)

Abstract: The aim of the work was to find out suitable method of dyeing so that costly reactive dye can be reused without draining them. The bleached jute fabric was dyed with four different class of reactive dyes namely, cold brand, hot brand, vinyl sulphone and high exhaustion (HE) brand. It is found that the two-step two-bath method of reactive dyeing, where exhaustion and fixation step is separated, is most ideal for reuse of dye bath. Separate original samples produced *K*/*S* value same as that of original sample and the *K*/*S* value of separate reuse sample varied from 50% to 80% of the original sample depending on the class of dye. In case of same bath method, colour yield of original reuse samples varies from only 10% to maximum 30% of the original samples depending on the class of dyes. Reuse of reactive dyes following separate bath method is particularly suitable for higher depth of shade (4% and above). This process not only utilises costly reactive dyes to the maximum extent but it also produces low water pollution as the effluent contain minimum amount of dye. So the process is economic and eco-friendly as well.

Keywords: Jute Fabric, Reuse, Reactive Dye, Two-Step Single-Bath Method, Two-Step Two-Bath Method

? Kumar, U. and Bandyopadhyay, M. (2006), Sorption of cadmium from aqueous solution using pretreated rice husk. *Bioresource Technology*, **97** (1), 104-109.

Full Text: [2006\Bio Tec97, 104.pdf](2006/Bio%20Tec97,%20104.pdf)

Abstract: The sorption of Cd(II) from aqueous solution by rice husk, a surplus agricultural byproduct was investigated. Some simple and low-cost chemical modifications resulted in increasing the sorption capacity of raw rice husk (RRH) from 8.58 mg/g to 11.12, 20.24, 16.18 mg/g and reducing the equilibrium time from 10 h of RRH to 2, 4 and 1 h for epichlorohydrin treated rice husk (ERH), NaOH treated rice husk (NRH), sodium bicarbonate treated rice husk (NCRH), respectively. The effect of pH, sorption kinetics and isotherms were studied in batch experiments. Good correlation coefficient was obtained for pseudo second-order kinetic model, which agreed with chemisorption as the rate-limiting mechanism. Sorption isotherm test showed that equilibrium sorption data were better represented by Langmuir model than the Freundlich model. The highly efficient low cost and the rapid uptake of Cd(II) by NCRH indicated that it could be an excellent alternative for the removal of heavy metal by sorption process.

Keywords: Cadmium, Rice Husk, Pretreatment, Sorption Kinetics, Isotherm

? Nakhla, G., Liu, V. and Bassi, A. (2006), Kinetic modeling of aerobic biodegradation of high oil and grease rendering wastewater. *Bioresource Technology*, **97** (1), 131-139.

Full Text: [2006\Bio Tec97, 131.pdf](2006/Bio%20Tec97,%20131.pdf)

Abstract: Batch scale activated sludge kinetic studies were undertaken for the treatment of pet food wastewater characterized by oil and grease concentrations of up to 21,500 mg/L, COD and BOD concentrations of 75,000 and 60,000 mg/L, respectively as well as effluent from the batch dissolved air flotation (DAF) system. The conducted kinetics studies showed that Haldane Model fit the substrates and biomass data better than Monod model in DAF-pretreated wastewater, while the modified hydrolysis Monod model better fit the raw wastewater kinetic data. For the DAF pretreated batches, Haldane Model kinetic coefficients k, K-S, Y and K-i values of 1.28-5.35 gCOD/gVSS-d, 17,833-23,477 mg/L, 0.13-0.41 mgVSS/mgCOD and 48,168 mg/L, respectively were obtained reflecting the slow biodegradation rate. Modified hydrolysis Monod model kinetic constants for the raw wastewater i.e., k, K-S, Y, and K-H varied from 1-1.3 gCOD/gVSS-d, 5580-5600 mgCOD/l, 0.08-0.85 mgVSS/mgCOD, and 0.21-0.66 d-1, respectively. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Activated Sludge, Aerobic, Air, Batch, Bio-Kinetics Modeling, Biodegradation, Biomass, Bod, Cod, Concentrations, Degradation, Dissolved, Effluent, Flotation, Food, Haldane, High Strength, Hydrolysis, Hydrolysis, Inhibition, Kinetic, Kinetic Studies, Kinetics, Model, Modeling, Modified, Monod, Oil, Parameters, Particulate Organic-Matter, Reactors, Scale, Sludge, Treatment, Wastewater

? Romero-González, J., Peralta-Videa, J.R., Rodríguez, E., Delgado, M. and Gardea-Torresdey, J.L. (2006), Potential of *Agave lechuguilla* biomass for Cr(III) removal from aqueous solutions: Thermodynamic studies. *Bioresource Technology*, **97** (1), 178-182.

Full Text: [2006\Bio Tec97, 178.pdf](2006/Bio%20Tec97,%20178.pdf)

Abstract: Thermodynamic studies on the bioadsorption of Cr(III) onto *Agave lechuguilla* biomass were conduced. The experimental results at different temperatures were modeled using the Langmuir and Freundlich isotherms to obtain the characteristic parameters of each model. Both the Freundlich and Langmuir models were found to represent the bioadsorption process. The average adsorption capacities calculated from Freundlich (4.7 mg/g) and Langmuir (14.2 mg/g) isotherms showed *A. lechuguilla* to be an effective biomass in the removal of Cr(III) from an aqueous solution. Thermodynamic parameters (Δ*G*0, Δ*H*0 and Δ*S*0) determined in the temperature range from 10 to 40 °C along with the parameters of the Dubinin–Radushkevick equation support the idea that the binding of Cr(III) may be caused by interactions with functional groups such as carboxyl groups located on the outer surface of the cell tissue of the bioadsorbent.

Keywords: Chromium(III), Thermodynamic Parameters, Adsorption, *Agave Lechuguilla*

? Horsfall, Jr., M., Abia, A.A. and Spiff, A.I. (2006), Kinetic studies on the adsorption of Cd2+, Cu2+ and Zn2+ ions from aqueous solutions by cassava (*Manihot sculenta* Cranz) tuber bark waste. *Bioresource Technology*, **97** (2), 283-291.

Full Text: [2006\Bio Tec97, 283.pdf](2006/Bio%20Tec97,%20283.pdf)

Abstract: The kinetics of Cd2+, Cu2+ and Zn2+ adsorption onto pure and thioglycolic acid treated cassava tuber bark wastes (CTBW) were investigated using a batch sorption technique at 30 °C. Kinetic data suggested that the adsorption process was exothermic, the rate limiting sorption step was physisorption and dsorption rates could be best described by a pseudo-second order model. Rate coefficients were determined to range between 1.39×10−2 min−1 and 5.94×10−2 min−1, 1.46×10−3 min−1 and 5.76×10−3 min−1 and 0.69×10−3 min−1 and 5.8×10−3 min−1 for Cd2+, Cu2+ and Zn2+, respectively. The results from these studies indicated that the sorption process is fast and stable. The adsorption equilibria were evaluated using the Langmuir equation and the monolayer sorption capacity was found to range between 5.88–26.3 mg/g, 33.3–90.9 mg/g and 22.2–83.3 mg/g for Cd2+, Cu2+ and Zn2+, respectively. Negative values of ΔG0ads indicated that the adsorption process was spontaneous and exothermic in nature.

Keywords: Adsorption, Kinetic Study, Bioremediation, Cassava Waste, Wastewater Treatment, Thiolation

? Sharma, P., Kumari, P., Srivastava, M.M. and Srivastava, S. (2006), Removal of cadmium from aqueous system by shelled *Moringa oleifera* Lam. seed powder. *Bioresource Technology*, **97** (2), 299-305.

Full Text: [2006\Bio Tec97, 299.pdf](2006/Bio%20Tec97,%20299.pdf)

Abstract: The present study explores the unexploited sorption properties of the plant *Moringa oleifera* Lam. for decontamination of Cd at laboratory scale. Sorption studies using standard practices were carried out in batch experiments as functions of biomass dosage, contact time, metal concentrations, particle size and pH. Percentage sorption in each case was computed on the basis of Cd estimation using a planar NaI (TI) detector coupled to a 4 K MCA (Canberra Accuspec Card with PC-AT 386). The adsorption data accurately in a Freundlich isotherm. Sorption studies resulted in the standardization of optimum conditions for removal of Cd (85.10%) as follows: biomass dosage (4.0 g), metal concentration (25 μg/ml), contact time (40 min) and volume of the test solution (200 ml) at pH 6.5. Fourier transform infrared (FTIR) spectrometry highlighted amino acid–Cd interactions responsible for sorption phenomenon. The findings open up new avenues in the removal of toxic metals by shelled *Moringa oleifera* seeds (SMOS) from water bodies as low cost, domestic and environmentally friendly safe technology.

Keywords: Biosorption, *Moringa Oleifera*, Cd, Ecofriendly Techniques

? Xu, H., Liu, Y. and Tay, J.H. (2006), Effect of pH on nickel biosorption by aerobic granular sludge. *Bioresource Technology*, **97** (3), 359-363.

Full Text: [2006\Bio Tec97, 359.pdf](2006/Bio%20Tec97,%20359.pdf)

Abstract: The Ni2+ biosorption by aerobic granular sludge was studied at various initial pH values of 2–7. Results showed that the initial pH would play an important role in the Ni2+ removal by aerobic granules and affected the zeta potential of aerobic granules. A thermodynamic equilibrium isotherm previously developed can fit the experimental data very well at all studied pH values. The close relationship between the zeta potential and Ni2+ biosorption capacity of aerobic granules showed the electrostatic attraction between the aerobic granules and Ni2+ ions. It was also found that some light metals, such as K+, Mg2+ and Ca2+ would be released into the bulk solution during the Ni2+ uptake onto the aerobic granules, which in turn indicated that ion-exchange was one of the Ni2+ biosorption mechanisms.

Keywords: Aerobic Granule, Ni2+, Biosorption, Zeta Potential

? Murugesan, G.S., Sathishkumar, M. and Swaminathan, K. (2006), Arsenic removal from groundwater by pretreated waste tea fungal biomass. *Bioresource Technology*, **97** (3), 483-487.

Full Text: [2006\Bio Tec97, 483.pdf](2006/Bio%20Tec97,%20483.pdf)

Abstract: Arsenic contamination in ground water poses a serious threat on human health. The tea fungus, a waste produced during black tea fermentation has been examined for its capacity to sequester the metal ions from ground water samples. Autoclaved tea fungal mat and autoclaving followed by FeCl3 pretreated tea fungal mat were exploited for removal of As(III), As(V) and Fe(II) from ground water sample collected from Kolkata, West Bengal, India. The biosorption rate tends to increase with the increase in contact time and adsorbent dosage. FeCl3 pretreated and autoclaved fungal mats removed 100% of As(III) and Fe(II) after 30 min contact time and 77% of As(V) after 90 min contact time. The optimum adsorbent dosage was 1.0 g/50 mL of water sample. The results revealed that the FeCl3 pretreated fungal mat could be used as an effective biosorbent for As(III) and As(V), autoclaved fungal mat for Fe(II) removal from ground water sample.

Keywords: Tea Fungus, Biosorption, Arsenic, Iron, Isotherm

? Tsai, W.T., Yang, J.M., Lai, C.W., Cheng, Y.H., Lin, C.C. and Yeh, C.W. (2006), Characterization and adsorption properties of eggshells and eggshell membrane. *Bioresource Technology*, **97** (3), 488-493.

Full Text: [2006\Bio Tec97, 488.pdf](2006/Bio%20Tec97,%20488.pdf)

Abstract: The objective of this work was to study the chemical and physical characterization of eggshell and eggshell membrane particles prepared from the hen eggshell waste. Under the characterization measurements investigated, it was found that the pore structures of the two biomaterials belong to a typical Type II, indicating that they should be basically characteristic of nonporous materials or materials with macropores or open voids. Further, the chemical composition of the resulting eggshell particle was strongly associated with the presence of carbonate minerals from the Fourier transform infrared (FTIR) spectra. In contrast to the resulting eggshell membrane particle, the presence of functional groups of amines and amides was observable because of its chemical composition of fibrous proteins. From the isotherm data of methylene blue at 25°C, the Freundlich model yielded a somewhat better fit than the Langmuir model. The adsorption isotherms revealed the eggshell biosorbents could only uptake the basic dye of less than 1.0 mg/g in aqueous medium, which was attributed to their poor pore properties.

Keywords: Eggshell, Eggshell Membrane, Pore Property, FTIR, Methylene Blue Adsorption

? Maurya, N.S., Mittal, A.K., Cornel, P. and Rother, E. (2006), Biosorption of dyes using dead macro fungi: Effect of dye structure, ionic strength and pH. *Bioresource Technology*, **97** (3), 512-521.

Full Text: [2006\Bio Tec97, 521.pdf](2006/Bio%20Tec97,%20521.pdf)

Abstract: Biosorbents prepared from dead macro fungi, namely *Fomes fomentarius* and *Phellinus igniarius*, were applied for the uptake of Methylene Blue (MB) and Rhodamine B (RB). Equilibrium isotherm data could be well described by the Langmuir and Freundlich models. Methylene Blue was found to be more adsorbable than Rhodamine B. Langmuir monolayer coverage was determined as 204.38–232.73 mg/g and 25.12–36.82 mg/g for MB and RB, respectively. Molecular structure and ionic radius of dyes were found to be responsible for differences in their uptakes. Results showed that sorption of MB increased while that of RB decreased as pH of respective dye solutions changed from 3 to 11. An increase in ionic strength also exhibited an adverse effect on dye sorption capacity. Ionic strength and pH affected the sorption of MB more as compared to the sorption of RB. The presence of carboxylic (−ve) and amino (+ve) groups in RB could explain the lower sorption of RB compared to MB.

Keywords: Macro Fungus, Biosorption, Cationic Dye, Dye Structure, Ionic Strength and pH

? Hawari, A.H. and Mulligan, C.N. (2006), Biosorption of lead(II), cadmium(II), copper(II) and nickel(II) by anaerobic granular biomass. *Bioresource Technology*, **97** (4), 692-700.

Full Text: [2006\Bio Tec97, 692.pdf](2006/Bio%20Tec97,%20692.pdf)

Abstract: Biosorption is potentially an attractive technology for treatment of wastewater for retaining heavy metals from dilute solutions. This study investigated the feasibility of anaerobic granules as a novel type of biosorbent, for lead, copper, cadmium, and nickel removal from aqueous solutions. Anaerobic sludge supplied from a wastewater treatment plant in the province of Quebec was used. Anaerobic granules are microbial aggregates with a strong, compact and porous structure and excellent settling ability. After treatment of the biomass with Ca ions, the cation exchange capacity of the biomass was approximately 111 meq/100g of biomass dry weight which is comparable to the metal binding capacities of commercial ion exchange resins. This work investigated the equilibrium, batch dynamics for the biosorption process. Binding capacity experiments using viable biomass revealed a higher value than those for nonviable biomass. Binding capacity experiments using non-viable biomass treated with Ca revealed a high value of metals uptake. The solution initial pH value affected metal sorption. Over the pH range of 4.0–5.5, pH-related effects were not significant. Meanwhile, at lower pH values the uptake capacity decreased. Time dependency experiments for the metal ions uptake showed that adsorption equilibrium was reached almost 30 min after metal addition. It was found that the qmax for Pb2+, Cd2+, Cu2+, and Ni2+ ions, were 255, 60, 55, and 26 mg/g respectively (1.23, 0.53, 0.87, and 0.44 mmol/g respectively). The data pertaining to the sorption dependence upon metal ion concentration could be fitted to a Langmiur isotherm model. Based on the results, the anaerobic granules treated with Ca appear to be a promising biosorbent for removal of heavy metals from wastewater due to its optimal uptake of heavy metals, its particulate shape, compact porous structure, excellent settling ability, and its high mechanical strength.

Keywords: Biosorption, Biosorbent, Adsorption Isotherms, Heavy Metals, Anaerobic Granular Biomass

? Sudaryanto, Y., Hartono, S.B., Irawaty, W., Hindarso, H. and Ismadji, S. (2006), High surface area activated carbon prepared from cassava peel by chemical activation. *Bioresource Technology*, **97** (5), 734-739.

Full Text: [2006\Bio Tec97, 734.pdf](2006/Bio%20Tec97,%20734.pdf)

Abstract: Cassava is one of the most important commodities in Indonesia, an agricultural country. Cassava is one of the primary foods in our country and usually used for traditional food, cake, etc. Cassava peel is an agricultural waste from the food and starch processing industries. In this study, this solid waste was used as the precursor for activated carbon preparation. The preparation process consisted of potassium hydroxide impregnation at different impregnation ratio followed by carbonization at 450-750°C for 1-3 h. The results revealed that activation time gives no significant effect on the pore structure of activated carbon produced, however, the pore characteristic of carbon changes significantly with impregnation ratio and carbonization temperature. The maximum surface area and pore volume were obtained at impregnation ratio 5:2 and carbonization temperature 750°C. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Pore Structure, Cassava Peel, Activation, Bituminous Coal, Coconut Shell, Adsorption

? Sannasi, P., Kader, J., Ismail, B.S. and Salmijah, S. (2006), Sorption of Cr(VI), Cu(II) and Pb(II) by growing and non-growing cells of a bacterial consortium. *Bioresource Technology*, **97** (5), 740-747.

Full Text: [2006\Bio Tec97, 740.pdf](2006/Bio%20Tec97,%20740.pdf)

Abstract: This paper reports the sorption of three metallic ions, namely Cr(VI), Cu(II) and Pb(II) in aqueous solution by a consortium culture (CC) comprising an acclimatised mixed bacterial culture collected from point and non-point sources. Metal sorption capability of growing and non-growing cells at initial pH of between 3 and 8 in the 1–100 mg/L concentration range were studied based on Qmax and Kf values of the Langmuir and linearised Freundlich isotherm models, respectively. Maximal metal loading was generally observed to be dependent on the initial pH. Growing cells displayed significant maximal loading (Qmax) for Pb(II) (238.09 mg/g) and Cu(II) (178.87 mg/g) at pH 6 and at pH 7 for Cr(VI) (90.91 mg/g) compared to non-growing cells (p < 0.05). At the pH range of 6–8, growing cells showed higher loading capacity compared to non-growing cells i.e. 38–52% for Cr, 17–28% for Cu and 3–17% for Pb. At lower metal concentrations and at more acidic pH (3–4) however, non-growing cells had higher metal loading capacity than growing cells. The metal sorption capacity for both populations were as follows: Pb(II) > Cu(II) > Cr(VI).

Keywords: Bacterial Consortium, Sorption, Metal Loading, Heavy Metal

? Dhodapkar, R., Rao, N.N., Pande, S.P. and Kaul, S.N. (2006), Removal of basic dyes from aqueous medium using a novel polymer: Jalshakti. *Bioresource Technology*, **97** (7), 877-885.

Full Text: [2006\Bio Tec97, 877.pdf](2006/Bio%20Tec97,%20877.pdf)

Abstract: Studies were carried out to remove basic dyes such as safranine T, methylene blue, crystal violet, light green, brilliant milling violet and patent blue VS from their aqueous solutions using biodegradable polymeric absorbent material, viz., Jalshakti® (JS). Results showed that 93% safranine T, 98% methylene blue and 84% crystal violet were adsorbed on JS relative to their initial concentration (10 mg L−1). The optimum pH was found to be 6.0±0.5 and smaller size of particle of JS resulted better adsorptive removal of the dyes. IR spectroscopic and potassium ion release studies revealed that basic dyes were selectively removed through adsorption–ion-exchange mechanism involving carboxylic groups and K+ ions of JS.

Keywords: Jalshakti Polymer, Absorbent, Basic Dyes, Adsorption–Ion-Exchange, Colour Removal

? Agarwal, G.S., Bhuptawat, H.K. and Chaudhari, S. (2006), Biosorption of aqueous chromium(VI) by Tamarindus indica seeds. *Bioresource Technology*, **97** (7), 949-956.

Full Text: [2006\Bio Tec97, 949.pdf](2006/Bio%20Tec97,%20949.pdf)

Abstract: The effectiveness of low cost agro-based materials namely, Tamarindus indica seed (TS), crushed coconut shell (CS), almond shell (AS), ground nut shell (GS) and walnut shell (WS) were evaluated for Cr(VI) removal. Batch test indicated that hexavalent chromium sorption capacity (qe) followed the sequence qe(TS) > qe(WS) > qe(AS) > qe(GS) > qe(CS). Due to high sorptive capacity, tamarind seed was selected for detailed sorption studies. Sorption kinetic data followed first order reversible kinetic fit model for all the sorbents. The equilibrium conditions were achieved within 150 min under the mixing conditions employed. Sorption equilibria exhibited better fit to Freundlich isotherms (R > 0.92) than Langmuir isotherm (R ≈ 0.87). Hexavalent chromium sorption by TS decreased with increase in pH, and slightly reduced with increase in ionic strength. Cr(VI) removal by TS seems to be mainly by chemisorption. Desorption of Cr(VI) from Cr(VI) laden TS was quite less by distilled water and HCl. Whereas with NaOH, maximum desorption achieved was about 15.3%. When TS was used in downflow column mode, Cr(VI) removal was quite good but head loss increased as the run progressed and was stopped after 200 h.

Keywords: Chromium(VI), Adsorption, Tamarindus Indica, Low Cost Biosorbent

? Kulkarni, M. and Chaudhari, A. (2006), Biodegradation of *p*-nitrophenol by *P. putida*. *Bioresource Technology*, **97** (8), 982-988.

Full Text: [2006\Bio Tec97, 982.pdf](2006/Bio%20Tec97,%20982.pdf)

Abstract: strain of Pseudomonas putida was found capable of metabolizing p-nitrophenol (PNP) as a sole source of carbon, nitrogen and energy. To explore the applicability of this strain for bioremediation for controlling environmental PNP pollution, its degradation potential at 300 and 500 ppm was examined in a medium devoid of carbon and nitrogen source (minimal medium). At A(600), 0.5 OD inoculum, the strain metabolized 300 and 500 ppm within 36 and 72 h, respectively. The degradation was accompanied by release of stoichiometric amount of nitrite. Effect of glucose and nitrogen on PNP degradation under similar conditions revealed that (i) glucose (0.4 g/l) at 20 and 50 ppm PNP did not accelerate the rate of PNP degradation, while glucose (0.4 g/l) at 300 ppm PNP inhibited its degradation, (ii) nitrogen supplement viz. sodium nitrate and ammonium sulphate (0.04 and 0.4 g/l) in minimal medium with PNP (300 ppm) showed no effect on PNP degradation, while glutamate alone (0.04 and 0.4 g/l) showed mere rise in biomass (from 0.5 to 1.6 OD units), and (iii) acidic pH (4.0-6.5) did not support PNP degradation, while alkaline pH (7.5-9.5) significantly enhanced the rate of PNP degradation. The complete degradation of PNP at high concentration (300 ppm) was confirmed by HPTLC analysis. In order to probe root cause of higher PNP degradation, preliminary studies on genetic analysis of P. putida were undertaken, which revealed the prevalence of a degradative plasmid of approximately 15 kb, while cured derivatives of P. putida (PNP-) did not show ability to degrade PNP. Further conjugal transfer of PNP+ phenotype from P. putida to standard strain of E. coli Nova blue (PNP-) confirmed the degradative type of plasmid. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: 2,4-Dinitrophenol, Ammonium, Ammonium Sulphate, Analysis, Bacteria, Biomass, Bioremediation, Carbon, Concentration, Degradation, Energy, Environmental, Genetic, Glucose, Hptlc, Kinetics, Mineralization, Nitrate, Nitrite, Nitroaromatic Compounds, Nitrogen, OD, Order, P, P-Nitrophenol, pH, Plasmid, Plasmid-Encoded Degradation, Pnp Degradation, Pollution, Prevalence, Pseudomonas, Pseudomonas Putida, Release, Root, Sodium, Source, Sphingomonas, Standard, Substrate, Sulphate, Support, Transfer, Water

? Singh, K.K., Singh, A.K. and Hasan, S.H. (2006), Low cost bio-sorbent ‘wheat bran’ for the removal of cadmium from wastewater: Kinetic and equilibrium studies. *Bioresource Technology*, **97** (8), 994-1001.

Full Text: [2006\Bio Tec97, 994.pdf](2006/Bio%20Tec97,%20994.pdf)

Abstract: Novel bio-sorbent wheat bran has been successfully utilized for the removal of cadmium(II) from wastewater. The maximum removal of cadmium(II) was found to be 87.15% at pH 8.6, initial Cd(II) concentration of 12.5 mg l−1 and temperature of 20 °C. The effect of different parameters such as contact time, adsorbate concentration, pH of the medium and temperature were investigated. Dynamics of the sorption process were studied and the values of rate constant of adsorption, rate constant of intraparticle diffusion and mass transfer coefficient were calculated. Different thermodynamic parameters viz., changes in standard free energy, enthalpy and entropy have also been evaluated and it has been found that the reaction was spontaneous and exothermic in nature. The applicability of Langmuir isotherm showed of monolayer coverage of the adsorbate on the surface of adsorbent. A generalized empirical model was proposed for the kinetics at different initial concentrations.

Keywords: Adsorption, Wheat Bran, Exothermic, Cadmium, Monolayer

Notes: highly cited

? Crini, G. (2006), Non-conventional low-cost adsorbents for dye removal: A review. *Bioresource Technology*, **97** (9), 1061-1085.

Full Text: [2006\Bio Tec97, 1061.pdf](2006/Bio%20Tec97,%201061.pdf)

Abstract: Adsorption techniques are widely used to remove certain classes of pollutants from waters, especially those that are not easily biodegradable. Dyes represent one of the problematic groups. Currently, a combination of biological treatment and adsorption on activated carbon is becoming more common for removal of dyes from wastewater. Although commercial activated carbon is a preferred sorbent for color removal, its widespread use is restricted due to high cost. As such, alternative non-conventional sorbents have been investigated. It is well-known that natural materials, waste materials from industry and agriculture and biosorbents can be obtained and employed as inexpensive sorbents. In this review, an extensive list of sorbent literature has been compiled. The review (i) presents a critical analysis of these materials, (ii) describes their characteristics, advantages and limitations, and (iii) discusses various mechanisms involved. It is evident from a literature survey of about 210 recent papers that low-cost sorbents have demonstrated outstanding removal capabilities for certain dyes. In particular, chitosan might be a promising adsorbent for environmental and purification purposes.

Keywords: Dyes, Adsorption, Low-Cost Adsorbents, Wastewater Treatment

? Srivastava, S. and Thakur, I.S. (2006), Isolation and process parameter optimization of *Aspergillus* sp. for removal of chromium from tannery effluent. *Bioresource Technology*, **97** (10), 1167-1173.

Full Text: [2006\Bio Tec97, 1167.pdf](2006/Bio%20Tec97,%201167.pdf)

Abstract: Five morphologically different fungi were isolated from leather tanning effluent in which *Aspergillus* sp. and Hirsutella sp. had higher potential to remove chromium. The potential of *Aspergillus* sp. for removal of chromium was evaluated in shake flask culture in different pH, temperature, inoculums size, carbon and nitrogen source. The maximum chromium was removed at pH 6, temperature 30 [deg]C, sodium acetate (0.2%) and yeast extract (0.1%). *Aspergillus* sp. was applied in 2 l bioreactor for removal of chromium, and it was observed that 70% chromium was removed after 3 days.

Keywords: *Aspergillus* sp., Bioreactor, Biosorption, Chromium, Fungi, *Hirsutella* sp.

? Namasivayam, C. and Sangeetha, D. (2006), Removal of molybdate from water by adsorption onto ZnCl2 activated coir pith carbon. *Bioresource Technology*, **97** (10), 1194-1200.

Full Text: [2006\Bio Tec97, 1194.pdf](2006/Bio%20Tec97,%201194.pdf)

Abstract: Removal and recovery of molybdate from aqueous solution was investigated using ZnCl2 activated carbon developed from coir pith. Studies were conducted to delineate the effects of contact time, adsorbent dose, molybdate concentration, pH and temperature. Two theoretical adsorption isotherms, namely, Langmuir and Freundlich were used to describe the experimental results. The Langmuir adsorption capacity (*Q*0) was found to be 18.9 mg molybdate/g of the adsorbent. Adsorption followed second order kinetics. Studies were performed at different pH values to find out the pH at which maximum adsorption occurred. The pH effect and desorption studies showed that ion exchange and chemisorption mechanism were involved in the adsorption process. Thermodynamic parameters such as Δ*G*0, Δ*H*0 and Δ*S*0 for the adsorption were evaluated. Effect of foreign ions on adsorption of molybdate has been examined. The results showed that ZnCl2 activated coir pith carbon was effective for the removal and recovery of molybdate from water.

Keywords: Adsorption, ZnCl2 Activated Coir Pith Carbon Molybdate Isotherms pH Effect Desorption, Temperature Effect

? Padoley, K.V., Rajvaidya, A.S., Subbarao, T.V. and Pandey, R.A. (2006), Biodegradation of pyridine in a completely mixed activated sludge process. *Bioresource Technology*, **97** (10), 1225-1236.

Full Text: [2006\Bio Tec97, 1225.pdf](2006/Bio%20Tec97,%201225.pdf)

Abstract: A potential bacterial culture (PI), isolated from garden soil and identified as Pseudomonas pseudoalcaligenes-KPN, was used as a starter seed to develop the biomass in a completely mixed activated sludge (CMAS) reactor and the system was evaluated for treatment of wastewater containing pyridine. The results of this study indicate that pyridine could be degraded efficiently at a loading of 0.251 kg pyridine kg MLSS-1 d-1 (0.156 kg TOC kg MLSS-1 d-1) and at an optimal hydraulic retention time (HRT) of 24 h. Pyridine was used as the sole source of carbon and nitrogen by the biomass. Ammonia-nitrogen (NH3-N) was formed due to the metabolism of the pyridine ring. In the present investigation, the performance of CMAS with reference to pyridine biodegradation and the bio-kinetic constants for the biodegradation of pyridine, in a continuous system, were computed. The results indicate that a CMAS system inoculated with P. pseudoalcaligenes-KPN, under optimum conditions of HRT and pyridine loading, gives a yield coefficient of (Y) 0.29, decay coefficient (K-d) 0.0011 d-1, maximum growth rate constant (mu(max)) 0.108 d-1 and saturation rate constant (K-s) 5.37 mg L-1 for pyridine. (c) 2005 Published by Elsevier Ltd.

Keywords: Activated Sludge, Activated Sludge Process, Ammonia-Nitrogen, Biodegradation, Biomass, Carbon, Continuous System, Culture, Decay, Growth, Growth Rate, Hydraulic Retention Time, Hydroxylation, Investigation, K-D, Kd, Loading, Metabolism, Microbial-Degradation, Microorganisms, Mixed Liquor Suspended Solids, Nicotinic Acid, Nitrogen, P, Performance, Polycyclic Aromatic-Hydrocarbons, Process, Pseudomonas, Pyridine Biodegradation, Quinoline, Rate Constant, Reactor, Retention, Retention Time, Saturation, Seed, Shale Retort Water, Sludge, Soil, Source, TOC, Tracer Technique, Treatment, Wastewater, Yield

? Sirianuntapiboon, S., Chairattanawan, K. and Jungphungsukpanich, S. (2006), Some properties of a sequencing batch reactor system for removal of vat dyes. *Bioresource Technology*, **97** (10), 1243-1252.

Full Text: [2006\Bio Tec97, 1243.pdf](2006/Bio%20Tec97,%201243.pdf)

Abstract: Bio-sludge from a wastewater treatment plant could be used as an adsorbent of vat dye from textile wastewater. Resting bio-sludge gave a higher adsorption capacity than dead bio-sludge. The resting bio-sludge from a textile wastewater treatment plant gave relatively high COD, BOD5 and dye adsorption capacity of 364.4±4.3, 178.0±9.0 and 50.5±1.3 mg/g of bio-sludge, respectively, in synthetic textile wastewater containing 40 mg/l Vat Yellow 1. Another advantage of the bio-sludge was that, after washing with 0.1 N NaOH solution, it was reusable without any activity loss. Through treatment with a sequencing batch reactor (SBR) system, both organic and dye in STIWW could be removed. The maximum dye (Vat Yellow 1), COD, BOD5 and TKN removal efficiencies of the SBR system under an MLSS of 2000 mg/l and an HRT of three days were 98.5±1.0%, 96.9±0.7%, 98.6±0.1% and 93.4±1.3%, respectively. Although, the dye and organic removal efficiencies of the SBR system with real textile wastewater were quite low, they could be increased by adding organic matters, especially glucose. The dye, COD, BOD5 and TKN removal efficiencies of the SBR system with glucose (0.89 g/l) supplemented textile industrial wastewater were 75.12±1.2%, 70.61±3.4%, 96.7±0.0%, and 63.2±1.1%, respectively.

Keywords: Sequencing Batch Reactor (SBR) System, Textile Industry, Vat Dye, Adsorption

? Pal, A., Ghosh, S. and Paul, A.K. (2006), Biosorption of cobalt by fungi from serpentine soil of Andaman. *Bioresource Technology*, **97** (10), 1253-1258.

Full Text: [2006\Bio Tec97, 1253.pdf](2006/Bio%20Tec97,%201253.pdf)

Abstract: Fungi belonging to *Aspergillus*, *Mortierella*, *Paecilomyces*, *Penicillium*, *Pythium*, *Rhizopus* and *Trichoderma*, isolated from serpentine soil of Andaman (India) were screened for cobalt-resistance. Eleven out of total 38 isolated fungi which tolerated >6.0 mM Co(II) were evaluated for cobalt biosorption using dried mycelial biomass. Maximum Co(II)-loading (1036.5 μM/g, 60 min) was achieved with *Mortierella* SPS 403 biomass, which removed almost 50% of 4.0 mM cobalt from the aqueous solution. Co(II)-sorption kinetics of *Mortierella* SPS 403 biomass was fast and appreciable quantities of metal [562.5 μM/g] was adsorbed during first 10 min of incubation. The metal biosorption capacity of the isolate was accelerated with increasing cobalt concentration, while it was reverse with increase of initial biomass. The optimum pH and temperature for Co(II) removal were 7.0 and 30 °C, respectively. However, Co(II)-uptake was inhibited in presence of other metals (Pb, Cd, Cu, Ni, Cr and Zn). Freundlich adsorption isotherm appropriately describes *Mortierella* SPS 403 biomass as an efficient Co(II)-biosorbent.

Keywords: Serpentine Soil, Fungi, Cobalt-Resistance, Cobalt Biosorption, *Mortierella*, Bioremediation

? Sanghi, R., Bhattacharya, B. and Singh, V. (2006), Use of *Cassia javahikai* seed gum and gum-g-polyacrylamide as coagulant aid for the decolorization of textile dye solutions. *Bioresource Technology*, **97** (10), 1259-1264.

Full Text: [2006\Bio Tec97, 1259.pdf](2006/Bio%20Tec97,%201259.pdf)

Abstract: Investigations were carried out for possible exploitation of Cassia javahikai seeds as potential source of commercial gum for the textile wastewater treatment. Graft copolymerization with acrylamide was done to modify the seed gum for the favorable properties. C. javahikai seed gum, and its copolymer grafted with acrylamide were synthesized in the presence of oxygen using potassium persulphate/ascorbic acid redox system. Both C. javahikai seed gum (CJ) and its grafted-polyacrylamide (CJG), were found to be good working substitutes as coagulant aids in conjunction with PAC, for the decolorization of all the dyes in varying ratios. CJ and CJG alone could effectively decolorize direct dyes (DBR and DO) and in conjunction with a very low dose of PAC could decolorize all the dyes (DBR, DO, ASR, and PBB) to more than 70%. Grafting also increased the decolorizing ability of CJ gum.

Keywords: Gum-g-polyacrylamide, Decolorization, *Cassia javahikai*, Copolymerization, Dye, PAC

? Santhy, K. and Selvapathy, P. (2006), Removal of reactive dyes from wastewater by adsorption on coir pith activated carbon. *Bioresource Technology*, **97** (11), 1329-1336.

Full Text: [2006\Bio Tec97, 1329.pdf](2006/Bio%20Tec97,%201329.pdf)

Abstract: The removal efficiency of activated carbon prepared from coir pith towards three highly used reactive dyes in textile industry was investigated. Batch experiments showed that the adsorption of dyes increased with an increase in contact time and carbon dose. Maximum decolourisation of all the dyes was observed at acidic pH. Adsorption of dyes was found to follow the Freundlich model. Kinetic studies indicated that the adsorption followed first order and the values of the Lagergren rate constants of the dyes were in the range of 1.77×10−2–2.69×10−2 min−1. The column experiments using granular form of the carbon (obtained by agglomeration with polyvinyl acetate) showed that adsorption efficiency increased with an increase in bed depth and decrease of flow rate. The bed depth service time (BDST) analysis carried out for the dyes indicated a linear relationship between bed depth and service time. The exhausted carbon could be completely regenerated and put to repeated use by elution with 1.0 M NaOH. The coir pith activated carbon was not only effective in removal of colour but also significantly reduced COD levels of the textile wastewater.

Keywords: Coir Pith Activated Carbon, Adsorption, Reactive Dyes, BDST, Textile Effluent

? Vijayaraghavan, K., Palanivelu, K. and Velan, M. (2006), Biosorption of copper(II) and cobalt(II) from aqueous solutions by crab shell particles. *Bioresource Technology*, **97** (12), 1411-1419.

Full Text: [2006\Bio Tec97, 1411.pdf](2006/Bio%20Tec97,%201411.pdf)

Abstract: Biosorption of each of the heavy metals, copper(II) and cobalt(II) by crab shell was investigated in this study. The biosorption capacities of crab shell for copper and cobalt were studied at different particle sizes (0.456-1.117 mm), biosorbent dosages (1-10 g/l), initial metal concentrations (500-2000 mg/l) and solution pH values (3.5-6) in batch mode. At optimum particle size (0.767 nun), biosorbent dosage (5 g/l) and initial solution pH (pH 6), crab shell recorded maximum copper and cobalt uptakes of 243.9 and 322.6 mg/g, respectively, according to Langmuir model. The kinetic data obtained at different initial metal concentrations indicated that biosorption rate was fast and most of the process was completed within 2 h, followed by slow attainment of equilibrium. Pseudo-second order model fitted the data well with very high correlation coefficients (> 0.998). The presence of light and heavy metal ions influenced the copper and cobalt uptake potential of crab shell. Among several eluting agents, EDTA (pH 3.5, in HCl) performed well and also caused low biosorbent damage. The biosorbent was successfully regenerated and reused for five cycles. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Wastewater Treatment, Elution, Regeneration, Crab Shell, Kinetics, Heavy-Metals, Cadmium Biosorption, Chitosan, Biosorbent, Biomass, Lead, Equilibrium, Adsorption, Effluents, Recovery

? Chang, W.C., Hsu, G.S., Chiang, S.M. and Su, M.C. (2006), Heavy metal removal from aqueous solution by wasted biomass from a combined AS-biofilm process. *Bioresource Technology*, **97** (12), 1503-1508.

Full Text: [2006\Bio Tec97, 1503.pdf](2006/Bio%20Tec97,%201503.pdf)

Abstract: This study evaluated the capability of metal biosorption by wasted biomass from a combined anaerobic–anoxic–oxic (A2O)-biofilm process with simultaneous nitrogen and phosphorus removal. Zinc, cadmium and nickel were rapidly adsorbed in 20 min by the harvested sludge from a continuous-flow pilot-plant. Biosorption equilibrium was then reached in 6 h. The biosorption isotherm showed that metal biosorption behavior had fitted well to the Freundlich isotherm, but not Langmuir isotherm. The capacity constants k of Freundlich model for nickel, zinc and cadmium were 0.471, 0.298 and 0.726, respectively, the affinity constants 1/n were 0.444, 0.722 and 0.718, respectively. The order of metal affinity for the wasted biomass was Zn > Cd > Ni, which was in conformity to the other biosorption results with different biological sludge.

Keywords: Wasted Sludge, Extracelluler Polymer, Metal Removal, Biosorption, Wasteweater Treatment

? Volke-Sepúlveda, T., Gutiérrez-Rojas, M. and Favela-Torres, E. (2006), Biodegradation of high concentrations of hexadecane by *Aspergillus niger* in a solid-state system: Kinetic analysis. *Bioresource Technology*, **97** (14), 1583-1591.

Full Text: [2006\Bio Tec97, 1583.pdf](2006/Bio%20Tec97,%201583.pdf)

Abstract: Solid-state microcosms were used to assess the influence of constant and variable C/N ratios on the biodegradation efficiency by *Aspergillus niger* at high hexadecane (HXD) concentrations (180-717 mg g-1). With a constant C/N ratio, 100% biodegradation (33-44% mineralization) was achieved after 15 days, at rates increasing as the HXD concentration increased. Biomass yields (Y-X/S) remained almost independent (similar to 0.77) of the carbon-source amount, while the specific growth rates (mu) decreased with increasing concentrations of HXD. With C/N ratios ranging from 29 to 115, complete degradation was only attained at 180 mg g-1, corresponding to 46% mineralization. Y-X/S diminished (similar to 0.50 units) as the C/N ratio increased. The highest values of mu (1.08 day-1) were obtained at low C/N values. Our results demonstrate that, under balanced nutritional conditions, high HXD concentrations can be completely degraded in solid-state microcosms, with a negligible (< 10%) formation of by-products. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Alkanes, Analysis, Aspergillus, *Aspergillus niger*, Biodegradation, By-Products, Byproducts, C, N, C, N Ratio, C, N Ratios, Carbon Source, Concentration, Concentrations, Degradation, Efficiency, Fermentation, Formation, Glucose, Growth, Growth Rates, Hexadecane, High Concentrations, Hydrocarbons, Kinetic Parameters, Liquid, Low, Microbial-Degradation, Microcosms, Mineralization, Nitrogen, Seawater, Solid-State Fermentation, Substrate

? Park, D., Yun, Y.S., Yim, K.H. and Park, J.M. (2006), Effect of Ni(II) on the reduction of Cr(VI) by Ecklonia biomass. *Bioresource Technology*, **97** (14), 1592-1598.

Full Text: [2006\Bio Tec97, 1592.pdf](2006/Bio%20Tec97,%201592.pdf)

Abstract: In this study, the removal of Cr(VI) was examined in a binary aqueous system containing Ni(II), and the competitive interaction between them was successfully modeled. The removal rate of Cr(VI) was unaffected by the presence of Ni(II). However, in an equilibrium state, the uptake of total Cr or Ni(II) was decreased in the presence of the other metal. The mono- and multi-component Langmuir adsorption models clearly represented the uptake behavior of these metals.

Keywords: Biosorption, Ecklonia, Reduction, Hexavalent Chromium, Nickel, Multi-Metal System

? Senthilkumaar, S., Kalaamani, P., Porkodi, K., Varadarajan, P.R. and Subburaam, C.V. (2006), Adsorption of dissolved Reactive red dye from aqueous phase onto activated carbon prepared from agricultural waste. *Bioresource Technology*, **97** (14), 1618-1625.

Full Text: [2006\Bio Tec97, 1618.pdf](2006/Bio%20Tec97,%201618.pdf)

Abstract: The adsorption of Reactive red dye (RR) onto Coconut tree flower carbon (CFC) and Jute fibre carbon (JFC) from aqueous solution was investigated. Adsorption studies were carried out at different initial dye concentrations, initial solution pH and adsorbent doses. The kinetic studies were also conducted, the adsorption of Reactive red onto CFC and JFC followed pseudo second-order rate equation. The effective diffusion coefficient was evaluated to establish the film diffusion mechanism. Quantitative removal of Reactive red dye was achieved at strongly acidic conditions for both the carbons studied. The adsorption isotherm data were fitted well to Langmuir isotherm and the adsorption capacity were found to be 181.9 and 200 mg/g for CFC and JFC, respectively. The overall rate of dye adsorption appeared to be controlled by chemisorption, in this case in accordance with poor desorption studies.

Keywords: Activated Carbons, Cellulosic Fibres, Reactive Red Dye, Adsorption Kinetics, Mechanism**,** Methylene-Blue, Removal, Sawdust, Equilibrium, Biosorbent, Effluents, Kinetics, Sorption, Water, Ions

? Solisio, C., Lodi, A., Torre, P., Converti, A. and Del Borghi, M. (2006), Copper removal by dry and re-hydrated biomass of Spirulina platensis. *Bioresource Technology*, **97** (14), 1756-1760.

Full Text: [2006\Bio Tec97, 1756.pdf](2006/Bio%20Tec97,%201756.pdf)

Abstract: Dried and re-hydrated biomass of Spirulina platensis was employed as a sorbent in tests of copper removal from water. Biomass re-hydrated for 24 h before use exhibited a shorter adsorption time as well as an increased percentage removal when compared with simply dried biomass. The combined effects of the concentrations of re-hydrated biomass (from 1.0 to 4.0 g l−1) and copper (from 0.1 to 0.4 g l−1) were then investigated. Copper was almost entirely removed (91% removal) at relatively high biomass levels (X0 ≥ 2.0 gDM l−1), while 1.0 gDM l−1 removed only 81% of copper present initially, suggesting a situation of excess metal with respect to the adsorption capacity of biomass. Additional tests performed with biomass re-hydrated for variable time demonstrated that no less than 48 h of this treatment are needed to ensure a satisfactory copper removal, while no significant improvement was detected using biomass re-hydrated for longer times.

Keywords: Copper, Removal, Biosorption, Spirulina Platensis, Dry Biomass, Biomass Hydration

? Can, M.Y., Kaya, Y. and Algur, O.F. (2006), Response surface optimization of the removal of nickel from aqueous solution by cone biomass of Pinus sylvestris. *Bioresource Technology*, **97** (14), 1761-1765.

Full Text: [2006\Bio Tec97, 1761.pdf](2006/Bio%20Tec97,%201761.pdf)

Abstract: Response surface methodology was applied to optimize the removal efficiency of Ni(II). Pinus sylvestris ovulate cones were used in this study. A 23 full-factorial central composite design was employed for experimental design and analysis of the results. The initial Ni(II) concentration (10–30 mg/l), pH (2.5–6.5) and biomass concentration (5–25 g/l) were the critical components of the removal optimized. The optimum pH, m (biomass concentration) and C0 (initial Ni(II) concentration) were found to be 6.17, 18.8 g/l and 11.175 mg/l, respectively. Under these conditions, removal efficiency of Ni(II) was 99.91%.

Keywords: Biosorption, Pinus Sylvestris, Response Surface Methodology, Nickel(II) Removal, Cone, Waste Water Treatment

? Akar, T. and Tunali, S. (2006), Biosorption characteristics of *Aspergillus flavus* biomass for removal of Pb(II) and Cu(II) ions from an aqueous solution. *Bioresource Technology*, **97** (15), 1780-1787.

Full Text: [2006\Bio Tec97, 1780.pdf](2006/Bio%20Tec97,%201780.pdf)

Abstract: The Pb(II) and Cu(II) biosorption characteristics of *Aspergillus flavus* fungal biomass were examined as a function of initial pH, contact time and initial metal ion concentration. Heat inactivated (killed) biomass was used in the determination of optimum conditions before investigating the performance of pretreated biosorbent. The maximum biosorption values were found to be 13.46 ± 0.99 mg/g for Pb(II) and 10.82 ± 1.46 mg/g for Cu(II) at pH 5.0 ± 0.1 with an equilibrium time of 2 h. Detergent, sodium hydroxide and dimethyl sulfoxide pretreatments enhanced the biosorption capacity of biomass in comparison with the heat inactivated biomass. The biosorption data obtained under the optimum conditions were well described by the Freundlich isotherm model. Competitive biosorption of Pb(II) and Cu(II) ions was also investigated to determine the selectivity of the biomass. The results indicated that *A. flavus* is a suitable biosorbent for the removal of Pb(II) and Cu(II) ions from aqueous solution.

Keywords: Biosorption, *Aspergillus flavus*, Cu(II), Pb(II), Pretreatment, Competitive Biosorption, Freundlich Isotherm

? Sarin, V., Singh, T.S. and Pant, K.K. (2006), Thermodynamic and breakthrough column studies for the selective sorption of chromium from industrial effluent on activated eucalyptus bark. *Bioresource Technology*, **97** (16), 1986-1993.

Full Text: [2006\Bio Tec97, 1986.pdf](2006/Bio%20Tec97,%201986.pdf)

Abstract: Studies were carried out on adsorption of Cr(VI) on an adsorbent made from eucalyptus bark. Results revealed that sorption of chromium on activated eucalyptus bark (AEB) was endothermic in nature. Thermodynamic parameters such as the entropy change, enthalpy change and Gibb’s free energy change were found out to be 100.97 J mol−1 K−1, 33 kJ mol−1 and −0.737 kJ mol−1, respectively. Industrial chrome effluent of different chromium concentration at different pH was used as feedstock for the fixed bed adsorption studies. When effluent was fed to the column at low pH of 2, the breakthrough volume increased significantly compared to effluent at higher pH of 4.85. The surface properties of sorbent were characterized by the Scanning electron microscopy, X-ray diffraction technique and Infrared techniques. It was concluded that AEB sorbent column could be used effectively for removal of chromium from industrial effluents by reducing the pH of chrome effluent to two and at optimal column conditions.

Keywords: Fixed Bed Column, Adsorption, Activated Eucalyptus Bark, Breakthrough

? Singh, K.K., Talat, M. and Hasan, S.H. (2006), Removal of lead from aqueous solutions by agricultural waste maize bran. *Bioresource Technology*, **97** (16), 2124-2130.

Full Text: [2006\Bio Tec97, 2124.pdf](2006/Bio%20Tec97,%202124.pdf)

Abstract: Maize bran is a low cost biosorbent that has been used for the removal of lead(II) from an aqueous solution. The effects of various parameters such as contact time, adsorbate concentration, pH of the medium and temperature were examined. Optimum removal at 20°C was found to be 98.4% at pH 6.5, with an initial Pb(II) concentration of 100 mg 1-1. Dynamics of the sorption process and mass transfer of Pb(II) to maize bran were investigated and the values of rate constant of adsorption, rate constant of intraparticle diffusion and the mass transfer coefficients were calculated. Different thermodynamic parameters viz., changes in standard free energy, enthalpy and entropy were evaluated and it was found that the reaction was spontaneous and exothermic in nature. The adsorption data fitted the Langmuir isotherm. A generalized empirical model was proposed for the kinetics at different initial concentrations. The data were subjected to multiple regression analysis and a model was developed to predict the removal of Pb(II) from an aqueous solution. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Monolayer, Lead(II), Maize Bran, Exothermic, Multiple Regressions, Isotherm, Heavy-Metals, Tree Fern, Adsorption, Ions, Wollastonite, Equilibrium, Biosorbents, Adsorbent, Sorbent, Cadmium

? Loperena, L., Saravia, V., Murro, D., Ferrari, M.D. and Lareo, C. (2006), Kinetic properties of a commercial and a native inoculum for aerobic milk fat degradation. *Bioresource Technology*, **97** (16), 2160-2165.

Full Text: [2006\Bio Tec97, 2160.pdf](2006/Bio%20Tec97,%202160.pdf)

Abstract: The aerobic fat biodegradation potential and growth characteristics of a commercial and a native inoculum (activated sludge from a dairy wastewater treatment pond), were evaluated. Batch tests were conducted with a medium based on butter oil, as the sole source of carbon, and mineral salts. Residual fat, biomass and CO2 production were measured. Overall fat removal values were above 78% for both inocula. The growth kinetics of the commercial and native inocula followed Haldane and Monod models respectively. Both inocula showed a similar behaviour when butter oil concentration was under 360 mg/l; at higher values, the difference between the growth rates increased as a consequence of the inhibition exhibited by the commercial inoculum. The selection of an inoculum for bioaugmentation of bioreactors in the wastewater treatment requires a comprehensive knowledge of their degradation ability and tolerance to fluctuating compounds and of the operational conditions that will be utilized. (c) 2005 Elsevier Ltd. All rights reserved.

Keywords: Activated Sludge, Aerobic, Bioaugmentation, Bioaugmentation, Biodegradation, Biological Treatment, Biomass, Bioreactors, Butter, Butter-Oil, Carbon, Characteristics, CO2, CO2 Production, Concentration, Degradation, Fat, Growth, Growth Rates, Inhibition, Kinetics, Knowledge, Milk, Milk Fat, Mineral, Models, Oil, Production, Properties, Removal, Respirometry, Selection, Sludge, Source, Tests, Tolerance, Treatment, Wastewater, Wastewater Treatment

? Delval, F., Crini, G. and Vebrel, J. (2006), Removal of organic pollutants from aqueous solutions by adsorbents prepared from an agroalimentary by-product. *Bioresource Technology*, **97** (16), 2173-2181.

Full Text: [2006\Bio Tec97, 2173.pdf](2006/Bio%20Tec97,%202173.pdf)

Abstract: Two series of crosslinked starch polymers were tested for their ability to adsorb organic pollutants in aqueous solutions. The polymers were prepared by a crosslinking reaction of starch-enriched flour using epichlorohydrin as the crosslinking agent, without and in the presence of NH4OH. These polymers were used as sorbent materials for the removal of phenolic derivatives from wastewater. The influence of several parameters (kinetics, pH and polymer structure) on the sorption capacity was evaluated using the batch and the open column methods. Results of adsorption experiments showed that the starch-based materials exhibited high sorption capacities toward phenolic derivatives. The study of the kinetics of pollutant uptake revealed that the adsorbents presented a relatively fast rate of adsorption. The experimental data were examined using the Langmuir and Freundlich models and it was found that the Freundlich model appeared to fit the isotherm data better than the Langmuir model.

Keywords: Starch Derivatives, Sorbents, Adsorption, Organic Pollutants, Isotherms

? Renganathan, S., Thilagaraj, W.R., Miranda, L.R., Gautam, P. and Velan, M. (2006), Accumulation of Acid Orange 7, Acid Red 18 and Reactive Black 5 by growing Schizophyllum commune. *Bioresource Technology*, **97** (16), 2189-2193.

Full Text: [2006\Bio Tec97, 2189.pdf](2006/Bio%20Tec97,%202189.pdf)

Abstract: The effect of Acid Orange 7, Acid Red 18 and Reactive Black 5 on the growth and decolorization properties of *Schizophyllum commune* was studied with respect to the initial pH varying from 1 to 6 and initial dye concentration (10–100 mg/L). The optimum pH value was found to be 2 for both growth and color removal of these azo dyes. Increasing the concentration of azo dyes inhibited the growth of *S. commune*. It was observed that *S. commune* was capable of removing Acid Orange 7, Acid Red 18 and Reactive Black 5 with a maximum specific uptake capacity of 44.23, 127.53 and 180.17 (mg/g) respectively for an initial concentration of 100 mg/L of the dye. Higher decolorization was observed at lower concentrations for all the dyes. Finally it was found that the percentage decolorization was more in the case of Reactive Black 5 dye compared to the other two dyes used in the present investigation.

Keywords: *Schizophyllum Commune*, Decolorization, Reactive Black 5, Acid Red 18, Acid Orange 7

? Wilson, K., Yang, H., Seo, C.W. and Marshall, W.E. (2006), Select metal adsorption by activated carbon made from peanut shells. *Bioresource Technology*, **97** (18), 2266-2270.

Full Text: [2006\Bio Tec97, 2266.pdf](2006/Bio%20Tec97,%202266.pdf)

Abstract: Agricultural by-products, such as peanut shells, contribute large quantities of lignocellulosic waste to the environment each growing season; but few, if any, value-added uses exist for their disposal. The objective of this study was to convert peanut shells to activated carbons for use in adsorption of select metal ions, namely, cadmium (Cd2+), copper (Cu2+), lead (Pb2+), nickel (Ni2+) and zinc (Zn2+). Milled peanut shells were pyrolyzed in an inert atmosphere of nitrogen gas, and then activated with steam at different activation times. Following pyrolysis and activation, the carbons underwent air oxidation. The prepared carbons were evaluated either for adsorption efficiency or adsorption capacity; and these parameters were compared to the same parameters obtained from three commercial carbons, namely, DARCO 12×20, NORIT C GRAN and MINOTAUR. One of the peanut shell-based carbons had metal ion adsorption efficiencies greater than two of the three commercial carbons but somewhat less than but close to Minotaur. This study demonstrates that peanut shells can serve as a source for activated carbons with metal ion-removing potential and may serve as a replacement for coal-based commercial carbons in applications that warrant their use.

Keywords: Carbon, Peanut Shells, Metals, Adsorption, Pyrolysis

? Singh, R.S., Agnihotri, S.S. and Upadhyay, S.N. (2006), Removal of toluene vapour using agro-waste as biofilter media. *Bioresource Technology*, **97** (18), 2296-2301.

Full Text: [2006\Bio Tec97, 2296.pdf](2006/Bio%20Tec97,%202296.pdf)

Abstract: Biodegradation of toluene vapour was investigated in a laboratory scale biofilter packed with cylindrical pieces of yellow-gram (*Cajanus cajan*) stalk. Inlet concentrations and volumetric flow rates of toluene were varied from 2.56 to 34.73 g/m3 and 0.18 to 0.24 m3/h, respectively. The steady state was achieved within seven days and the degradation of toluene followed an exponential behaviour with time. Elimination capacity increased and tended towards a constant value but removal efficiency decreased with increase in inlet toluene loading. Depending upon loading rate, the process was either mass transfer or reaction-controlled.

Keywords: Biofiltration, Biofilter Media, Elimination Capacity, Removal Efficiency, Toluene Vapour

? Pavasant, P., Apiratikul, R., Sungkhum, V., Suthiparinyanont, P., Wattanachira, S.and Marhaba, T.F. (2006), Biosorption of Cu2+, Cd2+, Pb2+, and Zn2+ using dried marine green macroalga *Caulerpa lentillifera*. *Bioresource Technology*, **97** (18), 2321-2329.

Full Text: [2006\Bio Tec97, 2321.pdf](2006/Bio%20Tec97,%202321.pdf)

Abstract: The sorption of Cu2+, Cd2+, Pb2+, and Zn2+ by a dried green macroalga *Caulerpa lentillifera* was investigated. The removal efficiency increased with pH. The analysis with FT-IR indicated that possible functional groups involved in metal sorption by this alga were O–H bending, N–H bending, N–H stretching, C–N stretching, C–O, S=O stretching, and S–O stretching. The sorption of all metal ions rapidly reached equilibrium within 20 min. The sorption kinetics of these metals were governed by external mass transfer and intraparticle diffusion processes. The sorption isotherm followed the Langmuir isotherm where the maximum sorption capacities was Pb2+ > Cu2+ > Cd2+ > Zn2+.

Keywords: Sorption, Biosorbent, Heavy Metals, Wastewater Treatment

? Issabayeva, G., Aroua, M.K. and Sulaiman, N.M.N. (2006), Removal of lead from aqueous solutions on palm shell activated carbon. *Bioresource Technology*, **97** (18), 2350-2355.

Full Text: [2006\Bio Tec97, 2350.pdf](2006/Bio%20Tec97,%202350.pdf)

Abstract: The performance of a commercially available palm shell based activated carbon to remove lead ions from aqueous solutions by adsorption was evaluated. The adsorption experiments were carried out at pH 3.0 and 5.0. The effect of malonic and boric acid presence on the adsorption of lead ions was also studied. Palm shell activated carbon showed high adsorption capacity for lead ions, especially at pH 5 with an ultimate uptake of 95.2 mg/g. This high uptake showed palm shell activated carbon as amongst the best adsorbents for lead ions. Boric acid presence did not affect significantly lead uptake, whereas malonic acid decreased it. The diffuse layer surface complexation model was applied to predict the extent of adsorption. The model prediction was found to be in concordance with the experimental values.

Keywords: Adsorption, Lead, Malonic Acid, Boric Acid, Modeling, Palm Shell Carbon

? Eberhardt, T.L., Min, S.H. and Han, J.S. (2006), Phosphate removal by refined aspen wood fiber treated with carboxymethyl cellulose and ferrous chloride. *Bioresource Technology*, **97** (18), 2371-2376.

Full Text: [2006\Bio Tec97, 2371.pdf](2006/Bio%20Tec97,%202371.pdf)

Abstract: Biomass-based filtration media are of interest as an economical means to remove pollutants and nutrients found in stormwater runoff. Refined aspen wood fiber samples treated with iron salt solutions demonstrated limited capacities to remove (ortho)phosphate from test solutions. To provide additional sites for iron complex formation, and thereby impart a greater capacity for phosphate removal, a fiber pretreatment with an aqueous solution of a non-toxic anionic polymer, carboxymethyl cellulose (CMC), was evaluated. Problems with excessive viscosities during the screening of commercially available CMC products led to the selection of an ultra low viscosity CMC product that was still usable at a 4% concentration in water. Soxhlet extractions of chipped aspen wood and refined aspen wood fiber samples showed a higher extractives content for the refined material. Analysis of these extracts by FTIR spectroscopy suggested that the higher extractives content for the refined material resulted from the fragmentation of cell wall polymers (e.g., lignin, hemicelluloses) normally insoluble in their native states. Spectroscopic analysis of CMC and ferrous chloride treated fibers showed that the complex formed was sufficiently stable to resist removal during subsequent water washes. Equilibrium sorption data, which fit better with a Freundlich isotherm model than a Langmuir isotherm model, showed that phosphate removal could be enhanced by the CMC pretreatment. Results suggest that the process outlined may provide a facile means to improve the phosphate removal capacity of biomass-based stormwater filtration media.

Keywords: Aspen Wood, Carboxymethyl Cellulose, Filtration, Iron, Phosphate, Stormwater

? Sankararamakrishnan, N., Dixit, A., Iyengar, L. and Sanghi, R. (2006), Removal of hexavalent chromium using a novel cross linked xanthated chitosan. *Bioresource Technology*, **97** (18), 2377-2382.

Full Text: [2006\Bio Tec97, 2377.pdf](2006/Bio%20Tec97,%202377.pdf)

Abstract: Suitability of a novel cross linked, chemically modified chitosan as highly efficient adsorbent for the recovery of toxic chromium(VI) was studied. After cross linking with glutaraldehyde, xanthate group was grafted onto the back bone of chitosan. Sorption was found to be both pH and concentration dependent, with pH 3 being the optimum value. Both, chemically modified beads (CMCB) and flakes (CMCF) followed a pseudo-second-order kinetics with a rate constant of 2.037 and 4.639 g/mg/min, respectively. The equilibrium data followed the Langmuir isotherm model with maximum capacities of 625 mg/g and 256.4 mg/g and for CMCF and CMCB respectively. Desorption studies revealed the reusability of the sorbent for at least 10 cycles without any significant change in adsorption capacities.

Keywords: Chitosan, Chromium, Adsorption, Xanthation, Biosorbent

? Kavitha, D. and Namasivayam, C. (2007), Experimental and kinetic studies on methylene blue adsorption by coir pith carbon. *Bioresource Technology*, **98** (1), 14-21.

Full Text: [2007\Bio Tec98, 14.pdf](2007/Bio%20Tec98,%2014.pdf)

Abstract: Varying the parameters such as agitation time, dye concentration, adsorbent dose, pH and temperature carried out the potential feasibility of thermally activated coir pith carbon prepared from coconut husk for removal of methylene blue. Greater percentage of dye was removed with decrease in the initial concentration of dye and increase in amount of adsorbent used. Kinetic study showed that the adsorption of dye on coir pith carbon was a gradual process. Lagergren first-order, second-order, intra particle diffusion model and Bangham were used to fit the experimental data. Equilibrium isotherms were analysed by Langmuir, Freundlich, Dubnin–Radushkevich, and Tempkin isotherm. The adsorption capacity was found to be 5.87 mg/g by Langmuir isotherm for the particle size 250–500 m. The equilibrium time was found to be 30 and 60 min for 10 and 20 mg/L and 100 min for 30, 40 mg/L dye concentrations, respectively. A maximum removal of 97% was obtained at natural pH 6.9 for an adsorbent dose of 100 mg/50 mL and 100% removal was obtained for an adsorbent dose of 600 mg/50 mL of 10 mg/L dye concentration. The pH effect and desorption studies suggest that chemisorption might be the major mode of the adsorption process. The change in entropy (ΔS0) and heat of adsorption (ΔH0) of coir pith carbon was estimated as 117.20 J/mol/K and 30.88 kJ/mol, respectively. The high negative value of change in Gibbs free energy indicates the feasible and spontaneous adsorption of methylene blue on coir pith carbon.

Keywords: Adsorption, Coir Pith Carbon, Methylene Blue, Kinetic Study

? Conrad, K. and Hansen, H.C.B. (2007), Sorption of zinc and lead on coir. *Bioresource Technology*, **98** (1), 89-97.

Full Text: [2007\Bio Tec98, 89.pdf](2007/Bio%20Tec98,%2089.pdf)

Abstract: Pilot tests have shown that coir (fibres from Coco nucifera) is suitable as a metal ion sorbent. Batch sorption experiments were carried out with Zn and Pb to quantify the sorption kinetics, the pH dependence of the sorption, sorption isotherms at pH 3.0 and pH 5.6, and desorption. Unground and unmodified coir was used and the metal concentrations ranged between 0 and 0.015 mM (1000 μg/l) for Zn and 0 and 9.7×10−4 mM (200 μg/l) for Pb. The pH maximum was 4.5 (91%) for Zn and 2.5 (97%) for Pb. Pb had a higher sorption affinity than Zn, and the affinity was higher at pH 5.6 than at pH 3.0. The isotherms could be represented by the Freundlich, but not by the Langmuir models in the concentration range tested. Desorption experiments demonstrated that less than 1% and 13% of the sorbed Pb and Zn, respectively, could be desorbed at pH 5.6 during 2 h.

Keywords: Fibre, Biosorption, Lead, Zinc, pH Dependence, Isotherms, Desorption

? Thawornchaisit, U. and Pakulanon, K. (2007), Application of dried sewage sludge as phenol biosorbent. *Bioresource Technology*, **98** (1), 140-144.

Full Text: [2007\Bio Tec98, 140.pdf](2007/Bio%20Tec98,%20140.pdf)

Abstract: The aim of this work was to determine the potential application of dried sewage sludge as a biosorbent for removing phenol from aqueous solution. Results showed that biosorption capacity was strongly influenced by the pH of the aqueous solution with an observed maximum phenol removal at pH around 6–8. Biosorption capacity increased when initial phenol concentration was increased to 110 mg/L but beyond this concentration, biosorption capacity decreased suggesting an inhibitory effect of phenol on biomass activity. Biosorption capacity decreased from 94 to 5 mg/g when biosorbent concentration was increased from 0.5 to 10 g/L suggesting a possible competitive effect of leachable heavy metals from the sludge. The effect of Cu2+ on biosorption capacity was also observed and the results confirmed that the phenol biosorption capacity decreased when concentration of Cu2+ in the sorption medium was increased up to 15 mg/L. Desorption of phenol using distilled deionized water was less than 2% suggesting a strong biosorption by the biomass.

Keywords: Biosolids, Metals, Sorption, Dried Sewage Sludge

? Wu, J. and Yu, H.Q. (2007), Biosorption of 2,4-dichlorophenol by immobilized white-rot fungus *Phanerochaete chrysosporium* from aqueous solutions. *Bioresource Technology*, **98** (2), 253-259.

Full Text: [2007\Bio Tec98, 253.pdf](2007/Bio%20Tec98,%20253.pdf)

Abstract: The fungus *Phanerochaete chrysosporium* was immobilized in several polymer matrices: Ca-alginate, Ca-alginate-polyvinyl alcohol (PVA) and pectin, and was then used as a biosorbent for removing 2,4-dichlorophenol (2,4-DCP) in wastewater. Immobilization of *P. chrysosporium* onto pectin was less efficient than that onto other matrices because of its poor mechanical strength and low adsorption efficiency. Ca-alginate immobilized fungal beads with biocompatibility exhibited good mechanical strength and adsorption efficiency over 60%. Among the different biomass dosages in Ca-alginate immobilized fungal beads, 1.25% (w/v) was the optimum. The adsorption data of 2,4-DCP on the blank Ca-alginate beads, free, and immobilized fungal biomass could be described by the Langmuir and Freundlich isotherms very well. Desorption operation was efficiently completed by using distilled water as eluant, and the desorption efficiency reached 82.16% at an optimum solid/liquid ratio of 14.3. The consecutive adsorption/desorption cycles studies employing the Ca-alginate immobilized fungal beads demonstrated that the immobilized fungal biomass could be reused in five cycles without significant loss of adsorption efficiency and adsorbent weight.

Keywords: Biosorption, Desorption, Fungal Biomass, Immobilization, Isotherms

? Lei, A.P., Hu, Z.L., Wong, Y.S. and Tam, N.F.Y. (2007), Removal of fluoranthene and pyrene by different microalgal species. *Bioresource Technology*, **98** (2), 273-280.

Full Text: [2007\Bio Tec98, 273.pdf](2007/Bio%20Tec98,%20273.pdf)

Abstract: In this work, the efficiency of four microalgal species, namely, Chlorella vulgaris, Scenedesmus platydiscus, Scenedesmus quadricauda, and Selenastrum capricornutum to remove fluoranthene (1.0 mg l−1), pyrene (1.0 mg l−1), and a mixture of fluoranthene and pyrene (each at a concentration of 0.5 mg l−1) was evaluated. Results showed that removal was algal species specific and was also toxicant-dependent. Se. capricornutum was the most effective species while C. vulgaris was the least efficient species in removing and transforming polycyclic aromatic hydrocarbons (PAHs). PAHs removal in 7-days of treatment was 78% and 48%, respectively by these two. All species, except S. platydiscus exhibited higher fluoranthene removal efficiency than pyrene, indicating the latter PAH was generally more stable and recalcitrant. The removal efficiency of fluoranthene and pyrene in a mixture was comparable, or higher than the respective single compound, suggesting that the presence of one PAH stimulated the removal of the other PAH.

Keywords: Bioaccumulation, Biotransformation, Fluoranthene, Pyrene, Microalgae

? Qian, Q.R., Machida, M. and Tatsumoto, H. (2007), Preparation of activated carbons from cattle-manure compost by zinc chloride activation. *Bioresource Technology*, **98** (2), 353-360.

Full Text: [2007\Bio Tec98, 353.pdf](2007/Bio%20Tec98,%20353.pdf)

Abstract: Dried cattle-manure compost was pyrolyzed by a one-step process to obtain activated carbon using chemical activation by zinc chloride. The influence of activation parameters such as ZnCl2 to cattle-manure compost (ZnCl2/CMC) ratio, activation temperature and retention time on the final products was investigated. The resultant activated carbons were characterized by nitrogen adsorption–desorption isotherms at 77 K. The results showed that the surface area and pore volume of activated carbons, which were estimated by BET and t-plot methods, were achieved as high as 2170 m2/g and 1.70 cm3/g in their highest value, respectively. Thermogravimetric analysis (TGA) was carried out to monitor the pyrolysis process of cattle-manure compost (CMC) and ZnCl2 impregnated one (ZnCl2/CMC). The capabilities of phenol adsorption were also examined for the CMC carbons prepared with various treatments.

Keywords: Activated Carbon, Cattle-Manure Compost, Zinc Chloride, Activation

? Šćiban, M., Radetić, B., Kevrešan, Ž. and Klašnja, M. (2007), Adsorption of heavy metals from electroplating wastewater by wood sawdust. *Bioresource Technology*, **98** (2), 402-409.

Full Text: [2007\Bio Tec98, 402.pdf](2007/Bio%20Tec98,%20402.pdf)

Abstract: Poplar wood sawdust was examined for adsorption as a replacement for current, more expensive methods of removing copper, zinc and cadmium from electroplating wastewater. Langmuir, Freundlich, BET and competitive Langmuir (two competing ions) isotherms were fitted to experimental data and the goodness of their fit for adsorption was compared. The shapes of isotherms obtained fitted well with multilayer adsorption. This was established and confirmed through solid correspondence between the BET equation and experimental data, in contrast to an observed monolayer adsorption of metal ions on poplar sawdust in single metal–water solutions. The adsorption of copper ions from a mixture (in wastewater) was better than that from a single metal solution. The adsorptions of zinc ions from wastewater and from model water were approximately equal, while that of cadmium ions was significantly lower from the wastewater than from model water. The aforementioned suggests that the presence of other ions in wastewater hindered adsorption of cadmium ions.

Keywords: Wastewater, Heavy Metals, Adsorption, Poplar Sawdust

? Karthikeyan, S., Balasubramanian, R. and Iyer, C.S.P. (2007), Evaluation of the marine algae *Ulva fasciata* and *Sargassum* sp. for the biosorption of Cu(II) from aqueous solutions. *Bioresource Technology*, **98** (2), 452-455.

Full Text: [2007\Bio Tec98, 452.pdf](2007/Bio%20Tec98,%20452.pdf)

Abstract: In this study, the adsorption properties of two different marine algae (*Ulva fasciata* (green algae) and *Sargassum* sp. (brown algae)) were investigated. Equilibrium isotherms and kinetics were studied to evaluate the relative ability of the two algae to sequester Cu(II) from aqueous solutions. The maximum biosorption capacity obtained was 73.5 mg g−1 for *U. fasciata* and 72.5 mg g−1 for *Sargassum* sp. at a solution pH of 5.5 ± 0.5. A significant fraction of the total copper(II) uptake was achieved within 30 min. The copper(II) uptake by the biosorbents was best described by pseudo-second-order rate model.

Keywords: Biosorption, Copper(II), *Sargassum* sp., *Ulva fasciata*, Water Treatment

? Jahan, M.S., Chowdhury, D.A.N., Islam, M.K. and Moeiz, S.M.I. (2007), Characterization of lignin isolated from some nonwood available in Bangladesh. *Bioresource Technology*, **98** (2), 465-469.

Full Text: [2007\Bio Tec98, 465.pdf](2007/Bio%20Tec98,%20465.pdf)

Abstract: Lignins isolated from cotton stalks, jute stick and dhaincha by acidolytic dioxane were characterized using alkaline nitrobenzene oxidation, elemental analysis, methoxyl analysis and molecular weight analysis and UV, IR 1H NMR spectroscopy. The C9 formulas for cotton stalks, jute stick and dhaincha (Sesbania aculeata) lignin were C9H9.36O4.50(OCH3)1.23, C9H9.02O4.57(OCH3)1.35 and C9H8.88O4.65(OCH3)1.50, respectively. All three lignins were of the guaiacyl–syringyl type. Cotton stalks lignin contained more p-hydroxy phenyl unit than dhaincha and jute stick lignins as observed by alkaline nitrobenzene oxidation products. The β-O-4 units in these nonwood lignins had predominately erythro stereochemistry type.

Keywords: Nonwood, Syringyl Unit, Guaiacyl Unit, Β-O-4 Structure, Erythro, Cotton Stalks, Jute Stick, Dhaincha

? Sharma, P., Kumari, P., Srivastava, M.M. and Srivastava, S. (2007), Ternary biosorption studies of Cd(II), Cr(III) and Ni(II) on shelled *Moringa oleifera* seeds. *Bioresource Technology*, **98** (2), 474-477.

Full Text: [2007\Bio Tec98, 474.pdf](2007/Bio%20Tec98,%20474.pdf)

Abstract: Competitive biosorption of Cd(II), Cr(III) and Ni(II) on unmodified shelled Moringa oleifera seeds (SMOS) present in ternary mixture were compared with the single metal solution. The extent of adsorption capacity of the ternary metal ions tested on unmodified SMOS was low (10–20%) as compared to single metal ions. SMOS removed the target metal ions in the selectivity order of Cd(II) > Cr(III) > Ni(II). Sorption equilibria, calculated from adsorption data, explained favorable performance of biosorption system. Regeneration of exhausted biomass was also attempted for several cycles with a view to restore the sorbent to its original state.

Keywords: Competitive Sorption, Metal Removal, Moringa Oleifera, Regeneration

? Shin, E.W., Karthikeyan, K.G. and Tshabalala, M.A. (2007), Adsorption mechanism of cadmium on juniper bark and wood. *Bioresource Technology*, **98** (3), 588-594.

Full Text: [2007\Bio Tec98, 588.pdf](2007/Bio%20Tec98,%20588.pdf)

Abstract: In this study the capacity of sorbents prepared from juniper wood (JW) and bark (JB) to adsorb cadmium (Cd) from aqueous solutions at different pH values was compared. Adsorption behavior was characterized through adsorption kinetics, adsorption isotherms, and adsorption edge experiments. Results from kinetics and isotherm experiments showed that JB (76.3–91.6 μmol Cd g−1 substrate) had 3–4 times higher adsorption capacity for Cd than JW (24.8–28.3 μmol Cd g−1). In addition to higher capacity, JB exhibited a higher strength of adsorption (45.3 versus 9.1 L mmol−1) and faster uptake kinetics (0.0119 versus 0.0083 g μmol−1 min−1) compared to JW. For both these adsorbents, increasing Cd adsorption with increasing solution pH in the range of 2–6 suggests that surface carboxyl groups (RCOOH) might be involved in interaction with Cd. Diffuse reflectance infrared Fourier transform (DRIFT) spectra showed that the surface concentration of carboxyl groups was higher on JB compared to JW. The ratio of Ca released to Cd adsorbed was 1.04 and 0.78 for JB and JW, respectively, indicating that Ca–Cd ion-exchange was the primary mechanism involved. The higher Ca content in JB (15 times more) and the surface RCOOH concentration (2.5 times more) can be attributed to the observed differences in Cd adsorption behavior between the two lignocellulosic adsorbents.

Keywords: Bark, Wood, Lignocellulosic Sorbents, Cadmium, Calcium, Adsorption, Ion-Exchange

? Pradhan, S., Singh, S. and Rai, L.C. (2007), Characterization of various functional groups present in the capsule of Microcystis and study of their role in biosorption of Fe, Ni and Cr. *Bioresource Technology*, **98** (3), 595-601.

Full Text: [2007\Bio Tec98, 595.pdf](2007/Bio%20Tec98,%20595.pdf)

Abstract: This study demonstrates highest biosorption of Fe followed by Ni and Cr by Mierocystis in single, bi and trimetallic combination. Fe was not only preferentially adsorbed from the metal mixtures but Ni and Cr failed to decrease its biosorption. The agreement of the data of Fe biosorption with the Langmuir model suggested monolayer sorption and existence of constant sorption energy during the experimental conditions. In contrast to Fe biosorption, Ni and Cr sorption followed the Freundlich isotherm; this demonstrates a multilayer biosorption of the two metals. IR analysis of Microcystis cells confirmed the presence of a large number of -COO- and some amino groups in the Microcystis cell wall. The oxygen and nitrogen donor atoms from carboxyl and amino groups were found to play a vital role in metal biosorption by Microcystis cell walls, and ion exchange mechanisms were involved in the biosorption of test metals. Extra peaks present in Ni and Cr treated cells implied that amino groups are more responsible for Ni and Cr biosorption. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Microcystis, Fe, Ni And Cr, Biosorption, Ir Spectra, Multimetallic Systems, Metal-Ions, Removal, Cyanobacterium, Biomass, Polysaccharide, Accumulation, Adsorption, Mechanism, Single

? Baran, A., Bıçak, E., Baysal, Ş.H. and Önal, S. (2007), Comparative studies on the adsorption of Cr(VI) ions on to various sorbents. *Bioresource Technology*, **98** (3), 661-665.

Full Text: [2007\Bio Tec98, 661.pdf](2007/Bio%20Tec98,%20661.pdf)

Abstract: The adsorption of Cr(VI) ions onto various sorbents (chitin, chitosan, ion exchangers, Purolite CT-275 (Purolite I), Purolite MN-500 (Purolite II) and Amberlite XAD-7) was investigated. Batch adsorption experiments were carried out as a function of pH, agitation period and concentration of Cr(VI) ions. The optimum pH for Cr(VI) adsorption was found as 3.0 for chitin and chitosan. The Cr(VI) uptake by ion exchangers was not very sensitive to changes in the pH of the adsorption medium. The maximum chromium sorption occurred at approximately 50 min for chitin, 40 min for Purolite II and 30 min for chitosan, Purolite I and Amberlite XAD-7. The suitability of the Freundlich and Langmuir adsorption models were also investigated for each chromium-sorbent system. Adsorption isothermal data could be accurately interpreted by the Langmuir equation for chitosan, chitin, Purolite I and Purolite II and by the Freundlich equation for chitosan, chitin and Amberlite XAD-7. The chromium(VI) ions could be removed from the sorbents rapidly by treatment with an aqueous EDTA solution and at the same time the sorbent regenerated and also could be used again to adsorb by heavy metal ions. The results showed that, chitosan, which is a readily available, economic sorbent, was found suitable for removing chromium from aqueous solution.

Keywords: Adsorption, Chitin, Chitosan, Heavy Metals, Metal Removal

? Chen, G.W., Yu, H.Q. and Xi, P.G. (2007), Influence of 2,4-dinitrophenol on the characteristics of activated sludge in batch reactors. *Bioresource Technology*, **98** (4), 729-733.

Full Text: [2006\Bio Tec98, 729.pdf](2006/Bio%20Tec98,%20729.pdf)

Abstract: The response of activated sludge characteristics to the presence of 2,4-dinitrophenol (dNP) in batch cultures was investigated in this study. The sludge yield slightly decreased with an increase in dNP concentration. At 10 mg l-1, or lower, dNP significantly reduced sludge yield and relative specific growth rates (mu/mu(o)), but didn’t substantially affect its relative specific chemical oxygen demand removal rate (q/q(o)). Presence of dNP at 1-20 mg l-1 increased the specific oxygen uptake rate of activated sludge, and slightly changed its hydrophobicity. An analysis on inhibition indicated that the reduction in sludge yield in the presence of dNP was mainly attributed to the significant decreased sludge growth, rather than the reduced substrate degradation. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: 2,4-Dinitrophenol (DNP), Activated Sludge, Affect, Analysis, Batch, Biodegradation, Biomass, Characteristics, Chemical, Chemical Oxygen Demand, Chemical Uncouplers, Concentration, Culture, Degradation, Growth, Growth Rates, Hydrophobicity, Inhibition, Kinetics, Metals, Oxygen, Oxygen Demand, Oxygen Uptake, Oxygen Uptake Rate, Reduction, Removal, Sludge, Substrate, Toxicity Assessment, Uptake, Yield

? Yue, Z.B., Yu, H.Q. and Wang, Z.L. (2007), Anaerobic digestion of cattail with rumen culture in the presence of heavy metals. *Bioresource Technology*, **98** (4), 781-786.

Full Text: [2007\Bio Tec98, 781.pdf](2007/Bio%20Tec98,%20781.pdf)

Abstract: The anaerobic digestion of cattail by rumen cultures in the presence of Cu(II), Cd(II) or Cr(VI) was investigated in this study. Three cases were respectively observed for the different metal dosages: promoted cattail degradation and methane production at a low heavy metal concentration, e.g., Cu(II) 2.4 mg/l, Cd(II) 1.6 mg/l, Cr(VI) 4.0 mg/l; reduced cattail degradation efficiency and methane production at a middle metal level; a severe inhibition to the cattail degradation at a high heavy metal dosage. The inhibition kinetics of Cu(II) on the digestion of cattail by rumen cultures was also analyzed and a simplified Andrews equation was used to describe such an inhibition. The inhibition constants for Cu(II) on the degradation of cattail, production of volatile fatty acids and formation of methane were estimated as 7.4, 9.5 and 6.4 mg/l, respectively. Comparative experimental results suggest that the order of toxicity degree of the tested metals on the rumen cultures was: Cd(II) > Cu(II) > Cr(VI). (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Acids, Anaerobic, Anaerobic Digestion, Biodegradation, Cattail, Cd(II), Concentration, Copper, Cr(VI), Cu(II), Culture, Degradation, Digestion, Dosage, Efficiency, Fatty Acids, Formation, Gas-Production, Heavy Metal, Heavy Metals, Inhibition, Kinetics, Low, Metal, Metals, Methane, Methane Production, Order, pH, Production, Rumen Cultures, Stress, Toxicity, Volatile, Volatile Fatty Acids, Water

? Sathishkumar, M., Binupriya, A.R., Kavitha, D. and Yun, S.E. (2007), Kinetic and isothermal studies on liquid-phase adsorption of 2,4-dichlorophenol by palm pith carbon. *Bioresource Technology*, **98** (4), 866-873.

Full Text: [2007\Bio Tec98, 866.pdf](2007/Bio%20Tec98,%20866.pdf)

Abstract: Adsorption studies were conducted to study the removal of 2,4-dichlorophenol (2,4-DCP) from aqueous solution on palm pith carbon under varying experimental conditions such as agitation time, adsorbent dose, pH and temperature. Higher 2,4-DCP was removed with decrease in the initial concentration of 2,4-DCP and increase in amount of adsorbent used. Kinetic study showed that the adsorption of 2,4-DCP on palm pith carbon was a gradual process. Adsorption capacities were 19.16 mg/g for the particle size of 250–500 μm. The equilibrium time was 60 and 80 min for 10 and 20 mg/L and 100 min for both 30 and 40 mg/L phenol concentrations, respectively. Acidic pH was favourable for the adsorption of 2,4-DCP. Studies on pH effect and desorption showed that chemisorption seemed to play a major role in the adsorption process. Thermodynamic study showed that adsorption of 2,4-DCP on palm pith carbon was more favoured. The change in entropy (Δ*S*0) and heat of adsorption (Δ*H*0) of palm pith carbon was estimated as 30.72 J/mol/k and 7.16 kJ/mol, respectively. The high positive value of change in Gibbs free energy indicated the feasible and spontaneous adsorption of 2,4-DCP on palm pith carbon. The results indicated that palm pith carbon was an attractive candidate for removing phenols from wastewater.

Keywords: Palm Pith Carbon, Adsorption, 2,4-DCP, Equilibrium Isotherms, Kinetic Study

? Hussain, S., Aziz, H.A., Isa, M.H., Adlan, M.N. and Asaari, F.A.H. (2007), Physico-chemical method for ammonia removal from synthetic wastewater using limestone and GAC in batch and column studies. *Bioresource Technology*, **98** (4), 874-880.

Full Text: [2007\Bio Tec98, 874.pdf](2007/Bio%20Tec98,%20874.pdf)

Abstract: The purpose of the present study was to examine the removal of ammoniacal nitrogen (NH4-N) from synthetic wastewater using limestone (LS) and granular activated carbon (GAC) mixture as low cost adsorbent. In batch study, optimum shaking and settling times were 150 and 120 min, respectively. The LS–GAC mixture ratio of 25:15 removed about 58% NH4-N. The smaller particle size of medium yielded higher adsorption capacity. The equilibrium adsorption data followed the Freundlich isotherm (*R*2 > 0.98) but it showed weak bond. Adsorption kinetics were well described by the pseudo second-order rate model (*R*2 > 0.93). The upflow column showed that higher flow rate and initial concentration resulted in shorter column saturation time. The study showed that the usage of GAC could be reduced by combining GAC with LS for the removal of NH4-N from wastewater; thus reducing the cost of treatment.

Keywords: Adsorption Isotherms, Adsorption Kinetics, Ammoniacal–Nitrogen Removal, Column Filtration, Granular Activated Carbon (GAC), Limestone (LS)

? Rodrigues, C.C., de Moraes, Jr., D., da Nóbrega, S.W. and Barboza, M.G. (2007), Ammonia adsorption in a fixed bed of activated carbon. *Bioresource Technology*, **98** (4), 886-891.

Full Text: [2007\Bio Tec98, 886.pdf](2007/Bio%20Tec98,%20886.pdf)

Abstract: The rise in atmospheric pollution caused by gases such as ammonia has led many researchers to conduct studies aimed at decreasing or treating the emissions of such polluting gases. The present work attempted to study the adsorption of ammonia in the fixed bed of activated carbon as a means to treat its emissions. The effects of the initial concentration of ammonia (*C*0) and of the bed temperature (*T*L) on the adsorption of ammonia by the activated carbon were also considered. Adsorption capacity of activated carbon was determined using data from the breakthrough curves and from a balance of mass in the bed. Adsorption capacities were obtained employing the Langmuir and Freudlich isotherms. The results showed that within the NH3 concentration range of 600–2400 ppm, adsorption capacity varied from 0.6 to 1.8 mg NH3/g carbon at 40 °C, from 0.2 to 0.7 mg NH3/g carbon at 80 °C and from 0.15 to 0.35 mg NH3/g carbon at 120 °C. These numbers highlight the tendency toward a lower adsorption capacity with the decrease in temperature. As to mass of the bed, this latter variable had no significant influence over adsorption capacity.

Keywords: Ammonia, Adsorption, Fixed Bed, Activated Carbon

? Gode, F and Pehlivan, E. (2007), Sorption of Cr(III) onto chelating b-DAEG–sporopollenin and CEP–sporopollenin resins. *Bioresource Technology*, **98** (4), 904-911.

Full Text: [2007\Bio Tec98, 904.pdf](2007/Bio%20Tec98,%20904.pdf)

Abstract: In the present study, the removal of Cr(III) from aqueous solution was studied using a new chelate-resins (b-DAEG–sporopollenin and CEP–sporopollenin). Mechanisms including ion exchange, complexation and adsorption to the surface are possible in the sorption process. Adsorption analysis results obtained at various concentrations of Cr(III) showed that the adsorption pattern on the resin followed a Langmuir isotherm. Langmuir constant Γmax and k for Cr(III) were found as 1.23, 84.84 mmol/g for b-DAEG–sporopollenin, 133.33, 10.39 mmol/g for CEP–sporopollenin at 20 ± 1 °C, respectively. In addition, kinetic and thermodynamic parameters such as enthalpy (ΔH0), free energy (ΔG0) and entropy (ΔS0) were calculated and these values show that adsorption of Cr(III) on b-DAEG–sporopollenin and CEP–sporopollenin was an exothermic process and the process of adsorption was favored at high temperatures. Maximum Cr(III) removal was observed near a pH of 6.

Keywords: Adsorption, Chelate Resin, Sporopollenin, Chromium, Langmuir

? Hasan, S.H., Talat, M. and Rai, S. (2007), Sorption of cadmium and zinc from aqueous solutions by water hyacinth (*Eichchornia crassipes*). *Bioresource Technology*, **98** (4), 918-928.

Full Text: [2007\Bio Tec98, 918.pdf](2007/Bio%20Tec98,%20918.pdf)

Abstract: The water hyacinth (*Eichchornia crassipes*) has been successfully utilized for the removal of Zn(II) and Cd(II) as well as their admixture from samples of aqueous solutions. The growth of the plant after 16 days of exposure to the metal ions showed an increasing trend up to 2.5 ppm of Cd(II) and 6.0 ppm of Zn(II) concentrations, however, the growth became nondetectable or inhibited above these concentrations. The overall metal uptake by the plant was dependent upon the concentration of the metal and the duration of the exposure time. The metal uptake from a mixture of Cd(II) and Zn(II) was reflected by a rate constant quite different from those solutions containing only one metal ion. An analysis of metal in roots and tops of the plants showed that more Zn(II) was accumulated in the root when compared to Cd(II). However, the accumulation factor for the tops and the roots for Cd(II) and Zn(II) was higher than those obtained admixture of Zn(II) and Cd(II). The rate of metal mobility in the root was slower than that in the top of the plant for Zn(II) and Cd(II). A water hyacinth based system can be used to remove Cd(II) and Zn(II) from water/wastewater.

Keywords: Sorption, Water Hyacinth, Wastewater, Zn and Cd

? Mor, S., Ravindra, K. and Bishnoi, N.R. (2007), Adsorption of chromium from aqueous solution by activated alumina and activated charcoal. *Bioresource Technology*, **98** (4), 954-957.

Full Text: [2007\Bio Tec98, 954.pdf](2007/Bio%20Tec98,%20954.pdf)

Abstract: Cr(VI) is considered to be potentially carcinogenic to humans. Removal of Cr(VI) ions from aqueous solution under different conditions was investigated using activated alumina (AA) and activated charcoal (AC) as adsorbents. Batch mode experiments were conducted to study the effects of adsorbent dose, contact time, pH, temperature and initial concentration of Cr(VI). Results showed that the adsorption of Cr(VI) depended significantly on pH and temperature. Equilibrium studies showed that Cr(VI) had a high affinity for AA at pH 4 and AC at pH 2. For AA, maximum adsorption was found at 25 °C, indicating exothermic adsorption, while for AC, maximum adsorption was at 40 °C. Freundlich and Langmuir adsorption isotherms were also applied and they showed good fits to the experimental data. The results suggest that both AA and AC could be used as effective adsorbents for the removal of Cr(VI) ions.

Keywords: Activated Alumina, Activated Charcoal, Adsorption, Cr(VI), Temperature

? Venkata Mohan, S., Ramanaiah, S.V., Rajkumar, B. and Sarma, P.N. (2007), Biosorption of fluoride from aqueous phase onto algal *Spirogyra* IO1 and evaluation of adsorption kinetics. *Bioresource Technology*, **98** (5), 1006-1011.

Full Text: [2007\Bio Tec98, 1006.pdf](2007/Bio%20Tec98,%201006.pdf)

Abstract: Non-viable algal *Spirogyra* IO1 was studied for its fluoride sorption potential in batch studies. The results demonstrated the ability of the biosorbent for fluoride removal. The sorption interaction of fluoride on to non-viable algal species obeyed the pseudo-first-order rate equation. The intraparticle diffusion of fluoride molecules within the *Spirogyra* was identified to be the rate-limiting step. It was also found that the adsorption isotherm followed the rearranged Langmuir isotherm adsorption model. Fluoride sorption was dependent on the aqueous phase pH and the fluoride uptake was greater at lower pH.

Keywords: Biosorption, Algal *Spirogyra* sp., Adsorption Kinetics, pH, Intraparticle Diffusion Model, Pseudo-First Order, Pseudo-Second Order, Biosorbent, Isotherm

? Loperena, L., Ferrari, M.D., Saravia, V., Murro, D., Lima, C., Ferrando, L., Fernandez, A. and Lareo, C. (2007), Performance of a commercial inoculum for the aerobic biodegradation of a high fat content dairy wastewater. *Bioresource Technology*, **98** (5), 1045-1051.

Full Text: [2007\Bio Tec98, 1045.pdf](2007/Bio%20Tec98,%201045.pdf)

Abstract: The effectiveness of a commercial inoculum for degrading a dairy wastewater with high fat content was evaluated, and compared with an activated sludge inoculum from a dairy wastewater treatment pond. Both inocula reached similar chemical oxygen demand removal in batch experiments. The population dynamics was also studied by determining heterotrophic counts. Predominant microorganisms were differentiated by colony morphology and genomic fingerprinting (BOX-PCR) analysis. The higher population diversity and the wider range of CO2 production rate observed in batch reactors inoculated with activated-sludge, indicated that microorganisms from this inoculum were well adapted and may have had synergic activity for the degradation of the dairy effluent. When the bioreactor was operated with the commercial inoculum in continuous mode, according to its microbial growth kinetics, other microorganisms became predominant. These results showed that inoculated microorganisms did not persist in the open system and periodic addition of microorganisms may be needed to achieve a high performance treatment. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Activated Sludge, Activated-Sludge, Activity, Aerobic, Analysis, Batch, Batch Experiments, Bioaugmentation, Bioaugmentation, Biodegradation, Biological Treatment, Bioreactor, Chemical, Chemical Oxygen Demand, CO2, CO2 Production, Degradation, Diversity, Dynamics, Effectiveness, Effluent, Failure, Fat, Grease, Growth, Heterotrophic, High Fat, Kinetics, Microbial, Microbial Growth, Microorganisms, Milk Fat, Morphology, Oxygen, Oxygen Demand, Performance, Population, Population Dynamics, Production, Production Rate, Range, Removal, Respirometry, Sludge, Systems, Treatment, Wastewater, Wastewater Treatment, Wastewaters

? Liu, M.H., Huang, J.H. and Deng, Y. (2007), Adsorption behaviors of L-arginine from aqueous solutions on a spherical cellulose adsorbent containing the sulfonic group. *Bioresource Technology*, **98** (5), 1144-1148.

Full Text: [2007\Bio Tec98, 1144.pdf](2007/Bio%20Tec98,%201144.pdf)

Abstract: An investigation was conducted regarding the adsorption and desorption of l-arginine from aqueous solutions with a new spherical cellulose adsorbent containing the sulfonic group. The adsorption of l-arginine on the adsorbent was time, pH, initial concentration of l-arginine and temperature dependent. The adsorption process followed the Langmuir adsorption isotherm, and was endothermic (ΔH = 24.66 KJ/mol). Almost 100% l-arginine adsorbed on the adsorbent could be recovered with a 2.0 mol/L NH4OH or 2.0 mol/L NH4Cl aqueous solution. After 25 and 40 cycles of adsorption and desorption, the decrease in adsorption capacity reached to 4.9% and 20.3%, respectively.

Keywords: Spherical Cellulose Adsorbent, Graft, l-Arginine, Adsorption, Desorption, *N*-methylmorpholine-*N*-Oxide (NMMO)

? Daneshvar, N., Ayazloo, M., Khataee, A.R. and Pourhassan, M. (2007), Biological decolorization of dye solution containing Malachite Green by microalgae *Cosmarium* sp. *Bioresource Technology*, **98** (6), 1176-1182.

Full Text: [2007\Bio Tec98, 1176.pdf](2007/Bio%20Tec98,%201176.pdf)

Abstract: The potential of Cosmarium species, belonging to green algae, was investigated as a viable biomaterial for biological treatment of triphenylmethane dye, Malachite Green (MG). The results obtained from the batch experiments revealed the ability of algal species in removing dye. The effects of operational parameters (temperature, pH, dye concentration and algal concentration) on decolorization were examined. Optimal initial pH was determined 9. The stability and efficiency of the algae in long-term repetitive operations were also examined. Michaelis-Menten kinetics was used to describe the apparent correlation between the decolorization rate and the dye concentration. The optimal kinetic parameters, v(max) and K-m are 7.63 mg dye g cell-1 h-1 and 164.57 ppm, respectively. All assays were conducted in triplicates. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Algae, Aqueous-Solutions, Azo-Dye, Batch, Batch Experiments, Biodegradation, Biodegradation, Biological Treatment, Biosorption, Bottom Ash, Chlorella-Vulgaris, Concentration, Correlation, Cosmarium, Decolorization, Dye, Dyeing Waste, Effects, Efficiency, Green Algae, Kinetic, Kinetic Parameters, Kinetics, Long-Term, Malachite Green, Mg, Microalgae, Parameters, pH, Photocatalytic Degradation, Removal, Species, Stability, Temperature, Textile, Treatment, Triphenylmethane, Waste-Water

? Thangamani, K.S., Sathishkumar, M., Sameena, Y., Vennilamani, N., Kadirvelu, K., Pattabhi, S. and Yun, S.E. (2007), Utilization of modified silk cotton hull waste as an adsorbent for the removal of textile dye (reactive blue MR) from aqueous solution. *Bioresource Technology*, **98** (6), 1265-1269.

Full Text: [2007\Bio Tec98, 1265.pdf](2007/Bio%20Tec98,%201265.pdf)

Abstract: Carbon prepared from silk cotton hull was used to remove a textile dye (reactive blue MR) from aqueous solution by an adsorption technique under varying conditions of agitation time, dye concentration, adsorbent dose and pH. Adsorption depended on solution pH, dye concentration, carbon concentration and contact time. Equilibrium was attained with in 60 min. Adsorption followed both Langmuir and Freundlich isotherm models. The adsorption capacity was found to be 12.9 mg/g at an initial pH of 2 ± 0.2 for the particle size of 125–250 μm at room temperature (30 ± 2 °C).

Keywords: Silk Cotton Hull,Carbon,Dye,Adsorption,Isotherms

? Karnitz, Jr., O., Gurgel, L.V.A., Perin de Melo, J.C., Botaro, V.R., Melo, T.M.S., de Freitas Gil, R.P. and Gil, L.F. (2007), Adsorption of heavy metal ion from aqueous single metal solution by chemically modified sugarcane bagasse. *Bioresource Technology*, **98** (6), 1291-1297.

Full Text: [2007\Bio Tec98, 1291.pdf](2007/Bio%20Tec98,%201291.pdf)

Abstract: This work describes the preparation of new chelating materials derived from sugarcane bagasse for adsorption of heavy metal ions in aqueous solution. The first part of this report deals with the chemical modification of sugarcane bagasse with succinic anhydride. The carboxylic acid functions introduced into the material were used to anchor polyamines, which resulted in two yet unpublished modified sugarcane bagasse materials. The obtained materials were characterized by elemental analysis and infrared spectroscopy (IR). The second part of this reports features the comparative evaluation of the adsorption capacity of the modified sugarcane bagasse materials for Cu2+, Cd2+, and Pb2+ ions in aqueous single metal solution by classical titration. Adsorption isotherms were studied by the Freundlich and Langmuir models.

Keywords: Adsorption, Modified Sugarcane Bagasse, Polyamines, Isotherm, Heavy Metals

? Barros, A.J.M., Prasad, S., Leite, V.D. and Souza, A.G. (2007), Biosorption of heavy metals in upflow sludge columns. *Bioresource Technology*, **98** (7), 1418-1425.

Full Text: [2007\Bio Tec98, 1418.pdf](2007/Bio%20Tec98,%201418.pdf)

Abstract: The present study was carried out for evaluating the retention behavior of sanitary sewage and sand in relation to chromium and nickel ions in upflow reactors. It was found that the sludge presented a greater assimilation of the metals studied when compared to the inert material, probably due to the presence of anionic groups, which favors adsorption and complexation processes. Thermal analyses of the samples showed a shift in the decomposition peaks of the “in natura” sludge, when compared with those of the samples spiked with the metals, confirming the possibility of interactions between the heavy metals and the anionic groups present in the sludge.

Keywords: Heavy Metals, Biosorption, Complexation, Sanitary Sludge, Thermal Analysis

? Kopsahelis, N., Agouridis, N., Bekatorou, A. and Kanellaki, M. (2007), Comparative study of spent grains and delignified spent grains as yeast supports for alcohol production from molasses. *Bioresource Technology*, **98** (7), 1440-1447.

Full Text: Bio Tec98, 1440

? Shailaja, S., Ramakrishna, M., Mohan, S.V. and Sarma, P.N. (2007), Biodegradation of di-n-butyl phthalate (DnBP) in bioaugmented bioslurry phase reactor. *Bioresource Technology*, **98** (8), 1561-1566.

Full Text: [2007\Bio Tec98, 1561.pdf](2007/Bio%20Tec98,%201561.pdf)

Abstract: Bioremediation of di-n-butyl phthalate (DnBP) in soil was studied with various concentrations in a bioslurry phase batch reactor operated in sequenting batch mode (bioaugmented with effluent treatment plant (ETP) microflora) for a total cycle period of 96 h. Process performance during the reactor operation was assessed by monitoring DnBP concentration and biochemical process parameters viz., pH, dissolved oxygen (DO), colony forming units (CFU) and oxygen uptake rate (OUR), during the sequence phase operation. The degradation rate was observed to be rapid at lower substrate concentrations and found to be slow as the substrate concentration increased. The potent bacterial strain was also isolated from the slurry phase reactor. Metabolites formed during the degradation of DnBP in the slurry phase reactor were identified. Studies on the kinetics and half-life of the reaction revealed that the degradation process followed zero-order kinetic model. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Acid Esters, Activated Carbon, Batch, Batch Mode, Batch Reactor, Bioaugmentation, Biochemical, Bioslurry Phase Reactor, Concentration, Concentrations, Degradation, Di-n-Butyl Phthalate (DnBP), Dissolved, Dissolved Oxygen, Effluent, Effluent Treatment, Half-Life, HPLC, Kinetic, Kinetic Model, Kinetics, Microflora, Mode, Model, Monitoring, NMR, Operation, OUR, Oxygen, Oxygen Uptake, Oxygen Uptake Rate, Parameters, Pendimethalin Contaminated Soil, Performance, pH, Phthalate, Plant, Process, Reaction, Reactor, Removal, Slurry, Soil, Substrate, Treatment, Uptake, Water

? Marungrueng, K. and Pavasant, P. (2007), High performance biosorbent (*Caulerpa lentillifera*) for basic dye removal. *Bioresource* *Technology*, **98** (8), 1567-1572.

Full Text: [2007\Bio Tec98, 1567.pdf](2007/Bio%20Tec98,%201567.pdf)

Abstract: The sorptions of three basic dyes, Astrazon® Blue FGRL (AB), Astrazon® Red GTLN (AR), and methylene blue (MB) onto green macroalga *Caulerpa lentillifera* were investigated. The results were compared to the sorption performance of a commercial activated carbon (CARBON). The results revealed that the alga exhibited greater sorption capacities than activated carbon for the three basic dyes investigated in this work. The sorption process for all mixture systems (ALGA/AB, ALGA/AR, ALGA/MB, CARBON/AB, CARBON/AR, and CARBON/MB) obeyed the pseudo-second order kinetic model. *C. lentillifera* could more rapidly sequester AR when compared with activated carbon, but was more slowly in the sorption of AB. For the sorption of MB, both ALGA and CARBON seemed to have the same sorption rate. The sorption processes were initially controlled by both film and pore-diffusion, and only were limited by pore diffusion in the later stage. The isotherms followed Langmuir model which suggested that the sorption was monolayer coverage.

Keywords: Wastewater, Textile Dye, Decolorization, Langmuir, Pseudo-Second Order, Sorption Kinetics

? Martínez, S., Cuervo-López, F.M. and Gomez, J. (2007), Toluene mineralization by denitrification in an up flow anaerobic sludge blanket (UASB) reactor. *Bioresource Technology*, **98** (9), 1717-1723.

Full Text: [2007\Bio Tec98, 1717.pdf](2007/Bio%20Tec98,%201717.pdf)

Abstract: In order to examine the effect of easily degradable substrate such as acetate on toluene mineralization by denitrification, an upflow anaerobic sludge blanket (UASB) reactor in steady state was set up. The experimentation was carried out in two stages. Initially, the reactor was fed with a carbon loading rate of 250 mg acetate-C L-1 d-1 as electron source. Nitrate loading rate (mg NO3- -N L-1 d-1) was adjusted to obtain a constant C/N ratio of 1.4. In the second stage, five toluene-C loading rates (TLR, mg toluene-C L-1 d-1), 25, 50, 75, 100 and 125, were assessed while total carbon loading rate and C/N were maintained constant at 250 mg C L-1 d-1 and 1.4, respectively. In so doing, acetate-C loading rate (mg acetate-C L-1 d-1) was gradually substituted by toluene-C. When acetate-C was the only electron source a dissimilative denitrifying process resulted as indicated by bicarbonate yield Y-HCO3, mg HCO3- produced/mg carbon consumed) of 0.74±0.005 and denitrifying yield (Y-N2 mg N2 produced/mg NO3- -N consumed of 0.89±0.042.3 The addition of different TLR did not affect the biological process as consumption carbon efficiency (CCE) values remained up to 95%±3.5 and Y-HCO3 and Y-N2 values were higher than 0.71±0.03 and 0.88±0.01, respectively. Toluene mineralization by denitrification in continuous culture was successfully achieved. A simple UASB denitrifying reactor system has promising applications for complete conversion of nitrate, toluene and acetate into N2 and CO2 with a minimal sludge production. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Acetate, Activated-Sludge, Affect, Anaerobic, Anaerobic Sludge, Applications, Aquifer Microorganisms, Bicarbonate, Biodegradation, Blanket, C, N, C, N Ratio, Carbon, CO2, Consumption, Continuous Culture, Conversion, Culture, Degradation, Denitrification, Efficiency, Experimentation, Flow, Kinetics, Loading, Mineralization, N2, N2, Nitrate, NO3, O-Xylene, Order, Oxygen, Process, Production, Reactor, Sludge, Source, Steady State, Steady-State, Substrate, Toluene, Toluene Mineralization, UASB, Upflow Anaerobic Sludge Blanket, Yield

? Mukhopadhyay, M., Noronha, S.B. and Suraishkumar, G.K. (2007), Kinetic modeling for the biosorption of copper by pretreated *Aspergillus niger* biomass. *Bioresource* *Technology*, **98** (9), 1781-1787.

Full Text: [2007\Bio Tec98, 1781.pdf](2007/Bio%20Tec98,%201781.pdf)

Abstract: In this present work, a kinetic model for biosorption of copper was developed considering the possibility of different forms of functional groups being present on the surface of the biomass prepared from *Aspergillus niger*. Results showed that metal uptake by *A. niger* was a mass transfer driven process, requiring only 30 min to achieve 70% adsorption efficiency. Copper sorption by *A. niger* was influenced by the biomass dose, initial metal ion concentration, and pH of the solution. The Langmuir and Freundlich adsorption isotherms were used to describe the behavior of the system at different pH. The retention capacity of the biomass was determined at pH 6.0 to be equal to 23.62 mg/g of biomass. The pretreatment with formalin improved the uptake of metal ion.

Keywords: Copper, Fungus, Biosorption, Biomass, Modeling

? Ringot, D., Lerzy, B., Chaplain, K., Bonhoure, J.P., Auclair, E. and Larondelle, Y. (2007), *In vitro* biosorption of ochratoxin A on the yeast industry by-products: Comparison of isotherm models. *Bioresource* *Technology*, **98** (9), 1812-1821.

Full Text: [2007\Bio Tec98, 1812.pdf](2007/Bio%20Tec98,%201812.pdf)

Abstract: Biosorption of ochratoxin A (OA) onto yeast biomass appears to be a reasonably low cost decontamination method. In vitro adsorption of OA onto three yeast industry by-products: a vinasse containing yeast cell walls (EX 16), a purified yeast beta-glucan (BETA) and a yeast cell wall fraction (LEC) was examined at 25°C. Seven classical adsorption models were tested to provide the best description of toxin adsorption. A comparison of these models was performed using the magnitude of the coefficient of determination R-2 for the linear models and the value of the sum of normalised errors (SNE) for linear and non-linear models. Based on the R-2 and the SNE values, Hill, Freundlich and Brunauer-Emmett-Teller equations produced the best models for OA biosorption onto respectively, EX16, BETA and LEC. For these best models, the values of isotherm constants were consistent when measured using both linear and non-linear calculations. The SNE calculation procedure presented in this paper in association with the linear equation analysis method is an appropriate approach for designing a better adsorption isothermal model. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Ochratoxin A, Biosorption, Yeast Cell Wall By-Products, Isotherm Models, Multicomponent Adsorption, Saccharomyces-Cerevisiae, Cell-Wall, Mycotoxins, Detoxification, Adsorbents, Prediction, Equations, Sorption, Removal

? Ha, J., Engler, C.R. and Wild, J.R. (2007), Biodegradation of chlorferon and diethylthiophosphate by consortia enriched from waste cattle dip solution. *Bioresource Technology*, **98** (10), 1916-1923.

Full Text: [2007\Bio Tec98, 1916.pdf](2007/Bio%20Tec98,%201916.pdf)

Abstract: Chlorferon and diethylthiophosphate (DETP) are the hydrolysis products of coumaphos, an organophosphate pesticide. In this research, two consortia of bacterial cultures, one responsible for degrading chlorferon and the other for degrading DETP, were selectively enriched from waste cattle dip solution. The enriched cultures were used as inocula to grow biomass for biodegradation studies. For chlorferon degradation, the optimum biomass concentration was found to be 80 g/L, and pH 7.5 was selected as the optimal operating pH. Chlorferon degradation was characterized by substrate inhibition kinetics with parameter values estimated to be V-m = 0.062±0.011 mg/(g-biomass) h, K-m, = 21±17 mg/L, and K-Si = 118±45 mg/L. For DETP degradation, the optimum biomass concentration was found to be 60 g/L, and the optimum pH was in the range of 7.5-8. DETP degradation was characterized by Michaelis-Menten kinetics with parameter values estimated to be V-m = 1.52±0.10 mg/(g-biomass) h and K-m = 610 106 mg/L. (c) 2006 Elsevier Ltd. All rights reserved.

Keywords: Bacteria, Biodegradation, Biomass, Cattle, Chlorferon, Concentration, Degradation, Diethylthiophosphate, Enrichment, Hydrolysis, Inhibition, Kinetics, Organophosphate, Organophosphate Insecticide Coumaphos, Pesticide, pH, Products, Range, Research, Substrate, Waste

? Ahluwalia, S.S. and Goyal, D. (2007), Microbial and plant derived biomass for removal of heavy metals from wastewater. *Bioresource Technology*, **98** (12), 2243-2257.

Full Text: [2007\Bio Tec98, 2243.pdf](2007/Bio%20Tec98,%202243.pdf)

Abstract: Discharge of heavy metals from metal processing industries is known to have adverse effects on the environment. Conventional treatment technologies for removal of heavy metals from aqueous solution are not economical and generate huge quantity of toxic chemical sludge. Biosorption of heavy metals by metabolically inactive non-living biomass of microbial or plant origin is an innovative and alternative technology for removal of these pollutants from aqueous solution. Due to unique chemical composition biomass sequesters metal ions by forming metal complexes from solution and obviates the necessity to maintain special growth-supporting conditions. Biomass of *Aspergillus niger*, Penicillium chrysogenum, Rhizopus nigricans, Ascophyllum nodosum, Sargassum natans, Chlorella fusca, Oscillatoria anguistissima, Bacillus firmus and Streptomyces sp. have highest metal adsorption capacities ranging from 5 to 641 mg g−1 mainly for Pb, Zn, Cd, Cr, Cu and Ni. Biomass generated as a by-product of fermentative processes offers great potential for adopting an economical metal-recovery system. The purpose of this paper is to review the available information on various attributes of utilization of microbial and plant derived biomass and explores the possibility of exploiting them for heavy metal remediation.

Keywords: Biosorption, Non-Living Microbial Biomass, Wastewater, Heavy Metals

? Sulak, M.T., Demirbas, E. and Kobya, M. (2007), Removal of Astrazon Yellow 7GL from aqueous solutions by adsorption onto wheat bran. *Bioresource Technology*, **98** (13), 2590-2598.

Full Text: [2007\Bio Tec98, 2590.pdf](2007/Bio%20Tec98,%202590.pdf)

Abstract: Adsorption kinetic and equilibrium of a basic dye (Astrazon Yellow 7GL) from aqueous solutions at various initial dye concentration (50–300 mg/l), pH (4–10), adsorbent dosage (2–8 g/l), particle size (354–846 μm) and temperature (30–50 °C) on wheat bran were studied in a batch mode operation. The result showed that the amount adsorbed of the dye increased with increasing initial dye concentration and contact time, whereas particle size and pH had no significant affect on the amount of dye adsorbed by the adsorbent. A comparison of kinetic models on the overall adsorption rate showed that dye/adsorbent system was best described by the pseudo second-order rate model. The removal rate was also dependent on both external mass transfer and intra-particle diffusion. The low value of the intraparticle diffusivity, 10−11 cm2/s, indicated the significant influence of intraparticle diffusion on the kinetic control. The adsorption capacity (*Q*0) calculated from the Langmuir isotherm was 69.06 mg/g for at pH 5.6, 303 K for the particle size of 354 μm. The experimental data yielded excellent fits with Langmuir and Tempkin isotherm equations. Different thermodynamic parameters showed that the reaction was spontaneous and endothermic in nature.

Keywords: Activated Carbon, Adsorbent, Adsorbent Dosage, Adsorbents, Adsorption, Adsorption Capacity, Adsorption Kinetics, Adsorption Rate, Affect, Aqueous Solutions, Astrazon Yellow, Basic Dye, Batch, Batch Mode, Capacity, Color Removal, Comparison, Concentration, Contact Time, Control, Diffusion, Diffusivity, Dosage, Dye, Dye Removal, Endothermic, Equations, Equilibrium, Experimental, Experimental Data, External Mass Transfer, Intra Particle Diffusion, Intra-Particle Diffusion, Intraparticle Diffusion, Intraparticle Diffusivity, Isotherm, Kinetic, Kinetic Models, Kinetics, Langmuir, Langmuir Isotherm, Langmuir-Isotherm, Low, Mass Transfer, Mass-Transfer, Model, Models, Operation, Overall Adsorption Rate, Parameters, Particle, Particle Size, pH, Pseudo Second Order, Pseudo Second-Order, Pseudo-Second-Order, Rate, Rate Model, Reaction, Removal, Removal Rate, Sawdust, Second Order, Size, Solutions, Sorption, Spontaneous, Temperature, Textile Waste-Water, Thermodynamic, Thermodynamic Parameters, Transfer, Wheat, Wheat Bran

? Kaikake, K., Hoaki, K., Sunada, H., Dhakal, R.P. and Baba, Y. (2007), Removal characteristics of metal ions using degreased coffee beans: Adsorption equilibrium of cadmium(II). *Bioresource Technology*, **98** (15), 2787-2791.

Full Text: [2007\Bio Tec98, 2787.pdf](2007/Bio%20Tec98,%202787.pdf)

Abstract: The feasibility of using coffee beans after being dripped and degreased (DCB) as an adsorbent for base metals such as copper(II), zinc(II), lead(II), iron(III) and cadmium(II) were examined. The compositions of the I)CB were characterized by Fourier transform infrared spectroscopy, scanning electronic micrograph and fluorescent X-ray. It was found that DCB contain sulfur and calcium from the analysis using fluorescent X-ray. The plant cell wall in DCB has the porous structure from the scanning electron microscopy (SEM) analysis, and the specific surface area was determined to be 1.2 m(2)/g using the specific surface area analyzer. Batch adsorption experiments on DCB were carried out at various pHs in order to elucidate the selectivity of metal ions. All metals were adsorbed at low pH region (3.0-5.0). of particular interest was the adsorption characteristics of cadmium(II) on DCB. The adsorption isotherm for cadmium(II) at pH 8 fitted with a Langmuir equation to yield an adsorption equilibrium constant of 55.2 mmol dm(-3) and an adsorption capacity of 5.98 x 10(-2) mmol g(-1), The desorption of cadmium(II) was easily achieved over 90% by a single batchwise treatment with an aqueous solution of hydrochloric acid or nitric acid at more than 0.01 mol dm(-3). These results suggested that I)CB behaves as a cation exchanger. (C) 2006 Elsevier Ltd. All rights reserved.

Keywords: Degreased Coffee Beans, Heavy Metals, Cadmium(II), Adsorption, Desorption, Selective Adsorption, Chitosan Derivatives, Aqueous-Solutions, Nitrate Anion, Mercury Ions, Iron(III), Zinc

? Ong, S.T., Lee, C.K. and Zainal, Z. (2007), Removal of basic and reactive dyes using ethylenediamine modified rice hull. *Bioresource Technology*, **98** (15), 2792-2799.

Full Text: [2007\Bio Tec98, 2792.pdf](2007/Bio%20Tec98,%202792.pdf)

Abstract: Wastewaters from textile industries may contain a variety of dyes that have to be removed before their discharge into waterways. Rice hull, an agricultural by-product, was modified using ethylenediamine to introduce active sites on its surface to enable it to function as a sorbent for both basic and reactive dyes. The sorption characteristics of Basic Blue 3 (BB3) and Reactive Orange 16 (RO16) by ethylenediamine modified rice hull (MRH) were studied under various experimental conditions. Sorption was pH and concentration dependent. Simultaneous removal of BB3 and RO16 occurred at pH greater than 4. The kinetics of dye sorption fitted a pseudo-second order rate expression. Increase in agitation rate had no effect on the sorption of BB3 but increased uptake of RO16 on MRH. Decreasing particle size increased the uptake of dyes in binary dye solutions. Equilibrium data could be fitted into both the Langmuir and Freundlich isotherms. Maximum sorption capacities calculated from the Langmuir model are 14.68 and 60.24 mg/g for BB3 and RO16, respectively in binary dye solutions. This corresponds to an enhancement of 4.5 and 2.4 fold, respectively, compared to single dye solutions. MRH therefore has the potential of being used as an efficient sorbent for the removal of both dyes in textile wastewaters. (C) 2006 Published by Elsevier Ltd.

Keywords: Active Sites, Adsorbents, Adsorption, Agitation, Agricultural, Agricultural By-Product, Aqueous-Solution, Basic Dyes, Binary Dye, By-Product, Characteristics, Concentration, Discharge, Dye, Dye Solutions, Dyes, Effluent, Ethylenediamine, Experimental, Freundlich, Freundlich Isotherms, Function, Husk, Isotherms, Kinetics, Langmuir, Langmuir and Freundlich Isotherms, Langmuir Model, Model, Modified, Modified Rice Hull, Order, Particle, Particle Size, pH, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second-Order, Rate, Reactive Dyes, Removal, Residues, Rice, Rice Hull, Sawdust, Sites, Size, Solutions, Sorbent, Sorption, Sorption, Surface, Textile, Uptake, Waste, Wastewaters

? Arslan, G. and Pehlivan, E. (2007), Batch removal of chromium(VI) from aqueous solution by Turkish brown coals. *Bioresource Technology*, **98** (15), 2836-2845.

Full Text: [2007\Bio Tec98, 2836.pdf](2007/Bio%20Tec98,%202836.pdf)

Abstract: The ability of using low-rank Turkish brown coals (Ilgin: BC1, Bey ehir: BC2, and Ermenek: BC3) to remove Cr(VI) from aqueous solutions was studied as a function of contact time, solution pH, temperature, concentration of metal solutions and amount of adsorbent. Their sorption properties were compared with the activated carbon from Chemviron (AQ-30). Adsorption of Cr(VI) uptake is in all cases pH-dependent showing a maximum at equilibrium pH values between 2.0 and 3.2, depending on the biomaterial, that correspond to initial pH values of 2.3 units for BC1, 3.0 units for BC2 and 3.2 units for BC3 and AQ-30. Batch equilibrium tests showed that the Cr(VI) removal was fitted with Freundlich isotherm and the adsorption reached equilibrium in 80 min. It was proceeding effectively into a short acid pH interval (2.0-3.2) where processes of Cr(VI) sorption are maximized. It was observed that the maximum adsorption capacity of 11.2 mM of Cr(VI)/g for Ilgin (BC1), 12.4 mM of Cr(VI)/g for Beysehir (BC2), 7.4 mM of Cr(VI)/g for Ermenek (BC3) and 6.8 mM of Cr(VI)/g for activated carbon (AQ-30) was achieved at pH of 3.0. The rise in temperature caused a slight decrease in the value of the equilibrium constant (K-c) for the sorption of Cr(VI) ion. The Cr(VI) sorption capacities of Bey ehir and Ilgin brown coals were the same. Ermenek brown coals and activated carbon (AQ-30) showed a similar sorption capacity. (C) 2006 Elsevier Ltd. All rights reserved.

Keywords: Biosorbent, Brown Coals, Hexavalent Chromium, Removal, Sulfurized Activated Carbon, Sphagnum Moss Peat, Hexavalent Chromium, Waste-Water, Heavy-Metals, Humic-Acid, Exchange-Resins, Adsorption, Cr(VI), Ions

? Cheung, W.H., Szeto, Y.S. and McKay, G. (2007), Intraparticle diffusion processes during acid dye adsorption onto chitosan. *Bioresource Technology*, **98** (15), 2897-2904.

Full Text: [2007\Bio Tec98, 2897.pdf](2007/Bio%20Tec98,%202897.pdf)

Abstract: The adsorption of five acid dyes onto chitosan was studied. The equilibrium capacities based on the Langmuir analysis were 1.54, 2.66, 1.11, 1.25 and 1.03mmol/g chitosan for Orange 10 (AO10), Acid Orange 12 (AO12), Acid Red 18 (AR18), Acid Red 73 (AR73) and Acid Green 25 (AG25) respectively. The batch adsorption rate for the five systems based on an intraparticle diffusion rate parameter derived from the plots of dye adsorbed versus the square root of time indicated that the adsorption mechanism was predominantly intraparticle diffusion but there was also a dependence on pore size as the dye diffuses through macropore, mesopore and micropore respectively. (C) 2006 Elsevier Ltd. All rights reserved.

Keywords: Chitosan, Adsorption, Acid Dyes, Diffusion, Intraparticle, Agricultural By-Products, Activated Carbon, Elovich Equation, Cadmium Ions, Waste-Water, Bone Char, Sorption, Kinetics, Adsorbents, Prediction

? Wu, H.F., Wang, S.H., Kong, H.L., He, W. and Xia, M.F. (2007), Determination of bulk mass transfer coefficient of biosorption on sludge granule based on liquid membrane mass transfer mechanism. *Bioresource* *Technology*, **98** (15), 2953-2957.

Full Text: [2007\Bio Tec98, 2953.pdf](2007/Bio%20Tec98,%202953.pdf)

Abstract: A bulk mass transfer coefficient (BMTC) equation was derived from the mechanism of mass transfer in surface liquid membrane in this study, which was based on the analysis of biosorption process, conservation of mass in sludge granule and the unification of the dimension. A biosorption experiment was carried out in which anoxic sludge from an anoxic baffled reactor for printing and dyeing wastewater treatment was used to adsorb Acid Red GR dye. The results showed that there was a linear regression curve between In [qe/(qe-q)] (qe and q were the amount adsorbed at equilibrium and at time t, respectively.) and time t. There was also a good agreement between the adsorbate amount measured and that predicted by the equation of BMTC. The BMTC of Acid Red GR dye adsorbed by anoxic sludge was 6.816 kg m-3 min-1. Experimental results indicated that the BMTC determined by a simple adsorptive experiment using this equation was credible. It could be a feasible and effective way to determine BMTC of activated sludge for biosorption performance. (C) 2006 Elsevier Ltd. All rights reserved.

Keywords: Bulk Mass Transfer Coefficient, Sludge Granule, Biosorption, Acid Red GR Dye, Dried Activated-Sludge, Basic-Dyes, Adsorption, Biomass, Removal, Reuse

? Banat, F., Al-Asheh, S., Al-Ahmad, R. and Bni-Khalid, F. (2007), Bench-scale and packed bed sorption of methylene blue using treated olive pomace and charcoal. *Bioresource* *Technology*, **98** (16), 3017-3025.

Full Text: [2007\Bio Tec98, 3017.pdf](2007/Bio%20Tec98,%203017.pdf)

Abstract: A combination of olive pomace after solvent extraction and charcoal produced from the solid waste of olive oil press industry was used as an adsorbent for the removal of methylene blue (MB) dye from aqueous solutions. Batch tests showed that up to 80% of dye was removed when the dye concentration was 10 mg/ml and the sorbent concentration was 45 mg/ml. An increase in the olive pomace concentration resulted in greater dye removal from aqueous solution, and an increase in MB dye concentration at constant adsorbent concentration increased the dye loading per unit weigh of adsorbent. In the kinetic of the adsorbent process, the adsorption data followed the second-order kinetic model better than first order kinetic model. Charcoal showed higher sorption capacity (uptake) than that of olive pomace.

In the fixed bed adsorption experiment, the breakthrough curves showed constant pattern behavior, typical of favorable isotherms. The breakthrough time increased with increasing bed height, decreasing flow rate and decreasing influent concentration and methylene blue dye uptake. The uptake of MB dye was significantly increased when a mixture of olive pomace and charcoal was packed in the column in a multi-layer fashion. Different models were used to describe the behavior of this packed-sorption process.

Keywords: Activated Carbons, Adsorbent, Adsorbent Concentration, Adsorbents, Adsorption, Adsorption, Aqueous Solution, Aqueous Solutions, Aqueous-Solutions, Behavior, Bentonite, Breakthrough, Breakthrough Curves, Breakthrough Time, Capacity, Charcoal, Column, Concentration, Date Pits, Dye, Dye Removal, Dyes, Effluent, Experiment, Extraction, First Order, Fixed Bed, Fixed Bed Adsorption, Fixed-Bed, Flow, Flow Rate, Influent, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetics, Loading, Mb, Mbd, Methylene Blue, Methylene Blue Dye, Microwave, Mixture, Model, Models, Natural, Oil, Olive, Olive Oil, Order, Packed Bed, Process, Rate, Removal, Second Order, Solid Waste, Solutions, Solvent, Solvent Extraction, Sorbent, Sorption, Sorption Capacity, Tests, Time, Uptake, Waste

? Chakravarty, S., Bhattacharjee, S., Gupta, K.K., Singh, M., Chaturvedi, H.T. and Maity, S. (2007), Adsorption of zinc from aqueous solution using chemically treated newspaper pulp. *Bioresource Technology*, **98** (16), 3136-3141.

Full Text: [2007\Bio Tec98, 3136.pdf](2007/Bio%20Tec98,%203136.pdf)

Abstract: Adsorption of zinc was studied using chemically modified newspaper pull) as an adsorbent in the aqueous medium. Quantitative chemical analysis showed the presence of trace quantities of some inorganic elements along with phosphorous in TNP. The experimental adsorption data fitted reasonably well to both Freundlich and Langmuir isotherm. pHzpc of TNP was 5.1, which indicated that the adsorbent was more potential for cationic adsorption. The adsorption kinetic data followed a pseudo-second order model for zinc. Optimum Zn2+ loading was 9.20 mg/g for 10.31 mg/l initial zinc concentration at pH 5.80. Zn2+ loading on TNP was dependent on initial zinc concentration. TNP was a potential adsorbent for the removal of Zn from the effluent of electroplating industry. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Kinetic, Analysis, Aqueous Medium, Aqueous Solution, Cellulose, Chemical, Chemical Analysis, Concentration, Cu(II), Effluent, Electroplating, Elements, Experimental, Freundlich, Heavy-Metals, Inorganic, Isotherm, Kinetic, Langmuir, Langmuir Isotherm, Langmuir-Isotherm, Loading, Metal-Ions, Model, Modified, Newspaper Pulp, Ni(II), Order, pH, Phosphorous, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second Order Model, Pseudo-Second-Order, Pulp, Removal, Sorption, TNP, Trace, Waste-Water, Zinc, Zn, Zn(II), Zn2+

? Patel, R. and Suresh, S. (2008), Kinetic and equilibrium studies on the biosorption of reactive black 5 dye by *Aspergillus foetidus*. *Bioresource* *Technology*, **99** (1), 51-58.

Full Text: [2008\Bio Tec99, 51.pdf](2008/Bio%20Tec99,%2051.pdf)

Abstract: An isolated fungus, Aspergillus foetidus had the ability to decolourize growth unsupportive medium containing 100 mg L-1 of reactive black 5 (RB5) dye with >99% efficiency at acidic pH (2-3). Pre-treatment of fungal biomass by autoclaving or exposure to 0.1 M sodium hydroxide facilitated more efficient uptake of dye as compared to untreated fungal biomass. Pre-equilibrium biosorption of RB5 dye onto fungus under different temperatures followed pseudo-second-order kinetic model with high degree of correlation coefficients (R2 > 0.99). Biosorption isotherm data fitted better into Freundlich model for lower concentrations of dye probably suggesting the heterogeneous nature of sorption process. Based on the Langmuir isotherm plots the maximum biosorption capacity (Q0) value was calculated to be 106 mg g-1 at 50°C for fungal biomass pre-treated with 0.1 M NaOH. Thermodynamic studies revealed that the biosorption process was favourable, spontaneous and endothermic in nature. Recovery of both adsorbate (dye) and adsorbent (fungal biomass) was possible using sodium hydroxide. Recovered fungal biomass could be recycled number of times following desorption of dye using 0.1 M NaOH. Fungal biomass pre-treated with NaOH was efficient in decolourizing solution containing mixture of dyes as well as composite raw industrial effluent generated from leather, pharmaceutical and dye manufacturing company. © 2006 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorbents, Adsorption, Aqueous-Solution, Aspergillus, Azo Dyes, Azo Dyes, Biomass, Biosorption, Biosorption Capacity, Capacity, Composite, Concentrations, Correlation, Decolourization, Degradation, Desorption, Dye, Dyes, Efficiency, Effluent, Endothermic, Equilibrium, Equilibrium Studies, Exposure, Freundlich, Freundlich Model, Fungal, Fungal Biomass, Fungus, Growth, Heterogeneous, Hydroxide, Industrial, Industrial Effluent, Isotherm, Isotherm Data, Kinetic, Kinetic Model, Langmuir, Langmuir Isotherm, Langmuir-Isotherm, Leather, Manufacturing, Mixture, Model, NaOH, pH, Pharmaceutical, Pretreated, Process, Pseudo Second Order, Pseudo Second Order Kinetic, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Rb5, Reactive Black, Reactive Black 5, Red-Dye, Removal, Sodium, Sodium Hydroxide, Sorption, Spontaneous, Temperatures, Textile Waste-Water, Untreated, Uptake, Value, Wastewaters

? Yang, L. and Chen, J.P. (2008), Biosorption of hexavalent chromium onto raw and chemically modified *Sargassum* sp. *Bioresource Technology*, **99** (2), 297-307.

Full Text: [2008\Bio Tec99, 297.pdf](2008/Bio%20Tec99,%20297.pdf)

Abstract: Hexavalent chromium biosorption by raw algae is always accompanied with significantly high organic leaching. In this study, hydrochloric acid, sodium hydroxide, calcium chloride, formaldehyde, and glutaraldehyde were used for modification of raw Sargassum sp. seaweed (RSW), in order that the modified seaweed (MSW) has a lower organic leaching while the metal biosorption capacity is comparable to the RSW. The result shows that the chemical modification by 0.2% formaldehyde achieves such goals. The biosorption of both RSW and MSW is highly pH dependent. At the optimal pH of 2.0, the maximum biosorption capacities of MSW and RSW are 1.123 and 0.601 mmol g(-1), respectively. The surface treatment improves the reduction capacity of the biosorbents. The instrumental analysis demonstrates that the Cr(VI) biosorption is controlled by redox, ion exchange and coordination reactions, of which alcohol, carboxyl, amino and sulphonic groups play important roles. The complete uptake of hexavalent chromium is achieved in 20 h. The chemical reduction for Cr(VI) to Cr(III) is pH dependent and controls the overall chromium removal kinetics. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Alcohol, Aqueous-Solutions, Biomass, Biosorption, Cadmium, Chromium, Chromium Removal, Cr(VI), Enhancement, Hexavalent Chromium, Kinetics, Metal Biosorption, Model, Modification, Organic Leaching, pH, Sargassum, Sargassum sp.

? Devi, R. and Dahiya, R.P. (2008), COD and BOD removal from domestic wastewater generated in decentralised sectors. *Bioresource* *Technology*, **99** (2), 344-349.

Full Text: [2008\Bio Tec99, 344.pdf](2008/Bio%20Tec99,%20344.pdf)

Abstract: The objective of this work is to study COD and BOD reduction of domestic wastewater using discarded material based mixed adsorbents (mixed adsorbent carbon, MAC and commercial activated carbon, CAC) in batch mode. Under optimum conditions, maximum reduction and maximum COD and BOD reduction achieved using MAC and CAC was 95.87% and 97.45%; and 99.05% and 99.54%, respectively. Results showed that MAC offered potential benefits for COD and BOD removal from wastewater. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorbents, BOD, COD, Decentralized Sectors, Wastewater Treatment, Low-Cost Adsorbents, Bagasse Fly-Ash, Carbon, Organics, Dye

? Kula, İ., Uğurlu, M., Karaoğlu, H. and Çelik, A. (2008), Adsorption of Cd(II) ions from aqueous solutions using activated carbon prepared from olive stone by ZnCl2 activation. *Bioresource* *Technology*, **99** (3), 492-501.

Full Text: [2008\Bio Tec99, 492.pdf](2008/Bio%20Tec99,%20492.pdf)

Abstract: This study is aimed to remove Cd(II) ions from aqueous solutions by adsorption. As adsorbent, activated carbon prepared from olive stone, an agricultural solid by-product was used. Different activating agent (ZnCl2) amounts and adsorbent particle size were studied to optimize adsorbent surface area. The adsorption experiments were conducted at different parameters such as, adsorbent dose, temperature, equilibrium time and pH. According to the experiments results, the equilibrium time, optimum pH, adsorbent dosage were found 60 min, pH > 6 and 1.0 g/50 ml respectively. The kinetic data supports pseudo-second order model and intra-particle model but shows very poor fit for pseudo-first order model. Adsorption isotherms were obtained from three different temperatures. These adsorption data were fitted with the Langmuir and Freundlich isotherms. In addition, the thermodynamic parameters, standard free energy (ΔG°), standard enthalpy (ΔH°), standard entropy (ΔS°) of the adsorption process were calculated. To reveal the adsorptive characteristics of the produced active carbon, BET surface area measurements were made. Structural analysis was performed using SEM-EDS. The resulting activated carbons with 20% ZnCl2 solution was the best sample of the produced activated carbons from olive stone with the specific surface area of 790.25 m2 g−1. The results show that the produced activated carbon from olive stone is an alternative low-cost adsorbent for removing Cd(II).

Keywords: Activated Carbon, Adsorbent, Adsorption, Cadmium, Cadmium(II) Ions, Chemically Prepared Activated Carbons, Dye, Equilibrium, Fly-Ash, Heavy-Metals, Isotherms, Kinetic Equations, Lead(II), Olive Stone, Peat, Removal, Rice Husk, Sorption, Waste-Water

? Ozmen, E.Y., Sezgin, M., Yılmaz, A. and Yılmaz, M. (2008), Synthesis of β-cyclodextrin and starch based polymers for sorption of azo dyes from aqueous solutions. *Bioresource* *Technology*, **99** (3), 526-531.

Full Text: [2008\Bio Tec99, 526.pdf](2008/Bio%20Tec99,%20526.pdf)

Abstract: Three β-cyclodextrin (polymers 1–3) and a starch-based (polymer 4) polymers were synthesized using hexamethylene diisocyanate (HMDI) as a cross-linking agent in dry dimethylformamide and used as a sorbent for the removal of some selected azo dyes from aqueous solutions. The cross-linked polymers were characterized by Fourier transform infrared spectroscopy, thermogravimetric and differential scanning calorimetric analysis. Results of sorption showed that cyclodextrin and starch based polymers can be effectively used as a sorbent for the removal of anionic azo dyes. The Influence of the amide groups and the chemical structure of azo dyes are also studied. Results of sorption experiments showed that these adsorbent exhibited high sorption capacities toward Direct Violent 51 (80% for polymer 1, 69% for polymer 2, 70% for polymer 3 and 78% for polymer 4). The sorption capacity of dyes on the polymers was dependent on the presence of sulfonate groups of the anionic dyes. In order to explain the results an adsorption mechanism mainly physical adsorption and interactions such as hydrogen bonding, ion-exchange due to the nature of the polymer network and the formation of an inclusion complex due to the β-CD molecules through host–guest interaction is proposed.

Keywords: Β-Cyclodextrin (Cd), Starch, Azo Dye, Solid Phase Extraction

? Peter, A.L.J. and Viraraghavan, T. (2008), Removal of thallium from aqueous solutions by modified *Aspergillus niger* biomass. *Bioresource Technology*, **99** (3), 618-625.

Full Text: [2008\Bio Tec99, 618.pdf](2008/Bio%20Tec99,%20618.pdf)

Abstract: The present study involves an investigation of various treated fungal biomasses of *Aspergillus niger* for the removal of thallium from aqueous solutions. Batch pH and kinetic studies were carried out to examine the effects of pH and contact time on the adsorption process. Among various pH values studied, the optimum pH was found to be between 4 and 5. The equilibrium time for T1 adsorption was found to be 6 h and the rate of T1 adsorption was rapid in the initial hours. Both Lagergren’s pseudo first-order model and Ho’s pseudo second-order model well described the reaction kinetics. Batch adsorption experiments conducted at room temperature (22 ± 1°C) showed that the adsorption pattern followed the Freundlich isotherm model. Column studies using iron oxide-coated immobilized fungal biomass showed lower adsorption capacities compared to batch studies. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: A. Niger, Adsorption, Adsorption, Biosorption, Cadmium, Environmental Concerns, Equilibrium, Heavy-Metals, Isotherm, Isotherms, Kinetics, Soils, Thallium, Wastewaters, Water

? Vílar, V.J.P., Botelho, C.M.S. and Boaventura, R.A.R. (2008), Copper removal by algae *Gelidium*, agar extraction algal waste and granulated algal waste: Kinetics and equilibrium. *Bioresource Technology*, **99** (4), 750-762.

Full Text: [2008\Bio Tec99, 750.pdf](2008/Bio%20Tec99,%20750.pdf)

Abstract: Biosorption of copper ions by an industrial algal waste, from agar extraction industry has been studied in a batch system. This biosorbent was compared with the algae Gelidium itself, which is the raw material for agar extraction, and the industrial waste immobilized with polyacrylonitrile (composite material). The effects of contact time, pH, ionic strength (IS) and temperature on the biosorption process have been studied. Equilibrium data follow both Langmuir and Langmuir-Freundlich models. The parameters of Langmuir equilibrium model were: q(max), = 33.0 mg g-1, K-L = 0.015 mg 1-1; q(max) = 16.7 mg g-1, K-L = 0.028 mg 1-1 and q(max) = 10.3 mg g-1, K-L = 0.160 mg 1-1 respectively for Gelidium, algal waste and composite material at pH = 5.3, T = 20°C and IS = 0.001 M. Increasing the pH, the number of deprotonated active sites increases and so the uptake capacity of copper ions. In the case of high ionic strengths, the contribution of the electrostatic component to the overall binding decreases, and so the uptake capacity. The temperature has little influence on the uptake capacity principally for low equilibrium copper concentrations. Changes in standard enthalpy, Gibbs energy and entropy during biosorption were determined. Kinetic data at different solution pH (3, 4 and 5.3) were fitted to pseudo-first-order and pseudo-second-order models. The adsorptive behaviour of biosorbent particles was modelled using a batch reactor mass transfer kinetic model, which successfully predicts Cu(II) concentration profiles. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorption, Agar Extraction Waste, Agricultural Waste, Algae Gelidium, Algal Waste, Aqueous-Solutions, Batch Reactor, Biosorbent, Biosorption, Biosorption, Copper, Copper(II), Cu(II), Equilibrium, Gelidium, Heavy-Metals, Immobilized, Ionic-Strength, Kinetic, Langmuir, Marine-Algae, Mass Transfer, pH, Pretreated Biomass, Removal, Sorption, Sorption

? Wang, B.E., Hu, Y.Y., Xie, L. and Peng, K. (2008), Biosorption behavior of azo dye by inactive CMC immobilized *Aspergillus fumigatus* beads. *Bioresource Technology*, **99** (4), 794-800.

Full Text: [2008\Bio Tec99, 794.pdf](2008/Bio%20Tec99,%20794.pdf)

Abstract: The biosorption equilibria and kinetics of an azo dye (reactive brilliant red K-2BP) were examined in this study using inactive carboxylmethylcellulose (CMC) immobilized Aspergillus fumigatus beads as the biosorbent. It was found that the biosorption capacity was at maximum when dye solution pH was about 2.0, that the sorption was spontaneous and endothermic with insignificant entropy changes, and that the Freundlich isotherm model fitted well to the biosorption equilibrium data. The biosorption rates were found to be consistent with a pseudo-second-order model. An intraparticle diffusion-based Weber-Morris model was applied to evaluate rate-limiting steps of the biosorption processes. The results suggested that the diffusion controlled the overall biosorption process, but the boundary layer diffusion of dye molecules could not be neglected. External mass transfer coefficients (beta S-I) obtained by both Mathews and Weber model and Frusawa and Smith model were consistent. (c) 2007 Published by Elsevier Ltd.

Keywords: Acid Blue-324, Adsorption, Aqueous-Solutions, Biosorbent, Biosorption, Diffusion, Dye, Equilibrium, Freundlich Isotherm, Immobilized, Inactive Immobilized Beads, Isotherm, Kinetics, Mass Transfer, Mass-Transfer, Metal-Ions, pH, Phanerochaete-Chrysosporium, Pseudo-Second-Order Kinetics, Reactive Dyes, Sorption, Spirogyra-Rhizopus, Thermodynamics, Trametes-Versicolor

? Chuang, C.S., Wang, M.K., Ko, C.H., Ou, C.C. and Wu, C.H. (2008), Removal of benzene and toluene by carbonized bamboo materials modified with TiO2. *Bioresource Technology*, **99** (5), 954-958.

Full Text: [2008\Bio Tec99, 954.pdf](2008/Bio%20Tec99,%20954.pdf)

Abstract: Carbonized moso bamboo (Phyllostachys pubescens) was coated with TiO2 nanoparticles to enhance its removal efficiency of harmful gases. Carbonized bamboo-TiO2 composite (CBC) was prepared by heating mixtures of carbonized bamboo powder (CB) and TiO2 nanoparticles, denoted as CBM, under nitrogen condition. TiO2 nanoparticle and carbonized bamboo powder were mixed with the mass ratios of 1/1 and 2/1, respectively. At the same mass ratio of TiO2 to CB, the benzene and toluene removal efficiencies follow the trend: CBC > CBM > CB, which is consistent with the amount of TiO2 validated by elemental analysis. Sorption mechanism of benzene and toluene by CB, CBM and CBC might belong to hydrophobic-hydrophobic interaction, observed by depletion of untreated bamboo (UB) carbohydrates during carbonization. Sorption kinetics was further analyzed, and optimal correlation was found by fitting with the Elovich kinetic equation. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Benzene, Carbonized Moso Bamboo, Charcoal, Composite, Elovich Equation, Interaction, Kinetic, Kinetics, Mechanism, Nanoparticle, Nitrogen, Removal, Sorption, Spectroscopy, TiO2, TiO2 Nanoparticles, Toluene

? Inbaraj, B.S., Chiu, C., Ho, G.H., Yang, J. and Chen, B.H. (2008), Effects of temperature and pH on adsorption of basic brown 1 by the bacterial biopolymer poly(gamma-glutamic acid). *Bioresource Technology*, **99** (5), 1026-1035.

Full Text: [2008\Bio Tec99, 1026.pdf](2008/Bio%20Tec99,%201026.pdf)

Abstract: Poly(gamma-glutamic acid) (gamma-PGA), an extracellular polymeric substance (EPS) synthesized by Bacillus species, was explored to study its interaction with the basic brown I dye by conducting a systematic batch adsorption study as affected by two critical parameters, temperature and pH. Adsorption isotherms were closely predicted by Temkin equation among the eight isotherm models tested. The rate of adsorption was very rapid attaining equilibrium within 60 min and the kinetics were well described by both modified second-order and pseudo second-order models. Boyd’s ion exchange model, which assumes exchanges of ions to be a chemical phenomenon, also fitted the kinetic data precisely. The adsorption rate increased with increasing solution temperature, however, a reversed trend was observed for the adsorption capacity. Changes in enthalpy, entropy and free energy values revealed dye adsorption by gamma-PGA to be an exothermic and spontaneous process involving no structural modification in gamma-PGA, whereas the activation energy of 37.21 kJ/mol indicated dye adsorption to be reaction-controlled. Following a rise in solution pH, the dye adsorption increased and reached a plateau at pH 5, while the maximum release of dye from spent gamma-PGA occurred at pH 1.5, suggesting a possible ion exchange mechanism. Ion exchange adsorption of basic dyes by gamma-PGA was further proved by the presence of two new IR bands at similar to 1600 and 1405.72 cm-1, representing asymmetric and symmetric stretching vibration of carboxylate anion, for dye-treated gamma-PGA. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activation, Activation Energy, Adsorption, Adsorption Isotherms, Aqueous-Solution, Bacillus, Basic Brown 1, Basic Dye, Basic Dyes, Batch Adsorption, Binding, Biosorption, Capacity, Dye, Dyes, Entropy, Equilibrium, Heavy-Metals, Interaction, Ion Exchange, Ion-Exchange, IR, Isotherm, Isotherms, Jackfruit Peel, Kinetic, Kinetics, Mechanism, Model, Models, Modification, pH, Poly(Gamma-Glutamic Acid), Polymeric, Pseudo Second-Order, Release, Removal, Rights, Solution, Sorption, Temperature, Tree Fern, Vibration

? Binupriya, A.R., Sathishkumar, M., Swaminathan, K., Ku, C.S. and Yun, S.E. (2008), Comparative studies on removal of Congo red by native and modified mycelial pellets of *Trametes versicolor* in various reactor modes. *Bioresource Technology*, **99** (5), 1080-1088.

Full Text: [2008\Bio Tec99, 1080.pdf](2008/Bio%20Tec99,%201080.pdf)

Abstract: Aerated and rotated mode adsorption experiments were carried out for the removal of Congo red from aqueous solution using native and pretreated mycelial pellets/biomass of Trametes versicolor. The effect of process parameters like contact time, dosage of adsorbent, adsorbate concentration and pH on adsorption was investigated. Higher the dye concentration lower was the adsorption. Equilibrium time was attained at 90 min. Increase in biomass dosage increased the adsorption. Experimental data were analyzed by the Langmuir and Temkin isotherms. Adsorption capacity (Q(0)) of autoclaved biomass was 51.81 mg/g, which was higher than other biomass studied. The second-order kinetic model by Ho and Mckay described well the experimental data. Acidic pH was favorable for the adsorption of Congo red. Studies on pH effect and desorption show that chemisorption seems to play a major role in the adsorption process. Among the native and pretreated biomass studied, autoclaved biomass showed a better adsorption capacity. Utilization of autoclaved biomass is much safer as it does not pose any threat to environment. Aerated mode showed a better adsorption capacity when compared to rotated mode. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption, Aqueous Solution, Aqueous-Solution, Biomass, Congo Red, Decolorization, Desorption, Dye, Dye Removal, Effluent, Environment, Equilibrium, Isotherms, Kinetic, Kinetics, Langmuir, Low-Cost Adsorbents, pH, pH Effect, Removal, Solution, Trametes Versicolor, Waste-Water, White-Rot Fungus

? Miretzky, P., Muñoz, C. and Carrillo-Chávez, A. (2008), Experimental binding of lead to a low cost on biosorbent: Nopal (*Opuntia streptacantha*). *Bioresource Technology*, **99** (5), 1211-1217.

Full Text: [2008\Bio Tec99, 1211.pdf](2008/Bio%20Tec99,%201211.pdf)

Abstract: The use of nopal cladodes (Opuntia streptacantha) as raw material for Pb2+ biosorption was investigated. Batch experiments were carried out to determine Pb22++ sorption capacity and the efficiency of the sorption process under different pH, initial Pb2+ and nopal biomass concentrations. The experimental data showed a good fit to Langmuir and Freundlich isotherms models. The maximum adsorption capacity for Pb2+ was 0.14 mmol g-1 with an efficiency higher than 94% (pH 5.0 and 2.5 g L-1 nopal biomass). The Pb2+ kinetics were best described by the pseudo-second-order rate model. The rate constant, the initial sorption rate and the equilibrium sorption capacity were determined. The practical implication of this study is the development of an effective and economic technology in which the nopal biomass did not undergo any chemical or physical pretreatment, which added to nopal abundance in Mexico and its low cost makes it a good option for Pb2+ removal from contaminated waters. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Aqueous-Solution, Biomass, Biosorbent, Biosorption, Capacity, Copper, Cost, Development, Economic, Efficiency, Equilibrium, Experiments, Ficus-Indica, Freundlich, Heavy-Metals, Isotherms, Kinetics, Langmuir, Langmuir And Freundlich Isotherms, Lead, Mexico, Model, Models, Mucilage, Nopal, Pb2+, pH, Pretreatment, Process, Pseudo-Second-Order, Pseudo-Second-Order Rate, Removal, Rights, Sorption, Sorption Capacity, Technology, Water, Waters

? Garg, U.K., Kaur, M.P., Garg, V.K. and Sud, D. (2008), Removal of nickel(II) from aqueous solution by adsorption on agricultural waste biomass using a response surface methodological approach. *Bioresource Technology*, **99** (5), 1325-1331.

Full Text: [2008\Bio Tec99, 1325.pdf](2008/Bio%20Tec99,%201325.pdf)

Abstract: In the present study, effect of adsorbent dose, pH and agitation speed on nickel removal from aqueous medium using an agricultural waste biomass, Sugarcane bagasse has been investigated. Batch mode experiments were carried out to assess the adsorption equilibrium. The influence of three parameters on the removal of nickel was also examined using a response surface methodological approach. The central composite face-centered experimental design in response surface methodology (RSM) by design expert version 6.0.10 (stat ease, usa) was used for designing the experiments as well as for full response surface estimation. the optimum conditions for maximum removal of nickel from an aqueous solution of 50 mg/l were as follows: adsorbent dose (1500 mg/L), pH (7.52) and stirring speed (150 rpm). This was evidenced by the higher value of coefficient of determination (r(2) = 0.9873). (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Response Surface Methodology (RSM), Central Composite Face-Centered Design (CCFD), Sugarcane Bagasse (SCB), Nickel (Ni), Adsorbent, Activated Carbon, Heavy-Metals, Fly-Ash, Water, Sorption, Ions, Optimization, Biosorption, Cadmium

? Wang, L. and Wang, A. (2008), Adsorption properties of congo red from aqueous solution onto *N,O*-carboxymethyl-chitosan. *Bioresource Technology*, **99** (5), 1403-1408.

Full Text: [2008\Bio Tec99, 1403.pdf](2008/Bio%20Tec99,%201403.pdf)

Abstract: N,O-carboxymethyl-chitosans (N,O-CMC) with different degree of substitution (DS) were synthesized under heterogeneous conditions by controlling the reaction temperature. The factors influencing adsorption capacity of N,O-CMC such as the DS of N,O-CMC, initial pH value of the dye solution and adsorption temperature for anionic dye congo red (CR) were investigated. Compared with chitosan (78.90 mg/g), N,O-CMC with the DS of 0.35 exhibited much higher adsorption capacity (330.62 mg/g) for CR at the same adsorption conditions. The adsorption kinetics and isotherms showed that the sorption processes were better fitted by pseudo-second-order equation and the Langmuir equation, respectively. The adsorption mechanism of N,O-CMC was also discussed by means of IR and XPS spectra. The results in this study indicated that N,O-CMC was an attractive candidate for removing CR from the dye wastewater. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Acid, Activated Carbon, Adsorbent, Adsorption, Adsorption Kinetics, Anionic Dyes, Aqueous Solution, Chitosan, Composite, Congo Red, Dye, Fly-Ash, Ions, IR, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Equation, Linked Chitosan Beads, Mechanism, N,O-Carboxymethyl-Chitosan, pH, Removal, Solution, Sorption, Temperature, Waste-Water, Wastewater, XPS

? Aroğuz, A.Z., Gulen, J. and Evers, R.H. (2008), Adsorption of methylene blue from aqueous solution on pyrolyzed petrified sediment. *Bioresource Technology*, **99** (6), 1503-1508.

Full Text: [2008\Bio Tec99, 1503.pdf](2008/Bio%20Tec99,%201503.pdf)

Abstract: The adsorption kinetics of methylene blue on pyrolyzed petrified sediment (PPS) has been performed using a batch-adsorption technique. The effects of various experimental parameters, such as initial dye concentration, contact time, and temperature were investigated. The pseudo-first-order and pseudo-second-order kinetic models were used to describe the kinetic data. The best correlation coefficient was obtained using the pseudo first-order kinetic model, which shows that the adsorption of methylene blue followed the pseudo-first-order rate expression and the rate constants were evaluated. The Langmuir and Freundlich adsorption isotherm models were applied to describe the equilibrium isotherms and the isotherm constants were determined. It was found that the data fitted well to Langmuir and Freundlich models. The activation energy of adsorption was also evaluated for the adsorption of methylene blue onto pyrolyzed sediment. It was found about 8.5 kJ mol-1. Thermodynamics parameters ΔG°, ΔH°, ΔS°were calculated, indicating that this process can be spontaneous and endothermic. The adsorption enthalpy and entropy were found as 14-18.5 kJ mol-1 and 52.8-67 J mol-1 K-1, respectively. The results obtained from the adsorption process using PPS as adsorbent was subjected to student’s t-test. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Acid Dyes, Activation, Adsorbent, Adsorption, Adsorption Isotherm, Adsorption Kinetic, Adsorption Kinetics, Aqueous Solution, Azinphosmethyl, Basic Dye, Bentonite, Cu(II), Dye, Earth, Equilibrium, Isotherm, Isotherms, Kinetic, Kinetic Models, Kinetics, Langmuir, Methylene Blue, Ocean, Pseudo First-Order, Pyrolysis, Removal, Sediment, Solution, Temperature, Waste-Water

? Lu, S.G. and Gibb, S.W. (2008), Copper removal from wastewater using spent-grain as biosorbent. *Bioresource Technology*, **99** (6), 1509-1517.

Full Text: [2008\Bio Tec99, 1509.pdf](2008/Bio%20Tec99,%201509.pdf)

Abstract: The removal of Cu(II) ions from aqueous solutions using spent-grain was studied. The experimental data fitted the Langmuir isotherm and the maximum adsorption capacity of spent-grain was determined to be 10.47 mg g-1 dry weight (pH 4.2). Kinetic studies showed the adsorption process followed pseudo second-order rate model. Column studies with synthetic Cu(II) solutions were used to investigate the effects of Cu(II) ion concentration, initial pH, flow rate and the presence of EDTA on the Cu(II) removal performance. When treating the spent-lees, the wastewater from the whisky distilling industry, the reduction of Cu(II) uptake capacity to 77.7% (solution pH adjusted to 4.5 with 1 N NaOH) and 31.6% (pH 3.8 without adjustment) was observed compared to Cu(II) uptake capacity when treating synthetic Cu(II) solution. On the basis of the results and that spent-grain is an abundant and by-product from the whisky distilling industry we suggest that it can be economically and effectively applied as a biosorbent for the removal of Cu(II) ions from distilling wastewaters. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Isotherm, Aqueous Solutions, Aqueous-Solutions, Biosorbent, Biosorption, Biosorption, Cu(II), Cu(II) Ion, Distillery Wastewater, Equilibrium, Heavy-Metals, Isotherm, Langmuir, Langmuir Isotherm, Lead, Low-Cost Adsorbents, Metal-Ions, Model, pH, Pseudo Second-Order, Removal, Solution, Sorption, Spent-Grain, Wastewater

? Nehrenheim, E. and Gustafsson, J.P. (2008), Kinetic sorption modelling of Cu, Ni, Zn, Pb and Cr ions to pine bark and blast furnace slag by using batch experiments. *Bioresource Technology*, **99** (6), 1571-1577.

Full Text: [2008\Bio Tec99, 1571.pdf](2008/Bio%20Tec99,%201571.pdf)

Abstract: Storm water and landfill leachate can both contain significant amounts of toxic metals such as Zn, Cu, Pb, Cr and Ni. Pine bark and blast furnace slag are both residual waste products that have shown a large potential for metal removal from contaminated water. There are however many variables that must be optimized in order to achieve efficient metal retention. One of these variables is the time of which the solution is in contact with each unit of filter material. Metal sorption was studied in two laboratory experiments to improve the knowledge of the effects of contact time. The results showed that pine bark was generally more efficient than blast furnace slag when the metal concentrations were relatively small, whereas blast furnace slag sorbed most metals to a larger extent at increased metal loads. In addition, sorption to blast furnace slag was found to be faster than metal binding to pine bark. A pseudo-second-order kinetic model was able to describe the data well within 1000 s of reaction time. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorbent, Adsorption, Adsorption, Batch Test, Blast Furnace Slag, Cadmium, Experiments, Heavy Metals, Heavy-Metal Ions, Kinetic, Kinetic Model, Kinetic Sorption, Knowledge, Metal, Metals, Model, Modelling, Pb, Pine Bark, Pollutants, Potential, Removal, Retention, Rights, Small, Solution, Sorption, Waste-Water, Water

? Tsai, W.T., Hsien, K.J., Hsu, H.C., Lin, C.M., Lin, K.Y. and Chiu, C.H. (2008), Utilization of ground eggshell waste as an adsorbent for the removal of dyes from aqueous solution. *Bioresource Technology*, **99** (6), 1623-1629.

Full Text: [2008\Bio Tec99, 1623.pdf](2008/Bio%20Tec99,%201623.pdf)

Abstract: The adsorption of cationic basic blue 9 and anionic acid orange 51 from aqueous solution onto the calcified eggshell (ES) and its ground eggshell powder (ESP) was carried out by varying the process parameters such as agitation speed, initial dye concentration, adsorbent mass and temperature. The adsorption potential for basic blue 9 onto ESP is far lower than that for acid orange 51, mainly due to the ionic interaction between the acid dye with the sulfonate groups and the positively charged sites on the surface of ESP. The adsorption capacity of acid orange 51 onto ES is significantly smaller than that onto ESP, which is in line with their pore properties (i.e., 1 vs. 21 m2/g). The experimental results showed that the adsorption process can be well described with a simple model, the pseudo-second-order model. According to the equilibrium adsorption capacity from the fitting of pseudo-second order reaction model, it was further found that the Freundlich model yields a somewhat better fit than the Langmuir model in the adsorption of acid orange 51 onto ESP. In addition, an increase in adsorption temperature from 15 to 45°C significantly enhances the adsorption capacity of acid orange 51 onto ESP, revealing that the adsorption should be an endothermic or chemisorption process. From the results, it is feasible to utilize the ground eggshell waste as an effective adsorbent for removal of anionic dye from aqueous solution. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Acid, Adsorbent, Adsorption, Aqueous Solution, Bioresource Utilization, Calcified Eggshell, Dye, Equilibrium, Heavy-Metals, Interaction, Kinetic Modeling, Kinetics, Langmuir, Liquid-Phase Adsorption, Low-Cost Adsorbents, Pseudo-Second Order, Removal, Solution, Sorbents, Spent Bleaching Earth, Temperature, Violet, Water

? Devi, R., Singh, V. and Kumar, A. (2008), COD and BOD reduction from coffee processing wastewater using Avacado peel carbon. *Bioresource Technology*, **99** (6), 1853-1860.

Full Text: [2008\Bio Tec99, 1853.pdf](2008/Bio%20Tec99,%201853.pdf)

Abstract: The aim of this study was the assessment of reduction of chemical oxygen demand (COD) and biological oxygen demand (BOD) of wastewater from coffee processing plant using activated carbon made up of Avacado Peels. The complete study was done in batch mode to investigate the effect of operating parameters. The results of the COD and BOD concentration reduction with avocado peel carbon (APC) and commercial activated carbon (CAC) were compared and optimum operating conditions were determined for maximum reduction. Adsorption isotherm was also studied besides the calculation of optimum treatment parameters for maximum reduction of COD and BOD concentration from effluent of the coffee processing plant. The maximum percentage reduction of COD and BOD concentration under optimum operating conditions using APC was 98.20% and 99.18% respectively and with CAC this reduction was 99.02% and 99.35% respectively. As the adsorption capacity of APC is comparable with that of CAC for reduction of COD and BOD concentration, it could be a lucrative technique for treatment of domestic wastewater generated in decentralized sectors. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Avacado, Bod, Cod, Coffee Processing Wastewater/Effluent, Low-Cost Adsorbents, Fly-Ash, Removal, Organics, Color, Pulp, Dye

? Schiewer, S. and Patil, S.B. (2008), Pectin-rich fruit wastes as biosorbents for heavy metal removal: Equilibrium and kinetics. *Bioresource Technology*, **99** (6), 1896-1903.

Full Text: [2008\Bio Tec99, 1896.pdf](2008/Bio%20Tec99,%201896.pdf)

Abstract: Biosorption can be used as a cost effective and efficient technique for the removal of toxic heavy metals from wastewater. Waste materials from industries such as food processing and agriculture may act as biosorbents. This study investigates the removal of cadmium by fruit wastes (derived from several citrus fruits, apples and grapes). Citrus peels were identified as the most promising biosorbent due to high metal uptake in conjunction with physical stability. Uptake was rapid with equilibrium reached after 30-80 min depending on the particle size (0.18-0.9 mm). Sorption kinetics followed a second-order model. Sorption equilibrium isotherms could be described by the Langmuir model in some cases, whereas in others an S-shaped isotherm was observed, that did not follow the Langmuir isotherm model. The metal uptake increased with pH, with uptake capacities ranging between 0.5 and 0.9 meq/g of dry peel. Due to their low cost, good uptake capacity, and rapid kinetics, citrus peels are a promising biosorbent material warranting further study. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Apple, Beet, Binding, Biomass, Biosorbent, Biosorption, Biosorption, Cadmium, Cations, Citrus Peels, Equilibrium, Heavy Metal, Heavy Metal Removal, Heavy Metals, Ions, Isotherm, Isotherms, Kinetics, Langmuir, Langmuir Isotherm, Metal, Metal Uptake, Metals, Orange, pH, Removal, Size, Wastewater, Water

? Serencam, H., Gundogdu, A., Uygur, Y., Kemer, B., Bulut, V.N., Duran, C., Soylak, M. and Tufekci, M. (2008), Removal of cadmium from aqueous solution by Nordmann fir (*Abies nordmanniana* (Stev.) Spach. Subsp *nordmanniana*) leaves. *Bioresource Technology*, **99** (6), 1992-2000.

Full Text: [2008\Bio Tec99, 1992.pdf](2008/Bio%20Tec99,%201992.pdf)

Abstract: The utility of Nordmann fir (Abies nordmanniana (Stev.) Spach. Subsp. nordmanniana) leaves from Eastern Black Sea region for the removal (sorption) of metal ions from aqueous solutions was investigated. For this, the optimum values of pH, time, metal concentration, leaf concentration, leaf particle size and adsorption capacity were determined. Also the recovery conditions of the metals from leaves were studied. Cd metal was selected because of its toxic properties. Freundlich isotherm model was used to describe the adsorption behaviour and the experimental results obtained for Cd2+ adsorption, followed this model well. The utility of Nordmann fir leaves to remove toxic metals from aqueous solutions was proved. Hence, this study showed that the leaves of Nordmann fir can provide cheap source as biosorbents for toxic metal removal from natural or wastewaters. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Nordmann Fir Leaves, Cadmium, Sorption, Desorption, Atomic Absorption Spectrometry, Waste Tea Leaves, Heavy-Metals, Immobilized Cells, Pinus-Sylvestris, Cone Biomass, Biosorption, Water, Recovery, Ions, Lead

? Pekkuz, H., Uzun, İ. and Güezel, F. (2008), Kinetics and thermodynamics of the adsorption of some dyestuffs from aqueous solution by poplar sawdust. *Bioresource Technology*, **99** (6), 2009-2017.

Full Text: [2008\Bio Tec99, 2009.pdf](2008/Bio%20Tec99,%202009.pdf)

Abstract: The effect of temperature on the adsorption of metanil yellow (MY) (acidic) and methylene blue (MB) (basic) by poplar sawdust was investigated. In addition, the amounts of NaHCO3, NaCO3, NaOH and C2H5ONa adsorbed by 1 g of poplar sawdust to determine its surface acidity were also determined. Kinetical data obtained at different temperatures (293 K, 313 K and 333 K) for the adsorption of each dyestuff by poplar sawdust were applied to the pseudo first-order, the pseudo second-order and the intraparticle diffusion equations, and the rate constants of first-order adsorption (k1), the rate constants of second-order adsorption (k2) and intraparticle diffusion rate constants (k(p)) at these temperatures were calculated, respectively. In addition, isothermal data obtained at different temperatures (293 K, 313 K and 333 K) for the adsorption of each dyestuff by poplar sawdust were applied to thermodynamical equations, and thermodynamical parameters (ΔG, ΔH and ΔS) were also calculated. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbents, Adsorption, Aqueous Solution, Calcined Alunite, Chitosan, Diffusion, Dyestuff, Kinetics, Methylene Blue, Poplar Sawdust, Pseudo First-Order, Pseudo Second-Order, Reactive Dyes, Removal, Sawdust, Solution, Surface Acidity, Surface-Acidity, Temperature, Thermodynamics, Wastes, Water

? Pokhrel, D. and Viraraghavan, T. (2008), Arsenic removal in an iron oxide-coated fungal biomass column: Analysis of breakthrough curves. *Bioresource Technology*, **99** (6), 2067-2071.

Full Text: [2008\Bio Tec99, 2067.pdf](2008/Bio%20Tec99,%202067.pdf)

Abstract: Column studies were conducted, using iron oxide-coated *Aspergillus niger* biomass, to examine the removal of arsenic [As(III) and As(V)] from an aqueous solution. The Thomas and Yan models were examined to predict the breakthrough curves. The Yan Model described the data better (based on the R-2 values) when compared with the Thomas Model. The adsorption capacity of the iron oxide-coated biomass estimated by the Thomas Model {1070 mu g/g for As(V) and 700 mu g/g for As(111)} was comparable to the calculated value of its adsorption capacity {1080 mu g/g for As(V) and 880 mu g/g for As(III)}. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Arsenic, Arsenic Removal, As(V), *Aspergillus niger*, Biomass, Biosorption, Breakthrough, Capacity, Column, Column Study, Data, Fungal Biomass, Iron, Iron Oxide-Coated Biomass, Iron Oxide-Coated Fungal Biomass, Model, Models, Removal, Wastewaters

? Parab, H., Joshi, S., Shenoy, N., Lali, A., Sarma, U.S. and Sudersanan, M. (2008), Esterified coir pith as an adsorbent for the removal of Co(II) from aqueous solution. *Bioresource Technology*, **99** (6), 2083-2086.

Full Text: [2008\Bio Tec99, 2083.pdf](2008/Bio%20Tec99,%202083.pdf)

Abstract: Coir pith was chemically modified for the adsorption of cobalt(II) ions from aqueous solution. Chemical modification was done by esterification using succinic anhydride followed by activation with NaHCO3 in order to improve the adsorption of Co(II). Adsorptive removal of Co(II) from aqueous solution onto modified coir pith was evaluated in batch studies under varying conditions of agitation time and metal ion concentration to assess the kinetic and equilibrium parameters. A pseudo-second-order kinetic model fitted well for the sorption of Co(II) onto modified coir pith. Sorption kinetics showed that the loading of Co(II) by this material was quite fast under ambient conditions. The Langmuir and Freundlich equilibrium isotherm models provided excellent fits for the adsorption data, with R2 of 0.99 and 0.98, respectively. After esterification, the maximum Co(II) sorption loading Q(0); was greatly improved. It is evident that chemically modified adsorbent exhibits better Co(II) removal capability than raw adsorbent suggesting that surface modification of the adsorbent generates more adsorption sites on its solid surface for metal adsorption. A complete recovery of the adsorbed metal ions from the spent adsorbent was achieved by using 1.0 N HCl. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activation, Adsorbent, Adsorption, Adsorption, Aqueous Solution, Batch Studies, Cobalt, Coir Pith, Equilibrium, Equilibrium Isotherm, Esterification, Isotherm, Kinetic, Kinetics, Langmuir, Metal, Metal Adsorption, Metal Ions, Modification, Removal, Solution, Sorption, Water

? Yi, J.Z. and Zhang, L.M. (2008), Removal of methylene blue dye from aqueous solution by adsorption onto sodium humate/polyacrylamide/clay hybrid hydrogels. *Bioresource Technology*, **99** (7), 2182-2186.

Full Text: [2008\Bio Tec99, 2182.pdf](2008/Bio%20Tec99,%202182.pdf)

Abstract: A type of novel hybrid hydrogels from sodium humate (SH), polyacrylamide (PAM), and hydrophilic laponite clay were prepared using potassium persulfate (KPS) as the initiator and N,N’-methylenebisacrylamide (MBA) as the cross-linker. The morphology of the hydrogels was characterized by field emission scanning electron microscope (FESEM). The adsorption-desorption kinetics of methylene blue (MB) were also investigated. It was shown that SH/PAM/clay hydrogels exhibited excellent performance in MB adsorption. The maximum absorption concentration of mb was 800 mg/l/g of hydrogel. the adsorption concentration of hydrogels Increased with increasing SH or clay content. Less MB were desorbed with increasing SH content, while the clay content had no significant influence on the amount of MB desorbed. This effect was attributed to the formation of a ionic complex between the imine groups of MB and the ionized carboxylic groups of SH. MB diffusion process was dominant in MB desorption. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Methylene Blue, Sodium Humate, Hydrogel, Complexes, Kinetics

? Namasivayam, C. and Sureshkumar, M.V. (2008), Removal of chromium(VI) from water and wastewater using surfactant modified coconut coir pith as a biosorbent. *Bioresource Technology*, **99** (7), 2218-2225.

Full Text: [2008\Bio Tec99, 2218.pdf](2008/Bio%20Tec99,%202218.pdf)

Abstract: Coconut coir pith, an agricultural solid waste was used as biosorbent for the removal of chromium(VI) after modification with a cationic surfactant, hexadecyltrimethylammonium bromide. Optimum pH for Cr(Vl) adsorption was found to be 2.0. Reduction of Cr(VI) to Cr(III) occurred to a slight extent during the removal. Langmuir, Freundlich and Dubinin Radushkevich (D-R) isotherms were used to model the adsorption equilibrium data and the system followed all the three isotherms. The adsorption capacity of the biosorbent was found to be 76.3 mg g-1, which is higher or comparable to the adsorption capacity of various adsorbents reported in literature. Kinetic studies showed that the adsorption obeyed second order and Elovich model. Thermodynamic parameters such as ΔG°, ΔH° and ΔS° were evaluated, indicating that the overall adsorption process was endothermic and spontaneous. Effects of foreign anions were also examined. The adsorbent was also tested for the removal of Cr(VI) from electroplating effluent. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorbent, Adsorbents, Adsorption, Adsorption Equilibrium, Agricultural Solid Waste, Aqueous-Solution, Biosorbent, Biosorption, Capacity, Cationic Surfactant, Chromate, Chromium(VI), Coir Pith, Cr(III), Cr(VI), Effluent, Equilibrium, Freundlich, Hexavalent Chromium, Isotherms, Kinetic, Kinetics, Kinetics, Langmuir, Literature, Model, Modification, pH, Reduction, Removal, Rights, Sorption, Surfactant, Thermodynamic, Thermodynamic Parameters, Wastewater, Water

? Cengiz, S. and Cavas, L. (2008), Removal of Methylene blue by invasive marine seaweed: *Caulerpa racemosa* var. *cylindracea*. *Bioresource Technology*, **99** (7), 2357-2363.

Full Text: [2008\Bio Tec99, 2357.pdf](2008/Bio%20Tec99,%202357.pdf)

Abstract: Caulerpa racemosa var. cylindracea is one of the well-known invasive species in the Mediterranean Sea. In the present study, dried biomass of C racemosa var. cylindracea was shown to have adsorption capacity for methylene blue. The adsorption reached equilibrium at 90 min for all studied concentrations (5-100 mg/L). The pseudo-second-order model is well in line with our experimental results. There was a sharp increase in the adsorbed dye amount per adsorbent amount from 3.3 to 16.7 g/L, then a slight increase up to 66.7 g/L was observed. Langmuir and Freundlich’s models were applied to the data related to adsorption isotherm. According to Langmuir’s model data, the observed maximum adsorption capacity (q(m)) was 5.23 mg/g at 18°C. The enthalpy of adsorption was found to be 33 kJ/mol, which indicated a chemical adsorption between dye molecules and C. racemosa var. cylindracea functional groups. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorbent, Adsorption, Adsorption Isotherm, Biomass, Biosorption, Biosorption, Capacity, Carbon, Caulerpa Racemosa Var.Cylindracea, Chlorophyta, Dye, Dye Removal, Equilibrium, Experimental, Isotherm, Kinetics, Langmuir, Lentillifera, Mechanism, Methylene Blue, Model, Models, Removal, Rights, Sorption, Waste Waters

? Argun, M.E. and Dursun, Ş. (2008), A new approach to modification of natural adsorbent for heavy metal adsorption. *Bioresource Technology*, **99** (7), 2516-2527.

Full Text: [2008\Bio Tec99, 2516.pdf](2008/Bio%20Tec99,%202516.pdf)

Abstract: This paper describes modification of a natural adsorbent with Fenton reagent and determines the removal of Cd(II) ions from aqueous solution. Changes of the surface properties of adsorbent materials were determined by the FT-IR analysis after the modification of pine bark. The effect of Fe2+/H2O2 ratio, ORP, pH, and contact time were determined. Different adsorption isotherms were also obtained using concentrations of Cd(II) ions ranging from 0.1 to 100 mg L-1. The adsorption process follows pseudo-first-order reaction kinetics and follows the Langmuir adsorption isotherm. The paper discusses thermodynamic parameters, including changes in gibbs free energy, entropy, and enthalpy, for the adsorption of Cd(II) on modified bark, and revealed that the adsorption process was spontaneous and exothermic under natural conditions. The maximum removal efficiency obtained was 97% at pH 7 and with a 90-min contact time (for 3 5 mg L-1 initial concentration and a 2.5 g L-1 solid-to-liquid ratio). (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Modification, Fenton, Natural Adsorbent, Cadmium Removal, Reaction Kinetic, Sphagnum Moss Peat, Aqueous-Solutions, Waste-Water, Nickel Removal, Ion-Exchange, Lemna-Minor, Fly-Ash, Oxidation, Kinetics, Sorption

? Grimm, A., Zanzi, R., Björnbom, E. and Cukierman, A.L. (2008), Comparison of different types of biomasses for copper biosorption. *Bioresource Technology*, **99** (7), 2559-2565.

Full Text: [2008\Bio Tec99, 2559.pdf](2008/Bio%20Tec99,%202559.pdf)

Abstract: Three biomass, birch wood Betula sp., marine brown alga Fucus vesiculosus, and terrestrial moss Pleurozium schreberi, have been compared as raw materials for preparation of biosorbents for removal of copper ions from diluted water solutions. Small sample doses (0.5 g/100 ml) of the biosorbents prepared from alga and moss enabled more than 90% removal of Cu(II) ions from diluted water solutions (5-20 mg/l). The sample from sawdust was less effective. A pseudo-second-order rate model properly described the experimental kinetic data for the biosorbents. The maximum sorption capacities (Xm) determined from the experimental equilibrium isotherms by applying the Langmuir model showed that the alga had the best copper-binding ability (Xm = 23.4 mg/g), followed by the moss (Xm = 11.1 mg/g), and the sawdust (Xm = 4.9 mg/g). No visible damages or performance losses were detected for the alga and moss after five sorption-desorption cycles using diluted HCl as eluent. ? 2007 Elsevier Ltd. All rights reserved.

Keywords: Aqueous-Solutions, Azolla-Filiculoides, Biomass, Biosorbents, Biosorption, Birch, Brown Alga, Copper, Cu(II), Cu(II) Ion, Equilibrium, Experimental, Heavy Metals, Isotherms, Kinetic, Langmuir, Lignocellulosic Materials, Marine-Algae, Metal-Ions, Model, Mosses, Preparation, Pretreated Biomass, Pseudo-Second-Order Rate, Removal, Rights, Sawdust, Sorption, Terrestrial Moss, Waste, Water, Water Treatment

? Apiratikul, R. and Pavasant, P. (2008), Batch and column studies of biosorption of heavy metals by *Caulerpa lentillifera*. *Bioresource Technology*, **99** (8), 2766-2777.

Full Text: [2008\Bio Tec99, 2766.pdf](2008/Bio%20Tec99,%202766.pdf)

Abstract: The biosorption of Cu(II), Cd(II), and Pb(II) by a dried green macroalga Caulerpa lentillifera was investigated. The sorption kinetic data could be fitted to the pseudo second order kinetic model. The governing transport mechanisms in the sorption process were both external mass transfer and intra-particle diffusion. Isotherm data followed the Sips isotherm model with the exponent of approximately unity suggesting that these biosorption could be described reasonably well with the Langmuir isotherm. The maximum sorption capacities of the various metal components on C lentillifera biomass could be prioritized in order from high to low as: Pb(II) > Cu(II) > Cd(II). The sorption energies obtained from the Dubinin-Radushkevich model for all sorption systems were in the range of 4-6 kJ mol-1 indicating that a physical electrostatic force was potentially involved in the sorption process. Thomas model could well describe the breakthrough data from column experiments. Ca(II), Mg(II), and Mn(II) were the major ions released from the algal biomass during the sorption which revealed that ion exchange was one of the main sorption mechanisms. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Biomass, Biosorbent, Biosorption, Breakthrough, Cadmium, Cd(II), Column Experiments, Copper, Cu(II), Diffusion, Experiments, Force, Green Macroalga, Heavy Metals, Intra-Particle Diffusion, Ion Exchange, Ion-Exchange, Ions, Isotherm, Kinetic, Langmuir, Langmuir Isotherm, Lead, Mass Transfer, Mechanism, Metal, Metals, Model, Pb(II), Removal, Rights, Sorption, Transport, Waste-Water, Wastewater Treatment

? Uluozlu, O.D., Sari, A., Tüzen, M. and Soylak, M. (2008), Biosorption of Pb(II) and Cr(III) from aqueous solution by lichen (*Parmelina tiliaceae*) biomass. *Bioresource Technology*, **99** (8), 2972-2980.

Full Text: [2008\Bio Tec99, 2972.pdf](2008/Bio%20Tec99,%202972.pdf)

Abstract: The biosorption characteristics of Pb(II) and Cr(III) ions from aqueous solution using the lichen (Parmelina tiliaceae) biomass were investigated. Optimum biosorption conditions were determined as a function of pH, biomass dosage, contact time, and temperature. Langmuir, Freundlich and Dubinin-Radushkevich (D-R) models were applied to describe the biosorption isotherm of the metal ions by P. tiliaceae biomass. Langmuir model fitted the equilibrium data better than the Freundlich isotherm. The monolayer biosorption capacity of P. tiliaceae biomass for Pb(II) and Cr(III) ions was found to be 75.8 mg/g and 52.1 mg/g, respectively. From the D-R isotherm model, the mean free energy was calculated as 12.7 kJ/mol for Pb(II) biosorption and 10.5 kJ/mol for Cr(III) biosorption, indicating that the biosorption of both metal ions was taken place by chemical ion-exchange. The calculated thermodynamic parameters (ΔG°, ΔH° and ΔS°) showed that the biosorption of Pb(II) and Cr(III) ions onto P. tiliaceae biomass was feasible, spontaneous and exothermic under examined conditions. Experimental data were also tested in terms of biosorption kinetics using pseudo-first-order and pseudo-second-order kinetic models. The results showed that the biosorption processes of both metal ions followed well pseudo-second-order kinetics. ? 2007.

Keywords: Adsorption, Aqueous Solution, Biomass, Biosorption, Biosorption Kinetics, Capacity, Chromium, Chromium(III), Cr(III), Equilibrium, Freundlich, Freundlich Isotherm, Function, Green, Heavy-Metals, Ion Exchange, Ion-Exchange, Ions, Isotherm, Kinetic, Kinetic Models, Kinetics, Langmuir, Lead(II), Metal, Metal Ions, Model, Models, Monolayer, Parmelina Tiliaceae, Pb(II), pH, Preconcentration, Pseudo-Second-Order Kinetics, Removal, Solution, Sorption, Spectrophotometric Determination, Temperature, Thermodynamic Parameters, Waste-Water

? Akar, T., Ozcan, A.S., Tunali, S. and Ozcan, A. (2008), Biosorption of a textile dye (Acid Blue 40) by cone biomass of *Thuja orientalis*: Estimation of equilibrium, thermodynamic and kinetic parameters. *Bioresource Technology*, **99** (8), 3057-3065.

Full Text: [2008\Bio Tec99, 3057.pdf](2008/Bio%20Tec99,%203057.pdf)

Abstract: Biosorption of Acid Blue 40 (AB40) onto cone biomass of Thuja orientalis was studied with variation in the parameters of pH, contact time, biosorbent and dye concentration and temperature to estimate the equilibrium, thermodynamic and kinetic parameters. The AB40 biosorption was fast and the equilibrium was attained within 50 min. Equilibrium data fitted well to the Langmuir isotherm model in the studied concentration range of AB40 and at various temperatures. Maximum biosorption capacity (q(max)) for AB40 was 2.05×10-4 mol g-1 or 97.06 mg g-1 at 20°C. The changes of Gibbs free energy, enthalpy and entropy of biosorption were also evaluated for the biosorption of AB40 onto T. orientalis. The results indicate that the biosorption was spontaneous and exothermic. Kinetics of biosorption of AB40 was analyzed and rate constants were also derived and the results show that the pseudo-second-order kinetic model agrees very well with the experimental data. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Ab40, Acid, Adsorption, Aqueous-Solutions, Aspergillus-Niger, Basic Dye, Biomass, Biosorbent, Biosorption, Capacity, Changes, Dye, Entropy, Equilibrium, Experimental, Ionic-Strength, Isotherm, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, Methylene-Blue, Model, pH, Phanerochaete-Chrysosporium, Regression-Analysis, Removal, Rights, Temperature, Thuja Orientalis

? Vieira, M.G.A., Oisiovici, R.M., Gimenes, M.L. and Silva, M.G.C. (2008), Biosorption of chromium(VI) using a *Sargassum* sp. packed-bed column. *Bioresource Technology*, **99** (8), 3094-3099.

Full Text: [2008\Bio Tec99, 3094.pdf](2008/Bio%20Tec99,%203094.pdf)

Abstract: Chromium(VI) is present in several industrial wastewaters and it can cause health and environmental hazards above certain concentrations. Equilibrium studies have shown the feasibility of using Sargassum sp. algae for chromium removal from aqueous solutions by biosorption. However, for the design and operation of chromium biosorption processes, dynamic flow studies are required. The objective of the study was to examine chromium(VI) removal from an aqueous solution using a packed-bed column with Sargassum sp. algae as a biosorbent. The dynamic behavior of the biosorption column was investigated through experiments and the influence of operating conditions, such as initial chromium concentration, flow rate and amount of biosorbent, on the column removal capacity have been analyzed using the factorial design methodology. The capacity of removal obtained at optimum conditions was 19.06 mg of metal/g biosorbent. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Biosorption, Chromium, Chromium Removal, Equilibrium, Hexavalent Chromium, Metal Biosorption, Methodology, Packed-Bed Columns, Removal, Sargassum, Wastewater

? Padmavathy, V. (2008), Biosorption of nickel(II) ions by baker’s yeast: Kinetic, thermodynamic and desorption studies. *Bioresource Technology*, **99** (8), 3100-3109.

Full Text: [2008\Bio Tec99, 3100.pdf](2008/Bio%20Tec99,%203100.pdf)

Abstract: In this study, the biosorption of nickel(II) ion on deactivated protonated yeast was investigated as a function of temperature at different initial metal ion concentrations. The effect of temperature on the sorption was more significant at lower nickel(II) ion concentrations compared to higher concentrations. The protonated yeast biomass exhibited the highest nickel(II) ion uptake capacity at 27°C at an initial nickel(II) ion concentration of 400 mg/l and an initial pH of 6.75. The biosorption capacity decreased from 9.8 to 9.3 mg/g at an initial nickel(II) ion concentration of 400 mg/l, while at a lower initial concentration of 100 mg/l, it decreased from 8.2 to 4.9 mg/g, as the temperature was increased from 27°C to 60°C. The equilibrium data fit better to the Freundlich and Redlich-Peterson isotherm models compared to the Langmuir model in the concentration range studied (10-400 mg/l). Kinetic models applied to the sorption data at different temperatures showed that nickel(II) ion uptake process followed the pseudo-second order rate model and the adsorption rate constants decreased with increasing temperature. The activation energy of biosorption (Ea) was determined to be -13.3 kJ/mol using the pseudo-second order rate constants. The results indicated that the biosorption of nickel(II) ion on to baker’s yeast was spontaneous and exothermic in nature. Desorption studies revealed that the protonated yeast biomass can be regenerated using 0.1N HCl and reused. ? 2007 Elsevier Ltd. All rights reserved.

Keywords: Activation, Activation Energy, Adsorption, Aqueous-Solution, Baker’s Yeast, Biomass, Biosorption, Capacity, Chlorella-Vulgaris, Chlorrela-Vulgaris, Cr(VI) Ions, Desorption, Equilibrium, Freundlich, Function, Isotherm, Kinetic, Kinetic Models, Langmuir, Metal, Metal-Ions, Model, Models, Ni(II), Nickel(II) Ion, pH, Pseudo-Second Order, Removal, Rights, Saccharomyces-Cerevisiae, Sorption, Temperature, Thermodynamic Parameters, Waste-Water

? Vijayaraghavan, K., Mao, J. and Yun, Y.S. (2008), Biosorption of methylene blue from aqueous solution using free and polysulfone-immobilized *Corynebacterium glutamicum*: Batch and column studies. *Bioresource Technology*, **99** (8), 2864-2871.

Full Text: [2008\Bio Tec99, 2938.pdf](2008/Bio%20Tec99,%202938.pdf)

Abstract: The amino acid fermentation industry waste, Corynebacterium glutamicum, has been found to possess excellent biosorption capacity towards methylene blue (MB). Due to practical difficulties in solid-liquid separation and biomass regeneration, C glutamicum was immobilized in a polysulfone matrix. The pH edge experiments revealed that neutral or alkaline pH values favored MB biosorption. Isotherm experiments indicated that C glutamicum, when in immobilized state, exhibited slightly inferior dye uptake compared to free biomass. Also considering the two forms, immobilized biomass took a long time to attain equilibrium. An attempt to identify the diffusion limitations in immobilized beads was successful, with the Weber-Morris model clearly indicating intraparticle as the rate controlling step. Regeneration of the free biomass was not possible as it tended to become damaged under strong acidic conditions. On the other hand, immobilized biomass performed well with 99% desorption of MB from the biosorbent with the aid of 0.1 mol/l HCl. The immobilized biomass was also successfully regenerated and reused for three cycles without significant loss in sorption capacity. An up-flow packed column loaded with immobilized biomass was employed for the removal of MB. The column performed well in the biosorption of MB, exhibiting a delayed and favorable breakthrough curve with MB uptake and % removal of 124 mg/g biomass and 70.1%, respectively. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Amino Acid, Aqueous Solution, Biomass, Biosorbent, Biosorption, Breakthrough, Capacity, Desorption, Diffusion, Dye, Dye Biosorption, Equilibrium, Experiments, Fermentation, Immobilization, Immobilized, Isotherm, Metal-Binding, Methylene Blue, Model, Modeling, Packed Column, pH, Polysulfone, Reactive Black-5, Removal, Rhizopus-Arrhizus, Rights, Separation, Solution, Sorption, Systems, Waste Biomass, Wastewater Treatment

? Han, R.P., Ding, D.D., Xu, Y.F., Zou, W.H., Wang, Y.F., Li, Y.F. and Zou, L. (2008), Use of rice husk for the adsorption of congo red from aqueous solution in column mode. *Bioresource Technology*, **99** (8), 2938-2946.

Full Text: [2008\Bio Tec99, 2938.pdf](2008/Bio%20Tec99,%202938.pdf)

Abstract: A continuous fixed bed study was carried out by using rice husk as a biosorbent for the removal of congo red (CR) from aqueous solution. The effects of important factors, such as the value of initial pH, existing salt, the flow rate, the influent concentration of CR and bed depth, were studied. Data confirmed that the breakthrough curves were dependent on flow rate, initial dye concentration and bed depth. Thomas, Adams-Bohart, and Yoon-Nelson models were applied to experimental data to predict the breakthrough curves using non-linear regression and to determine the characteristic parameters of the column useful for process design, while bed depth/service time analysis (BDST) model was used to express the effect of bed depth on breakthrough curves. The results showed that Thomas model was found suitable for the normal description of breakthrough curve at the experimental condition, while Adams-Bohart model was only for a initial part of dynamic behavior of the rice husk column. The data were in good agreement with BDST model. It was concluded that the rice husk column can remove CR from solution. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Acid Dyes, Adsorption, Analysis, Aqueous Solution, Behavior, Biosorbent, Biosorption, Bottom Ash, Breakthrough, Breakthrough Curve, Congo Red, Dye, Experimental, Fixed Bed, Fixed-Bed Adsorption, Fly-Ash, Granular Activated Carbon, Leaf Powder, Methylene-Blue, Model, Models, Orange Peel, pH, Removal, Rice, Rice Husk, Rights, Solution, Waste-Water

? Gurgel, L.V.A., Júnior, O.K., Gil, R.P.D.F. and Gil, L.F. (2008), Adsorption of Cu(II), Cd(II), and Pb(II) from aqueous single metal solutions by cellulose and mercerized cellulose chemically modified with succinic anhydride. *Bioresource Technology*, **99** (8), 3077-3083.

Full Text: [2008\Bio Tec99, 3077.pdf](2008/Bio%20Tec99,%203077.pdf)

Abstract: This work describes the preparation of new chelating material from mercerized cellulose. The first part treats the chemical modification of non-mercerized cellulose (cell 1) and mercerized cellulose (cell 2) with succinic anhydride. Mass percent gains (mpg) and degree of succinylation (DS) of cell 3 (from cell 1) and cell 4 (from cell 2) were calculated. Cell 4 in relation to cell 3 exhibited an increase in mpg and in the concentration of carboxylic functions of 68.9% and 2.8 mmol/g, respectively. Cells 5 and 6 were obtained by treatment of cells 3 and 4 with bicarbonate solution to release the carboxylate functions and characterized by FTIR. The second part compares the adsorption capacity of cells 5 and 6 for Cu2+, Cd2+, and Pb2+ ions in an aqueous single metal solution. Adsorption isotherms were developed using Langmuir model. Cell 6 in relation to cell 5 exhibited an increase in Q(max) for Cu2+ (30.4 mg/g), Cd2+ (86.0 mg/g) and Pb2+ (205.9 mg/g). (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Mercerization, Modified Cellulose, Succinylation, Adsorption, Heavy Metals, OH Valency Range, FTIR Spectra, Fibers, Sorption, Removal, Polyethyleneimine, Spectroscopy, Oxidation, Behavior, Carbon

? Pavan, F.A., Mazzocato, A.C. and Gushikem, Y. (2008), Removal of Methylene blue dye from aqueous solutions by adsorption using yellow passion fruit peel as adsorbent. *Bioresource Technology*, **99** (8), 3162-3165.

Full Text: [2008\Bio Tec99, 3162.pdf](2008/Bio%20Tec99,%203162.pdf)

Abstract: The removal of color from aquatic systems caused by presence of synthetic dyes is extremely important from the environmental viewpoint because most of these dyes are toxic, mutagenic and carcinogenic. In this present study, the yellow passion fruit (Passiflora edulis Sims. f. flavicarpa Degener) peel a powdered solid waste, was tested as an alternative low-cost adsorbent for the removal of a basic dye, methylene blue (MB), from aqueous solutions. Adsorption of MB onto this natural adsorbent was studied by batch adsorption isotherms at room temperature. The effects of shaking time and pH on adsorption capacity were studied. An alkaline pH was favorable for the adsorption of MB. The contact time required to obtain the maximum adsorption was 56 h at 25°C. Yellow passion fruit peel may be used as an alternative adsorbent to remove MB from aqueous solutions. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Low-Cost Natural Adsorbent, Yellow Passion Fruit Peel, Methylene Blue, Aqueous Solution, Batch Technique, Activated Carbons, Rice-Husk, Basic Dye, Waste, Sorption, Sawdust, Water

? Liu, Y. and Wang, Z.W. (2008), Uncertainty of preset-order kinetic equations in description of biosorption data. *Bioresource Technology*, **99** (8), 3309-3312.

Full Text: [2008\Bio Tec99, 3309.pdf](2008/Bio%20Tec99,%203309.pdf)

Abstract: This study investigated uncertainty encountered in description of biosorption data by preset-order kinetic equations. It was shown that for a given set of biosorption data, the kinetic equations with the preset-order of first to fourth can all provide equally good fittings to the experimental data, indicated by comparable values of correlation coefficients (R). In the sense of chemistry, the reaction order of a biosorption process must be experimentally determined rather than preset to a fixed value. In this case, a generalized kinetic equation was proposed without any constrain on the reaction order. In order to statistically evaluate the curve fittings of biosorption data by various kinetic equations, a concept of the relative goodness of curve fitting was developed. Compared to all the preset-order kinetic equations studied, the generalized equation can offer the best prediction for experimental data obtained in various biosorption experiments. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Biosorption Kinetics, Reaction Order, Curving Fitting, Uncertainty, Dried Activated-Sludge, Equilibrium, Adsorption

? Sun, X.F., Wang, S.G., Liu, X.W., Gong, W.X., Bao, N., Gao, B.Y. and Zhang, H.Y. (2008), Biosorption of Malachite Green from aqueous solutions onto aerobic granules: Kinetic and equilibrium studies. *Bioresource Technology*, **99** (9), 3475-3483.

Full Text: [2008\Bio Tec99, 3475.pdf](2008/Bio%20Tec99,%203475.pdf)

Abstract: Batch experiments were conducted to study the biosorption characteristics of a cationic dye, Malachite Green (MG), onto aerobic granules. Effects of pH, aerobic granule dosage, contact time and solution temperature on MG biosorption by aerobic granules were evaluated. Simultaneity the thermodynamic analysis was also performed. The results showed that alkaline pH was favorable for the biosorption of MG and chemisorption seemed to play a major role in the biosorption process. Kinetic studies indicate that MG biosorption on aerobic granules in the system follows the pseudo-second order kinetics. The equilibrium time was 60 min for both 50 and 60 mg/L and 120 min for both 70 and 80 mg/L MG concentrations, respectively. Moreover, the experimental equilibrium data have been analyzed using the linearized forms of Langmuir, Freundlich, and Redlich-Peterson isotherms and the Langmuir isotherm was found to provide the best theoretical correlation of the experimental data for the biosorption of MG. The monolayer biosorption (saturation) capacities were determined to be 56.8 mg of MG per gram of aerobic granules at 30°C. Thermodynamic analysis show that biosorption follows an endothermic path of the positive value of ΔH° and spontaneous with negative value of ΔG°. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorbent, Adsorption, Aerobic Granule, Aerobic Granules, Analysis, Aqueous Solutions, Basic-Dyes, Biosorption, Carbon Nanotubes, Dried Activated-Sludge, Dye, Equilibrium, Equilibrium Isotherm, Experimental, Experiments, Freundlich, Granule, Isotherm, Isotherms, Kinetic, Kinetic Study, Kinetics, Langmuir, Langmuir Isotherm, Malachite Green, Mechanism, Methylene-Blue, Monolayer, pH, Pseudo-Second Order, Removal, Rights, Saturation, Solution, Sorption, Temperature, Thermodynamic, Waste-Water

? Pehlivan, E., Yanik, B.H., Ahmetli, G. and Pehlivan, M. (2008), Equilibrium isotherm studies for the uptake of cadmium and lead ions onto sugar beet pulp. *Bioresource Technology*, **99** (9), 3520-3527.

Full Text: [2008\Bio Tec99, 3520.pdf](2008/Bio%20Tec99,%203520.pdf)

Abstract: The adsorption of Cd2+ and Pb2+ on sugar beet pulp (SBP), a low-cost material, has been studied. In the present work, the abilities of native (SBP) to remove cadmium (Cd2+) and lead (Pb2+) ions from aqueous solutions were compared. The (SBP) an industrial by product and solid waste of sugar industry were used for the removal of Cd2+ and Pb2+ ions from aqueous water. Batch adsorption studies were carried out to examine the influence of various parameters such as initial pH, adsorbent dose, initial metal ion concentration, and time on uptake. The sorption process was relatively fast and equilibrium was reached after about 70 min of contact. As much as 70-75% removal of Cd2+ and Pb2+ ions for (SBP) are possible in about 70 min, respectively, under the batch test conditions. Uptake of Cd2+ and Pb2+ ions on (SBP) showed a pH-dependent profile. The overall uptake for the (SBP) is at a maximum at pH 5.3 and gives up to 46.1 mg g-1 for Cd2+ and at pH 5.0 and gives 43.5 mg g-1 for Pb2+ for (SBP), which seems to be removed exclusively by ion exchange, physical sorption and chelation. A dose of 8 g L-1 was sufficient for the optimum removal of both the metal ions. The Freundlich represented the sorption data for (SBP). In the presence of 0.1 M NaNO3 the level of metal ion uptake was found to reach its maximum value very rapidly with the speed increasing both with the (SPB) concentration and with increasing initial pH of the suspension. The reversibility of the process was investigated. The desorption of Cd2+ and Pb2+ ions which were previously deposited on the (SBP) back into the deionised water was observed only in acidic pH values during one day study period and was generally rather low. The extent of adsorption for both metals increased along with an increase of the (SBP) dosage. (SBP), which is cheap and highly selective, therefore seems to be a promising substrate to entrap heavy metals in aqueous solutions. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Uptake, Sugar Beet Pulp, Sorption Isotherms, Heavy Metals, Sorption, Heavy-Metal Ions, Aqueous-Solution, Waste-Water, Fly-Ash, Industrial Effluents, Binding-Properties, Pine Bark, Tree Fern, Removal, Sorption

? Ramesh, A., Hasegawa, H., Sugimoto, W., Maki, T. and Ueda, K. (2008), Adsorption of gold(III), platinum(W) and palladium(II) onto glycine modified crosslinked chitosan resin. *Bioresource Technology*, **99** (9), 3801-3809.

Full Text: [2008\Bio Tec99, 3801.pdf](2008/Bio%20Tec99,%203801.pdf)

Abstract: The adsorption of Au(III), Pt(IV) and Pd(II) onto glycine modified crosslinked chitosan resin (GMCCR) has been investigated. The parameters studied include the effects of pH, contact time, ionic strength and the initial metal ion concentrations by batch method. The optimal pH for the adsorption of Au(III), Pt(IV) and Pd(II) was found to range from 1.0 to 4.0 and the maximum uptake was obtained at pH 2.0 for Au(III), Pt(IV) and Pd(II). The results obtained from equilibrium adsorption studies are fitted in various adsorption models such as Langmuir and Freundlich and the model parameters have been evaluated. The maximum adsorption capacity of GMCCR for Au(III), Pt(IV) and Pd(II) was found to be 169.98, 122.47 and 120.39 mg/g, respectively. The kinetic data was tested using pseudo-first-order and pseudo-second-order kinetic models and an intraparticle diffusion model. The correlation results suggested that the pseudo-second-order model was the best choice among all the kinetic models to describe the adsorption behavior of Au(III), Pt(IV) and Pd(II) onto GMCCR. Various concentrations of HCl, thiourea and thiourea-HCl solutions were used to desorb the adsorbed precious metal ions from GMCCR. It was found that 0.7 M thiourea-2 M HCl solution provided effectiveness of the desorption of Au(III), Pt(IV) and PD(II) from GMCCR. The modification of glycine on crosslinked chitosan resin (CCR) was studied by Fourier transform infrared spectrometry (FTIR) and scanning electron microscopy (SEM). (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Behavior, Aqueous-Solutions, Au(III), Behavior, Capacity, Carboxymethylchitosan Hydrogels, Chitosan, Crosslinked Chitosan, Derivatives, Desorption, Diffusion, Effectiveness, Electron Microscopy, Equilibrium, Freundlich, FTIR, Glycine Modified Crosslinked Chitosan Resin, Intraparticle Diffusion Model, Kinetic, Kinetic Models, Kinetics, Kinetics, Langmuir, Metal, Metal Ions, Metal-Ions, Model, Models, Modification, pH, Precious Metals, Preconcentration, Rights, Scanning Electron Microscopy, Selective Adsorption, SEM, Silica-Gel, Solution, Sorption

? Bhainsa, K.C. and D’souza, S.F. (2008), Removal of copper ions by the filamentous fungus, *Rhizopus oryzae* from aqueous solution. *Bioresource Technology*, **99** (9), 3829-3835.

Full Text: [2008\Bio Tec99, 3829.pdf](2008/Bio%20Tec99,%203829.pdf)

Abstract: Removal of heavy metals present in wastewaters has been a major concern due to their non-biodegradability and toxicity. Removal of copper ion using NaOH treated Rhizopus oryzae biomass was investigated in a batch reactor. The copper uptake exhibited substantial enhancement both in terms of kinetics of uptake as well as the loading capacity. The copper biosorption by viable and pretreated fungal biomass fit well to a Lagergren’s pseudo second order reaction in comparison to pseudo first order kinetics. Investigation on effect of pH indicated improved performance in the range of pH 4-6 in alkali treated biomass. Copper uptake exhibited by viable biomass was highest at 21°C, unlike pretreated biomass that showed maximum uptake across the range of temperature 21-55°C. The maximum copper loading capacity of the viable and pretreated biomass according to Langmuir isotherm was 19.4 and 43.7 mg/g, respectively. Distribution coefficient of pretreated biomass showed improvement at lower residual concentration, indicating a change in the nature of binding by the treated biomass. Copper uptake decreased wipH an increasing dose of biosorbent, although enhancement in the total metal ion removal was observed at higher dose. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous Solution, Arrhizus, Batch Reactor, Biomass, Bioremediation, Biosorbent, Biosorption, Capacity, Comparison, Copper, Copper Biosorption, First, Fungal Biomass, Heavy Metals, Isotherm, Kinetics, Lagergren Kinetics, Langmuir, Langmuir Isotherm, Metal, Metal-Ions, Metals, Naoh Treatment, Peat, pH, Removal, Rhizopus Oryzae, Rights, Solution, Sorption, Strain, Temperature, Toxicity, Uranium

? Green-Ruiz, C., Rodriguez-Tirado, V. and Gomez-Gil, B. (2008), Cadmium and zinc removal from aqueous solutions by Bacillus jeotgali: pH, salinity and temperature effects. *Bioresource Technology*, **99** (9), 3864-3870.

Full Text: [2008\Bio Tec99, 3864.pdf](2008/Bio%20Tec99,%203864.pdf)

Abstract: Effects of pH, salinity and temperature on biosorption of Cd and Zn by bacteria Bacillus jeotgali strain U3 were evaluated in batch experiments. Traditional and subsequent addition methods (SAM) were used to carry out the bioassays. sorption of metals was higher when pH or temperature was increased, or when salinity was reduced. The Langmuir isotherm better fit the biosorption data for Cd, while the Freundlich model fitted better for Zn biosorption. A comparison with similar biosorbents suggested that Bacillus jeotgali strain U3 could be considered a good biosorbent for Cd and Zn recovery. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Biosorption, Bacteria, Bioremediation, Isotherms, Metal, Heavy-Metal, Waste-Water, Sorption, Ions, Biosorption, Kinetics, Chromium(VI), Adsorption, Biomass, Cd(II)

? Ngah, W.S.W. and Hanafiah, M.A.K.M. (2008), Removal of heavy metal ions from wastewater by chemically modified plant wastes as adsorbents: A review. *Bioresource Technology*, **99** (10), 3935-3948.

Full Text: [2008\Bio Tec99, 3935.pdf](2008/Bio%20Tec99,%203935.pdf)

Abstract: The application of low-cost adsorbents obtained from plant wastes as a replacement for costly conventional methods of removing heavy metal ions from wastewater has been reviewed. It is well known that cellulosic waste materials can be obtained and employed as cheap adsorbents and their performance to remove heavy metal ions can be affected upon chemical treatment. In general, chemically modified plant wastes exhibit higher adsorption capacities than unmodified forms. numerous chemicals have been used for modifications which include mineral and organic acids, bases, oxidizing agent, organic compounds, etc. in this review, an extensive list of plant wastes as adsorbents including rice husks, spent grain, sawdust, sugarcane bagasse, fruit wastes, weeds and others has been compiled. Some of the treated adsorbents show good adsorption capacities for Cd, Cu, Pb, Zn and Ni. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Plant Wastes, Low-Cost Adsorbents, Heavy Metals, Wastewater Treatment, Agricultural By-Products, Manihot-Sculenta Cranz, Sugar-Industry Waste, Modified Rice Husk, Bagasse Fly-Ash, Aqueous-Solutions, Activated Carbon, Tree Fern, Malachite Green, Cassava Waste

? Herrero, R., Lodeiro, P., Rojo, R., Ciorba, A., Rodríguez, P. and de Vicente, M.E.S. (2008), The efficiency of the red alga *Mastocarpus stellatus* for remediation of cadmium pollution. *Bioresource Technology*, **99** (10), 4138-4146.

Full Text: [2008\Bio Tec99, 4138.pdf](2008/Bio%20Tec99,%204138.pdf)

Abstract: This work reports the results of the study for cadmium binding by the dead red macroalga Mastocarpus stellatus. Kinetics sorption experiments demonstrated the high rate of metal biosorption: the system attained over 50% of the total biomass cadmium uptake within 2 min of contact and over 90% in the first 9 min. The kinetic data was successfully described by a pseudo-second order model with rate constants ranging from 1.06 to 10 gnimol-1 min-1, as a function of initial metal concentration and temperature. The equilibrium binding was accurately represented in terms of Langmuir and Langmuir-Freundlich models. The sorption isotherms at constant pH showed uptake values as 0.49 mmol g-1 (at pH 2.4), 0.56 mmol g-1 (at pH 4) and 0.59 mmol g-1 (at pH 6), while the affinity constant values were between 0.6 and 5 mmol-1 L (Langmuir fit). The acid-base properties of the alga were also studied, obtaining the total number of acid groups, 2.5 mmol g-1, and their apparent pK value, 1.56, using the Katchalsky model. Desorption studies were conducted employing different HNO3 concentrations and desorption times. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Biomass, Biosorbent, Biosorption, Biosorption-Desorption, Brown, Cadmium, Cadmium Binding, Cadmium Pollution, Desorption, Efficiency, Equilibrium, Experiments, First, Function, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir-Freundlich, Macroalga Cystoseira-Baccata, Marine Macroalgae, Marine-Algae, Mastocarpus Stellatus, Metal, Model, Models, ph, Pollution, Pseudo-Second Order, Remediation, Removal, Rights, Sargassum-Muticum, Sorption, Sorption Isotherms, Temperature, Waste, Work

? Handayani, A.D., Sutrisno, Indraswati, N. and Ismadji, S. (2008), Extraction of astaxanthin from giant tiger (*Panaeus monodon*) shrimp waste using palm oil: Studies of extraction kinetics and thermodynamic. *Bioresource Technology*, **99** (10), 4414-4419.

Full Text: [2008\Bio Tec99, 4414.pdf](2008/Bio%20Tec99,%204414.pdf)

Abstract: Study of extraction of astaxanthin from giant tiger (panaeus monodon) shrimp waste using palm oil was conducted to determine the extraction kinetics and Thermodynamic parameters. Two extraction models were proposed: mass transfer kinetic model and reaction kinetic model. It was found that both of mass transfer and reaction kinetic control the extraction of astaxanthin from shrimp waste using palm oil. The thermodynamic parameters of extraction were also obtained in this study. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Shrimp Waste, Astaxanthin, Oil Extraction, Carotenoids, Carotenoprotein, Recovery, Sorption, Model

? Gong, R.M., Sun, J., Zhang, D.M., Zhong, K.D. and Zhu, G.P. (2008), Kinetics and thermodynamics of basic dye sorption on phosphoric acid esterifying soybean hull with solid phase preparation technique. *Bioresource Technology*, **99** (10), 4510-4514.

Full Text: [2008\Bio Tec99, 4510.pdf](2008/Bio%20Tec99,%204510.pdf)

Abstract: In this paper, the solid phase preparation method of a cationic sorbent, which bears hydroxyl groups of phosphoric acid derived from esterified soybean hull (ESH), was reported. The sorption kinetics and thermodynamics of two basic dyes, acridine orange (AO) and malachite green (MG), from aqueous solution onto ESH were investigated with a batch system. The isothermal data of dye sorptions followed the Langmuir model better than the Freundlich model. The maximum sorption capacity (Q(m)) of ESH for AO and MG was 238.1 mg/g and 178.57 mg/g, respectively. The dye sorption processes could be described by the pseudo-second-order kinetic model. The thermodynamic study indicated that the dye sorptions were spontaneous and exothermic. Lower temperatures were favorable for the sorption processes. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorbents, Adsorption, Aqueous Solution, Aqueous-Solution, Basic Dye, Basic Dyes, Capacity, Cationic Dyes, Dye, Dyes, Dyestuffs, Equilibrium, ESH, Freundlich, Kinetic, Kinetic Model, Kinetics, Langmuir, Langmuir Model, Malachite Green, Model, Preparation, Reactive Dyes, Removal, Rice Husk, Rights, Solution, Sorption, Sorption Kinetics, Textile Waste-Water, Thermodynamic, Thermodynamics

? Castro, G.R., Panilaitis, B. and Kaplan, D.L. (2008), Emulsan, a tailorable biopolymer for controlled release. *Bioresource Technology*, **99** (11), 4566-4571.

Full Text: [2008\Bio Tec99, 4566.pdf](2008/Bio%20Tec99,%204566.pdf)

Abstract: Microsphere hydrogels made with emulsan-alginate were used as carrier for the microencapsulation of blue dextran in order to study the effect of emulsan on the alginate bead stability. Blue dextran release studies indicated an increase of microsphere stability in presence of emulsan, as a coating agent. BSA adsorption by emulsan-alginate microspheres is also enhanced 40% compared to alginate alone. XPS studies confirm the presence of BSA adsorbed on emulsan microsphere surfaces. These results are in agreement with the equilibrium adsorption model of Freundlich. Studies of BSA adsorption using non-equilibrium Lagergren second-order and intraparticle models, are suggesting a complex mechanisms of protein adsorption by chemisorption and intraparticle diffusion. Also, enzymatic release of BSA from emulsan microspheres containing azo-BSA under physiological conditions is suggests the possibility of using microspheres as a depot for pre-proteins of medical interest. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Agriculture, Alginate, Alginate Bead, Bioemulsifier, BSA, Chitosan, Coating, Controlled Release, Dextran, Diffusion, Emulsan, Equilibrium, Fermentation, Freundlich, Hydrogels, Medical, Microencapsulation, Microspheres, Model, Models, Protein, Release, Rights, Stability, XPS

? Mashitah, M.D., Azila, Y.Y. and Bhatia, S. (2008), Biosorption of cadmium(II) ions by immobilized cells of *Pycnoporus sanguineus* from aqueous solution. *Bioresource Technology*, **99** (11), 4742-4748.

Full Text: [2008\Bio Tec99, 4742.pdf](2008/Bio%20Tec99,%204742.pdf)

Abstract: Biosorption of cadmium(II) ions from aqueous solution onto immobilized cells of *Pycnoporus sanguineus* (*P. sanguineus*) was investigated in a batch system. Equilibrium and kinetic studies were conducted by considering the effect of pH, initial cadmium(II) concentration, biomass loading and temperature. Results showed that the uptake of cadmium(II) ions increased with the increase of initial cadmium(II) concentration, pH and temperature. Langmuir, Freundlich and Redlich-Peterson isotherm models were used to analyze the equilibrium data at different temperatures. Langmuir isotherm model described the experimental data well followed by Redlich-Peterson and Freundlich isotherm models. Biosorption kinetics data were fitted using pseudo-first, pseudo-second-order and intraparticle diffusion. It was found that the kinetics data fitted well the pseudo-second-order followed by intraparticle diffusion. Thermodynamic parameters such as standard Gibbs free energy (ΔG°), standard enthalpy (ΔH°) and standard entropy (ΔS°) were evaluated. The result showed that biosorption of cadmium(II) ions onto immobilized cells of P. sanguineus was spontaneous and endothermic nature. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous Solution, Aspergillus-Niger, Biomass, Biosorption, Cadmium, Cadmium(II), Cadmium(II) Ions, Copper, Diffusion, Endothermic, Entropy, Equilibrium, Experimental, Freundlich, Freundlich Isotherm, Fungus Trametes-Versicolor, Heavy-Metals, Immobilized, Immobilized Cells, Isotherm, Isotherm Model, Kinetic, Kinetic Studies, Kinetic-Analysis, Kinetics, Langmuir, Langmuir Isotherm, Model, Models, pH, *Pycnoporus Sanguineus*, Removal, Rights, Solution, Standard, Temperature, Thermodynamic, Thermodynamic Parameters, Waste

? Ozsoy, H.D., Kumbur, H., Saha, B. and van Leeuwen, J.H. (2008), Use of *Rhizopus oligosporus* produced from food processing wastewater as a biosorbent for Cu(II) ions removal from the aqueous solutions. *Bioresource Technology*, **99** (11), 4943-4948.

Full Text: [2008\Bio Tec99, 4943.pdf](2008/Bio%20Tec99,%204943.pdf)

Abstract: Dried biomass of Rhizopus oligosporus produced from food processing wastewater was used as an adsorbent for copper ions in water. The adsorption process was carried out in a batch process and the effects of contact time (1-48 h), initial pH (2.0-6.0), initial metal ion concentration (20-100 mg L-1) and temperature (20-3 8°C) on the adsorption were investigated. Experimental results showed that the maximum adsorption capacity was achieved at pH 5.0 and adsorbed Cu(II) ion concentration was increased with increasing initial metal concentration and contact time. The isothermal data could be described well by the Langmuir equations and monolayer capacity had a mean value of 79.37 mg g-1. A pseudo-second order reaction model provided the best description of the data with a correlation coefficient 0.99 for different initial metal concentrations. Thermodynamic parameters indicated that biosorption of Cu(II) on R. oligosporus dried biomass was exothermic and spontaneous. To observe the copper pellets on the biosorbent surface after biosorption SEM was used and copper was characterized by EDX The results of FTIR analyses indicated that amide I and hydroxyl groups of adsorbent played important role in binding Cu(II). (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption, Aqueous Solutions, Biomass, Biosorbent, Biosorption, Capacity, Copper, Copper(II) Ions, Correlation Coefficient, Cu(II), Cu(II) Ion, EDX, Equilibrium, Food, Food Processing Wastewater, FTIR, Heavy-Metals, Kinetics, Langmuir, Metal, Metal-Ions, Model, Monolayer, pH, Pseudo-Second Order, Removal, Rhizopus Oligosporus, Rights, SEM, Temperature, Thermodynamic, Thermodynamic Parameters, Tree Fern, Wastewater, Water

? Ao, Y.S., Sun, M. and Li, Y.Q. (2008), Effect of organic substrates on available elemental contents in nutrient solution. *Bioresource Technology*, **99** (11), 5006-5010.

Full Text: [2008\Bio Tec99, 5006.pdf](2008/Bio%20Tec99,%205006.pdf)

Abstract: in this paper, the changes of available elemental contents in the nutrient solution extracts of organic substrates (peat moss, charred rice husk, chicken manure, sawdust, turfgrass clipping and weathered coal) were studied and compared with that in the water extracts. Results showed that available elemental contents in the nutrient solution extracts are significantly different between organic substrates, whereas ionic concentrations are basically under steady condition after treatment for 36-108 h. ionic contents in the nutrient solution extracts are not equal to the value of adding ionic concentrations in the supplied nutrient solution to that in the water extract. Thus, a mathematical model was proposed for adjusting the composition of supplied nutrient solution to match plant requirements in the organic soilless culture system. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Organic Substrate, Nutrient Solution, Available Element, Soilless Culture, Mathematical Model, Sphagnum Moss Peat, Fruit-Quality, Substitute, Tomato, Adsorption, Chromium, Removal, Manure, Media, Yield

? Demirbaş, E., Kobya, M. and Sulak, M.T. (2008), Adsorption kinetics of a basic dye from aqueous solutions onto apricot stone activated carbon. *Bioresource Technology*, **99** (13), 5368-5373.

Full Text: [2008\Bio Tec99, 5368.pdf](2008/Bio%20Tec99,%205368.pdf)

Abstract: The preparation of activated carbon from apricot stone with H2SO4 activation and its ability to remove a basic dye, astrazon yellow 7GL, from aqueous solutions were reported in this study-The adsorbent was characterized by FTIR, BET and SEM, respectively. The effects of various experimental parameters, such as initial dye concentration, pH, adsorbent dosage and temperature were investigated in a batch-ad sorption technique. The optimum conditions for removal of the basic dye were found to be pH 10, 6 g/l of adsorbent dosage and equilibrium time of 35 min, respectively. A comparison of three kinetic models, the pseudo first-order, second-order and diffusion controlled kinetic models, on the basic dye-adsorbent system showed that the removal rate was heavily dependent on diffusion controlled kinetic models. The adsorption isotherm data were fitted well to Langmuir and Freundlich isotherms. The adsorption capacity was calculated as 221.23 mg/g at 50°C. Thermodynamics parameters were also evaluated. The values of enthalpy and entropy were 49.87 kJ/mol and 31.93 J/mol K, respectively, indicating that this process was spontaneous and endothermic. The experimental studies were indicated that ASC had the potential to act as an alternative adsorbent to remove the basic dye from aqueous solutions. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Activation, Adsorbent, Adsorption, Adsorption Capacity, Adsorption Equilibrium, Adsorption Isotherm, Adsorption Kinetics, Agricultural Wastes, Alternative, Apricot Stone Carbon, Aqueous Solutions, Astrazon Yellow, Basic Dye, Bet, Capacity, Carbon, Chitosan, Coir Pith, Comparison, Diffusion, Dye, Effluent, Endothermic, Entropy, Equilibrium, Experimental, Freundlich, Ftir, Isotherm, Isotherms, Kinetic, Kinetic Models, Kinetics, Langmuir, Low Cost Adsorbent, Models, pH, Potential, Preparation, Pseudo First-Order, Pseudo-First-Order, Removal, Rights, Sawdust, Sem, Sorption, Temperature, Thermodynamics, Waste-Water

? Ofomaja, A.E. and Ho, Y.S. (2008), Effect of temperatures and pH on Methyl violet biosorption by mansonia wood sawdust. *Bioresource Technology*, **99** (13), 5411-5417.

Full Text: [2008\Bio Tec99, 5411.pdf](2008/Bio%20Tec99,%205411.pdf)

Abstract: In this study, the effect of temperature on the equilibrium biosorption of methyl violet dye from aqueous solution using Mansonia wood sawdust was studied. The equilibrium biosorption data were analyzed using three widely applied isotherm models; Langmuir, Freundlich and Redlich–Peterson isotherm. The fit of three linear Langmuir isotherm forms, the Freundlich isotherm, and the Redlich–Peterson isotherm were determined using linear and the non-linear methods. Langmuir isotherm parameters obtained from the three Langmuir linear equations by using linear method were dissimilar, except, when the non-linear method was used. Best fits were yielded with Langmuir and Redlich–Peterson isotherms. The methyl violet biosorption was strongly dependent solution pH and percentage dye removal became significant above pH 7, which was slightly higher than the pHPZC of the sawdust material. In addition, various thermodynamic parameters, such as ΔG°, ΔH°, and ΔS° were calculated. Results suggested that the biosorption was a spontaneous and endothermic process.

Keywords: Adsorption, Methyl Violet, Langmuir Isotherm Forms, Temperature, Mansonia Wood Sawdust

? Ncibi, M.C., Mahjoub, B. and Seffen, M. (2008), Investigation of the sorption mechanisms of metal-complexed dye onto *Posidonia oceanica* (L.) fibres through kinetic modelling analysis. *Bioresource Technology*, **99** (13), 5582-5589.

Full Text: [2008\Bio Tec99, 5582.pdf](2008/Bio%20Tec99,%205582.pdf)

Abstract: This research deals with the exploitation of highly available and renewable marine biomass, Posidonia oceanica (L.) fibres as low cost biosorbent for the removal of metal-complexed textile dyestuff from aqueous medium, and the investigation of the probably involved physiochemical mechanisms. Experiments were carried out in batch reactor. Firstly, the adsorption process was studied as a function of initial solution pH and contact time under different initial dye concentration. The results showed that the highest dye adsorption capacity was found at pH 2 under a constant temperature of 30 °C, and the equilibrium state was reached within 48 h of exposure time. Secondly, several adsorption kinetic models were applied to fit the experimental data, namely Lagergren irreversible first-order, Reversible first-order, Pseudo-second-order, Elovich, Ritchie and intraparticle diffusion models. The proposed explanations were deduced from the theoretical assumptions behind the most appropriate model(s), which could satisfactorily describe the present biosorption phenomenon. The interpretation of the related results have shown that, with R2 of about 99%, the pseudo-second order model is the most suitable dynamic theory describing the biosorption of metal complex dye onto P. oceanica fibres, predicting therefore a chemisorption process. © 2007 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Adsorption Kinetic, Analysis, Aqueous-Solution, Assumptions, Batch Reactor, Batch System, Biomass, Biosorbent, Biosorption, Capacity, Cost, Diffusion, Dye, Dye Adsorption, Dyestuff, Elovich Equation, Equilibrium, Experimental, Exposure, Function, Investigation, Kinetic, Kinetic Modelling, Kinetic Models, Kinetics, Metal, Metal Complex Dye, Methylene-Blue, Model, Modelling, Models, pH, Pine Sawdust, Posidonia Fibres, Pseudo-Second Order, Pseudo-Second-Order, Reactive Dye, Removal, Research, Rights, Solution, Sorption, Sorption Mechanisms, Temperature, Textile Dyes, Theory

? Kuo, S. and Bembeneka, R. (2008), Sorption and desorption of chromate by wood shavings impregnated with iron or aluminum oxide. *Bioresource Technology*, **99** (13), 5617-5625.

Full Text: [2008\Bio Tec99, 5617.pdf](2008/Bio%20Tec99,%205617.pdf)

Abstract: This study examined the impregnation of hybrid poplar shavings with Fe or Al oxide and their reactivity with Cr(VI). The shavings were impregnated with an average of 1.24 ± 0.18 mmol Fe g−1 or 1.51 ± 0.17 mmol Al g−1, and the impregnated Fe or Al oxide was highly amorphous. Capacity of Cr(VI) sorption by impregnated shavings was high and rate of the sorption was rapid. While the freshly sorbed Cr on the Fe oxide-shavings was readily desorbed in 0.1M NaOH, nine weeks of ageing reduced the desorbability to only 6.5% of the sorbed Cr. Extraction with 0.1 M NaOH remained feasible to recover most sorbed Cr from the Al oxide-shavings over the same ageing period. Impregnation of the shavings with Fe or Al oxide turns the wood waste into a product for removing Cr(VI) or other oxyanions from wastewater.

Keywords: Chromate, Wood Shavings, Fe Oxide, Al Oxide, Sorption

? Raungsomboon, S., Chidthaisong, A., Bunnag, B., Inthorn, D. and Harvey, N.W. (2008), Removal of lead (Pb2+) by the Cyanobacterium *Gloeocapsa* sp. *Bioresource Technology*, **99** (13), 5650-5658.

Full Text: [2008\Bio Tec99, 5650.pdf](2008/Bio%20Tec99,%205650.pdf)

Abstract: Pb2+ removal ability of the viable-freshwater cyanobacterium Gloeocapsa sp. was studied in batch experiments. Gloeocapsa sp. was cultured in the Medium 18 with pH adjusted to 3, 4, 5, 6 and 7. Growth was subsequently determined based on the increase of chlorophyll-a content. Gloeocapsa sp. was able to grow at all pH levels tested, except at pH 3. Removal of Pb2+ was then further studied under pH 4. The results showed that Pb2+ concentration in the range of 0-20 mg L-1 was not inhibitory to Gloeocapsa sp. growth but reduced its Pb2+ removal efficiency (by 4.5% when Pb2+ concentration increased from 2.5 to 20 mg L-1). Pb2+ removal characteristics followed the Langmuir adsorption isotherm with the maximum removal capacity (q(max)) of 232.56 mg g-1. Adsorption of Pb2+ by this cyanobacterium followed the second order rate reaction and intraparticle diffusion was likely the rate-determining step. The initial rate of Pb2+ adsorption during intraparticle diffusion was slower under light than under dark conditions, indicating that light probably slowed down the initial rate of intraparticle diffusion through the repulsion effects on cell membrane. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Accumulation, Adsorption, Adsorption Isotherm, Aqueous-Solutions, Biosorption, Biosorption, Cadmium, Capacity, Cyanobacteria, Diffusion, Efficiency, Experiments, Gloeocapsa sp., Growth, Heavy-Metals, Isotherm, Langmuir, Lead, Lead (Pb2+), Marine-Algae, Pb2+, Pb2+ Adsorption, pH, Removal, Removal Efficiency, Rights, Viable Cells, Water

? Vijayaraghavan, K., Lee, M.W. and Yun, Y.S. (2008), A new approach to study the decolorization of complex reactive dye bath effluent by biosorption technique. *Bioresource Technology*, **99** (13), 5778-5785.

Full Text: [2008\Bio Tec99, 5778.pdf](2008/Bio%20Tec99,%205778.pdf)

Abstract: This work focused on the development of a practical biosorbent for the decolorization of textile effluents. The fermentation waste, Corynebacterium glutamicum biomass, when decarboxylated and immobilized in polysulfone matrix performed well in decolorization of simulated reactive dye bath effluent comprised of four different reactive dyes and other auxiliary chemicals. The regeneration of polysulfone-immobilized C glutamicum was successful with the aid of 0.01 M NaOH as the eluant, which enabled the biosorbent to maintain consistent decolorization efficiency for up to 25 cycles. An up-flow packed column loaded with polysulfone-immobilized biomass performed well in the continuous treatment of Remazol effluent. Samples collected after 14 h of column operation revealed almost zero color and TOC. The column was also able to decrease the TDS level from 55,840 to 33,480 mg/L. Column regeneration experiments revealed that the biosorbent was able to continuously treat Remazol effluent over ten cycles, with more than 90.6% decolorization. efficiency. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Effluent, Immobilization, Biosorption, Reactive Dyes, Wastewater Treatment, Corynebacterium-Glutamicum, Aqueous-Solution, Waste Biomass, Adsorption, Removal

? Aroua, M.K., Leong, S.P.P., Teo, L.Y., Yin, C.Y. and Daud, W.M.A.W. (2008), Real-time determination of kinetics of adsorption of lead(II) onto palm shell-based activated carbon using ion selective electrode. *Bioresource Technology*, **99** (13), 5786-5792.

Full Text: [2008\Bio Tec99, 5786.pdf](2008/Bio%20Tec99,%205786.pdf)

Abstract: In this study, the kinetics of adsorption of Pb(II) from aqueous solution onto palm shell-based activated carbon (PSAC) were investigated by employing ion selective electrode (ISE) for real-time Pb(II) and pH monitoring. Usage of ISE was very appropriate for real-time adsorption kinetics data collection as it facilitated recording of adsorption data at very specific and short time intervals as well as provided consistent kinetics data. Parameters studied were initial Pb(II) concentration and agitation speed. It was found that increases in initial Pb(II) concentration and agitation speed resulted in higher initial rate of adsorption. Pseudo first-order, pseudo second-order, Elovich, intraparticle diffusion and liquid film diffusion models were used to fit the adsorption kinetics data. It was suggested that chemisorption was the rate-control ling step for adsorption of Pb(II) onto PSAC since the adsorption kinetics data fitted both the pseudo second-order and Elovich models well. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbents, Adsorption, Adsorption Kinetics, Aqueous Solution, Aqueous-Solution, Biomass, Carbon, Diffusion, Dyes, Equation, Equilibrium, Intervals, Ion Selective Electrode, Kinetics, Lead(II), Models, Palm Shell-Based Activated Carbon, Pb(II), pH, Pseudo Second-Order, Pseudo-Second-Order, Removal, Rights, Solution, Sorption

? Solisio, C., Lodi, A., Soletto, D. and Converti, A. (2008), Cadmium biosorption on *Spirulina platensis* biomass. *Bioresource Technology*, **99** (13), 5933-5937.

Full Text: [2008\Bio Tec99, 5933.pdf](2008/Bio%20Tec99,%205933.pdf)

Abstract: Dry biomass of Spirulina platensis re-hydrated for 48 h was employed as a biosorbent in tests of cadmium(H) removal from water. Various concentrations of biomass (from 1 to 4 g l-1) and metal (from 100 to 800 mg l-1) were tested. Low biomass levels (X-o <= 2 g l-1) ensured metal removal up to 98% only at Cd-0 = 100 and 200 mg l-1, while X-o >= 2.0 g l-1 were needed at Cd-0 = 400 mg l-1 to achieve satisfactory results. Whereas X-o = 4.0 g l-1 was effective to remove up to Cd-0 = 500 mg l-1, a further increase in metal concentration (Cd-0 = 600 and 800 mg l-1) led to progressive worsening of the system performance. At a given biomass levels, the kinetics of the process was better at low Cd2+ concentrations, while, raising the adsorbent level from 1.0 to 2.0 g l-1 and then to 4.0 g l-1, the rate constant of biosorption increased by about one order of magnitude in both cases and the adsorption capacity of the system progressively decreased from 357 to 149 mg g-1. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Cadmium Removal, Biosorption, Spirulina Platensis, Re-Hydrated Biomass, Heavy-Metal Biosorption, Copper, Equilibrium, Binding, Algae, Lead

? Sud, D., Mahajana, G. and Kaura, M.P. (2008), Agricultural waste material as potential adsorbent for sequestering heavy metal ions from aqueous solutions – A review. *Bioresource Technology*, **99** (14), 6017-6027.

Full Text: [2008\Bio Tec99, 6017.pdf](2008/Bio%20Tec99,%206017.pdf)

Abstract: Heavy metal remediation of aqueous streams is of special concern due to recalcitrant and persistency of heavy metals in environment. Conventional treatment technologies for the removal of these toxic heavy metals are not economical and further generate huge quantity of toxic chemical sludge. Biosorption is emerging as a potential alternative to the existing conventional technologies for the removal and/or recovery of metal ions from aqueous solutions. The major advantages of biosorption over conventional treatment methods include: low cost, high efficiency, minimization of chemical or biological sludge, regeneration of biosorbents and possibility of metal recovery. Cellulosic agricultural waste materials are an abundant source for significant metal biosorption. The functional groups present in agricultural waste biomass viz. acetamido, alcoholic, carbonyl, phenolic, amido, amino, sulphydryl groups etc. have affinity for heavy metal ions to form metal complexes or chelates. The mechanism of biosorption process includes chemisorption, complexation, adsorption on surface, diffusion through pores and ion exchange etc. The purpose of this review article is to provide the scattered available information on various aspects of utilization of the agricultural waste materials for heavy metal removal. Agricultural waste material being highly efficient, low cost and renewable source of biomass can be exploited for heavy metal remediation. Further these biosorbents can be modified for better efficiency and multiple reuses to enhance their applicability at industrial scale.

Keywords: Agricultural Wastes, Biosorption, Industrial Effluents, Heavy Metal Remediation, Adsorbent

? Karagoz, S., Tay, T., Ucar, S. and Erdem, M. (2008), Activated carbons from waste biomass by sulfuric acid activation and their use on methylene blue adsorption. *Bioresource Technology*, **99** (14), 6214-6222.

Full Text: [2008\Bio Tec99, 6214.pdf](2008/Bio%20Tec99,%206214.pdf)

Abstract: Preparation of the activated carbons from sunflower oil cake by sulphuric acid activation with different impregnation ratios was carried out. Laboratory prepared activated carbons were used as adsorbents for the removal of methylene blue (MB) from aqueous solutions. Liquid-phase adsorption experiments were conducted and the maximum adsorption capacity of each activated carbon was determined. The effects of various process parameters i.e., temperature, pH, initial methylene blue concentration, contact time on the adsorption capacity of each activated carbon were investigated. The kinetic models for MB adsorption onto the activated carbons were studied. Langmuir isotherm showed better fit than Freundlich isotherm for all activated carbon samples. The rates of adsorption were found to conform to the pseudo-second-order kinetics with good correlation. The separation factor (R-L) revealed the favorable nature of the isotherm of the MB activated carbon system. (C) 2007 Elsevier Ltd. All rights reserved.

Keywords: Acid-Activation, Activated Carbon, Activated Carbons, Activation, Adsorbents, Adsorption, Adsorption Capacity, Aqueous Solutions, Aqueous-Solutions, Biomass, Capacity, Carbon, Chemical Activation, Equilibrium, Euphorbia-Rigida, Experiments, Freundlich, Freundlich Isotherm, Gas, Impregnation, Isotherm, Kinetic, Kinetic Models, Kinetics, Langmuir, Langmuir Isotherm, Methylene Blue, Models, Oil-Palm Stone, pH, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Pyrolysis, Removal, Rice Husks, Rights, Separation, Sulphuric Acid, Temperature, Waste, Waste Biomass

? Lai, Y.L., Annadurai, G., Huang, F.C. and Lee, J.F. (2008), Biosorption of Zn(II) on the different Ca-alginate beads from aqueous solution. *Bioresource Technology*, **99** (14), 6480-6487.

Full Text: [2008\Bio Tec99, 6480.pdf](2008/Bio%20Tec99,%206480.pdf)

Abstract: The performance of a new biosorbent system, consisting of a fungal biomass immobilized within an orange peel cellulose absorbent matrix, for the removal of Zn2+ heavy metal ions from an aqueous solution was tested. The amount of Zn(II) ion sorption by the beads was as follows; orange peel cellulose with Phanerochaete chrysosporium immobilized Ca-alginate beads (OPCFCA) (168.61 mg/g) > orange peel cellulose immobilized Ca-alginate beads (OPCCA) (147.06 mg/g) > P. chrysosywrium (F) (125.0 mg/g) > orange peel cellulose (OPC) (108.70 mg/g) > plain Ca-alginate bead (PCA) (98.26 mg/g). The Zn2+ concentration was 100 to 1000 mg/L. The widely used Langmuir and Freundlich isotherm models were utilized to describe the biosorption equilibrium process. The isotherm parameters were estimated using linear and non-linear regression analysis. The Box-Behnken model was found to be in close agreement with the experimental values, as indicated by the correlation coefficient value of 0.9999. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Biosorption, Orange Peel Cellulose, Fungal Biomass, Immobilization, Isotherm, Heavy-Metals, Phanerochaete-Chrysosporium, Sphaerotilus-Natans, Sorption Isotherm, Removal, Water, Adsorption, Recovery, Orange, Ions

? Afrane, G. and Achaw, O.W. (2008), Effect of the concentration of inherent mineral elements on the adsorption capacity of coconut shell-based activated carbons. *Bioresource Technology*, **99** (14), 6678-6682.

Full Text: 2008\Bio Tec99, 6678.pdf

Abstract: Coconut shells of West Africa Tall, a local variety of the coconut species Cocos nucifera L., were taken from five different geographical locations in Ghana and examined for the presence and concentration levels of some selected mineral elements using atomic absorption spectrometer. Activated carbons were subsequently made from the shells by the physical method. The iodine adsorption characteristics of the activated carbons measured showed a definite relationship to the concentration levels of potassium and other mineral elements in the precursor shell. Samples with lower total minerals content recorded higher iodine numbers. It was observed that the origin of the shells was related to the concentration levels of the analyzed mineral elements in the shells, which in turn affected the adsorption capacity of the activated carbons. The results of this study have important implications for the sourcing of coconuts whose shells are used in the manufacture of activated carbons. (c) 2007 Elsevier Ltd. All rights reserved.

Keywords: Absorption, Activated Carbon, Activated Carbons, Adsorption, Adsorption Capacity, Capacity, Carbonization, Coconut Shell, Coconut Shells, Iodine Number, Minerals, Palm-Shell, Pore Development, Precursor

? O’Connell, D.W., Birkinshaw, C. and O’Dwyer, T.F. (2008), Heavy metal adsorbents prepared from the modification of cellulose: A review. *Bioresource Technology*, **99** (15), 6709-6724.

Full Text: [2008\Bio Tec99, 6709.pdf](2008/Bio%20Tec99,%206709.pdf)

Abstract: A number of industries currently produce varying concentrations of heavy metal laden waste streams with significant consequences for any receiving environmental compartment. In recent years, increasing emphasis has been placed on environmental impact minimisation and resulting from this the range and capability of natural and prepared materials capable of heavy metal removal has seen steady development. In particular considerable work has been carried out on the use of both natural materials and their modifications. These natural materials, in many instances are relatively cheap, abundant in supply and have significant potential for modification and ultimately enhancement of their adsorption capabilities. This review paper reviews the current state of research on the use of the naturally occurring material cellulose, its modified forms and their efficacy as adsorbents for the removal of heavy metals from waste streams. Adsorbents based on direct modification of cellulose are evaluated initially and subsequently modifications resulting from the grafting of selected monomers to the cellulose backbone with subsequent functionalisation are assessed. The heavy metal adsorption capacities for these modified cellulose materials were found to be significant and levels of uptake were comparable, in many instances, to both other naturally occurring adsorbent materials and commercial ion exchange type resins. Many of the modified cellulose adsorbents proved regenerable and re-usable over a number of adsorption/desorption cycles allowing recovery of the adsorbed heavy metal in a more concentrated form. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Cellulose, Modification, Adsorption, Heavy Metals, Wastewater, Waste-Water Treatment, Ceric Ammonium-Nitrate, Aqueous-Solutions, Graft-Copolymerization, Ion-Exchange, Electrochemical Precipitation, Glycidyl Methacrylate, Adsorption-Isotherms, Synthetic Solutions, Cotton Cellulose

? Li, X.D. and Jia, R. (2008), Decolorization and biosorption for Congo red by system rice hull *Schizophyllum* sp. F17 under solid-state condition in a continuous flow packed-bed bioreactor. *Bioresource Technology*, **99** (15), 6885-6892.

Full Text: [2008\Bio Tec99, 6885.pdf](2008/Bio%20Tec99,%206885.pdf)

Abstract: Synthetic dyes are important chemical pollutants from various industries. This work developed an efficient and relatively simple continuous decolorization system rice hull-Schizophyllum sp. F17 under solid-state condition in a packed-bed bioreactor, for decolorizing Congo red. In the decolorization system, two decolorization mechanisms exist, one is decolorization by Schizophyllum sp. F17, the other is biosorption by rice hull. The decolorization efficiency was greatly affected by dye concentration and hydraulic retention time (HRT), which were quantificationally analyzed and optimized through response surface methodology (RSM). A 2(2) full factorial central composite design (CCD) was performed, and three second order polynomial models were generated to describe the effects of dye concentration and HRT on total decolorization (R-2 = 0.902), decolorization by Schizophyllum sp. F17 (R-2 = 0.866) and biosorption by rice hull (R-2 = 0.890). Response surface contour plots were constructed to show the individual and cumulative effects of dye concentration and HRT, and the optimum values. A maximum total decolorization 89.71% and maximum decolorization by Schizophyllum sp. F17 60.44% was achieved at dye concentration 142.63 mg/L, HRT41 h, and dye concentration 110.7 mg/L, HRT 29.4 h, respectively. Meanwhile, the role of manganese peroxidase (MnP) in the decolorizaion process was investigated. This study proved the feasibility of continuous mode for decolorizing synthetic dyes by white-rot fungi in solid-state fermentation bioreactors. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Azo-Dyes, Biosorption, Composite, Congo Red, Continuous Decolorization, Decolorization, Dye, Dyes, Efficiency, Fermentation, Funalia-Trogii, Immobilized Phanerochaete-Chrysosporium, Ligninolytic Enzyme-Production, Manganese, Manganese Peroxidase, Manufacturing Conditions, Mechanisms, Methodology, Models, Optimization, Packed-Bed Bioreactor, Pollutants, Response Surface Methodology, Retention, Rice, Rice Hull, Rights, Schizophyllum sp F17, Second Order, Second-Order, Solid-State Fermentation, Synthetic Dyes, Textile Dye, White-Rot Fungus, Work

? Wang, S.Y., Tsai, M.H., Lo, S.F. and Tsai, M.J. (2008), Effects of manufacturing conditions on the adsorption capacity of heavy metal ions by Makino bamboo charcoal. *Bioresource Technology*, **99** (15), 7027-7033.

Full Text: [2008\Bio Tec99, 7027.pdf](2008/Bio%20Tec99,%207027.pdf)

Abstract: The objective of this study was to investigate the effects of manufacturing conditions on the adsorption capacity of heavy metal ions by Makino bamboo charcoal. Results show that the specific surface area and iodine number of bamboo charcoal activated at 900 degrees C were larger than those of bamboo charcoal activated at 800 degrees C. The specific surface area of bamboo charcoal activated at 800 degrees C by carbon dioxide was larger than that of charcoal activated by steam. However, a contrary result was observed when the activation temperature was 900 degrees C. The total volume and proportion of micropores in bamboo charcoal activated by carbon dioxide were greater than those in the other sample groups. However, the total volume and bulk volume of meso- and macropores, and average pore diameter for bamboo charcoal activated by steam were greater than those in the other sample groups. Using 5 g bamboo charcoal (10-30 mesh) with a soaking time of 24 h, a better adsorption effect on Pb2+ (100%), Cu2+ (100%), and Cr3+ (88-98%) was found. However, medium frequencies were observed for the adsorption of Cd2+ (40-80%) and Ni2+ (20-60%). Very limited adsorption of As5+ was detected in this study. For the same charcoal grain sizes, the adsorption capacity of 0.5 g of charcoal was better than that of 0.1 g. The improved adsorption effect of the sample group activated by steam was compared with the sample group activated by carbon dioxide. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Activation, Adsorption, Adsorption Capacity, Adsorption Capacity of Heavy Metal Ions, Agricultural By-Products, Aqueous-Solutions, Capacity, Carbon, Carbon Dioxide, Carbonaceous Adsorbents, Cd2+, Charcoal, Cu2+, Granular Activated Carbons, Heavy Metal, Heavy Metal Ions, Iodine Number, Japonica Wood, Makino Bamboo Charcoal, Metal Ions, Ni2+, Palm Shell, Pb2+, Pore, Removal, Sorption, Surface Area, Surface-Area, Systems, Temperature, Volume

? Renault, F., Morin-Crini, N., Gimbert, F., Badot, P.M. and Crini, G. (2008), Cationized starch-based material as a new ion-exchanger adsorbent for the removal of CI Acid Blue 25 from aqueous solutions. *Bioresource Technology*, **99** (16), 7573-7586.

Full Text: [2008\Bio Tec99, 7573.pdf](2008/Bio%20Tec99,%207573.pdf)

Abstract: This article describes the use of a cationized starch-based material as new ion-exchanger adsorbent for the removal of C.I. Acid Blue 25 (AB 25) from aqueous solutions. Batch adsorption studies concerning the effects of contact time, pH and temperature are presented and discussed. Adsorption experimental data showed that: (i) the process was uniform and rapid: adsorption of dye reached equilibrium in 50 min in the wide pH range of dye solutions; (ii) adsorption kinetics followed the pseudo-second order model; (iii) the Langmuir model yielded a much better fit than the Freundlich model for the dye concentration range under study; (iv) this adsorbent exhibited interesting adsorption capacities: on the basis of the Langmuir analysis, the maximum adsorption capacity was determined to be 322 mg of dye per gram of material at 25°C; (v) the adsorption capacity decreased with increasing temperature; and (vi) the negative value of free energy change indicated the spontaneous nature of adsorption. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Acid Blue 25, Activated Carbons, Adsorbent, Adsorption, Adsorption Capacity, Adsorption Kinetics, Adsorption-Kinetics, Analysis, Anionic Dyes, Aqueous Solutions, Basic-Dyes, Batch Experiments, Beta-Cyclodextrin, Capacity, Concentration, Dye, Dye Adsorption, Equilibrium, Experimental, Freundlich, Freundlich Model, Ion-Exchanger Adsorbent, Kinetics, Langmuir, Langmuir Model, Methylene-Blue, Model, pH, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second Order Model, Pseudo-Second-Order, Reactive Dye, Removal, Residual Dyes, Rights, Starch, Temperature, Value, Waste-Water

? Wu, Y., Zhang, S.Z., Guo, X.Y. and Huang, H.L. (2008), Adsorption of chromium(III) on lignin. *Bioresource Technology*, **99** (16), 7709-7715.

Full Text: [2008\Bio Tec99, 7709.pdf](2008/Bio%20Tec99,%207709.pdf)

Abstract: In order to assess the possibility of using lignin to remove Cr(III) from waters, the adsorption of Cr(III) on lignin isolated front black liquor, a waste product of the paper industry, was investigated. The influences of pH, lignin dosage, contact time, ionic strength, Cr(III) concentration and other metals were investigated. The Cr(III) adsorption was strongly dependent on pH and adsorbent dosage, but independent of ionic strength and other metal ions. The adsorption kinetic data can be described well with pseudo-second-order model and the equilibrium data can be well fitted using Langmuir two-surface model with a maximum adsorption capacity of 17.97 mg/g. Cr(III) adsorption on lignin was mainly through the ion-exchange mechanism and formed inner-sphere complexes with lignin. Successful application in removing Cr(III) was achieved by using a real wastewater sample. This study indicates that lignin has the potential to become an effective and economical adsorbent for the removal of Cr(III) from wastewaters. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Acid Dye Adsorption, Activated Carbon, Adsorbent, Adsorption, Adsorption Capacity, Adsorption Kinetic, Aqueous-Solutions, Bagasse-Fly-Ash, Black Liquor, Cadmium Ions, Capacity, Chromium(III), Concentration, Cr(III), Cr(III) Adsorption, Equilibrium, Ion Exchange, Ion-Exchange, Ionic Strength, Kinetic, Kinetics, Langmuir, Lignin, Mechanism, Metal, Metal Ions, Metals, Model, Ph, Potential, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Model, Removal, Rights, Sorption, Strength, Trivalent Chromium, Waste, Waste-Water, Wastewater

? Bai, H.J., Zhang, Z.M., Yang, G.E. and Li, B.Z. (2008), Bioremediation of cadmium by growing *Rhodobacter sphaeroides*: Kinetic characteristic and mechanism studies. *Bioresource Technology*, **99** (16), 7716-7722.

Full Text: [2008\Bio Tec99, 7716.pdf](2008/Bio%20Tec99,%207716.pdf)

Abstract: The removal kinetic characteristic and mechanism of cadmium by growing Rhodobacter sphaeroides were investigated. The removal data were fitted to the second-order equation, with a correlation coefficient, R-2 = 0.9790-0.9916. Furthermore, it was found that the removal mechanism of cadmium was predominantly governed by bioprecipitation as cadmium sulfide with biosorption contributing to a minor extent. Also, the results revealed that the activities of cysteine desulfhydrase in strains grown in the presence of 10 and 20 mg/l of cadmium were higher than in the control, while the activities in the presence of 30 and 40 mg/l of cadmium were lower than in the control. Content analysis of subcellular fractionation showed that cadmium was mostly removed and transformed by precipitation on the cell wall. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Analysis, Bioaccumulation, Bioprecipitation, Bioremediation Mechanism, Biosorption, Cadmium, Cadmium Sulfide, Cell Wall, Control, Correlation Coefficient, Cysteine Desulfhydrase Gene, Escherichia-Coli, Fractionation, Kinetic, Kinetic Characteristic, Mechanism, Mine, Minor, Precipitation, Removal, Rhodobacter Sphaeroides, Rights, Second Order, Second-Order, Second-Order Equation, Sulfate-Reducing Bacteria, Surface, Treponema-Denticola

? Aksu, Z. and Karabayur, G. (2008), Comparison of biosorption properties of different kinds of fungi for the removal of Gryfalan Black RL metal-complex dye. *Bioresource Technology*, **99** (16), 7730-7741.

Full Text: [2008\Bio Tec99, 7730.pdf](2008/Bio%20Tec99,%207730.pdf)

Abstract: Three kinds of filamentous fungi (Rhizopus arrhizus, Trametes versicolor, *Aspergillus niger*) were tested for their ability to adsorb Gryfalan Black RL metal-complex dye as a function of pH, temperature and dye concentration. R. arrhizus and T versicolor exhibited the maximum dye uptake at pH 2.0 and at 25°C while A. niger performed the highest dye biosorption at pH 1.0 and at 35°C. Sorption capacity of each biosorbent increased with increasing initial dye concentration. Among the three fungi, R. arrhizus was the most effective biosorbent showing a maximum dye uptake of 666.7 mg g-1. The Langmuir model described the equilibrium data of each dye-fungus system accurately in the concentration and temperature ranges studied. Kinetic analysis indicated that both adsorption kinetics and internal diffusion played an important role on controlling the overall adsorption rate for each fungus. Thermodynamic analysis verified that A. niger biosorption was endothermic while the others were exothermic. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Biosorption, Fungi, Gryfalan Black RL, Metal-Complex Dye, Solid-State Fermentation, Aqueous-Solution, Textile Dyes, Aspergillus-Foetidus, Trametes-Versicolor, Rhizopus-Arrhizus, Reactive Dye, Biomass, Kinetics, Sorption

? He, Z.Y., Nie, H.L., Branford-White, C., Zhu, L.M., Zhou, Y.T. and Zheng, Y. (2008), Removal of Cu2+ from aqueous solution by adsorption onto a novel activated nylon-based membrane. *Bioresource Technology*, **99** (17), 7954-7958.

Full Text: [2008\Bio Tec99, 7954.pdf](2008/Bio%20Tec99,%207954.pdf)

Abstract: A novel activated nylon-based membrane was prepared and applied as an adsorbent for the removal of Cu2+ from aqueous solutions. It involved three stages: (i) deposition of a chitosan layer that functionalized the nylon membrane, (ii) cross-linking with epichlorohydrin to stabilize the polymer layer and enabling grafting, and (iii) iminodiacetic acid grafting. SEM and EDX techniques were used to characterize the composition of the membranes. Dynamic adsorption experiments on membranes were carried out at various pH values, contact times, adsorption dosages and initial metal concentrations to determine optimum membrane adsorption properties. The adsorption isotherm relating to Cu2+ fitted the Langmuir equation and an adsorption equilibrium constant and adsorption capacity of 2.345 x 10(-3) mg/ml and 10.794 mg/g were determined, respectively. The experimental data was analyzed using two adsorption kinetic models, pseudo-first-order and pseudo-second-order with the latter system providing the best fit. Finally complete regeneration of the activated nylon membrane was possible using 100 mmol/l Na(2)EDTA. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Model, Affinity Membranes, Biosorption, Cellulose, Copper, Cu2+, Equilibrium, Ions, Kinetics, Nylon-Based Membrane, Phosphate, Purification, Separation

? Calderón, M., Moraga, C., Leal, J., Agouborde, L., Navia, R. and Vidal, G. (2008), The use of Magallanic peat as non-conventional sorbent for EDTA removal from wastewater. *Bioresource Technology*, **99** (17), 8130-8136.

Full Text: [2008\Bio Tec99, 8130.pdf](2008/Bio%20Tec99,%208130.pdf)

Abstract: Kraft mills are responsible for large volumes discharges of highly Polluted effluents. Application of new bleaching processes (i.e. total chlorine-free (TCF) process) is already a feasible option to reduce environmental impacts. The current trend in the increase in the production of TCF pulp will proportionally increase the consumption of chelating agents. The most commonly used chelants, ethylenediaminetetraacetic acid (EDTA) and diethylenetriaminepentaacetic acid (DPTA) are supposed to be relatively persistent substances, poorly degradable in biological treatment facilities and are subsequently considered as environmentally critical compounds. Adsorption could be used as a treatment technique to remove recalcitrant compounds from wastewaters. However, in most cases, sorbent and regeneration costs can make the whole process not economically feasible. The goal of this Study was to evaluate the use of Magallanic peat as non-conventional sorbent for EDTA removal from wastewater. Adsorption studies were carried out considering a 2(3) factorial design. pH, temperature and sorbent/sorbate (S/S) relationship effects were evaluated in EDTA adsorption onto Magallanic peat. In addition, adsorption isotherm constants were determined according to the Langmuir and Freundlich models. The results showed that the optimal conditions for EDTA adsorption onto Magallanic peat were 20°C, acid pH (4.0) and a low sorbent/sorbate ratio (0.1/100). At these conditions Magallanic peat showed an adsorption capacity for EDTA (Cs-sat) of 128.2 mg/g, comparable and even better than activated carbon (Cs-sat 56.5 mg/g). EDTA adsorption data at 60°C obtained are not shown due to Magallanic peat degradation phenomena. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous-Solution, Biosorbent, Cadmium Biosorption, Chemisorption, Edta, Equilibrium, Fly-Ash, Kinetics, Kraft Mill Effluents, Magallanic Peat, Part I, Reactive Dyes, Sargassum Sp Biomass, Sorption

? Srinivasan, A. and Viraraghavan, T. (2008), Removal of oil by walnut shell media. *Bioresource Technology*, **99** (17), 8217-8220.

Full Text: [2008\Bio Tec99, 8217.pdf](2008/Bio%20Tec99,%208217.pdf)

Abstract: Studies were conducted to evaluate the oil sorption capacities of walnut shell media. Sorption capacity is the weight of oil picked up by unit weight of a sorbent. Initial oil pick-up by walnut shell media on pure oil and oil on aqueous medium was evaluated. Batch kinetic studies were conducted to evaluate the equilibrium time required by walnut shell media for sorbing oil. For pure oil medium, sorption capacities of 0.30 g/g, 0.51 g/g and 0.58 g/g were obtained for standard mineral oil, vegetable oil and DoALL Bright-Edge oil, respectively. The results showed sorption capacities of 0.56 g/g, 0.58 g/g and 0.74 g/g for standard mineral oil, vegetable oil and DoALL Bright-Edge oil, respectively, for oil on aqueous medium. It was found that sorbed oil could be recovered from walnut shell media by applying pressure. The Study showed that walnut shell media can be used as a sorbent for oil removal. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Aqueous Medium, Batch, Bed, Capacity, Equilibrium, Fibers, Filter, Filtration, Kinetic, Oil On Aqueous Medium, Oil Removal, Pressure, Pure Oil, Removal, Sorbent, Sorbents, Sorption, Sorption Capacity, Spill Cleanup, Ultrafiltration, Walnut Shell, Walnut Shell Media, Water Emulsions, Weight

? Sundaram, C.S., Viswanathan, N. and Meenakshi, S. (2008), Uptake of fluoride by nano-hydroxyapatite/chitosan, a bioinorganic composite. *Bioresource Technology*, **99** (17), 8226-8230.

Full Text: [2008\Bio Tec99, 8226.pdf](2008/Bio%20Tec99,%208226.pdf)

Abstract: A bioinorganic composite namely nano-hydroxyapatite/chitosan (n-HApC) composite which could be employed for technology development was prepared and studied for its defluoridation efficiency. It has been observed that there was a slight enhancement in the defluoridation capacity (DC) of n-HApC composite (1560 mg F-/kg) than nano-hydroxyapatite (n-HAp) which has a DC of 1296 mg F-/kg. The sorbents were characterized with XRD and TEM studies. The fluoride sorption was explained with Freundlich and Langmuir isotherms. Thermodynamic parameters such as ΔG°, ΔH°, ΔS° and E-a were calculated in order to understand the nature of sorption. The sorption process was found to be controlled by pseudo-second-order and pore diffusion models. Field studies were carried out with the fluoride containing water sample collected from a fluoride-endemic area in order to test the suitability of the sorbents at field conditions. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous-Solution, Chitosan, Chitosan, Defluoridation, Defluoridation, Equilibrium, Kinetics, N-HApC Composite, Nano-Hydroxyapatite, Removal, Sorption, Sorption, Temperature, Water

? Dang, V.B.H., Doan, H.D., Dang-Vu, T. and Lohi, A. (2009), Equilibrium and kinetics of biosorption of cadmium(II) and copper(II) ions by wheat straw. *Bioresource Technology*, **100** (1), 211-219.

Full Text: [2009\Bio Tec100, 211.pdf](2009/Bio%20Tec100,%20211.pdf)

Abstract: Biosorption equilibrium and kinetics of Cd2+ and Cu2+ ions on wheat straw, Triticum aestivum, in an aqueous system were investigated. Among the models tested, namely the Langmuir, Freundlich, Temkin, and Dubinin-Radushkevich isotherms, the biosorption equilibrium for both Cd2+ and Cu2+ was best described by the Langmuir model. The Langmuir biosorption capacity for Cd2+ was about 27% higher than that for Cu2+. It was also found that biosorption of Cd2+ and Cu2+ by wheat straw followed second-order kinetics. The equilibrium amount of metal ions adsorbed onto the wheat straw increased with increasing of pH from 4.0 to 7.0, and the effect was more pronounced for Cd2+ than for Cu2+. The equilibrium adsorbed amount also increased with the initial concentration of the metal ions, as expected. On the other hand, an increase of temperature from 25 to 30ºC only enhanced the biosorption of Cd2+ and Cu2+ slightly. The apparent temperature independence and the strong pH dependence of the amount of metal ions adsorbed along with moderate mean free energies of biosorption (between 8.0 and 12.9 kJ mol(-1)) altogether indicate that biosorption of Cd2+ and Cu2+ by wheat straw might follow a chemisorption mechanism. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Aqueous-Solutions, Biosorption, Cadmium(II), Capacity, Cd2+, Chemisorption, Concentration, Copper(II), Cu2+, Equilibrium, Freundlich, Heavy-Metal Removal, Ions, Isotherms, Kinetics, Langmuir, Langmuir Model, Lead, Mechanism, Metal, Metal Ions, Model, Models, pH, pH Dependence, Residue, Rights, Saccharomyces-Cerevisiae, Seaweeds, Second Order, Second Order Kinetics, Second-Order, Second-Order Kinetics, Straw, Temperature, Wheat Straw, Zinc

? Mathialagan, T. and Viraraghavan, T. (2009), Biosorption of pentachlorophenol from aqueous solutions by a fungal biomass. *Bioresource Technology*, **100** (2), 549-558.

Full Text: [2009\Bio Tec100, 549.pdf](2009/Bio%20Tec100,%20549.pdf)

Abstract: This study focuses on the use of non-viable *Aspergillus niger* biomass, for the biosorption of pentachlorophenol (PCP) from aqueous solutions. Various forms of the biomass-autoclaved and chemically conditioned, were tested for their potential in the removal of PCP from aqueous solutions. It was found that PCP removal was pH dependent; PCP removal decreased with the increase in pH for all type of biomass, except for cetyltrimethylammonium bromide (CTAB) biomass. For CTAB biomass, a near complete removal of PCP was observed at all pHs. Therefore, CTAB biomass was used in further studies. PCP removal was rapid, with an equilibrium time of 2 h. The rate of adsorption kinetics was well described by a pseudo-second order model. Isotherm models of the type one and two parameter models were found to fit the isotherm data. PCP biosorption was found to be exothermic in nature; the amount of PCP sorbed decreased with an increase in temperature. Desorption was carried out using deionized water, dilute HCI and dilute NaOH, and it was found that most of the PCP was irreversibly bound to the biomass. The addition of inorganic salts did not affect the removal of PCP from aqueous solutions. Among the surface functional groups present on the biomass, carboxyl, amide and hydroxyl groups seem to have played a role in PCP biosorption. It was concluded that CTAB treated biomass was an excellent adsorbent for the removal of PCP from aqueous solutions. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Kinetics, Aqueous Solutions, *Aspergillus niger*, Biomass, Biosorption, Cetyltrimethylammonium Bromide, Chemical-Modification, Chlorinated Phenols, Chlorophenols, Complete, CTAB, Data, Desorption, Equilibrium, Hazardous Organic Pollutants, Ionic-Strength, Isotherm, Isotherm Models, Isotherms, Kinetics, Microbial Biomass, Model, Models, Pentachlorophenol, pH, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second-Order, Removal, Salts, Sorption, Temperature, Type of Biomass, Water

? Nunes, A.A., Franca, A.S. and Oliveira, L.S. (2009), Activated carbons from waste biomass: An alternative use for biodiesel production solid residues. *Bioresource Technology*, **100** (5), 1786-1792.

Full Text: [2009\Bio Tec100, 1786.pdf](2009/Bio%20Tec100,%201786.pdf)

Abstract: Defective coffee press cake, a residue from coffee oil biodiesel production, was evaluated as raw material for production of an adsorbent for removal of methylene blue (MB) from aqueous solution. Batch adsorption tests were performed at 25 degrees C and the effects of particle size, contact time, adsorbent dosage and pH were investigated. Preliminary adsorption tests indicated that thermal treatment is necessary in order to improve adsorption capacity. Adsorption kinetics was determined by fitting first and second-order kinetic models to the experimental data, with the second-order model providing the best description of MB adsorption onto the prepared adsorbent. The experimental adsorption equilibrium data were fitted to Langmuir, Freundlich and Temkin adsorption models, with the last two providing the best fits. The experimental data obtained in the present study indicated that this type of waste material is a suitable candidate for use in the production of adsorbents for removal of cationic dyes, thus contributing for the implementation of sustainable development in both the coffee and biodiesel production chains. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Biodiesel Solid Waste, Toxic Pollutants, Methylene-Blue Adsorption, Coir Pith Carbon, Aqueous-Solution, Surface-Chemistry, Removal, Dye, Oil, Equilibrium, Adsorbents, Kinetics

? Chowdhury, P., Viraraghavan, T. and Srinivasan, A. (2010), Biological treatment processes for fish processing wastewater - A review. *Bioresource Technology*, **101** (2), 439-449.

Full Text: [2010\Bio Tec101, 439.pdf](2010/Bio%20Tec101,%20439.pdf)

Abstract: Water consumption in a fish-processing industry and high-strength wastewater from such an industry are of great concern world-wide. Liquid effluent regulations are becoming more stringent day by day. Biological treatment is the best option for such a wastewater. Anaerobic processes such as upflow anaerobic sludge blanket (UASB) reactor, anaerobic filter (AF) and anaerobic fluidized bed (AFB) reactor can achieve high (80-90%) organics removal and produce biogas. Aerobic processes such as activated sludge, rotating biological contactor, trickling filter and lagoons are also Suitable for organics removal. Anaerobic digestion followed by an aerobic process is an optimal process option for fish processing wastewater treatment. (c) 2009 Elsevier Ltd. All rights reserved.

Keywords: Aerobic, Anaerobic, Anaerobic Treatment, Blanket UASB Reactor, Effluent, Filter, Fish Processing, Liquid Effluents, Meal Factories, pH, Pilot-Plant, Process, Processes, Reactor, Removal, Review, Saline Wastewaters, Treatment, Treatment Systems, Wastewater, Wastewater Treatment, Water

? Cheung, W.H., Szeto, Y.S. and McKay, G. (2009), Enhancing the adsorption capacities of acid dyes by chitosan nano particles. *Bioresource Technology*, **100** (3), 1143-1148.

Full Text: [2009\Bio Tec100, 1143.pdf](2009/Bio%20Tec100,%201143.pdf)

Abstract: In the present study, nanochitosan emulsion has been produced in a suspension form by adding tripolyphosphate solution into a chitosan solution drop-wise. The adsorption capacities of four acid dyes, namely, Acid Orange 10 (AO10), Acid Orange 12 (AO12), Acid Red 18 (AR18) and Acid Red 73 (AR73) on nanochitosan, have been determined to be 1.77, 4.33. 1.37 and 2.13 mmol l-1, respectively. The nanochitosan dye capacities were compared with normal chitosan capacities which were 1.54, 2.66, 1.11 and 1.25 mmol l-1 for AO10, A012, AR18 and AR73, respectively. In all cases, the nanochitosan has a higher capacity. The mechanism of acid dye adsorption and the effect of pH are also discussed. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Nanochitosan, Adsorption, Chitosan, Acid Dyes, Waste Red Mud, Agricultural By-Products, Activated Carbon, Color Removal, Congo Red, Triphenylmethane Dyes, Natural Adsorbents, Textile Effluents, Fullers Earth, Solid-Waste

? Mao, J., Won, S.W., Vijayaraghavan, K. and Yun, Y.S. (2009), Surface modification of Corynebacterium glutamicum for enhanced Reactive Red 4 biosorption. *Bioresource Technology*, **100** (3), 1463-1466.

Full Text: [2009\Bio Tec100, 1463.pdf](2009/Bio%20Tec100,%201463.pdf)

Abstract: This study reports the possibility of enhancing the reactive dye biosorption capacity of Corynebacterium glutamicum via its cross-linking with polyethylenimine (PEI). The amine groups in the cell wall of C glutamicum were found to electrostatically interact with reactive dye anions. Thus, cross-linking the biomass with PEI enhanced the primary and secondary amine groups, thereby increased the biosorption of reactive dye. The pH edge experiments revealed that acidic conditions, due to protonation of the amine groups, were found to favor Reactive Red 4 (RR 4) biosorption. According to the Langmuir model, the PEI-modified C. glutamicum recorded a maximum RR 4 uptake capacity of 485.1 mg/g compared to 171.9 mg/ g of the raw C glutamicum. The kinetic experiments revealed that chemical modification decreased the rate of biosorption. Desorption was successful at pH 9, with the biomass successfully regenerated and reused over four cycles. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Binding, Biomass, Biosorption, Capacity, Chemical-Modification, Cross-Linking, Desorption, Dye, Elsevier, Groups, Heavy-Metals, Isotherm, Kinetic, Langmuir, Langmuir Model, Model, PEI, pH, Primary, Reactive Dye, Removal, Surface Modification, Walls, Wastewater Treatment

? Tan, I.A.W., Ahmad, A.L. and Hameed, B.H. (2009), Fixed-bed adsorption performance of oil palm shell-based activated carbon for removal of 2,4,6-trichlorophenol. *Bioresource Technology*, **100** (3), 1494-1496.

Full Text: 2009\Bio Tec100, 1494.pdf

Abstract: This study investigated the adsorption potential of oil palm shell-based activated carbon to remove 2,4,6-trichlorophenol from aqueous solution using fixed-bed adsorption column. The effects of 2,4,6-trichlorophenol inlet concentration, feed flow rate and activated carbon bed height on the breakthrough characteristics of the adsorption system were determined. The regeneration efficiency of the oil palm shell-based activated carbon was evaluated using ethanol desorption technique. Through ethanol desorption, 96.25% of the adsorption sites could be recovered from the regenerated activated carbon. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: 2,4,6-Trichlorophenol, Activated Carbon, Adsorption, Aqueous-Solution, Batch, Biosorption, Breakthrough, Breakthrough Characteristics, Carbon, Column, Desorption, Equilibrium, Ethanol, Fixed-Bed, Ions, Kinetics, Oil Palm Shell, Phenol, Pith Carbon, Regeneration, Removal, System, Waste

? Mestre, A.S., Pires, J., Nogueira, M.F., Parra, J.B., Carvalho, A.P. and Ania, C.O. (2009), Waste-derived activated carbons for removal of ibuprofen from solution: Role of surface chemistry and pore structure. *Bioresource Technology*, **100** (5), 1720-1726.

Full Text: [2009\Bio Tec100, 1720.pdf](2009/Bio%20Tec100,%201720.pdf)

Abstract: The removal of a widespread used drug (i.e., ibuprofen) from water was investigated using high valuable carbon adsorbents obtained from chemical and physical activation of a bioresource (cork) and a municipal waste (plastic). The waste-derived carbons outperformed the adsorption capacity of commercial carbonaceous adsorbents due to their adequate features for the removal of the targeted compound. Regarding the adsorption mechanism, the results obtained point out that ibuprofen retention is favored in activated carbons with basic surface properties. On the other hand, the textural features also play an important role; the presence of a transport pores network (i.e., mesopores) is crucial to ensure the accessibility to the inner porosity, and the microporosity must be large enough to accommodate the ibuprofen molecule. Specifically, adsorbents with a large fraction of ultramicropores (pore widths <0.7 nm) are not adequate to effectively remove ibuprofen. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Ibuprofen, Adsorption, Cork Powder, Plastic Waste, Cork Powder Waste, Chemical Activation, PET Waste, Adsorption, Pharmaceuticals, Water, Heterogeneity, Components, Products, Models

? El Bakouri, H., Usero, J., Morillo, J., Rojas, R. and Ouassini, A. (2009), Drin pesticides removal from aqueous solutions using acid-treated date stones. *Bioresource Technology*, **100** (10), 2676-2684.

Full Text: [2009\Bio Tec100, 2676.pdf](2009/Bio%20Tec100,%202676.pdf)

Abstract: This work describes the potential applicability of chemically and thermally treated date stones for removing drin pesticides (aldrin, dieldrin and endrin) from aqueous solutions. The effect of several parameters, such as sorbent particle size, adsorbent dose, shaking speed, shaking time, concentration of pesticide solution and temperature, was evaluated by batch experiments. Pesticide determination was carried out using stir bar sorptive extraction and gas chromatography coupled with mass spectroscopy. Maximum removal efficiency (93%) was reached using 0.1 g of acid-treated date stones (ATDS) (63-100 mu m) and 100 mL of aldrin (0.5 mg L-1). The removal efficiency of drin pesticides decreased in the order of aldrin, dieldrin and endrin, and decreased as the temperature rose. Adsorption data were processed according to various kinetic models. Lagergren and Morris-Weber equations were applied to fit the kinetic results. The second order model was the most suitable on the whole, and intra-particle diffusion was found to be the rate-controlling the adsorption process. According to adsorption kinetic data, 3.5 h were considered as the equilibrium time for determining adsorption isotherms. Adsorption data were analyzed by the Langmuir, Freundlich and Dubinin-Radushkevich adsorption approaches. Experimental results showed that the Freundlich isotherm model best described the adsorption process. In addition, thermodynamic parameters such as ΔH, ΔS and ΔG were calculated. Negative values of ΔH and ΔG indicate the exothermic and spontaneous nature of pesticide adsorption on ATDS. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: Acid-Treated Date Stones, Adsorption, Adsorption Isotherms, Adsorption Isotherms, Bar Sorptive Extraction, Chlorinated Pesticides, Granular Activated Carbon, In-Ground Water, Kinetic Models, Low-Cost Adsorbent, Natural Organic-Substances, Organochlorine Pesticides, Pesticide Removal, Phase Microextraction, Polychlorinated-Biphenyls, Removal, Stir Bar Sorptive Extraction

? Bayramoğlu, G., Gursel, I., Tunali, Y. and Arıca, M.Y. (2009), Biosorption of phenol and 2-chlorophenol by *Funalia trogii* pellets. *Bioresource Technology*, **100** (10), 2685-2691.

Full Text: [2009\Bio Tec100, 2685.pdf](2009/Bio%20Tec100,%202685.pdf)

Abstract: The removal of phenol (Ph) and 2-chlorophenol (2-CPh) from aqueous solution by native and heat inactivated fungus Funalia trogii pellets were investigated. The effects of contact time, solid/liquid ratio, optimum pH and temperature on the phenols removal capacity by the pellets were established. The removal efficiency of phenols increased significantly with increasing biomass dose. The optimum pH was detected to be 8.0. The second-order equations are described and evaluated on the basis of a comparative estimation of the corresponding coefficients. The phenol removal equilibrium isotherm was modeled by the Langmuir equations. The enthalpy change values were obtained between 7.62 and 10.64 kJ/mol. This indicated that the uptake of phenols either on native or heat inactivated fungal pellets was based on a physical adsorption process. (C) 2008 Elsevier Ltd. All rights reserved.

Keywords: 2,4-Dichlorophenol, Adsorption, Adsorption Isotherm, Adsorption Kinetic, Aqueous-Solutions, *Aspergillus-Niger*, Biodegradation, Biomass, Bioremediation, Biosorption, Ca-Alginate, Funalia Trogii, Phenol, Removal, Surface-Properties, White-Rot Fungus

? Chatterjee, S., Lee, D.S., Lee, M.W. and Woo, S.H. (2009), Enhanced adsorption of congo red from aqueous solutions by chitosan hydrogel beads impregnated with cetyl trimethyl ammonium bromide. *Bioresource Technology*, **100** (11), 2803-2809.

Full Text: [2009\Bio Tec100, 2803.pdf](2009/Bio%20Tec100,%202803.pdf)

Abstract: The adsorption of congo red (CR) onto chitosan (CS) beads impregnated by a cationic surfactant (CTAB, cetyl trimethyl ammonium bromide) was investigated. Chitosan beads impregnated at a ratio of 1/20 of CTAB to CS (0.05% of CTAB and 1% of CS) increased the CR adsorption capacity by 2.2 times from 162.3 mg/g (0% CTAB) to 352.5 mg/g (0.05% CTAB). The CR adsorption decreased with an increase in pH of the CR solution from 4.0 to 9.0. The Sips isotherm model showed a good fit with the equilibrium experimental data and the values of the heterogeneity factor (n) indicated heterogeneous adsorption of CR onto CS/CTAB beads, as well as CS beads. The kinetic data showed better fit to the pseudo second-order rate model than to the pseudo first-order rate model. The impregnation of CS beads by cationic surfactants showed the highest adsorption capacities of CR compared to any other adsorbents and would be a good method to increase adsorption efficiency for the removal of anionic dyes in a wastewater treatment process. (c) 2008 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbents, Adsorption, Behavior, Chitosan Bead, Coir Pith, Congo Red, CTAB, Dyes, Effluent, Equilibrium, Ions, Pseudo Second Order, Removal, Surfactant, Surfactant-Modified Montmorillonite

? Li, K.L. and Wang, X.H. (2009), Adsorptive removal of Pb(II) by activated carbon prepared from *Spartina alterniflora*: Equilibrium, kinetics and thermodynamics. *Bioresource Technology*, **100** (11), 2810-2815.

Full Text: [2009\Bio Tec100, 2810.pdf](2009/Bio%20Tec100,%202810.pdf)

Abstract: Low-cost activated carbon was prepared from Spartina alterniflora by phosphoric acid activation for the removal of Pb(II) from dilute aqueous solution. The effect of experimental parameters such as pH, initial concentration, contact time and temperature on the adsorption was studied. The obtained data were fitted with the Langmuir and Freundlich equations to describe the equilibrium isotherms. The kinetic data were fitted with the Lagergren-first-order, pseudo-second-order and Elovich models. It was found that pH played a major role in the adsorption process. The maximum adsorption capacity for Pb(II) on S. alterniflora activated carbon (SAAC) calculated from Langmuir isotherm was more than 99 mg g-1. The optimum pH range for the removal of Pb(II) was 4.8-5.6. The Freundlich isotherm model was found to best describe the experimental data. The kinetic rates were best fitted to the pseudo-second-order model. Thermodynamic study showed the adsorption was a spontaneous exothermic process. Crown Copyright (c) 2008 Published by Elsevier Ltd. All rights reserved.

Keywords: Adsorbents, Adsorption Isotherm, Aqueous-Solutions, Basic Dye, Desorption, Ions, Isotherms, Kinetics, Lead, Malachite Green, Mechanism, Pseudo Second Order, Shell, Spartina Alterniflora, Thermodynamics, Water

? Gurgel, L.V.A., de Melo, J.C.P., de Lena, J.C. and Gil, L.F. (2009), Adsorption of chromium(VI) ion from aqueous solution by succinylated mercerized cellulose functionalized with quaternary ammonium groups. *Bioresource Technology*, **100** (13), 3214-3220.

Full Text: [2009\Bio Tec100, 3214.pdf](2009/Bio%20Tec100,%203214.pdf)

Abstract: Succinylated mercerized cellulose (cell I) was used to synthesize an anion exchange resin. Cell 1, containing carboxylic acid groups was reacted with triethylenetetramine to introduce amine functionality to this material to obtain cell 2. Cell 2 was reacted with methyl-iodide to quaternize the amine groups from this material to obtain cell 3. Cells 2 and 3 were characterized by mass percent gain, degree of amination and quaternization, FUR and CHN. Cells 2 and 3 showed degrees of amination and quaternization of 2.8 and 0.9 mmol/g and nitrogen content of 6.07% and 2.13%, respectively. Cell 3 was used for Cr(VI) adsorption studies. Adsorption equilibrium time and optimum pH for Cr(VI) adsorption were found to be 300 min and 3.1, respectively. The Langmuir isotherm was used to model adsorption equilibrium data. The adsorption capacity of cell 3 was found to be 0.829 mmol/g. Kinetic studies showed that the rate of adsorption of Cr(VI) on cell 3 obeyed a pseudo-second-order kinetic model. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorption, Anion Exchange, Bagasse, Chromate, Chromium(VI), Equilibrium, Kinetics, Modified Cellulose, Removal, Sorption, Speciation, Triethylenetetramine, Waste-Water, Wood

? Chauhan, K., Chauhan, G.S. and Ahn, J.H. (2009), Synthesis and characterization of novel guar gum hydrogels and their use as Cu2+ sorbents. *Bioresource Technology*, **100** (14), 3599-3603.

Full Text: [2009\Bio Tec100, 3599.pdf](2009/Bio%20Tec100,%203599.pdf)

Abstract: To prepare novel hydrogels for use in water technologies, guar gum was subjected to acid hydrolysis. The depolymerized guar gum obtained there from and the native guar gum were oxidized to their respective polycarboxylic forms using NOx as oxidant. All these polymers were crosslinked with N,N-methylenebisacrylamide, and were used as Cu2+ sorbents. The candidate hydrogel exhibiting the highest uptake was used further to investigate the effect of external stimuli on sorption. The sorption on hydrogels was fast as the highest sorption was observed after 2 h at 40°C and 20 ppm of Cu2+ ions. The hydrogel prepared from the oxidized guar gum afforded the maximum sorption capacity of 125.893 mg g-1. Langmuir and Freundlich isotherms, and pseudo second order kinetics matches the experimental data. The evidence of sorption was obtained by characterizing Cu2+-loaded hydrogels by FTIR spectroscopy. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid Hydrolysis, Acrylamide-Based Hydrogels, Aqueous-Solution, Biosorption, Biosorption, Copper, Graft-Copolymers, Guar Gum, Heavy-Metals, Metal-Ions, Modified Cellulosics, NOx Oxidant, Oxidation, Polycarboxylate, Removal

? El Bakouri, H., Usero, J., Morillo, J. and Ouassini, A. (2009), Adsorptive features of acid-treated olive stones for drin pesticides: Equilibrium, kinetic and thermodynamic modeling studies. *Bioresource Technology*, **100** (18), 4147-4155.

Full Text: [2009\Bio Tec100, 4147.pdf](2009/Bio%20Tec100,%204147.pdf)

Abstract: The adsorption behavior of drin pesticides from aqueous solution onto acid treated olive stones (ATOS) was investigated using stir bar sorptive extraction and gas chromatography coupled with mass spectroscopy. The effects of sorbent particle size, adsorbent dose, contact time, concentration of pesticide solution and temperature on the adsorption processes were systematically studied in batch shaking sorption experiments. Maximum removal efficiency (94.8%) was reached for aldrin (0.5 mg L-1) using the fraction 63-100 mu m of ATOS (solid/liquid ratio: 1 g L-1). Experimental data were modeled by Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherms. The Freundlich isotherm model (R-2 = 0.98-0.99) fitted the equilibrium data better than the Langmuir and D-R isotherm models, with low sum of error values (SE = 1.4-9.2%). The mean adsorption free energy derived from the D-R isotherm model (R-2 = 0.95-0.99) showed that the adsorption of drin pesticides was taken place by weak physical forces, such as van der Waals forces and hydrogen bonding. The calculated thermodynamic parameters, ΔH, ΔS and ΔG prove that drin pesticides adsorption on ATOS was feasible, spontaneous and exothermic under examined conditions. The pseudo first order, pseudo second order kinetic and the intra-particle diffusion models were used to describe the kinetic data and rate constants were evaluated. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid Treated Olive Stones, Adsorbent, Adsorbent Dose, Adsorption, Adsorption Behavior, Aldrin, Aqueous Solution, Aqueous-Solutions, Bar Sorptive Extraction, Batch, Batch Shaking, Behavior, Chlorinated Pesticides, Chromatography, Concentration, D-R Isotherm, Data, Diffusion, Efficiency, Energy, Equilibrium, Error, Exothermic, Experiments, Extraction, First, First Order, Freundlich, Freundlich Isotherm, Freundlich Isotherm Model, Hydrogen, Hydrogen Bonding, In-Ground Water, Intra-Particle Diffusion, Intraparticle Diffusion, Isotherm, Isotherm Model, Isotherms, Kinetic, Kinetics, L1, Langmuir, Low-Cost Adsorbent, Metanil-Yellow, Model, Modeling, Models, Natural Organic-Substances, Northwest Morocco, Organochlorine Pesticides, Particle Size, Pesticide, Pesticide Removal, Pesticides, Physical, Polychlorinated-Biphenyls, Pseudo First Order, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Rate Constants, Removal, Removal Efficiency, Rights, Se, Second Order, Second-Order, Size, Solution, Sorbent, Sorption, Spectroscopy, STIR Bar Sorptive Extraction, Temperature, Thermodynamic, Thermodynamic Parameters

? Oei, B.C., Ibrahim, S., Wang, S.B. and Ang, H.M. (2009), Surfactant modified barley straw for removal of acid and reactive dyes from aqueous solution. *Bioresource Technology*, **100** (18), 4292-4295.

Full Text: [2009\Bio Tec100, 4192.pdf](2009/Bio%20Tec100,%204192.pdf)

Abstract: A barley straw was modified by a surfactant, cetylpyridinium chloride, and used as an adsorbent for acid (acid blue 40) and reactive dye (reactive black 5) adsorption in aqueous solution. Characterization of the modified barley straw was performed using N-2 adsorption, titration, and FT-IR analysis. It was found that the surfactant modified barley straw exhibits higher adsorption to acid blue 40 than reactive black 5 and adsorption of the dyes is influenced by several parameters such as dye initial concentration, adsorbent dosage, solution pH, and adsorption temperature. Adsorption isotherms show that maximum adsorption of acid blue 40 and reactive black 5 is 1.02×10-4 and 2.54×10-5 mol/g, respectively. Desorption studies show that both dyes are strongly bounded with the adsorbent and exhibit low desorption. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorbent Dosage, Adsorption, Adsorption Isotherms, Analysis, Aqueous Solution, Azo Dyes, Azo Dyes, Barley Straw, Biosorbent, Biosorption, Black-5, Cetylpyridinium Chloride, Characterization, Chloride, Concentration, *Corynebacterium-glutamicum*, Desorption, Dye, Dyes, Equilibrium, Fly-Ash, FT-IR, FTIR, FTIR Analysis, Isotherm, Isotherms, Low-Cost Adsorbents, Modified, N2, N2, N2 Adsorption, pH, Reactive Black 5, Reactive Dye, Reactive Dyes, Red Mud, Removal, Rights, Solution, Straw, Surfactant, Temperature, Textile Effluent

? Lang, W., Dejma, C., Sirisansaneeyakul, S. and Sakairi, N. (2009), Biosorption of nonylphenol on dead biomass of *Rhizopus arrhizus* encapsulated in chitosan beads. *Bioresource Technology*, **100** (23), 5616-5623.

Full Text: [2009\Bio Tec100, 5616.pdf](2009/Bio%20Tec100,%205616.pdf)

Abstract: The nonylphenol (NP) biosorption and desorption potential for fungal biomass used under batch conditions was investigated using kinetics and isotherm models. Fungal biomass of *Rhizopus arrhizus* TISTR 3610 exhibited preferential uptake of NP, an endocrine disrupting chemicals. Sporangiospores, asexual spores, were immobilised in chitosan beads. The biosorption data of NP on the moist heat inactivated R. arrhizus-chitosan beads were analyzed using four popular adsorption isotherms and, by using non-linear least-regression with the solver add-in in Microsoft Excel, correlated in order with the Fritz-Schluender > Redlich-Peterson > Freundlich > Langmuir isotherms. The pseudo first-order kinetics was found to have the best fit with the experimental data. The diffusivity of NP in the R. arrhizus-chitosan beads was calculated using the shrinking core model, and the diffusivity values were in the ranges of 2.3736×10-4-1.8950×10-4 cm2 s-1. Desorption to recover the adsorbed NP from the beads was performed in methanol and was best described using a pseudo second-order kinetic model (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: 4-Nonylphenol, Activated-Sludge, Adsorption, Adsorption Isotherms, Alginate, Aqueous-Solutions, Batch, Beads, Bioaccumulation, Biomass, Biosorption, Carbon, Chemicals, Chitosan, Data, Desorption, Experimental, First Order, First-Order Kinetics, Freundlich, Fungal Biomass, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetic Modelling, Kinetics, Langmuir, Langmuir Isotherms, Methanol, Model, Models, Nonylphenol, Organic Pollutants, Phanerochaete-Chrysosporium, Potential, Pseudo First Order, Pseudo First-Order, Pseudo Second Order, Pseudo Second-Order, Pseudo-First-Order, Pseudo-Second-Order, Reactive Dyes, Redlich-Peterson, *Rhizopus arrhizus*, Rights, Second Order, Second-Order, Uptake

? Dávila-Jiménez, M.M., Elizalde-González, M.P. and Hernández-Montoya, V. (2009), Performance of mango seed adsorbents in the adsorption of anthraquinone and azo acid dyes in single and binary aqueous solutions. *Bioresource Technology*, **100** (24), 6199-6206.

Full Text: [2009\Bio Tec100, 6199.pdf](2009/Bio%20Tec100,%206199.pdf)

Abstract: In this study the husk of mango seed and two carbonaceous adsorbents prepared from it were used to study the adsorption behavior of eight acid dyes. The adsorbed amount in mmol m-2 decayed asymptotically as the molecular volume and area increased. The interaction between the studied dyes and the mesoporous carbon was governed by the ionic species in solution and the acidic/basic groups on the surface. Less than 50% of the external surface of the microporous carbon became covered with the dyes molecules, though monolayer formation demonstrating specific interactions only with active sites on the surface and the adsorption magnitudes correlated with the shape parameter of the molecule within a particular dye group. The adsorption behavior in mixtures was determined by the molecular volume of the constituents; the greater the molecular volume difference, the greater the effect on the adsorbed amount. We also demonstrated that the raw husk of the mango seed can be used to remove up to 50% from model 50 mg l-1 solutions of the studied acid dyes. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid Dyes, Activated Carbons, Adsorbents, Adsorption, Adsorption Behavior, Aggregation, Anionic Dyes, Aqueous Solutions, Behavior, Binary Mixtures, Biosorbent, Carbon, Dye, Dyes, Interaction, Liquid-Phase Adsorption, Mango Seed, Mesoporous, Mesoporous Carbon, Model, Monolayer, Orange Peel, Phenols, Removal, Rights, Solution, Solutions, Species, Structure-Adsorption Correlations, Surface, Surface-Chemistry, Volume, Waste-Water

? Won, S.W., Vijayaraghavan, K., Mao, J., Kim, S. and Yun, Y.S. (2009), Reinforcement of carboxyl groups in the surface of Corynebacterium glutamicum biomass for effective removal of basic dyes. *Bioresource Technology*, **100** (24), 6301-6306.

Full Text: [2009\Bio Tec100, 6301.pdf](2009/Bio%20Tec100,%206301.pdf)

Abstract: The biomass of Corynebacterium glutamicum was treated with poly(amic acid) to improve the biosorption of Basic Blue 3 (BB3) from aqueous solution. The grafting of poly(amic acid) onto the biomass surface increased the density of the carboxyl groups. The UV-spectrum revealed that strong acidic (pH < 2) and basic conditions (pH ≧ 11) resulted in the precipitation of BB3. Therefore, pH edge experiments were conducted only within the range 3-10; these results indicated that electrostatic attraction between carboxyl groups of C. glutamicum and BB3 dye cations was favored under alkaline conditions. From the Langmuir model, poly(amic acid)-modified biomass gave a maximum uptake of 173.6 mg/g at pH 9, compared to 52.8 mg/g by the raw biomass. The biosorption kinetics was found to be fast; with equilibrium attained within 10 min. The increase in the ionic strength strongly affected the uptake of BB3 for both forms of C. glutamicum. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous Solution, Aqueous-Solution, Aspergillus-Niger, Basic Blue 3, Basic Dye, Basic Dyes, Biomass, Biosorption, Biosorption, Biosorption Kinetics, Chemical-Modification, Corynebacterium Glutamicum, Decolorization, Dye, Dyes, Equilibrium, Experiments, Forms, Grafting, Ionic Strength, Kinetics, Langmuir, Langmuir Model, Lead, Metal-Ions, Model, pH, Precipitation, Removal, Rights, Solution, Sorption, Strength, Surface, Surface Modification, Uptake

? Nuithitikul, K., Srikhun, S. and Hirunpraditkoon, S. (2010), Influences of pyrolysis condition and acid treatment on properties of durian peel-based activated carbon. *Bioresource Technology*, **101** (1), 426-429.

Full Text: [2009\Bio Tec101, 426.pdf](2009/Bio%20Tec101,%20426.pdf)

Abstract: Durian peel was used for the synthesis of activated carbon used for adsorption of Basic Green 4 dye. Activated carbon was synthesised under either nitrogen (N-2) atmospheric or vacuum pyrolysis, followed by carbon dioxide (CO2) activation. The synthesised activated carbon then was treated with hydrochloric acid (HCl) solution. The results showed that activated carbon synthesised under vacuum pyrolysis exhibited better properties and adsorption capacities than that under nitrogen atmospheric pyrolysis. The HCl treatment improved properties and adsorption capacities of activated carbons. Pseudo-second-order kinetics well described the adsorption of Basic Green 4. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid Treatment, Acid-Treatment, Activated Carbon, Activated Carbons, Activation, Adsorption, Adsorption Capacities, Adsorption Kinetics, Aqueous-Solutions, Basic Green 4 Dye, Carbon, Carbon Dioxide, CO2, Durian Peel, Dye, Kinetics, N-2, N2, Nitrogen, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Pyrolysis, Removal, Rights, Solution, Sorption, Steam, Synthesis, Treatment, Vacuum, Vacuum Pyrolysis

? Dragan, E.S., Dinu, M.V. and Timpu, D. (2010), Preparation and characterization of novel composites based on chitosan and clinoptilolite with enhanced adsorption properties for Cu2+. *Bioresource Technology*, **101** (2), 812-817.

Full Text: [2009\Bio Tec101, 812.pdf](2009/Bio%20Tec101,%20812.pdf)

Abstract: Novel ionic composites based on chitosan (CS) and clinoptilolite (CPL), a widespread natural zeolite, were prepared in this work as microspheres by a “tandem” ionic/covalent cross-linking. The mass ratio between CPL and CS was varied in the range 1:10-1:2. The ionic gelation of CS was performed with sodium tripolyphosphate and epichlorohydrin was used as covalent cross-linker. An abrupt increase of the adsorption capacity for Cu2+ with the increase of the CPL content loaded in the composite compared with cross-linked CS was observed, up to 20 wt.% of CPL The external stimuli which control the adsorption of Cu2+ were solution pH and temperature. The optimum adsorption pH was 5.0 and the adsorption process was well described by the pseudo-second-order kinetics. The maximum adsorption capacity of metal ions was observed after the 2nd cycle of adsorption, for all composites. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Adsorption Properties, Aqueous-Solution, Beads, Biosorbent, Capacity, Characterization, Chitosan, Clinoptilolite, Composite, Composites, Control, Copper, Cross-Linked, Cross-Linking, Crosslinking, Cu2+, Equilibrium, Gelation, Ions, Kinetics, Metal, Metal Ions, Metal-Ions, Microspheres, Nanoparticles, Natural, Natural Zeolite, pH, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Removal, Rights, Sodium, Solution, Temperature, Tripolyphosphate, Waste-Water, Work, Zeolite

? Franca, A.S., Oliveira, L.S., Nunes, A.A. and Alves, C.C.O. (2010), Microwave assisted thermal treatment of defective coffee beans press cake for the production of adsorbents. *Bioresource Technology*, **101** (3), 1068-1074.

Full Text: [2010\Bio Tec101, 1068.pdf](2010/Bio%20Tec101,%201068.pdf)

Abstract: Defective coffee press cake, a residue from coffee oil biodiesel production, was evaluated as an adsorbent for removal of basic dyes (methylene blue - MB) from aqueous solutions. The adsorbent was prepared by microwave treatment, providing a significant reduction in processing time coupled to an increase in adsorption capacity in comparison to conventional carbonization in a muffle furnace, Batch adsorption tests were performed at 25°C and the effects of particle size, contact time, adsorbent dosage and initial solution pH were investigated. Adsorption kinetics was better described by a second-order model. The experimental adsorption equilibrium data were fitted to Langmuir, Freundlich and Tempkin adsorption models, with Langmuir providing the best fit. The results presented in this study show that microwave activation presents great potential as an alternative method in the production of adsorbents. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Activation, Adsorbent, Adsorbent Dosage, Adsorbents, Adsorption, Adsorption Capacity, Adsorption Equilibrium, Adsorption Kinetics, Agri-Food Waste, Alternative, Aqueous Solutions, Aqueous-Solution, Basic Dyes, Batch Adsorption, Biodiesel Production, Capacity, Carbonization, Comparison, Contact Time, Conventional, Data, Dyes, Equilibrium, Experimental, Freundlich, Kinetics, Langmuir, Mb, Methylene Blue, Methylene-Blue Adsorption, Microwave, Microwave Activation, Model, Models, Particle Size, Ph, Potential, Reduction, Removal, Residues, Rights, Second Order, Second-Order, Second-Order Model, Size, Solution, Solutions, Surface-Chemistry, Thermal Treatment, Toxic Pollutants, Treatment, Waste Biomass

? Franca, A.S., Oliveira, L.S., Nunes, A.A. and Alves, C.C.O. (2010), Microwave assisted thermal treatment of defective coffee beans press cake for the production of adsorbents. *Bioresource Technology*, **101** (3), 1068-1074.

Full Text: [2010\Bio Tec101, 1068.pdf](2010/Bio%20Tec101,%201068.pdf)

Abstract: Defective coffee press cake, a residue from coffee oil biodiesel production, was evaluated as an adsorbent for removal of basic dyes (methylene blue - MB) from aqueous solutions. The adsorbent was prepared by microwave treatment, providing a significant reduction in processing time coupled to an increase in adsorption capacity in comparison to conventional carbonization in a muffle furnace, Batch adsorption tests were performed at 25ºC and the effects of particle size, contact time, adsorbent dosage and initial solution pH were investigated. Adsorption kinetics was better described by a second-order model. The experimental adsorption equilibrium data were fitted to Langmuir, Freundlich and Tempkin adsorption models, with Langmuir providing the best fit. The results presented in this study show that microwave activation presents great potential as an alternative method in the production of adsorbents. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Activation, Adsorbent, Adsorbent Dosage, Adsorbents, Adsorption, Adsorption Capacity, Adsorption Equilibrium, Adsorption Kinetics, Agri-Food Waste, Alternative, Aqueous Solutions, Aqueous-Solution, Basic Dyes, Batch Adsorption, Biodiesel Production, Capacity, Carbonization, Comparison, Conventional, Data, Dyes, Equilibrium, Experimental, Freundlich, Kinetics, Langmuir, MB, Methylene Blue, Methylene-Blue Adsorption, Microwave, Microwave Activation, Model, Models, Particle Size, pH, Potential, Reduction, Removal, Residues, Rights, Second Order, Second-Order, Second-Order Model, Size, Solution, Solutions, Surface-Chemistry, Thermal Treatment, Toxic Pollutants, Treatment, Waste Biomass

? Rathinam, A., Maharshi, B., Janardhanan, S.K., Jonnalagadda, R.R. and Nair, B.U. (2010), Biosorption of cadmium metal ion from simulated wastewaters using Hypnea valentiae biomass: A kinetic and thermodynamic study. *Bioresource Technology*, **101** (5), 1466-1470.

Full Text: [2010\Bio Tec101, 1466.pdf](2010/Bio%20Tec101,%201466.pdf)

Abstract: Present study deals with the evaluation of biosorptive removal of cadmium by red macro alga Hypnea valentiae. Experiments have been carried out to find the effect of various parameters such as initial cadmium concentration, experimental pH and temperature on the biosorption potential of H. valentiae. Optimum pH for biosorption of cadmium was found to be 6±0.3. A maximum removal of about 17 mg of cadmium per g of micro algae was observed at pH 6.0 for 250 mg L-1 solution of cadmium. Kinetics of cadmium biosorption by H. valentiae biomass is better described by pseudo first order kinetic model. The equilibrium isotherm data are very well represented by Langmuir isotherm equation, which confirmed the monolayer coverage of cadmium onto H. valentiae biomass. Various thermodynamic parameters such as change in enthalpy, free energy and entropy were estimated. It was also clearly observed that the presence of neutral salts and other metal ions affected the cadmium uptake behavior of the biomass considerably. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Algae, Aqueous-Solutions, Behavior, Biomass, Biosorption, Brown, Cadmium, Cadmium Biosorption, Chromium, Concentration, Coverage, Data, Dye, Energy, Enthalpy, Entropy, Equilibrium, Equilibrium Isotherm, Evaluation, Experimental, First, First Order, Heavy-Metals, Hypnea Valentia, Ions, Isotherm, Kinetic, Kinetic Model, Kinetics, L1, Langmuir, Langmuir Isotherm, Low-Cost Adsorbents, Mar, Metal, Metal Ion, Metal Ions, Model, Monolayer, pH, Potential, Pseudo First Order, Pseudo-First-Order, Removal, Rights, Salts, Si, Solution, Temperature, Thermodynamic, Thermodynamic Parameters, Thermodynamics, Uptake, Waste-Water, Wastewaters

? Xu, X., Gao, B.Y., Wang, W.Y., Yue, Q.Y., Wang, Y. and Ni, S.Q. (2010), Effect of modifying agents on the preparation and properties of the new adsorbents from wheat straw. *Bioresource Technology*, **101** (5), 1477-1481.

Full Text: [2010\Bio Tec101, 1477.pdf](2010/Bio%20Tec101,%201477.pdf)

Abstract: Three different types of new adsorbents modified from wheat straw were synthesized after the reaction between epichlorohydrin and triethylamine by using ethylenediamine (EDA), diethylenetriamine (DETA) and triethylenetetramine (TETA) as modifying agents. The performance of the modified wheat straws (MWS) was characterized by Fourier transform infrared spectroscopy (FTIR), scanning electron microscope (SEM) and elemental analysis. Results showed that the optimal dosages for the three modifying agent (EDA, DETA and TETA) were 3, 4 and 3 ml. The optimum synthesis temperature for the three MWS was 80, 85 and 95 degrees C, respectively. The IR spectra of the three MWS were analogical, and nitrogen contents of the MWS were found to be consistent with their adsorption capacity. The pseudo-second-order equation generated the best agreement with the experimental data for adsorption systems. In addition, the adsorption process of the three MWS reached equilibrium at 10-15 min. MWS (EDA) demonstrated the largest phosphate capacity than the other MWS. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorbents, Adsorption, Adsorption Capacity, Analysis, Anion-Exchangers, Aqueous-Solutions, Bagasse, Capacity, Chromium, Data, Dyes, EDA, Equilibrium, Ethylenediamine, Experimental, FTIR, Industrial-Waste, Infrared Spectroscopy, IR, Kinetic, Mar, Modified, Modifying Agent, MWS, Nitrogen, Nitrogen Content, Performance, Phosphate, Preparation, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Equation, Reaction, Removal, Rights, SEM, Si, Sorption, Spectroscopy, Straw, Synthesis, Systems, Temperature, Water

? Tsekova, K., Todorova, D., Dencheva, V. and Ganeva, S. (2010), Biosorption of copper(II) and cadmium(II) from aqueous solutions by free and immobilized biomass of *Aspergillus niger*. *Bioresource Technology*, **101** (6), 1727-1731.

Full Text: [2010\Bio Tec101, 1727.pdf](2010/Bio%20Tec101,%201727.pdf)

Abstract: This study investigates the ability of *Aspergillus niger* resting cells entrapped into poly(vinyl alcohol) (PVA) network to remove Cu(II) and Cd(II) from single ions solutions. The performance of free and immobilized biosorbent was evaluated by equilibrium and kinetic studies. The PVA-immobilized fungal biosorbent removed Cu(II) and Cd(II) rapidly and efficiently with maximum metal removal capacities of 34.13 mg/g and 60.24 mg/g, respectively. These values of heavy metal uptake at equilibrium were higher than the amount of Cu(II) and Cd(II) removal by free biomass (17.60 mg/g and 69.44 mg/g, respectively). Biosorption equilibrium data were best described by Langmuir isotherm model. The biosorption kinetics followed the pseudo-second order model and intraparticle diffusion equation. The results obtained suggest that the immobilized biosorbent holds great potential for wastewater treatment applications. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Alcohol, Aqueous Solutions, *Aspergillus niger*, Biomass, Biosorbent, Biosorption, Biosorption Kinetics, Cadmium, Cadmium(II), Cd(II), Cd(II) Removal, Cells, Chromium, Copper, Copper(II), Cu(II), Data, Diffusion, Equilibrium, Equilibrium And Kinetic Studies, Fungal Biomass, Heavy Metal, Heavy Metal Uptake, Heavy-Metal Removal, Immobilized, Immobilized Biomass, Immobilized Cells Biosorption, Intraparticle Diffusion, Ions, Isotherm, Isotherm Model, Kinetic, Kinetic Studies, Kinetics, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Mar, Metal, Metal Uptake, Model, Network, Performance, Potential, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second Order Model, Pseudo-Second-Order, Pycnoporus-Sanguineus, Removal, Rights, Solutions, Treatment, Uptake, Waste-Water, Wastewater, Wastewater Treatment, Zinc

? Li, S.F. (2010), Removal of crystal violet from aqueous solution by sorption into semi-interpenetrated networks hydrogels constituted of poly(acrylic acid-acrylamide-methacrylate) and amylose. *Bioresource Technology*, **101** (7), 2197-2202.

Full Text: [2010\Bio Tec101, 2197.pdf](2010/Bio%20Tec101,%202197.pdf)

Abstract: The dynamic remove of Crystal Violet (CV) by Semi-IPN hydrogels constituted of poly(acrylic acid-acrylamide-methacrylate) and amylose was studied. Adsorption capacity, kinetic and isotherm studies of CV onto hydrogels have been evaluated. It was found that the sorption process agreed very well with the Langmuir model and the adsorption of CV depended on the length of the side chain, amylose content and pH of the solution. For three types of hydrogels, 1-1, n2-1 and n4-1, the equilibrated amounts of CV adsorbed on the hydrogels decreased in the following order: n4-1 (28.6 mg/g) > n2-1 (25.0 mg/g) > n1-1 (20.0 mg/g). Increasing the amylose content led to decrease the equilibrated amounts of CV adsorbed on the hydrogels. Moreover, adsorption kinetic studies showed that the adsorption followed a pseudo-second-order kinetic model, indicating that the chemical adsorption was the rate-limiting step. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid Hydrogels, Adsorption, Adsorption Capacity, Adsorption Kinetic, Amylose, Aqueous Solution, Capacity, Chemical, Content, Crystal Violet, Decolorization, Delivery, Dynamic, Hydrogel, Hydrogels, Isotherm, Kinetic, Kinetic Model, Kinetic Studies, Kinetics, Langmuir, Langmuir Model, Length, Methyl Violet, Model, Networks, pH, Poly(Acrylic Acid-Acrylamide-Methacrylate), Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Rate Limiting Step, Rate-Limiting Step, Reactive Dyes, Removal, Rights, Solution, Sorbents, Sorption, Sorption Process, Toxicity, Waste-Water

? Miretzky, P., Munoz, C. and Carrillo-Chavez, A. (2010), Cd (II) removal from aqueous solution by Eleocharis acicularis biomass, equilibrium and kinetic studies. *Bioresource Technology*, **101** (8), 2637-2642.

Full Text: [2010\Bio Tec101, 2637.pdf](2010/Bio%20Tec101,%202637.pdf)

Abstract: Batch experiments were carried out to determine the capacity of Eleocharis acicularis biomass to adsorb Cd2+ ions from contaminated solutions with respect to pH, initial Cd2+ concentration, contact time, solution ionic strength and biomass dose. The experimental data were modeled by Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherm models. Freundlich and D-R models resulted in the best fit of the adsorption data. The maximum adsorption capacity for Cd2+ was 0.299 mmol g-1 (33.71 mg g-1) with efficiency higher than 80% (pH 6.0 and 5 g L-1 biomass dose). The mean adsorption free energy value derived from the D-R model (8.058 kJ mol-1) indicated that adsorption was governed by an ionic exchange process. The pseudo-first order, pseudo-second order, Elovich kinetic models and the intra-particle diffusion models were used to describe the kinetic data and to evaluate rate constants. The best correlation was provided by the second-order kinetic model, implying that chemical sorption was the rate-limiting step, although intra-particle diffusion could not be ignored. The practical implication of this study is the development of an effective and economic technology for Cd2+ removal from contaminated waters. The macrophyte biomass used in this study did not undergo any chemical or physical pre-treatment, which added to macrophyte abundance and its low cost makes it a good option for Cd2+ removal from waste water. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Aqueous Solution, Biomass, Biosorption, Cadmium, Cadmium Biosorption, Capacity, Cd, Cd(II), Cd2+, Chemical, Concentration, Correlation, Cost, Data, Dead, Development, Diffusion, Economic, Efficiency, Elovich, Energy, Equilibrium, Equilibrium and Kinetic Studies, Experimental, Experiments, Freundlich, Intra-Particle Diffusion, Intraparticle Diffusion, Ionic Strength, Ions, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetic Models, Kinetic Studies, L1, Langmuir, Low Cost, Macrophyte Biomass, Macrophytes, Metals, Model, Models, Pb(II), pH, Physical, Pre-Treatment, Pretreatment, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Rate Constants, Rate Limiting Step, Rate-Limiting Step, Removal, Rights, Second Order, Second-Order, Solution, Solutions, Sorption, Strength, Technology, Time, Value, Waste, Waste Water, Waste-Water, Water, Waters

? Yao, Y.J., Xu, F.F., Chen, M., Xu, Z.X. and Zhu, Z.W. (2010), Adsorption behavior of methylene blue on carbon nanotubes. *Bioresource Technology*, **101** (9), 3040-3046.

Full Text: [2010\Bio Tec101, 3040.pdf](2010/Bio%20Tec101,%203040.pdf)

Abstract: The effect of temperature on the equilibrium adsorption of methylene blue dye from aqueous solution using carbon nanotubes was investigated. The equilibrium adsorption data were analyzed using two widely applied isotherms: Langmuir and Freundlich. The results revealed that Langmuir isotherm fit the experimental results well. Kinetic analyses were conducted using pseudo-first and second-order models and the intraparticle diffusion model. The regression results showed that the adsorption kinetics were more accurately represented by pseudo-second-order model. The activation energy of system (Ea) was calculated as 18.54 kJ/mol. Standard free energy changes (Δ*G*°), standard enthalpy change (Δ*H*°), and standard entropy change (Δ*S*°) were calculated using adsorption equilibrium constants obtained from the Langmuir isotherm at different temperatures. All Δ*G*° values were negative: the Δ*H*° values and Δ*S*° values of CNTs were 7.29 kJ/mol and 64.6 J/mol K, respectively. Results suggested that the methylene blue adsorption on CNTs was a spontaneous and endothermic process. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Acid-Blue-193, Activation, Activation Energy, Adsorbents, Adsorption, Adsorption Equilibrium, Adsorption Kinetics, Analyses, Aqueous Solution, Aqueous-Solutions, Behavior, Carbon, Carbon Nanotube, Carbon Nanotubes, Changes, Data, Diffusion, Diffusion Model, Dye, Dye Removal, Endothermic, Energy, Enthalpy, Entropy, Equilibrium, Experimental, Freundlich, Intraparticle Diffusion, Intraparticle Diffusion Model, Isotherm, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Isotherm, Mechanism, Methylene Blue, Methylene Blue Adsorption, Model, Models, Nanotubes, Pseudo Second Order, Pseudo-First And, Pseudo-Second-Order, Pseudo-Second-Order Model, Regression, Rights, Second Order, Second-Order, Sepiolite, Solution, Standard, Temperature, Thermodynamics, Thermodynamics, Waste-Water

? Cunha, G.D., Romão, L.P.C., Santos, M.C., Araújo, B.R., Navickiene, S. and de Pádua, V.L. (2010), Adsorption of trihalomethanes by humin: Batch and fixed bed column studies. *Bioresource Technology*, **101** (10), 3345-3354.

Full Text: [2010\Bio Tec101, 3345.pdf](2010/Bio%20Tec101,%203345.pdf)

Abstract: The objective of the present work was to assess the performance of batch and fixed bed column systems, using humin in natura and immobilized on sodium silicate, respectively, for the adsorption of the principal trihalomethanes (THMs) found in water supply systems. Kinetically, adsorption of THMs by humin follows a pseudo-second order reaction, with more than 50% removal in the first 5 min for all compounds studied. and equilibrium described by the Freundlich model reached in 240 min. The THM adsorption results were significant at p < 0.05 for both batch (74.6-83.2% removal) and column (99.7% removal in optimized tests) experiments, and were significantly (p < 0.05) influenced by flow rate and bed height. The work demonstrates the potential of humin for removal of THMs. (C) 2009 Published by Elsevier Ltd.

Keywords: Adsorption, Batch, Biosorption, Biosorption, Carbon, Chlorination By-Products, Column, Column Studies, Drinking-Water, Equilibrium, Experiments, First, Fixed Bed, Flow, Flow Rate, Freundlich, Freundlich Model, Hexavalent Chromium, Humin, Immobilized, Low-Cost Adsorbents, Model, Organic-Compounds, Performance, Potential, Pseudo Second Order, Pseudo-Second Order, Pseudo-Second-Order, Reaction, Removal, Silica, Silicate, Sodium, Systems, Trihalomethanes, Waste-Water, Water, Water Supply, Water Treatment, Work

? Gupta, N., Amritphale, S.S. and Chandra, N. (2010), Removal of Zn (II) from aqueous solution by using hybrid precursor of silicon and carbon. *Bioresource Technology*, **101** (10), 3355-3362.

Full Text: [2010\Bio Tec101, 3355.pdf](2010/Bio%20Tec101,%203355.pdf)

Abstract: Hybrid precursor (HP) of silicon and carbon was synthesized from rice hulls by a novel low temperature method, using sol-gel route. The potential of hybrid precursor to remove Zn (II) ions from aqueous solutions was investigated under different experimental conditions. Hybrid precursor removes Zn (II) ions with efficiency higher than 95% at low concentration. The data revealed that initial uptake was rapid and equilibrium was established in 30 min. Pseudo first order, Pseudo second order and Intraparticle diffusion kinetic models were applied to the kinetic data and it was found that adsorption process followed pseudo second order with activation energy of 1.093 kJ mol-1. Zn (II) removal was quantitatively evaluated using Langmuir and Freundlich isotherm model and monolayer sorption capacity show the value 28.76 mg/g indicating the affinity of HP for Zn (II) ions. The negative value of Gibbs free energy obtained in this study with hybrid precursor confirms the feasibility and spontaneous nature of adsorption process. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Activation, Activation Energy, Adsorption, Adsorption, Aqueous Solution, Aqueous Solutions, Biosorption, Capacity, Carbon, Concentration, Copper, Cu(II), Data, Diffusion, Efficiency, Energy, Equilibrium, Experimental, Feasibility, First, First Order, Fly-Ash, Freundlich, Freundlich Isotherm, Freundlich Isotherm Model, Gibbs Free Energy, Heavy-Metals, Hybrid, Hybrid Precursor, Intraparticle Diffusion, Ions, Isotherm, Isotherm Model, Kinetic, Kinetic Models, Langmuir, Langmuir Isotherm, Low Temperature, Model, Models, Monolayer, Potential, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Removal, Rice, Rice Hulls, Rights, Route, Second Order, Second-Order, Silicon, Sol-Gel, Solution, Solutions, Sorption, Sorption Capacity, Temperature, Thermodynamic Parameter, Uptake, Value, Waste-Water, Zinc, Zn(II)

? Kushwaha, J.P., Srivastava, V.C. and Mall, I.D. (2010), Treatment of dairy wastewater by commercial activated carbon and bagasse fly ash: Parametric, kinetic and equilibrium modelling, disposal studies. *Bioresource Technology*, **101** (10), 3474-3483.

Full Text: [2010\Bio Tec101, 3474.pdf](2010/Bio%20Tec101,%203474.pdf)

Abstract: Present study reports treatment of synthetic dairy wastewater (SDW) in terms of chemical oxygen demand (COD) removal by means of adsorption onto activated carbon-commercial grade (ACC) and bagasse fly ash (BFA). Optimum conditions for SDW treatment were found to be: initial pH ≈ 4.8, adsorbent dose of 20 g/l for ACC and 10 g/l for BFA and contact time ≈8 h. Pseudo-second-order kinetic model was found to fit the kinetic data and Redlich-Peterson isotherm model was generally found to best represent the equilibrium data for SDW treatment by ACC and BFA. The change in entropy and enthalpy for SDW adsorption onto ACC and BFA were estimated as 125.85 kJ/mol K and 91.53 kJ/mol; and 25.71 kJ/mol K and 17.26 kJ/mol, respectively. The negative values of change in Gibbs free energy indicate the feasibility and spontaneous nature of the adsorptive treatment. © 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorbent Dose, Adsorption, Adsorption, Aqueous-Solution, Bagasse, Bagasse Fly Ash, Carbon, Chemical, Chemical Oxygen Demand, Cod, Dairy, Dairy Wastewater, Data, Demand, Disposal, Dyes, Energy, Enthalpy, Entropy, Equilibrium, Feasibility, Fly Ash, Gibbs Free Energy, Isotherm, Isotherm Model, Kinetic, Kinetic Model, Model, Modelling, Oxygen, pH, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Redlich-Peterson, Removal, Reuse, Reverse-Osmosis, Rights, Sorption, Toxic Metal-Ions, Treatment, Wastewater

? Ofomaja, A.E., Unuabonah, E.I. and Oladoja, N.A. (2010), Competitive modeling for the biosorptive removal of copper and lead ions from aqueous solution by Mansonia wood sawdust. *Bioresource Technology*, **101** (11), 3844-3852.

Full Text: [2010\Bio Tec101, 3844.pdf](2010/Bio%20Tec101,%203844.pdf)

Abstract: Mansonia wood sawdust is applied as a biosorbent for the removal of copper and lead ions from single and binary aqueous solution. The effect of solution pH, electrolyte, metal ion competition and temperature were examined to obtain insight of its application for industrial waste water treatment. The Langmuir isotherm provided a better fit to experimental data for lead ion sorption with a higher monolayer capacity, while copper ion sorption was best described by the Freundlich and BET isotherms. The combined effect of adsorbing one metal ion in the presence of the other metal ion reduced the adsorption capacity of either metal ion. In a binary solution, removal of lead ions in the presence of copper ions followed the Langmuir isotherm model while the removal of copper ions in presence of lead ions followed both the Langmuir and BET isotherm models. (C) 2009 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Application, Aqueous Solution, BET, Biosorbent, Biosorption, Cadmium, Capacity, Coconut Copra Meal, Competition, Competitive Adsorption, Binary Metal Ion, Copper, Copper Ion, Data, Equilibrium, Experimental, Freundlich, Heavy-Metals, Insight, Ions, Isotherm, Isotherm Model, Isotherm Models, Isotherms, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Lead, Lead Ion, Metal, Metal Ion, Model, Modeling, Models, Monolayer, pH, Pinus-Sylvestris, Removal, Rights, Sawdust, Solution, Sorption, Temperature, Thermodynamics, Treatment, Tree Fern, Waste, Waste Water, Waste Water Treatment, Waste-Water, Water, Water Treatment, Wood

? Farooq, U., Kozinski, J.A., Khan, M.A. and Athar, M. (2010), Biosorption of heavy metal ions using wheat based biosorbents: A review of the recent literature. *Bioresource Technology*, **101** (14), 5043-5053.

Full Text: [2010\Bio Tec101, 5043.pdf](2010/Bio%20Tec101,%205043.pdf)

Abstract: Conventional technologies for the removal/remediation of toxic metal ions from wastewaters are proving expensive due to non-regenerable materials used and high costs. Biosorption is emerging as a technique offering the use of economical alternate biological materials for the purpose. Functional groups like carboxyl, hydroxyl, sulphydryl and amido present in these biomaterials, make it possible for them to attach metal ions from waters. Every year, large amounts of straw and bran from Triticum aestivum (wheat), a major food crop of the world, are produced as by-products/waste materials. The purpose of this article is to review rather scattered information on the utilization of straw and bran for the removal/minimization of metal ions from waters. High efficiency, high biosorption capacity, cost-effectiveness and renewability are the important parameters making these materials as economical alternatives for metal removal and waste remediation. Applications of available adsorption and kinetic models as well as influences of change in temperature and pH of medium on metal biosorption by wheat straw and wheat bran are reviewed. The biosorption mechanism has been found to be quite complex. It comprises a number of phenomena including adsorption, surface precipitation, ion-exchange and complexation. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorption, Agricultural By-Products, Alternatives, Aqueous-Solutions, Biological, Biomaterials, Biosorbents, Biosorption, Biosorption Mechanism, Bran, Cadmium Biosorption, Capacity, Complexation, Copper(II) Ions, Cost Effectiveness, Cost-Effectiveness, Costs, Efficiency, Food, Heavy Metal, Heavy Metal Ions, Hexavalent Chromium, Information, Ion Exchange, Ion-Exchange, Ionexchange, Ions, Kinetic, Kinetic Models, Literature, Mechanism, Metal, Metal Ions, Models, pH, Phanerochaete-Chrysosporium, Precipitation, Purpose, Remediation, Removal, Review, Rice Husk, Rights, Saccharomyces-Cerevisiae, Straw, Surface, Surface Precipitation, Technologies, Temperature, Toxic, Triticum Aestivum, Utilization, Waste, Waste-Water, Wastewaters, Waters, Wheat Bran, World

? Zhua, H.Y., Jiang, R., Xiao, L. and Zeng, G.M. (2010), Preparation, characterization, adsorption kinetics and thermodynamics of novel magnetic chitosan enwrapping nanosized γ-Fe2O3 and multi-walled carbon nanotubes with enhanced adsorption properties for methyl orange. *Bioresource Technology*, **101** (14), 5063-5069.

Full Text: [2010\Bio Tec101, 5063.pdf](2010/Bio%20Tec101,%205063.pdf)

Abstract: A novel magnetic composite bioadsorbent composed of chitosan wrapping magnetic nanosizedγ-Fe2O3 and multi-walled carbon nanotubes (m-CS/γ-Fe2O3/MWCNTs) was prepared under relative mild conditions and was characterized. Adsorption of methyl orange (MO) onto m-CS/γ-Fe2O3/MWCNTs was investigated with respect to pH, initial MO concentration, coexisting anions and temperature. Results of characterizations indicated that magnetic nanosizedγ-Fe2O3 and MWCNTs have been wrapped by crosslinked chitosan. Introduction of MWCNTs could obviously increase the adsorption capacity (qe) of MO onto bioadsorbent by 2.2 times. Kinetics data and adsorption isotherm were better fitted by pseudo-second-order kinetic model and by Langmuir isotherm, respectively. Values of activation parameters such as free energy (G°), enthalpy (H°) and entropy (ΔS°) were determined as 3.15–3.78 kJ mol−1, −9.94 kJ mol−1 and −20.65 J mol−1 k−1, respectively, indicating that the adsorption was feasible, spontaneous and exothermic process in nature. After adsorption, m-CS/γ-Fe2O3/MWCNTs could be effectively and fleetly separated by applying a magnetic field.

Keywords: Activation, Activation Parameters, Adsorption, Adsorption Capacity, Adsorption Isotherm, Adsorption Kinetics, Adsorption Properties, Anions, Aqueous-Solution, Capacity, Carbon, Carbon Nanotubes, Characterization, Characterizations, Chitosan, Complex, Composite, Concentration, Crosslinked Chitosan, Data, Dyes, Energy, Enthalpy, Entropy, Exothermic, Field, Immobilization, Isotherm, Kinetic, Kinetic Model, Kinetics, Kinetics And Thermodynamics, Langmuir, Langmuir Isotherm, Magnetic, Magnetic Field, Magnetic Gamma-Fe2O3, Metal-Ions, Methyl Orange, Microemulsion, MO, Model, Multi-Walled Carbon Nanotubes, Multiwalled Carbon Nanotubes, Mwcnts, Nanoparticles, Nanotubes, Particles, pH, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Recovery, Temperature, Thermodynamics, Water

? Wahab, M.A., Jellali, S. and Jedidi, N. (2010), Ammonium biosorption onto sawdust: FTIR analysis, kinetics and adsorption isotherms modeling. *Bioresource Technology*, **101** (14), 5070-5075.

Full Text: [2010\Bio Tec101, 5070.pdf](2010/Bio%20Tec101,%205070.pdf)

Abstract: Sawdust, an available and renewable biomass, was investigated as a novel ammonium biosorbent. Biosorption occurred over a pH range of 6-10, reached an equilibrium state within only 20 min, and can be described by a pseudo-second-order model predicting a chemisorption process. Equilibrium data were very well represented by Langmuir isotherm and confirm monolayer coverage. FTIR analysis before and after biosorption of ammonium onto sawdust suggested that the main mechanisms involved in the removal of ammonium might be the ionic exchange and complexation. The use of sawdust presents an interesting option for both tertiary wastewater treatment (as a possible non-conventional biosorbent for the removal of ammonium), and waste recycling (as a fertilizer and compost). (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Isotherms, Ammonium, Analysis, Aqueous-Solutions, Biomass, Biosorbent, Biosorption, Chemisorption, Complexation, Compost, Coverage, Data, Equilibrium, Fertilizer, FTIR, FTIR Analysis, Ions, Isotherm, Isotherms, Kinetics, Langmuir, Langmuir Isotherm, Mechanism, Mechanisms, Methylene-Blue, Model, Modeling, Monolayer, Natural Chinese Clinoptilolite, pH, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Model, Recycling, Removal, Rights, Sawdust, Sorption, State, Treatment, Waste, Wastewater, Wastewater Treatment, Water

? El Bakouri, H., Morillo, J., Usero, J., Vanderlinden, E. and Vidal, H. (2010), Effectiveness of acid-treated agricultural stones used in biopurification systems to avoid pesticide contamination of water resources caused by direct losses: Part I. Equilibrium experiments and kinetics. *Bioresource Technology*, **101** (14), 5084-5091.

Full Text: [2010\Bio Tec101, 5084.pdf](2010/Bio%20Tec101,%205084.pdf)

Abstract: Several recent publications report the use of low-cost and locally available adsorbents in biopurification systems to eliminate pesticides from water. Nonetheless, the literature is insufficient to cover this problem, and more investigations are needed in this field to evaluate the possible application of economical adsorbents to prevent pesticide water resources contamination caused by direct losses. This study focuses on the fate of endosulfan metabolites, in small-scale biopurification systems, using as adsorbents treated and untreated organic agricultural stones (date, olive and avocado). The effects of sorbent particle size, adsorbent dose, contact time, concentration of pesticide solution and temperature on the adsorption processes were systematically studied in batch experiments. Pesticide determination was carried out using stir bar sorptive extraction and gas chromatography coupled with mass spectroscopy. Maximum removal efficiency (94.8%) was reached for endosulfan sulfate (0.1 mg L-1) using the acid-treated date stones (ATOS) fraction <125 µm (solid/liquid ratio: 1 g L-1). According to the general behavior of the adsorption mechanism, date stones show the higher removal efficiency followed by olive and avocado stones, respectively. The analyses of the results reveal that the thermo chemical treatment improves notably the pesticides adsorption efficiency of the studied sorbents and that the adsorption decreases when the pesticide solubility rises. Experimental adsorption data were analyzed according to various kinetic models. Lagergren and Morris-Weber equations were applied to fit the kinetic results. The second order model was the most suitable and intra-particle diffusion was found to be the rate controlling the adsorption process. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Acid-Treated Organic Waste Residues, Adsorbent, Adsorbent Dose, Adsorbents, Adsorption, Adsorption Mechanism, Agricultural, Analyses, Application, Aqueous-Solutions, Bar Sorptive Extraction, Batch, Batch Experiments, Behavior, Biopurification Systems, Chemical, Chlorinated Pesticides, Chromatography, Concentration, Contamination, Data, Diffusion, Efficiency, Endosulfan, Equilibrium, Experiments, Extraction, Fate, Field, General, Henrys Law Constants, Intra-Particle Diffusion, Intraparticle Diffusion, Investigations, Kinetic, Kinetic Models, Kinetics, L1, Literature, Losses, Low Cost, Low-Cost Adsorbent, Mechanism, Metabolites, Metanil-Yellow, Methyl Parathion Pesticide, Model, Models, Natural Organic-Substances, Northwest Morocco, Organic, Particle Size, Pesticide, Pesticide Removal, Pesticides, Publications, Removal, Removal Efficiency, Rights, Second Order, Second-Order, Size, Solubility, Solution, Sorbent, Sorbents, Spectroscopy, Stir Bar Sorptive Extraction, Sulfate, Systems, Temperature, Treatment, Water, Water Resources

? Owlad, M., Aroua, M.K. and Daud, W.M.A.W. (2010), Hexavalent chromium adsorption on impregnated palm shell activated carbon with polyethyleneimine. *Bioresource Technology*, **101** (14), 5098-5103.

Full Text: 2010\Bio Tec101, 5098.pdf

Abstract: Removal of Cr(VI) ions from aqueous solution was investigated using modified palm shell activated carbon. Low Molecular Weight Polyethyleneimine (LMW PEI) was used for impregnation purpose. The maximum amount of LMW PEI adsorbed on activated carbon was determined to be approximately 228.2 mg/g carbon. The adsorption experiments were carried out in a batch system using potassium dichromate K2Cr2O7 as the source of Cr(VI) in the synthetic waste water and modified palm shell activated carbon as the adsorbent. The effects of pH, concentration of Cr(VI) and PEI loaded on activated carbon were studied. The adsorption data were found to fit well with the Freundlich isotherm model. This modified Palm shell activated carbon showed high adsorption capacity for chromium ions. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Capacity, Aqueous-Solution, Batch, Capacity, Carbon, Charcoal, Chromium, Cr(VI), Freundlich, Freundlich Isotherm, Hazelnut Shell, Hexavalent Chromium, Industrial Waste-Water, Ions, Isotherm, Membrane, Model, Modification, Palm Shell, pH, Polyethyleneimine, Reduction, Removal, Surface Modification, System, Waste Water, Water

? Deniz, F. and Saygideger, S.D. (2010), Equilibrium, kinetic and thermodynamic studies of Acid Orange 52 dye biosorption by *Paulownia tomentosa* Steud. leaf powder as a low-cost natural biosorbent. *Bioresource Technology*, **101** (14), 5137-5143.

Full Text: [2010\Bio Tec101, 5137.pdf](2010/Bio%20Tec101,%205137.pdf)

Abstract: The biosorption of Acid Orange 52 onto the leaf powder of Paulownia tomentosa Steud. was studied in a batch adsorption system to estimate the equilibrium, kinetic and thermodynamic parameters as a function of solution pH, biosorbent concentration, dye concentration, biosorbent size, temperature and contact time. The Langmuir, Freundlich and Temkin isotherm models were used for modeling the biosorption equilibrium. The experimental equilibrium data could be well interpreted by the Temkin and Langmuir isotherms with maximum adsorption capacity of 10.5 mg g-1. In order to state the sorption kinetics, the fits of pseudo-first order, pseudo-second order, Elovich and intraparticle diffusion kinetic models were investigated. It was obtained that the biosorption process followed the pseudo-second order rate kinetics. Thermodynamic studies indicated that this system was exothermic process. The results revealed that P. tomentosa leaf powder could be an efficient biosorbent for the treatment of wastewater containing Acid Orange 52. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Acid Orange 52, Adsorption, Adsorption Capacity, Aqueous-Solutions, Azo-Dye, Batch, Batch Adsorption, Biosorbent, Biosorption, Capacity, Concentration, Data, Diffusion, Dye, Dye Biosorption, Elovich, Equilibrium, Exothermic, Experimental, Freundlich, Function, Intraparticle Diffusion, Isotherm, Isotherms, Kinetic, Kinetic Models, Kinetics, Langmuir, Langmuir Isotherms, Linked Chitosan Beads, Low Cost, Malachite-Green, Methylene-Blue, Modeling, Models, Natural, P, Paulownia Tomentosa, pH, Phase, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Rate Kinetics, Reactive Dyes, Removal, Rights, Size, Solution, Sorption, Sorption Kinetics, State, Temkin Isotherm, Temperature, Thermodynamic, Thermodynamic Parameters, Thermodynamic Studies, Treatment, Wastewater

? Ye, H.P., Zhu, Q. and Du, D.Y. (2010), Adsorptive removal of Cd(II) from aqueous solution using natural and modified rice husk. *Bioresource Technology*, **101** (14), 5175-5179.

Full Text: [2010\Bio Tec101, 5175.pdf](2010/Bio%20Tec101,%205175.pdf)

Abstract: In this study, the natural and modified rice husk were tested to remove Cd(II) ions from water. The modified rice husk was prepared by being treated with alkali. The results showed the Cd(II) adsorption capacity was 73.96, 125.94 mg/g, respectively, for the natural and modified rice husk. The modified rice husk had faster kinetics and higher adsorption capacities than the natural rice husk, which can be attributed to the surface structural changes of the material. Equilibrium adsorption data are more consistent with the Langmuir isotherm equation than with the Freundlich equation. The Cd(II) adsorption on the two adsorbents tends to increase with the increase of pH. The optimum pH for Cd(II) adsorption is 6.5. Both pseudo-first-order and pseudo-second-order equations were able to describe properly the kinetics of Cd(II) adsorption. The desorbability of Cd(II) is about 95.8-99.1% by 0.1 M HCl solution. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Adsorbents, Adsorption, Adsorption Capacities, Adsorption Capacity, Aqueous Solution, Ash, Cadmium, Capacity, Cd(II), Cd(II) Adsorption, Cd(II) Ions, Changes, Cu2+, Data, Equilibrium, Freundlich, Freundlich Equation, Ions, Isotherm, Kinetics, Langmuir, Langmuir Isotherm, Metal-Ions, Modified, Natural, Ni2+, pH, Phosphate, Pseudo First Order, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Red, Removal, Rice, Rice Husk, Rice-Husk, Rights, Solution, Surface, Waste-Water, Wastewater, Water

? Wang, L., Zhang, J., Zhao, R., Li, Y., Li, C. and Zhang, C.L. (2010), Adsorption of Pb(II) on activated carbon prepared from *Polygonum orientale Linn*.: Kinetics, isotherms, pH, and ionic strength studies. *Bioresource Technology*, **101** (15), 5808-5814.

Full Text: [2010\Bio Tec101, 5808.pdf](2010/Bio%20Tec101,%205808.pdf)

Abstract: Low-cost activated carbon was prepared from Polygonum orientate Linn. (PL) by phosphoric acid activation. Its ability to adsorb Pb(II) ions from aqueous solutions was examined. Through SEM, XRD, BET, and FTIR analyses, the PL-activated carbon (PLAC) was found to have a porous structure with a surface area of about 1400 m2/g. Carboxyl groups played an important role in the adsorption of Pb(II) through blocking studies. The sorption system followed a pseudo second-order kinetic model, and the equilibrium time was obtained after 30 min. The adsorption isotherms were simulated well by the Langmuir model. The adsorption of Pb(II) on PLAC was strongly dependent on pH and ionic strength, indicating an ion-exchange mechanism. Regeneration studies showed that PLAC could be used several times by desorption with an HCl reagent. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Acid, Acid Activation, Acid-Activation, Activated Carbon, Activation, Adsorption, Adsorption Isotherms, Adsorption Kinetics and Isotherms, Analyses, Aqueous Solutions, Aqueous-Solutions, BET, Biosorption, Carbon, Desorption, Equilibrium, FTIR, Ion Exchange, Ion-Exchange, Ionexchange, Ionic Strength, Ions, Isotherms, Kinetic, Kinetic Model, Kinetics, Langmuir, Langmuir Model, Lead, Lead, Mechanism, Model, Oxidation, Pb(II), Pb(II) Ions, pH, Phosphoric Acid, Polygonum-Orientale-Linn.-Activated Carbon (PLAC), Pseudo Second Order, Pseudo Second-Order, Pseudo-Second-Order, Regeneration, Removal, Rights, Role, *Sargassum* sp, Second Order, Second-Order, SEM, Solutions, Sorption, Strength, Structure, Surface, Surface Area, Waste, XRD

? Ofomaja, A.E. (2010), Intraparticle diffusion process for lead(II) biosorption onto mansonia wood sawdust. *Bioresource Technology*, **101** (15), 5868-5876.

Full Text: [2010\Bio Tec101, 5868.pdf](2010/Bio%20Tec101,%205868.pdf)

Abstract: The overall biosorption rate of lead(II) onto mansonia wood sawdust has been determined. Kinetic modeling revealed that pseudo-second-order kinetics described the experimental data fully while pseudo-first kinetics followed for only 5 min. Ion-exchange constant, S, was similar to the pseudo-first-order rate constant, k(1), indicating that ion-exchange is important only in the first 5 min. Intraparticle diffusion increased with lead(II) concentration while film and pore diffusion decreased. The initial biosorption factor, R-i, showed that initial biosorption was intermediate. Addition of calcium ions reduced initial biosorption almost completely, reduced the amounts of lead(II) removed and increased ion-exchange phenomenon indicating significance of ion-exchange. Increase in temperature was found to increase intraparticle diffusion rate and reduce film and pore diffusion. Activation energy of film diffusion and pseudo-second-order kinetics were highest indicating that film diffusion-controlled the overall rate with active participation of ion-exchange from pseudo-second-order model. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activation, Activation Energy, Adsorption, Biosorption, Calcium, Concentration, Copper, Data, Diffusion, Dye, Energy, Experimental, Film Diffusion, First, Intraparticle Diffusion, Ion Exchange, Ion-Exchange, Ion-Exchange Model, Ionexchange, Ions, Kinetic, Kinetic Modeling, Kinetics, Lead(II), Mansonia Wood Sawdust, Methylene-Blue, Model, Modeling, Palm Kernel Fiber, Participation, Pore and Film Diffusion, Pore Diffusion, Pseudo First Order, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-First-Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Pseudo-Second-Order Model, Rate Constant, Removal, Rights, Sawdust, Significance, Sorption, Temperature, Wood

? Yan, L., Yin, H.H., Zhang, S.A., Duan, J.G., Li, Y.Q., Chen, P. and Li, H.Y. (2010), Organoarsenic resistance and bioremoval of *Acidithiobacillus ferrooxidans*. *Bioresource Technology*, **101** (16), 6572-6575.

Full Text: [2010\Bio Tec101, 6572.pdf](2010/Bio%20Tec101,%206572.pdf)

Abstract: The tolerance and bioremoval of dimethylarsinic acid (DMA(V)) by Acidithiobacillus ferrooxidans (A. ferrooxidans) were investigated here. The inhibitory concentration (IC) of DMA(V) was determined for A. ferrooxidans. The effects of various parameters such as pH, contact time, initial DMA(V) concentration, biosorbent dose and temperature were systematically examined to study the biosorption processes. Results indicated that Langmuir model fitted better than Freundlich model to the equilibrium data. Analysis of kinetic data showed that the biosorption processes of DMA(V) involved pseudo-second-order kinetics. Thermodynamic analysis showed that the biosorption of DMA(V) onto A. ferrooxidans was feasible, spontaneous, endothermic and chemisorptive under examined conditions. Fourier transform infrared spectroscopy (FTIR) showed the involvement of -OH, -NH and -SO3 groups in the biosorption process. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Acidithiobacillus Ferrooxidans, Analysis, Biomass, Bioremoval, Biosorbent, Biosorption, Biosorption, Concentration, Data, Dimethylarsinic Acid, Endothermic, Equilibrium, Freundlich, Freundlich Model, FTIR, Infrared Spectroscopy, Kinetic, Kinetic Data, Kinetics, Langmuir, Langmuir Model, Model, Organoarsenic, pH, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Removal, Resistance, Rights, Spectroscopy, Temperature, Thermodynamic, *Thiobacillus-ferrooxidans*, Tolerance, Tolerance

? Srinivasan, A. and Viraraghavan, T. (2010), Oil removal from water using biomaterials. *Bioresource Technology*, **101** (17), 6594-6600.

Full Text: [2010\Bio Tec101, 6594.pdf](2010/Bio%20Tec101,%206594.pdf)

Abstract: A batch study was conducted to evaluate efficiencies of four types of biomaterials to remove oil from water. The oils used in the study were standard mineral oil, vegetable oil and cutting oil. Two fungal biomasses of Mucor rouxii and Absidia coerulea along with chitosan and walnut shell media were the biomaterials used. The study was carried out with an initial oil concentration of 200 mg/L for 6 h. Nonviable M. rouxii biomass was found to be more effective than A. coerulea biomass in removing oil from water. The study demonstrated that the removal efficiencies by M. rouxii for these oils were in the 77-93% range at a pH of 5.0. The adsorption capacities for standard mineral oil, vegetable oil and cutting oil were 77.2, 92.5, and 84 mg/g of biomass, respectively. The adsorption capacities for various oils exhibited by M. rouxii biomass were less than those of chitosan and walnut shell media. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Oil Removal; Oil-In-Water Emulsions; Fungi; Chitosan; Walnut Shell Media, Mucor-Rouxii; Waste-Water; Chitosan; Filtration; Adsorption; Sorption; Fibers; Media

? Akar, T. and Divriklioglu, M. (2010), Biosorption applications of modified fungal biomass for decolorization of Reactive Red 2 contaminated solutions: Batch and dynamic flow mode studies. *Bioresource Technology*, **101** (19), 7271-7277.

Full Text: [2010\Bio Tec101, 7271.pdf](2010/Bio%20Tec101,%207271.pdf)

Abstract: Biosorption characteristics of a surfactant modified macro fungus were investigated for decolorization of Reactive Red 2 contaminated solutions. Better biosorption efficiency was obtained with a small amount of fungal biomass after modification process. Operating variables like pH, biomass amount, contact time, temperature, dye concentration, flow rate and column size were explored. The biosorption process followed the pseudo-second-order kinetic and Langmuir isotherm models. Thermodynamic data confirm that the biosorption process is spontaneous and endothermic in nature. Under optimized batch conditions, up to 141.53 mg dye g-1 could be removed from solution in a relatively short time. Modification process was confirmed by Fritz spectroscopy and zeta potential studies. Possible dye-biosorbent interactions were discussed. Good dynamic flow biosorption potential was observed for the suggested biosorbent in simulated wastewater. Overall, batch and continuous mode data suggest that this environmentally friendly and efficient biosorbent may be useful for the removal of reactive dyes from aqueous media. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorption, Aqueous-Solution, Azo-Dye, Batch, Biomass, Biosorbent, Biosorption, Characteristics, Column, Concentration, Data, Decolorization, Degradation, Dye, Dyes, Dynamic, Efficiency, Endothermic, Environmentally Friendly, Equilibrium, Equilibrium, Flow, Flow Rate, Fungal Biomass, Fungus, Isotherm, Isotherms, Kinetic, Kinetics, Kinetics, Langmuir, Langmuir Isotherm, Media, Methylene-Blue, Mode, Models, Modification, Modified, Parameters, pH, Potential, Pseudo Second Order, Pseudo-Second-Order, Reactive Dyes, Removal, Rights, Size, Small, Solution, Solutions, Spectroscopy, Surfactant, Temperature, Thermodynamic, Thermodynamic Data, Wastewater, Zeta Potential

? Garcia-Reyes, R.B. and Rangel-Mendez, J.R. (2010), Adsorption kinetics of chromium(III) ions on agro-waste materials. *Bioresource Technology*, **101** (21), 8099-8108.

Full Text: [2010\Bio Tec101, 8099.PDF](2010/Bio%20Tec101,%208099.PDF)

Abstract: The objective of this research is to compare empirical (pseudo-first and pseudo-second order models) and diffusional models (film diffusion, film-pore-volume diffusion, and film-surface diffusion models) in predicting the adsorption kinetics of chromium(III) on water-washed agro-waste materials (sorghum straw, oats straw, and agave bagasse). Concentration decay curves can be predicted by using either empirical or diffusional kinetic models. However, the film diffusion model seems to be the most appropriated one based on the low reported deviation (0.45-4.09%), and the physical properties (low porosity 0.004-0.007, low surface area 0.6-1.2 m2 g-1 and low pore volume 0.003-0.004 cm3 g-1) of the studied agro-waste materials, which support the idea that intraparticle diffusion may be neglected. Furthermore, the external mass transfer coefficient estimated with the film diffusion model has a physical meaning that helps to explain the diffusion of solutes across the film resistance in agro-waste biosorbents. (c) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorption, Adsorption Kinetics, Agrowaste, Aqueous-Solutions, Bagasse, Biomass, Biosorbents, Biosorption, Chromium, Chromium(III), Diffusion, Diffusion Model, Equilibrium, Film Diffusion, Film Resistance, Hexavalent Chromium, Intraparticle Diffusion, Ions, Kinetic, Kinetic Models, Kinetics, Mass Transfer, Mass Transfer Coefficient, Metal-Ions, Model, Models, Ni(II) Ions, Nov, Physical, Pore Volume, Porosity, Pseudo Second Order, Pseudo-First and, Pseudo-Second Order, Pseudo-Second-Order, Removal, Research, Resistance, Rights, Straw, Support, Surface, Surface Area, Transfer Coefficient, Trivalent Chromium, Volume

? Wahab, M.A., Jellali, S. and Jedidi, N. (2010), Effect of temperature and pH on the biosorption of ammonium onto *Posidonia oceanica* fibers: Equilibrium, and kinetic modeling studies. *Bioresource Technology*, **101** (22), 8606-8615.

Full Text: [2010\Bio Tec101, 8606.pdf](2010/Bio%20Tec101,%208606.pdf)

Abstract: In the present study, the effects of temperature and pH on ammonium biosorption onto Posidonia oceanica fibers were investigated. The results showed that the ammonium biosorption onto these fibers occurred for a wide pH range and the adsorption capacity of these fibers increased with increasing temperature. The modeling studies showed that the ammonium biosorption was well described by the pseudo-second-order model, predicting therefore chemisorption interactions-type at earlier stages and intraparticle diffusion at later stages. The ammonium biosorption was governed by film diffusion process at various temperatures. Besides, equilibrium data were very well represented by Langmuir isotherm, which confirmed the mono-layer coverage. The use of P. oceanica fibers presents an interesting option for both tertiary wastewater treatment (as a possible non-conventional biosorbent for the removal of ammonium), and waste recycling (as a fertilizer and compost). (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Capacity, Ammonium, Aqueous-Solutions, Biosorbent, Biosorption, Capacity, Chemisorption, Clinoptilolite, Compost, Coverage, Data, Diffusion, Equilibrium, Fertilizer, Fibers, Film Diffusion, Intraparticle Diffusion, Ion-Exchange, Isotherm, Kinetic, Kinetic Modeling, Langmuir, Langmuir Isotherm, Metal-Ions, Model, Modeling, Monolayer, NOV, P, pH, Posidonia Oceanica Fibers, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Model, Recycling, Removal, Rights, Sorption, Temperature, Treatment, Volatilization, Waste, Wastewater, Wastewater Treatment, Water, Zeolite

? Zakeri, F., Noghabi, K.A., Sadeghizadeh, M., Kardan, M.R., Masoomi, F., Farshidpour, M.R. and Atarilar, A. (2010), *Serratia sp*. ZF03: An efficient radium biosorbent isolated from hot-spring waters in high background radiation areas. *Bioresource Technology*, **101** (23), 9163-9170.

Full Text: [2010\Bio Tec101, 9163.pdf](2010/Bio%20Tec101,%209163.pdf)

Abstract: The aim of this study is to isolate and characterize Ra-226 biosorbing indigenous bacterial strains from soils and hot-springs containing high concentrations of Ra-226 by using biochemical and molecular approaches. Fifteen bacteria were isolated and their phylogenetic affiliations were determined based on their 165 rRNA gene and the two most relevant hypervariable regions of this gene; V3 and V6 analysis. A pigmented Serratia sp. ZF03 strain isolated from the water with Ra-226 content of 50471 mBq l-1, caused 70% removal of Ra-226 at a radioactivity level of 50 Bq ml-1, after 5 min and 75-80% in equilibrium time of 1 h, depending on the particular biosorption system and experimental conditions studied. The biosorption equilibrium was described by Langmuir and Freundlich isotherm models. Kinetic studies indicated that the biosorption follows pseudo-second-order kinetics. Effect of different physico-chemical parameters on 226Ra sorption, FTIR, SEM and TEM analysis were also investigated. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: 16s Rrna, Analysis, Aqueous-Solutions, Bacteria, Biomass, Biosorbent, Biosorption, Biosorption, Cadmium, Electron Microscopy, Equilibrium, Experimental, Freundlich, Freundlich Isotherm, FTIR, Gene, High Background Radiation Areas, Identification, Isotherm, Isotherm Models, Kinetic, Kinetic Studies, Kinetics, Langmuir, Marcescens, Metal, Microorganisms, Models, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Ra-226, Radiation, Radioactivity, Removal, Rights, SEM, Soils, Sorption, TEM, Water, Waters

? Fernandez, M.E., Nunell, G.V., Bonelli, P.R. and Cukierman, A.L. (2010), Effectiveness of Cupressus sempervirens cones as biosorbent for the removal of basic dyes from aqueous solutions in batch and dynamic modes. *Bioresource Technology*, **101** (24), 9500-9507.

Full Text: [2010\Bio Tec101, 9500.pdf](2010/Bio%20Tec101,%209500.pdf)

Abstract: The feasibility of using cypress cone chips from *Cupressus sempervirens* as a low-cost biosorbent for the removal of two representative basic dyes, methylene blue (MB) and rhodamine B (RhB), from aqueous solutions was investigated in batch and continuous modes. Dyes biosorption was strongly dependent on the solution’s pH. Sorption kinetics was determined and properly described by the pseudo-second-order rate model. Experimental equilibrium isotherms fitted the Langmuir model, showing maximum biosorption capacities of 0.62 mmol/g for MB and 0.24 mmol/g for RhB. Competitive experiments from a binary solution of the dyes demonstrated the preference of the cone chips for biosorbing MB. Very low desorption efficiencies were obtained for both dyes. Dynamic experiments showed that the breakthrough time was three times higher for MB biosorption than for RhB for the same conditions. Breakthrough curves were properly represented by a mathematical model. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorption, Aqueous Solutions, Basic Dyes, Batch, Biosorbent, Biosorption, Breakthrough, Congo Red, Cypress Cone Chips, Desorption, Dyes, Dynamic, Equilibrium, Equilibrium Isotherms, Experiments, Feasibility, Fixed-Bed, Isotherms, Kinetics, Langmuir, Langmuir Model, Low Cost, Low-Cost Adsorbents, Mathematical Model, Mb, Methylene Blue, Methylene-Blue, Model, pH, Preference, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Rate, Removal, Rhodamine B, Rhodamine-B, Rights, Solution, Solutions, Sorption, Sorption Kinetics, Textile Wastewater Treatment, Thuja-Orientalis, Trace Toxic Metals, Up-Flow Column, Waste-Water

? Yang, Y.Y., Wang, G.A., Wang, B., Li, Z.L., Jia, X.M., Zhou, Q.F. and Zhao, Y.H. (2011), Biosorption of Acid Black 172 and Congo Red from aqueous solution by nonviable Penicillium YW 01: Kinetic study, equilibrium isotherm and artificial neural network modeling. *Bioresource Technology*, **102** (2), 828-834.

Full Text: [2011\Bio Tec102, 828.pdf](2011/Bio%20Tec102,%20828.pdf)

Abstract: The main objective of this work was to investigate the biosorption performance of nonviable *Penicillium* YW 01 biomass for removal of Acid Black 172 metal-complex dye (AB) and Congo Red (CR) in solutions. Maximum biosorption capacities of 225.38 and 411.53 mg g-1 under initial dye concentration of 800 mg L-1, pH 3.0 and 40ºC conditions were observed for AB and CR, respectively. Biosorption data were successfully described with Langmuir isotherm and the pseudo-second-order kinetic model. The Weber-Morris model analysis indicated that intraparticle diffusion was the limiting step for biosorption of AB and CR onto biosorbent. Analysis based on the artificial neural network and genetic algorithms hybrid model indicated that initial dye concentration and temperature appeared to be the most influential parameters for biosorption process of AB and CR onto biosorbent, respectively. Characterization of the biosorbent and possible dye-biosorbent interaction were confirmed by Fourier transform infrared spectroscopy and scanning electron microscopy. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Acid Black 172, Adsorption, Artificial Neural Network, Azo-Dye Decolorization, Biomass, Biosorption, Biosorption Isotherms, Blue, Characterization, Congo Red, Kinetic Model, Nonviable Penicillium YW 01, Removal, *Rhizopus*, Waste, Water

? Ren, R., Li, K.X., Zhang, C., Liu, D.F. and Sun, J. (2011), Biosorption of tetradecyl benzyl dimethyl ammonium chloride on activated sludge: Kinetic, thermodynamic and reaction mechanisms. *Bioresource Technology*, **102** (4), 3799-3804.

Full Text: [2011\Bio Tec102, 3799.pdf](2011/Bio%20Tec102,%203799.pdf)

Abstract: The biosorption of tetradecyl benzyl dimethyl ammonium chloride (C(14)BDMA) onto activated sludge was examined in aqueous solution with respect to the contact time, temperature and particle size. Equilibrium reached in about 2 h contact time. An decrease in the temperature increases of biosorption capacity of C(14)BDMA onto activated sludge, which also increases with decreasing particle size. The experimental data fit the pseudo-second-order kinetics model well. The Langmuir and Freundlich models were applied to describe equilibrium isotherms, and the equilibrium partitioning data was described well by both models. Thermodynamic data showed that C(14)BDMA biosorption onto activated sludge was feasible, spontaneous and exothermic. The Fourier transform infrared (FT-IR) spectrophotometry results show that both physisorption and chemisorption were involved. The measured zeta potential values and the enhanced cation concentration indicate the presence of electrostatic interactions, hydrophobic interactions and ion exchange. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous-Solutions, Biosorption, Carbon, Cationic Surfactants, Chloride, Dye, Equilibrium, Fly-Ash, Kinetics, Malachite-Green, Mechanisms, Removal, Sorption, Tetradecyl Benzyl Dimethyl Ammonium, Thermodynamics

? Remya, N., Kumar, M., Mohan, S. and Azzam, R. (2011), Influence of organic matter and solute concentration on nitrate sorption in batch and diffusion-cell experiments. *Bioresource Technology*, **102** (9), 5283-5289.

Full Text: [2011\Bio Tec102, 5283.pdf](2011/Bio%20Tec102,%205283.pdf)

Abstract: Nitrate sorption potentials of three surface soils (soils-1-3) were evaluated under different solute concentrations. i.e. 1-100 mg L-1. Batch and diffusion-cell adsorption experiments were conducted to delineate the diffusion property and maximum specific nitrate adsorption capacity (MSNAC) of the soils. Ho’s pseudo-second order model well fitted the batch adsorption kinetics data (R-2 > 0.99). Subsequently, the MSNAC was estimated using Langmuir and Freundlich isotherms; however, the best-fit was obtained with Langmuir isotherm. Interestingly, the batch adsorption experiments over-estimated the MSNAC of the soils compared with the diffusion-cell tests. On the other hand, a proportionate increase in the MSNAC was observed with the increase in soil organic matter content (OM) under the batch and diffusion-cell tests. Therefore, increasing the soil OM by the application of natural compost could stop nitrate leaching from agricultural fields and also increase the fertility of soil. (C) 2010 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption, Adsorption Kinetics, Batch, Desorption Characteristics, Diffusion-Cell Test, Freundlich, Ho’s Pseudo-Second Order Model, Indian Soils, Isotherm, Isotherms, Kinetics, Langmuir, Langmuir Isotherm, Leaching, Mexico, Nitrate, Nitrogen, Organic Matter, Removal, Sorption, Surfactant, Water

? Çelekli, A. and Geyik, F. (2011), Artificial neural networks (ANN) approach for modeling of removal of Lanaset Red G on *Chara contraria*. *Bioresource Technology*, **102** (10), 5634-5638.

Full Text: [2011\Bio Tec102, 5634.pdf](2011/Bio%20Tec102,%205634.pdf)

Abstract: A three-layer artificial neural network (ANN) was constructed to predict the removal efficiency of Lanaset Red (LR) G on Chara contraria based on 2304 experimental sets. The effects of operating variables (particle size, adsorbent dosage, pH regimes, dye concentration, and contact time) were studied to optimize the sorption conditions of this dye. The operating variables were used as the input to the constructed neural network to predict the dye uptake at any time as the output. This adsorbent was characterized by FTIR. Pseudo second-order model was also fitted to the experimental data. According to values of error analyses and determinations coefficient, the ANN was more appropriate to describe this adsorption process. Result of this model indicated that pH regimes had the highest importance effect (49%) on the dye uptake. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption, Ann, Biosorbents, Biosorption, Chara Contraria, Dye, Dye Solution, Equilibrium, FTIR, Lanaset Red G, Macroalgae, Modeling, Parameters, pH, Removal, Sorption, Uptake

? Xiong, Y., Chen, C.B., Gu, X.J., Biswas, B.K., Shan, W.J., Lou, Z.N., Fang, D.W. and Zang, S.L. (2011), Investigation on the removal of Mo(VI) from Mo-Re containing wastewater by chemically modified persimmon residua. *Bioresource Technology*, **102** (13), 6857-6862.

Full Text: [2011\Bio Tec102, 6857.pdf](2011/Bio%20Tec102,%206857.pdf)

Abstract: Persimmon waste was chemically modified by crosslinking with concentrated sulfuric acid to obtain a novel kind of adsorption gel, which was termed as crosslinked persimmon tannin (CPT), hereinafter. The adsorption behaviors of Mo(VI) with other coexisting metal ions onto the CPT gel were investigated. The gel exhibited selectivity only for Mo(VI) ions evidenced by the high value of separation factor of molybdenum and rhenium (beta(Mo/Re) = 164.37), and the adsorption mechanism of Mo(VI) as a multispecies was studied. The molybdenum adsorption behavior conforms to the Langmuir model with a remarkably high adsorption capacity of 0.56 mol/kg. A kinetic study for the adsorption of molybdenum at various temperatures confirmed that the endothermic adsorption process followed pseudo-second order kinetics. Moreover, its excellent adsorption properties and applicability for Mo(VI) were demonstrated by the removal and separation of Mo(VI) from different Mo-Re containing industrial wastewaters. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Adsorption Mechanism, Aqueous-Solutions, Catalysts, Condensed-Tannin, Hexavalent Chromium, Ions, Kinetics, Langmuir Model, Metal-Ions, Model, Molybdenum, Molybdenum, Persimmon, Pseudo-Second Order, Pseudo-Second-Order, Recovery, Rhenium, Solvent-Extraction, Tannin Gel, Waste, Wastewater

? Sajab, M.S., Chia, C.H., Zakaria, S., Jani, S.M., Ayob, M.K., Chee, K.L., Khiew, P.S. and Chiu, W.S. (2011), Citric acid modified kenaf core fibres for removal of methylene blue from aqueous solution. *Bioresource Technology*, **102** (15), 7237-7243.

Full Text: [2011\Bio Tec102, 7237.pdf](2011/Bio%20Tec102,%207237.pdf)

Abstract: Chemically modified kenaf core fibres were prepared via esterification in the presence of citric acid (CA). The adsorption kinetics and isotherm studies were carried out under different conditions to examine the adsorption efficiency of CA-treated kenaf core fibres towards methylene blue (MB). The adsorption capacity of the kenaf core fibres increased significantly after the citric acid treatment. The values of the correlation coefficients indicated that the Langmuir isotherm fitted the experimental data better than the Freundlich isotherm. The maximum adsorption capacity of the CA-treated kenaf core fibres was found to be 131.6 mg/g at 60ºC. Kinetic models, pseudo-first-order, pseudo-second-order and intraparticle diffusion, were employed to describe the adsorption mechanism. The kinetic data were found to fit pseudo-second-order model equation as compared to pseudo-first-order model. The adsorption of MB onto the CA-treated kenaf core fibres was spontaneous and endothermic. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Adsorption, Adsorption Isotherms, Adsorption Kinetics, Basic-Dyes, Diffusion, Dye Removal, Equilibrium, Fixed-Bed, Isotherm, Kenaf Fibres, Kinetic, Kinetic Model, Kinetic Models, Kinetics, Langmuir Isotherm, Methylene Blue, Model, Natural Adsorbents, Pseudo-First-Order, Pseudo-Second-Order, Rice Straw, Sorption, Unbleached Kraft Fibers

? Hsi, H.C., Tsai, C.Y., Kuo, T.H. and Chiang, C.S. (2011), Development of low-concentration mercury adsorbents from biohydrogen-generation agricultural residues using sulfur impregnation. *Bioresource Technology*, **102** (16), 7470-7477.

Full Text: [2011\Bio Tec102, 7470.pdf](2011/Bio%20Tec102,%207470.pdf)

Abstract: Mercury adsorbents were derived from waste biohydrogen-generation barley husk and rice husk via carbonization, steam activation, and sulfur impregnation at 300-650ºC. The samples derived from agricultural residues showed a greater Hg(0) adsorption than that of a coal-based activated carbon, confirming the feasibility of resource recovery of these agricultural residuals for low-concentration gaseous Hg adsorption. Sulfur impregnation reduced both the surface area and pore volume of the samples, with lower temperature causing a greater decrease. Elevating the impregnation temperature increased the organic sulfur contents, suggesting that in addition to elemental sulfur, organic sulfur may also act as active sites to improve Hg(0) adsorption. Oxygen and sulfur functional groups accompanying the microporous structures may account for the enhancing Hg adsorption of the raw and sulfur-treated samples, respectively. The pseudo-second-order model can best describe the chemisorption characteristics, implying that Hg adsorption on the samples was in a bimolecular reaction form. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbon, Activated Carbon-Fibers, Active, Adsorption, Adsorption, Biotreated Waste, Elemental Mercury, Gas-Phase Mercury, Mercury, Optimization, Protocol, Recovery, Removal, Rice, Rice Husk, Sulfur-Impregnation, Sulfurization, Surface, Surface Modification, Temperature, Waste

? Mestre, A.S., Bexiga, A.S., Proença, M., Andrade, M., Pinto, M.L., Matos, I., Fonseca, I.M. and Carvalho, A.P. (2011), Activated carbons from sisal waste by chemical activation with K2CO3: Kinetics of paracetamol and ibuprofen removal from aqueous solution. *Bioresource Technology*, **102** (17), 8253-8260.

Full Text: [2011\Bio Tec102, 8253.pdf](2011/Bio%20Tec102,%208253.pdf)

Abstract: Sisal waste was used as precursor to prepare carbons by chemical activation. The influence of the K2CO3 amount and activation temperature on the materials textural properties were studied through N2 and CO2 adsorption assays. As the severity of the treatment increases there is a development of supermicropores, and the micropore size distribution changes from mono to bimodal. A carbon with an apparent surface area of 1038 m2 g-1 and pore volume of 0.49 cm3 g-1 was obtained. TPD results showed the incidence in acidic type groups although the pHPZC reveals an almost neutral character of the surface. Adsorption kinetic data of ibuprofen and paracetamol show that the processes obey to a pseudo-second order kinetic equation. Regarding the removal efficiency the prepared samples attained values comparable to a commercial carbon (>65%), revealing that chemical activation of sisal wastes with K2CO3 allows obtaining samples suitable for pharmaceutical compounds removal from liquid phase. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorption, Adsorption Kinetic, Aqueous Solution, Fibers, Ibuprofen, K2CO3, Kinetic, Kinetics, Paracetamol, Pharmaceuticals, Phosphoric-Acid, Removal, Residues, Sisal, Surface-Chemistry, Systems, Temperature, Waste, Water

? Inbaraj, B.S. and Chen, B.H. (2011), Dye adsorption characteristics of magnetite nanoparticles coated with a biopolymer poly(γ-glutamic acid). *Bioresource Technology*, **102** (19), 8868-8876.

Full Text: [2011\Bio Tec102, 8868.pdf](2011/Bio%20Tec102,%208868.pdf)

Abstract: Magnetite nanoparticles coated with an anionic biopolymer poly(γ-glutamic acid) (PGA-MNPs) were synthesized and characterized for their methylene blue dye adsorption capability. Both bare- and dye-loaded PGA-MNPs were characterized by FTIR, TEM and VSM measurements, revealing the PGA-MNPs to be superparamagnetic with average particle diameter being 12.4 nm and magnetization value 59.2 emu/g. The synthesized PGA-MNPs were stable in deionized, tap and river waters as well as in acidic and basic media. Redlich-Peterson and Langmuir models precisely described the isotherm and the maximum adsorption capacity was 78.67 mg/g. A pseudo-second-order equation best predicted the kinetics with a maximum adsorption attained within 5 min. Incorporation of sodium or calcium ions reduced the dye adsorption, while a raise in pH enhanced adsorption and a complete desorption occurred at pH 1.0. Dye removal mechanism by PGA-MNPs was probably due to electrostatic interaction through exchange of protons from side-chain cc-carboxyl groups on PGA-MNPs surface. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous-Solutions, Biopolymer, Calcium, Desorption, Dye, Dye Adsorption, Dye Removal, FTIR, Heavy-Metals, Iron-Oxide Nanoparticles, Isotherm, Kinetics, Langmuir, Magnetic Nanoparticles, Magnetite, Mechanism, Methylene Blue, Methylene-Blue, pH, Poly(Gamma-Glutamic Acid), Pseudo Second Order, Removal, Sorption, Water

? Feng, Y.F., Yang, F., Wang, Y.Q., Ma, L., Wu, Y.H., Kerr, P.G. and Yang, L.Z. (2011), Basic dye adsorption onto an agro-based waste material - Sesame hull (*Sesamum indicum* L.). *Bioresource Technology*, **102** (22), 10280-10285.

Full Text: [2011\Bio Tec102, 10280.pdf](2011/Bio%20Tec102,%2010280.pdf)

Abstract: The aim of this project was to establish an economical and environmentally benign biotechnology for removing methylene blue (MB) from wastewater. The adsorption process of MB onto abandoned sesame hull (*Sesamum indicum* L.) (SH) was investigated in a batch system. The results showed that a wide range of pH (3.54-10.50) was favorable for the adsorption of MB onto SH. The Langmuir model displayed the best fit for the isothermal data. The exothermic adsorption process fits a pseudo-second-order kinetic model. The maximum monolayer adsorption capacity (359.88 mg g-1) was higher than most previously investigated low-cost bioadsorbents (e.g., peanut hull, wheat straw, etc.). This study indicated that sesame hull is a promising, unconventional, affordable and environmentally friendly bio-measure that is easily deployed for removing high levels of MB from wastewater. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activated Carbons, Adsorption, Aqueous-Solutions, Basic Dye, Biosorption, Equilibrium, Kinetic, Kinetics, Langmuir, Leaf Powder, Low-Cost Adsorbents, Methylene Blue, Methylene-Blue Adsorption, pH, Removal, Sesame Hull (*Sesamum indicum* L.), Sorption, Thermodynamics

? Khan, M.A., Ngabura, M., Choong, T.S.Y., Masood, H. and Chuah, L.A. (2012), Biosorption and desorption of Nickel on oil cake: Batch and column studies. *Bioresource Technology*, **103** (1), 35-42.

Full Text: [2012\Bio Tec103, 35.pdf](2012/Bio%20Tec103,%2035.pdf)

Abstract: Biosorption potential of mustard oil cake (MOC) for Ni(II) from aqueous medium was studied. Spectroscopic studies showed possible involvement of acidic (hydroxyl, carbonyl and carboxyl) groups in biosorption. Optimum biosorption was observed at pH 8. Contact time, reaction temperature, biosorbent dose and adsorbate concentration showed significant influence. Linear and non-linear isotherms comparison suggests applicability of Temkin model at 303 and 313 K and Freundlich model at 323 K. Kinetics studies revealed applicability of Pseudo-second-order model. The process was endothermic and spontaneous. Freundlich constant (n) and activation energy (E(a)) values confirm physical nature of the process. The breakthrough and exhaustive capacities for 5 mg/L initial Ni(II) concentration were 0.25 and 4.5 mg/g, while for 10 mg/L initial Ni(II) concentration were 4.5 and 9.5 mg/g, respectively. Batch desorption studies showed maximum Ni(II) recovery in acidic medium. Regeneration studies by batch and column process confirmed reutilization of biomass without appreciable loss in biosorption. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Activation, Adsorption, Aqueous-Solution, Biosorbent, Biosorption, Breakthrough Capacity, Cd(II), Cu(II), Desorption, Equilibrium, Freundlich, Heavy-Metals, Kinetics, Kinetics, Metal-Ions, Pb(II), pH, Regeneration, Removal, Thermodynamics

? Ҫelekli, A., Birecikligil, S.S., Geyik, F. and Bozkurt, H. (2012), Prediction of removal efficiency of Lanaset Red G on walnut husk using artificial neural network model. *Bioresource Technology*, **103** (1), 64-70.

Full Text: [2012\Bio Tec103, 64.pdf](2012/Bio%20Tec103,%2064.pdf)

Abstract: An artificial neural network (ANN) model was used to predict removal efficiency of Lanaset Red (LR) G on walnut husk (WH). This adsorbent was characterized by FTIR-ATR. Effects of particle size, adsorbent dose, initial pH value, dye concentration, and contact time were investigated to optimize sorption process. Operating variables were used as the inputs to the constructed neural network to predict the dye uptake at any time as an output. Commonly used pseudo second-order model was fitted to the experimental data to compare with ANN model. According to error analyses and determination of coefficients, ANN was the more appropriate model to describe this sorption process. Results of ANN indicated that pH was the most efficient parameter (43%), followed by initial dye concentration (40%) for sorption of LR Con WH. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Adsorbent, Adsorption, Adsorption, Ann, Aqueous-Solution, Basic Green 4, Biosorbents, Biosorption, Dye Solution, Equilibrium, Kinetics, Lanaset Red G, Methylene-Blue, Modeling, Parameters, pH, Walnut Husk

? Bulgariu, D. and Bulgariu, L. (2012), Equilibrium and kinetics studies of heavy metal ions biosorption on green algae waste biomass. *Bioresource Technology*, **103** (1), 489-493.

Full Text: [2012\Bio Tec103, 489.pdf](2012/Bio%20Tec103,%20489.pdf)

Abstract: The biosorption of Pb(II), Cd(II), and Co(II), respectively, from aqueous solution on green algae waste biomass was investigated. The green algae waste biomass was obtained from marine green algae after extraction of oil, and was used as low-cost biosorbent. Batch shaking experiments were performed to examine the effects of initial solution pH, contact time and temperature. The equilibrium biosorption data were analyzed using two isotherm models (Langmuir and Freundlich) and two kinetics models (pseudo-first order and pseudo-second order). The results indicate that Langmuir model provide best correlation of experimental data, and the pseudo-second order kinetic equation could best describe the biosorption kinetics of considered heavy metals. (C) 2011 Elsevier Ltd. All rights reserved.

Keywords: Adsorption, Aqueous-Solutions, Biosorbent, Biosorption, Cd(II), Equilibrium, Equilibrium and Kinetics, Freundlich, Green Algae Waste Biomass, Heavy Metals, Isotherm, Isotherm Models, Kinetic, Kinetics, Langmuir, Lead Ions, Metals, Models, pH, Sorption

# Title: BioResources

Full Journal Title: [BioResources](http://www.ncsu.edu/bioresources/)

ISO Abbrev. Title: BioResources

JCR Abbrev. Title: BioResources

ISSN: 1930-2126

Issues/Year: 4

Language: English

Journal Country/Territory: United States

Publisher: North Carolina State Univ Dept Wood & Paper Sci

Publisher Address: Campus Box 8005, Raleigh, NC 27695-8005

Subject Categories:

Materials Science, Paper & Wood: Impact Factor 1.406, 3/21 (2009)

? Tazrouti, N. and Amrani, M. (2009), Chromium(VI) adsorption onto activated kraft lignin produced from alfa grass (*Stipa Tenacissima*). *BioResources*, **4** (2), 740-755.

Full Text: [2009\BioResources4, 740.pdf](2009/Bioresources4,%20740.pdf)

Abstract: Activated lignin having a surface area of 1023 m2 g-1 has been prepared from sulfate lignin that was treated by 30% H2O2 and carbonized at 300°C in order to test the chromium (VI) adsorption from aqueous solution. The influence of contact time, pH, initial concentrations of adsorbent and adsorbate, and temperature on the adsorption capacity were investigated. The maximum removal of Cr(VI) was found to be 92.36 % at pH=2 and a contact time of 80 min. Optimal concentration of lignin and Cr(VI) were found to be 3.8 g L-1 and 180 mg L-1, respectively. The adsorption kinetics data fitted well with a pseudo-second-order equation, and the rate of removal of chromium was found to speed up with increasing temperature. Activation energy for the adsorption process was found to be 18.19 kJ mol-1. The Langmuir and Freundlich adsorption isotherm models were applied to describe the isotherm and isotherm constants for the adsorption of Cr(VI) on lignin. These constants and correlation coefficients of the isotherm models were calculated and compared. Results indicated that Cr(VI) uptake could be described by the Langmuir adsorption model. The maximum adsorption capacity (*q*m) of Cr(VI) on lignin was 75.75 mg g-1 at 40°C. The dimensionless equilibrium parameter (*R*L) signified a favorable adsorption of Cr(VI) on lignin and was found to be between 0.0601 and 0.818 (0<*R*L<1). The thermodynamic parameters such as Δ*G*°, Δ*S*°, and Δ*H*° were calculated, and it was found that the reaction was spontaneous and endothermic in nature. This study indicates that lignin has the potential to become an effective and economical adsorbent for removal Cr(VI) from waste water.

Keywords: Activation, Activation Energy, Adsorbent, Adsorption, Adsorption Capacity, Adsorption Isotherm, Adsorption Isotherm Models, Adsorption Kinetics, Aqueous Solution, Aqueous-Solutions, Capacity, Carbon, Chromium, Chromium(VI), Concentration, Correlation, Cr(VI), Data, Endothermic, Energy, Equilibrium, Freundlich, Freundlich Adsorption Isotherm, H2O2, Heavy-Metals, Hexavalent Chromium, Isotherm, Isotherm Kinetics, Kinetics, L1, Langmuir, Lignin, Low-Cost Adsorbents, Model, Models, pH, Potential, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Equation, Removal, Removal, Solution, Sulfate, Surface, Surface Area, Temperature, Thermodynamic, Thermodynamic Parameters, Uptake, Waste, Waste Water, Waste-Water, Water

? Wu, N., Hubbe, M.A., Rojas, O.J. and Park, S. (2009), Permeation of polyelectrolytes and other solutes into the pore spaces of water-swollen cellulose: A Review. *BioResources*, **4** (3), 1222-1262.

Full Text: [2009\BioResources4, 1222.pdf](2009/Bioresources4,%201222.pdf)

Abstract: The rate and extent of transport of macromolecules and other solutes into cellulosic materials and fibers have important applications in such fields as papermaking, textiles, medicine, and chromatography. This review considers how diffusion and flow affect permeation into wood, paper, and other lignocellulosic materials. Because pore sizes within such materials can range from nanometers to millimeters, a broad perspective will be used, also considering some publications related to other porous materials. Factors that limit the rate or extent of polymer or other solute transport into pores can involve thermodynamics (affecting the driving motivation for permeation), kinetics (if there is insufficient time for the system to come to equilibrium), and physical barriers. Molecular flow is also affected by the attributes of the solute, such as molecular mass and charge, as well as those of the substrate, such as the pore size, interconnectedness, restricted areas, and surface characteristics. Published articles have helped to clarify which of these factors may have a controlling influence on molecular transport in different situations.

Keywords: Aqueous Surfactant Solutions, Barriers, Cationic Polyelectrolytes, Cellulose, Characteristics, Charge, Chromatography, Diffusion, Driving, Electrical-Conductivity, Enablers, Enhanced Oil-Recovery, Equilibrium, Fibers, Flow, Intraparticle Diffusion, Kinetics, Lignocellulosic Materials, Medicine, Nanoporous Silica Particles, Papermaking, Permeation, Physical, Polyelectrolytes, Polymer, Porous Materials, Porous-Media, Predicting Boron-Diffusion, Publications, Review, Size, Solute Transport, Solutes, Surface, Textiles, Thermodynamics, Transport, Wood, Wood Cell-Walls

? Haron, M.J., Tiansih, M., Ibrahim, N.A., Kassim, A. and Yunus, W.M.Z.W. (2009), Sorption of Cu(II) by poly(hydroxamic acid) chelating exchanger prepared from pol(ymethyl acrylate) grafted oil palm empty fruit bunch (OPEFB). *BioResources*, **4** (4), 1305-1318.

Full Text: [2009\BioResources4, 1305.pdf](2009/Bioresources4,%201305.pdf)

Abstract: This paper describes the preparation of chemically modified oil palm empty fruit bunch (OPEFB) with hydroxamic acid functional group and its use for the sorption of Cu(II) from aqueous solution. OPEFB was grafted with poly(methylacrylate) (PMA), using H2O2/Fe2+ as initiator. The PMA grafted OPEFB (PMA-OPEFB) was treated with hydroxylammonium chloride in alkaline medium to produce hydroxamic acid grafted fiber (PHA-OPEFB). The FTIR spectrum of OPEFB grafted with PMA showed an intense absorption band at 1734 cm-1 which is attributed to C=O vibration in the grafted ester. After hydroxylamine treatment, the intensity of absorption band at 1734 cm-1 decreased and new bands appeared at the 1640 cm-1 related to C=O vibration in hydroxamic acid and at the 1568 cm-1 related to the N-H amide. Sorption of Cu(II) by PHA-OPEFB was effective over a pH range of 4 to 6. The sorption followed the Langmuir model with maximum capacities of 74.1 mg g-1 at 25ºC. The sorption process was exothermic, as shown by the negative value of enthalpy change Delta H degrees. The free energy change (ΔGº) for the sorption was negative, showing that the sorption process was spontaneous. A kinetic study showed that the Cu(II) sorption followed a second order kinetic model.

Keywords: Absorption, Adsorption, Aqueous Solution, Aqueous-Solutions, Biosorption, Chloride, Copper, Cu(II), Energy, Enthalpy, Exothermic, Fiber, FTIR, Functional Group, Grafted, Heavy-Metals, Hydroxamic Acid, Ions, Kinetic, Kinetic Model, Kinetic Study, Kinetics, Langmuir, Langmuir Model, Methyl Acrylate, Model, Modified, OPEFB, pH, Preparation, Removal, Resin, Second Order, Second-Order, Solution, Sorption, Sorption Process, Spontaneous, Treatment, Value, Vibration

? Thirumalisamy, S. and Subbian, M. (2010), Removal of Methylene blue from aqueous solution by activated carbon prepared from the peel of *Cucumis sativa* fruit by adsorption. *BioResources*, **5** (1), 419-437.

Full Text: [2010\BioResources5, 419.pdf](2010/Bioresources5,%20419.pdf)

Abstract: The use of low-cost, locally available, highly efficient, and eco-friendly adsorbents has been investigated as an ideal alternative to the current expensive methods of removing dyes from wastewater. This study investigates the potential use of activated carbon prepared from the peel of *Cucumis sativa* fruit for the removal of methylene blue (MB) dye from simulated wastewater. The effects of different system variables, adsorbent dosage, initial dye concentration, pH, and contact time were investigated, and optimal experimental conditions were ascertained. The results showed that as the amount of the adsorbent increased, the percentage of dye removal increased accordingly. The optimum pH for dye adsorption was 6.0. Maximum dye was sequestered within 50 min of the start of each experiment. The adsorption of methylene blue followed the pseudo-second-order rate equation and fit the Langmuir, Freundlich, Dubinin-Radushekevich (D-R), and Tempkin equations well. Maximum removal of MB was obtained at pH 6 as 99.79% for adsorbent doses of 0.6 g/ 50 mL and 25 mg/L initial dye concentrations at room temperature. The maximum adsorption capacity obtained from the Langmuir equation was 46.73 mg g-1. The rate of adsorption was found to conform to pseudo-second-order kinetics with a good correlation (R-2 > 0.9677) with intraparticle diffusion as one of the rate-determining steps. Activated carbon developed from the peel of *Cucumis sativa* fruit can be an attractive option for dye removal from wastewater.

Keywords: Activated Carbon, Adsorbent, Adsorbent Dosage, Adsorbents, Adsorption, Adsorption Capacity, Alternative, Biosorption, Capacity, Carbon, Concentration, Correlation, *Cucumis Sativa*, Diffusion, Dye, Dye Adsorption, Dye Removal, Dyes, Dyestuffs, Equilibrium, Experiment, Experimental, Freundlich, Intraparticle Diffusion, Isotherms, Kinetics, Kinetics, Langmuir, Langmuir Equation, Low Cost, Mb, Mechanism, Methods, Methylene Blue, Orange Peel, pH, Potential, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Pseudo-Second-Order Rate, Removal, Room Temperature, Sorption, Temperature, Time, Wastewater

? Rao, K.S., Anand, S. and Venkateswarlu, P. (2010), Adsorption of cadmium(II) ions from aqueous solution by *Tectona grandis* lf (Teak Leaves Powder). *BioResources*, **5** (1), 438-457.

Full Text: [2010\BioResources5, 438.pdf](2010/Bioresources5,%20438.pdf)

Abstract: Batch adsorption studies were undertaken with the abundantly available waste biosorbent *Tectona grandis* L.f. leaf powder for removal of cadmium(II) from aqueous solutions. The adsorption experiments were performed under various conditions such as time, temperature, different initial Cd(II) concentrations, pH, adsorbent dosage, and adsorbent particle size. The data showed that in 30 minutes, 1 g of Tectona grandis L.f. could remove 86.73% of cadmium(II) from 50 mL aqueous solution containing 100 mg L-1 of Cd. The isothermal data fitted well to both Langmuir and Freundlich models for Cd(II) adsorption on *Tectona grandis* L.f. Using the Langmuir model equation, the monolayer sorption capacity of *Tectona grandis* L.f. was evaluated to be 29.94 mg g-1. The optimum pH value was found to be 5.5. The pseudo-first-order and pseudo-second-order kinetic models were used to describe the kinetic data. The dynamic data fitted well to the pseudo-second-order kinetic model. Cd(II) adsorption was only marginally affected in the temperature range of 30 to 50º C. An SEM of Cd(II) loaded powder showed formation of agglomerates. The FTIR of Cd(II) loaded powder showed negative shift in the wave numbers.

Keywords: Activated Carbon, Adsorbent, Adsorbent Dosage, Adsorption, Agricultural Waste, Aqueous Solution, Aqueous Solutions, Batch Adsorption, Biosorbent, Cadmium (II), Cadmium(II), Capacity, Cd, Cd(II), Component Adsorption, Copper(II) Ion, Data, Dynamic, Experiments, Freundlich, FTIR, Functional-Groups, Heavy-Metals, Isothermal, Isotherms, Kinetic, Kinetic Model, Kinetic Models, Kinetics, L1, Langmuir, Langmuir Model, Model, Models, Monolayer, Particle Size, Ph, Ph Value, Pseudo First Order, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Range, Removal, SEM, Size, Solution, Solutions, Sorption, Sorption Capacity, Synthetic Resin, Tectona Grandis l.f., Temperature, Time, Tree Fern, Value, Waste, Waste-Water, Wheat Bran

? Girirajanna, A., Prasad, D. and Abdullah, M.A. (2010), Biosorption of Cr(VI) from synthetic wastewater using the fruit shell of gulmohar (Delonix Regia): Application to electroplating wastewater. *BioResources*, **5** (2), 838-853.

Full Text: [2010\BioResources5, 838.pdf](2010/Bioresources5,%20838.pdf)

Abstract: The biosorption of Cr(VI) from synthetic solutions and electroplating wastewater using the fruit shell of gulmohar has been investigated in a batch system. The effects of various parameters such as pH, contact time, adsorbent dosage, and initial concentration of Cr(VI) on the biosorption process were studied. The complete removal of Cr(VI) was observed at pH < 3.0. Studies indicated that both biosorption and bioreduction were involved in the removal of Cr(VI). The sorption equilibrium exhibited a better fit to the Langmuir isotherm than the Freundlich isotherm. The maximum biosorption capacity of fruit shell of gulmohar to remove Cr(VI) was 12.28 mg/g. A kinetic model of pseudo-second order provided a good description of the experimental data as compared to a pseudo-first order kinetic model. The sorption rate was found to be dependent on the initial concentration of Cr(VI) and biomaterials dosage. The study showed that the abundant and inexpensive fruit shell of gulmohar biosorbent has a potential application in the removal of Cr(VI) from electroplating wastewater and its conversion into less or non-toxic Cr (III).

Keywords: Activated Carbon, Adsorbent, Adsorbent Dosage, Adsorption, Adsorption Isotherm, Adsorption Kinetics, Application, Aqueous-Solutions, Batch, Batch System, Biomaterials, Biosorbent, Biosorption, Capacity, Chromium, Concentration, Cr(VI), Data, Electroplating, Equilibrium, Eucalyptus Bark, Experimental, Freundlich, Freundlich Isotherm, Gulmohar, Hazelnut Shell, Heavy-Metals, Hexavalent Chromium, Industrial-Waste, Isotherm, Kinetic, Kinetic Model, Langmuir, Langmuir Isotherm, Metal-Ions, Model, Ph, Potential, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Removal, Shell, Solutions, Sorption, Time, Wastewater

? Ranjan, D. and Hasan, S.H. (2010), Rice Bran Carbon: An alternative to commercial activated carbon for the removal of hexavalent chromium from aqueous solution. *BioResources*, **5** (3), 1661-1674.

Full Text: [2010\BioResources5, 1661.pdf](2010/Bioresources5,%201661.pdf)

Abstract: Rice bran carbon (RBC) prepared from rice bran (an agricultural waste) was successfully utilized for the removal of hexavalent chromium from aqueous solution. The potentiality of RBC was tested and compared with commercial activated carbon (CAC), and it was found that RBC removed 95% of hexavalent chromium at pH 2, 1000 mu M Cr(VI) concentration, temperature 30ºC, and adsorbent dose of 2 g/L. The maximum uptake of total chromium obtained by applying the Langmuir isotherm model was 138.88 mg/g for RBC, which was found comparable to that obtained by utilizing CAC (116.28 mg/g) at 40ºC. The removal of Cr(VI) was found maximum at a proton to chromium ratio of 10 and chromium to carbon ratio of 0.052, and these ratios were found to be applicable over a range of Cr(VI) concentrations. The removal of Cr(VI), at low pH (< 2.0), was not only due to sorption of Cr(VI) but also because of reduction of Cr(VI) into less toxic Cr(III), which was also adsorbed on the surface of the sorbent. The rate of reduction removal of Cr(VI) followed pseudo-first order kinetics, whereas the sorption of total chromium followed pseudo-second order kinetics for both the types of activated carbons.

Keywords: Activated Carbon, Activated Carbons, Adsorbent, Adsorbent Dose, Adsorption, Adsorption, Agricultural, Agricultural Waste, Aqueous Solution, Aspergillus-Niger, Biomass, Carbon, Chromium, Concentration, Cr(Iii), Cr(Vi), Hexavalent Chromium, Isotherm, Isotherm Model, Kinetics, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Model, Ph, Pseudo First Order, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-First Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second Order Kinetics, Pseudo-Second-Order, Reduction, Removal, Rice, Rice Bran, Rice Bran Carbon, Sawdust, Solution, Sorbent, Sorption, Sorption Kinetics, Surface, Temperature, Toxic, Trivalent, Uptake, Waste, Wastes, Water

? Mahdavi, M., Ahmad, M.B., Haron, M.J. and Ab Rahman, M.Z. (2011), Adsorption of Cr(III) from aqueous solutions by polyacrylamide-grafted rubberwood fibre: Kinetics, equilibrium, and thermodynamic studies. *BioResources*, **6** (1), 22-33.

Full Text: [2011\BioResources6, 22.pdf](2011/Bioresources6,%2022.pdf)

Abstract: Cr(III) ions were adsorbed onto polyacrylamide-grafted rubberwood fibre, and effects of aqueous conditions were evaluated. The adsorbent was prepared via graft copolymerization of acrylamide (Am) onto rubberwood fibre (RWF), using ceric ammonium nitrate as an initiator. Fourier transform infrared spectroscopy was used to confirm the formation of PAm-g-RWF. Various variables affecting the adsorption capacity such as the pH of the solution, adsorption time, initial metal ion concentration, and temperature were investigated. The Cr(III) was up to 92% removed by PAm-g-RWF from an initial concentration of 10 mg/L at pH 5.0. Kinetic data fitted very well to a pseudo-second-order rate expression and less well to a pseudo-first-order equation. The equilibrium parameters for adsorption isotherms of the metal ions on the grafted fibre were obtained using Langmuir and Freundlich models, and the Langmuir model was found to be in better correlation with the experimental data with a maximum adsorption capacity of 18.24 mg/g. Thermodynamic parameters such as enthalpy change (Δ*H*°), free energy change (Δ*G*°), and entropy change (Δ*S*°) were calculated; the adsorption process was spontaneous and endothermic.

Keywords: Acrylate), Adsorbent, Adsorbents, Adsorption, Adsorption Capacity, Adsorption Isotherms, Biomass, Biosorption, Capacity, Chromium, Cr(III), Cr(III) Adsorption, Cu(II), Data, Equilibrium, Fourier Transform Infrared, Fourier Transform Infrared Spectroscopy, Freundlich, Graft Copolymerization, Grafted, Infrared, Isotherm, Isotherms, Kinetic, Kinetics, Langmuir, Langmuir Model, Metal Ions, Model, Models, Nitrate, pH, Process, Pseudo Second Order, Pseudo-Second-Order, Removal, Rubberwood Fibre, Sorption, Temperature, Thermodynamic, Thermodynamic Parameters, Waste-Water

? Sun, Y., Lin, C.X., Liu, M.H. and Liu, Y.F. (2011), Equilibrium adsorption behaviors and kinetic characteristics of oxymatrine on a spherical cellulose adsorbent. *BioResources*, **6** (1), 631-640.

Full Text: [2011\BioResources6, 631.pdf](2011/Bioresources6,%20631.pdf)

Abstract: An investigation was conducted on the adsorption of oxymatrine (OMT) on a spherical cellulose adsorbent embedded with wattle bark tannin. The results showed that the adsorption of the OMT on the adsorbent was solution pH dependent and the adsorption process followed the Freundlich adsorption isotherm. The adsorption kinetics of the OMT on the adsorbent could be well described by the pseudo-second-order rate model. And, the adsorption capacity calculated by the pseudo-second-order rate model was close to the experimental data. Desorption and regeneration experiments showed that the OMT adsorbed on the adsorbent could be easily recovered by 50% methanol solution.

Keywords: Absorption Behaviors, Adsorption, Adsorption Isotherm, Alkaloids, Aqueous-Solutions, Cellulose, Counter-Current Chromatography, Desorption, Embedded, Equilibrium, Freundlich, Isotherm, Kinetic, Kinetics, Mechanism, Oxymatrine, pH, Recovery, Removal, Sorption, Spherical Cellulose Absorbent, Uranium, Valonia Tannin Resin

? Yu, X.W., Zhang, G., Xie, C.X., Yu, Y.Q., Cheng, T.L. and Zhou, Q. (2011), Equilibrium, kinetic, and thermodynamic studies of hazardous dye neutral red biosorption by spent corncob substrate. *BioResources*, **6** (2), 936-949.

Full Text: [2011\BioResources6, 936.pdf](2011/Bioresources6,%20936.pdf)

Abstract: This study focuses on the possible use of spent corncob substrate (SCS), an agricultural waste utilized after the cultivation of white rot fungus *Pleurotus ostreatus*, to adsorb the hazardous dye Neutral Red (NR) from aqueous solutions. Natural SCS was initially characterized by using a combination of Fourier Transform Infrared Spectrometry (FTIR) and Brunauer-Emmett-Teller (BET) techniques. A batch adsorption study was carried out with varied solution pH, adsorption time, temperature, and initial NR concentration. It was found that NR uptake was favorable over a pH range of 4.0 to 7.0, and the equilibrium adsorption capacity can be reached within about 180 min. The biosorption data were also calculated by the pseudo-second-order kinetic model and Langmuir isotherm model. The maximum adsorption capacity was 139.1, 140.0, and 143.3 mg g(-1) at 20, 30, and 40 degrees C, respectively. Thermodynamic parameters showed that the adsorption was a spontaneous and endothermic process. The study highlighted a new pathway to develop potential low-cost biosorbent for the removal of dye pollutants from wastewater.

Keywords: Adsorbent, Adsorption, Aqueous-Solution, Biosorption, Cationic Dyes, Chrysosporium, Isotherms, Kinetics, Lead II Ions, Leaves, Methylene-Blue, Model, Neutral Red, Powder, Pseudo-Second-Order, Removal, Spent Corncob Substrate, Thermodynamics

? Tolba, R., Wu, G.S. and Chen, A.C. (2011), Adsorption of dietary oils onto lignin for promising pharmaceutical and nutritional applications. *BioResources*, **6** (2), 1322-1335.

Full Text: [2011\BioResources6, 1322.pdf](2011/Bioresources6,%201322.pdf)

Abstract: Kraft lignin, a by-product of the pulp and paper industry, was explored as an adsorbent for six dietary oils and was compared to chitosan, which is widely used in the pharmaceutical market. The dissolution and adsorption efficiency of kraft lignin were tested at an acidic pH corresponding to the stomach, as well as at a basic pH corresponding to the intestine. Results showed that kraft lignin is a powerful adsorbent that can take up dietary oils at up to about 6 times its own weight. Kraft lignin exhibits higher stability and insolubility at the pH of the stomach in comparison to chitosan. The adsorption isotherm of dietary oils fits well with the Freundlich model, and the adsorption kinetics follows a pseudo-second order relationship.

Keywords: Adsorbent, Adsorption, Adsorption Kinetics, Aqueous-Solutions, Chitosan, Chitosan, Components, Derivatives, Digestion, Fatty-Acids, Fiber, Kinetics, Lignin, Metal-Ions, Model, Morphology, Pseudo-Second Order, Pseudo-Second-Order, Smooth Model Surfaces, Vegetable Oil

? Karaoğlu, M.H., Uğurlu, M. and Kula, İ. (2011), Adsorption characterization of Co(II) ions onto chemically treated *Quercus Coccifera* shell: Equilibrium, kinetic, and thermodynamic studies. *BioResources*, **6** (2), 1954-1971.

Full Text: [2011\BioResources6, 1954.pdf](2011/Bioresources6,%201954.pdf)

Abstract: Quercus coccifera shell (QCS), a relatively abundant and inexpensive material, is currently being investigated as an adsorbent to remove cobalt(II) from water. Before the adsorption experiments, QCS was subjected to chemical treatment to provide maximum surface area. Then, the kinetics and adsorption mechanism of Co(II) ions on QCS were studied using different parameters such as adsorbent dosage, initial concentration, temperature, contact time, and solution pH. The loaded metals could be desorbed effectively with dilute hydrochloric acid, nitric acid, and 0.1 M EDTA. The Langmuir and Freundlich models were used to describe the uptake of cobalt on QCS. The equilibrium adsorption data were better fitted to Langmuir adsorption isotherm model. The maximum adsorption capacity (q(m)) of QCS for Co(II) was 33 mg g(-1). Various kinetic models were used to describe the adsorption process. The adsorption followed pseudo second-order kinetic model. The intraparticle diffusion was found to be the rate-limiting step in the adsorption process. The diffusion coefficients were calculated and found to be in the range of 3.11x10(-6) to 168.78x10(-6) cm(2)s(-1). The negative Delta H(star) value indicated exothermic nature of the adsorption.

Keywords: Adsorption, Aqueous-Solution, Batch Adsorption, Biomass, Biosorption, Desorption, Divalent Cobalt, Heavy-Metals, Kinetics, Methylene-Blue, Model, Packed-Column, Pb(II), Pseudo-Second-Order, Quercus Coccifera Shell, Removal, Waste-Water

? Saleem, N. and Bhatti, H.N. (2011), Adsorptive removal and recovery of U(VI) by citrus waste biomass. *BioResources*, **6** (3), 2522-2538.

Full Text: [2011\BioResources6, 2522.pdf](2011/Bioresources6,%202522.pdf)

Abstract: Adsorption and recovery of hexavalent uranium from dilute aqueous solutions by low cost citrus waste biomass was investigated by performing adsorption-desorption studies. Different samples of citrus waste biomasses were screened for removal of U(VI) from aqueous solutions. The results indicated that the biosorption capacity was strongly affected by the solution pH, biosorbent dose, contact time, and initial uranium concentration. Uranium binding by the test biomass was rapid, achieving >79% sorption efficiency within 15 min, and the equilibrium was established in 60 min. Optimum biosorption capacity (*q*e) was observed at pH 4.0, biosorbent dose 0.1 % (w/v), initial uranium concentration of 100 mg/L. The kinetic data fitted well to a pseudo-second-order rate equation (R2=0.980). The adsorption process conformed to a Langmuir adsorption isotherm model. Gibbs free energy (ΔG(o)) and enthalpy change (ΔH(o)) indicated that reaction was spontaneous and exothermic in nature at the studied temperatures. FT-IR studies showed the involvement of carbonyl, carboxyl, and amide groups in the biosorption process. Treatment of biomass with different reagents affected its biosorption capacity, and maximum removal (70.63%) was recorded with polyethyleneimine (PEI) treated biomass. EDTA had the best effects as an eluent, showing 94.7% desorption capacity.

Keywords: Adsorption, Biosorbent, Biosorption, Carbon, Citrus Biomass, Cr(VI), Equilibrium, FTIR, Heavy-Metals, Ions, Isotherm, Kinetics, Langmuir, pH, Recovery, Removal, Thermodynamics, Uranium, Uranium, Water

? Mahajan, G. and Sud, D. (2011), Kinetics and equilibrium studies of Cr(VI) metal ion remediation by *Arachis hypogea* shells: A green approach. *BioResources*, **6** (3), 3324-3338.

Full Text: [2011\BioResources6, 3324.pdf](2011/Bioresources6,%203324.pdf)

Abstract: *Arachis hypogea* shells (ground nut shells), a lignocellulosic waste biomass, was evaluated for sequestering of Cr(VI) from synthetic wastewater. *Arachis hypogea* shells (AHS) were used in three different forms, viz. natural (AHSN), immobilized in the form of beads (AHSB), and in the form of activated carbon (AHSC). Batch experiments were performed for the removal of hexavalent chromium. Effects of pH adsorbent dose, initial metal ion concentration, stirring speed, and contact time were investigated. The removal of metal ions was dependent on the physico-chemical characteristics of the adsorbent, adsorbate concentration, and other studied process parameters. Maximum metal removal for Cr(VI) was observed at pH 2.0. The experimental data were analyzed based on Freundlich and Langmuir adsorption isotherms. Kinetic studies indicated that the adsorption of metal ions followed a pseudo-second-order equation.

Keywords: Activated Carbon, Adsorption, Adsorption Isotherms, Agricultural Waste Biomass, Aqueous-Solution, Arachis Hypogea, Biosorption, Biosorption, Cr(VI), Equilibrium, Hazelnut Shell, Heavy-Metals, Hexavalent Chromium, Kinetic, Kinetics, Langmuir, pH, Remediation, Removal, Sugar-Beet Pulp, Waste Water

? Neto, V.O.S., Oliveira, A.G., Teixeira, R.N.P., Silva, M.A.A., Freire, P.T.C., Keukeleire, D.D. and Nascimento, R.F. (2011), Use of coconut bagasse as alternative adsorbent for separation of copper(II) ions from aqueous solutions: Isotherms, kinetics, and thermodynamic studies. *BioResources*, **6** (3), 3376-3395.

Full Text: [2011\BioResources6, 3376.pdf](2011/Bioresources6,%203376.pdf)

Abstract: The use of coconut bagasse as an adsorbent for the treatment of Cu(II) ions from aqueous solutions has been investigated. The adsorbent was characterized by infrared spectroscopy, including zeta potential and pH effects. To assess the possibility of removing Cu(II) from aqueous solutions by this sorbent the effects of contact time, initial metal ion concentration, and temperature were studied at pH 5.5. Kinetic studies showed that the amount adsorbed increased with initial Cu(II) concentration, and the equilibrium was established in 120 min. The kinetic data were analyzed using a pseudo second-order equation. Adsorption equilibrium data were investigated using the Langmiur, Freundlich, D-R, Temkin and Halsey isotherm models. The adsorption of Cu(II) on the coconut bagasse was endothermic (ΔH°86.2 kJ/mol), resulting in an increase in entropy (ΔS°339 J/mol/K) and a decrease in Gibbs free energy (ΔG -16.34 to -22.44 kJ/mol) in the temperature range of 301-313 K. A reduction in adsorption capacity with an increase in heat of adsorption revealed an ion exchange mechanism for Cu(II) adsorption.

Keywords: Activated Carbons, Adsorption, Adsorption Kinetics, Biosorption, Coconut Bagasse, Copper(II), Cu(II), Heavy-Metals, Hydrogel Beads, Isotherm, Isotherms, Kinetic, Kinetics, Metal Adsorption, pH, Removal, Sawdust, Separation, Sorption, Sugarcane Bagasse, Thermodynamic, Thermodynamics, Waste-Water

# Title: Biorheology

Full Journal Title: [Biorheology](http://www.swetswise.com/eAccess/viewTitleIssues.do?titleID=26374)

ISO Abbreviated Title: Biorheology

JCR Abbreviated Title: Biorheology

ISSN: 0006-355X

Issues/Year: 4

Journal Country/Territory: England

Language: Multi-Language

Publisher: IOS Press

Publisher Address: Nieuwe Hemweg 6B, 1013 BG Amsterdam, Netherlands

Subject Categories:

Biophysics: Impact Factor 1.016, / (2001)

Engineering, Biomedical: Impact Factor 1.016, / (2001)

Hematology: Impact Factor 1.016, / (2001)

Resch, K.L. and Ernst, E. (1995), Scientific productivity in clinical hemorheology. *Biorheology*, **32** (2-3), 380-381.

Full Text: [B\Biorheology32, 380.pdf](B/Biorheology32,%20380.pdf)

Abstract: Background: The relevance of new findings in any area of medical research depends crucially on the extent to which it can be made available to the scientific community. Therefore the worldwide leading medical database (MEDLINE) was used to investigate this aspect concerning the field of hemorheology. Method: All MEDLINE records (year 1993) containing at least one of the MeSH headings BLOOD-VISCOSIT\*, ERYTHROCYTE-AGGREGATIO\*, or ERYTHROCYTE-DEFORMABILIT\* or the free search term HEMORHEOLOG\*/HAEMORHEOLOG\*, and an (English) abstract were retrieved and analyzed. Results: 291 articles from 41 different countries had been published in 185 different journals, 202 of them (from 28 countries) had been published in English, whereas 89 articles (from 13 countries) had been published in 11 other languages, 25 of them in Chinese, 17 in Russian, and 13 in German. 123 papers could be categorized as “clinical research” (research in man), 105 as “basic research” (*in-vitro* or animal studies), 28 were dedicated to hemorheological methodology, 25 were reviews, and 10 were case-reports. Papers from Germany as well as from most other European countries mainly focused on clinical issues (12/19). Basic research and hemorheological methodology was most popular in the USA (45/60) and Japan (15/26). Whereas the majority of papers from Austria, France, and Italy were published in languages other than English, English language papers predominated in Germany (14/19) and most smaller European countries. In terms of “impact factor”, the USA (122.5) and Great Britain (49.1) were far in front of Germany (23.9), while France and Italy (impact factor<10) were found among smaller European Countries like Sweden, Austria, or Switzerland. From a total of 12 German papers categorized as “clinical papers”, 11 were rated as “JOURNAL ARTICLE” by MEDLINE, and one paper as “RANDOMIZED CONTROLLED TRIAL”. Conclusion: Few papers (mainly British and US American ones) were published in journals that reach a broad audience. However, a large circulation must be considered a precondition, especially for clinical studies, for the dissemination of rheological findings among the general medical audience. Clinical studies were mainly restricted to observing rheological phenomena rather than performing RCTs, not allowing firm new therapeutic evidence, and therefore not supporting the development and recognition of hemorheology in clinical medicine. Finally, there seems to be an inappropriate link between basic research and clinical studies, which must have a negative impact on the quality of a major part of the clinical research work performed.

# Title: BioScience

Full Journal Title: [BioScience](http://www.bioone.org/perlserv/?request=get-archive&issn=0006-3568)

ISO Abbreviated Title: BioScience

JCR Abbreviated Title: BioScience

ISSN: 0006-3568

Issues/Year: 11

Journal Country/Territory: United States

Language: English

Publisher: Amer Inst Biological Sci

Publisher Address: 1444 Eye St, NW, Ste 200, Washington, DC 20005

Subject Categories:

Biology: Impact Factor

? Iltis, H.H. (1983), Ferns and allied plants with special reference to tropical America: Tryon, RM, Tryon, AF. *BioScience*, **33** (10), 659.

Full Text: [1983\Bioscience33, 659.pdf](1983/Bioscience33,%20659.pdf)

? Leimu, R. and Koricheva, J. (2005), Does scientific collaboration increase the impact of ecological articles? *Bioscience*, **55** (5), 438-443.

Full Text: [2005\Bioscience55, 438.pdf](2005/Bioscience55,%20438.pdf)

Abstract: We examined the effects of different types of collaboration on the citation rates of 837 research papers published in Oecologia from 1998 through 2000. Multiauthored papers had higher annual citation rates, but also higher self-citation rates, than single-authored papers. Interdisciplinary collaboration between institutions increased citation rates, whereas in-house collaboration reduced them. Contrary to our predictions, international collaboration had no effect on the citation rates of ecological papers, and US ecologists benefited from collaboration more than their European colleagues. Altogether, our results indicate that scientific collaboration in ecology has a rather minor effect on the impact of the resulting publications, as measured by their citation rates.

Keywords: Authored Papers, Citation, Citation Rates, Coauthorship, Cooperation, Domestic Collaboration, Ecology, International Collaboration, Molecular-Biology, Multidisciplinarity, Patterns, Publications, Quality, Research, Research Institutes, Research Papers, Scientific Collaboration, Self-Citation, Single, US

? Lovegrove, B.G. and Johnson, S.D. (2008), Assessment of research performance in biology: How well do peer review and bibliometry correlate? *BioScience*, **58** (2), 160-164.

Full Text: [2008\Bioscience58, 160.pdf](2008/Bioscience58,%20160.pdf)

Abstract: Bibliometric indices based on publishing output, and citation records used to measure scientific quality, are increasingly being employed to supplement and even replace traditional alternatives, such as the peer-review system. In this article we question whether peer review can predict bibliometric indices for individual researchers. We compared the ratings of scientific quality obtained using a peer-review system with the most popular bibliometric scores (h-, m-, and g-indices; total citations, and mean number of citations per publication) for 163 botanists and zoologists. Although the peer-review ratings were correlated with the bibliometric measures, they explained less than 40 percent of the variation in the scores. Most of this unexplained variation is presumably due to limitations of both the peer-review system and bibliometric scores. We propose a synergy between peer-review and bibliometric scores that can improve the assessment of scientific quality, especially by bench marking peer-review decisions against bibliometric thresholds.

Keywords: Alternatives, Assessment, Bibliometric, Bibliometric Scores, Bibliometry, Biology, Citation, Citation Record, Citations, h-Index, Hirsch Index, Hirsch-Index, Indicators, Peer Review, Peer-Review, Publication, Publication Record, Publishing, Quality, Records, Research, Research Performance, Review, Scientists, Thresholds

? Berra, T.M., Alvarez, G. and Ceballos, F.C. (2010), Was the Darwin/Wedgwood Dynasty Adversely Affected by Consanguinity? *BioScience*, **60** (5), 376-383.

Full Text: [2010\Bioscience60, 376.pdf](2010/Bioscience60,%20376.pdf)

Abstract: Charles Darwin, who was married to his first cousin, Emma Wedgwood, was one of the first experimentalists to demonstrate the adverse effects of inbreeding and to question the consequences of consanguineous mating. He documented the phenomenon of inbreeding depression for numerous plant species, and this caused him to worry about the health of his own children, who were often ill. To determine whether Darwin’s fears were justified, we constructed a pedigree of the Darwin! Wedgwood dynasty from the large quantity of genealogical information published on these families. The inbreeding coefficients (F) computed from the pedigree show that Darwin’s children were subject to a moderate level of inbreeding (F = 0.0630), and the progeny of related families had still higher inbreeding values (e.g., F = 0.1255 for the progeny of Henry Wedgwood, Emma Wedgwood’s brother). The analysis of a sample of 25 Darwin/Wedgwood families belonging to four consecutive generations shows a statistically significant positive association between child mortality (death at or before the age of 10 years) and inbreeding coefficient detected by means of nonparametric tests (T = 0.309, P = 0.040). Our findings suggest that the high childhood mortality experienced by the Darwin progeny (3 of his 10 children died at age 10 or younger) might be a result of increased homozygosity of deleterious recessive alleles produced by the consanguineous marriages within the Darwin/Wedgwood dynasty.

Keywords: Consanguineous Marriage, Darwin, Inbreeding Coefficient, Pedigrees, Wedgwood, Homozygosity, Disease, Risk

# Title: Bioscience Biotechnology and Biochemistry

Full Journal Title: [Bioscience Biotechnology and Biochemistry](http://www.jstage.jst.go.jp/browse/bbb/-char/en)

ISO Abbreviated Title: Biosci. Biotechnol. Biochem.

JCR Abbreviated Title: Biosci Biotech Bioch

ISSN: 0916-8451

Issues/Year: 12

Journal Country/Territory: Japan

Language: English

Publisher: Japan Soc Biosci Biotechn Agrochem

Publisher Address: Japan Acad Soc Ctr Bldg, 2-4-6 Yayoi Bunkyo-Ku, Tokyo 113, Japan

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 1.039, 224/310 (2000)

Biotechnology & Applied Microbiology: Impact Factor 1.039, / (2000)

Chemistry, Applied: Impact Factor 1.039, 19/55 (2000)

Food Science & Technology: Impact Factor 1.039, / (2000)

? Saito, T., Yamane, H., Murofushi, N., Takahashi, N. and Phinney, B.O. (1997), 4-O-caffeoylshikimic and 4-O-(p-coumaroyl)shikimic acids from the dwarf tree fern, Dicksonia Antarctica. *Bioscience Biotechnology and Biochemistry*, **61** (8), 1397-1398.

Abstract: Two derivatives of shikimic acid were isolated from croziers of the dwarf tree fern, Dicksonia antarctica, and their structures were elucidated as 4-O-caffeoylshikimic acid and 4-O-(p-coumaroyl)-shikimic acid on the basis of mass spectrometric and NMR spectroscopic evidence.

Keywords: Caffeoyl Ester, P-Coumaroyl Ester, Dicksonia Antarctica, Shikimic Acid, Tree Fern, Elicitor

Yamada, M., Amano, Y., Horikawa, E., Nozaki, K. and Kanda, T. (1997), Mode of action of cellulases on dyed cotton with a reactive dye. *Bioscience Biotechnology and Biochemistry*, **69** (1), 45-50.

Full Text: [B\Bio Bio Bio69, 45.pdf](B/Bio%20Bio%20Bio69,%2045.pdf)

Abstract: Cotton woven fabrics which were previously dyed with a reactive dye were treated with a commercial cellulase preparation. Dyeing with a reactive dye for cotton apparently inhibited the weight loss activity and saccharification activity of cellulase. In addition, dyed cotton was treated with highly purified cellulases which were exo-type cellulases (Cellobiohydrolase I (CBH I) and Cellobiohydrolase II (CBH II)) and endo-type cellulase (Endoglucanase II (EG II)). Exo-type cellulases were inhibited more than endo-type cellulase by dyeing in the case of saccharification activity. CBH I was severely inhibited by dyeing as compared with CBH II or EG II from the viewpoint of morphological changes in the fiber surface. Dyes on the cellulose substrates severely influenced CBH I in spite of the rare modification, because CBH I hydrolyzed cellulose with true-processive action. The change in the activity of each cellulase component on dyed cotton can affect the synergistic action of cellulases.

Keywords: Action of Cellulases, Reactive Dye, Weight Loss Activity, Saccharification Activity, Morphology of Fiber Surface

# Title: Biosensors & Bioelectronics

Full Journal Title: [Biosensors & Bioelectronics](http://www.sciencedirect.com/science/journal/09565663)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Sadana, A. and Madagula, A. (1994), A fractal analysis of external diffusion-limited 1st-order kinetics for the binding of antigen by immobilized antibody. *Biosensors & Bioelectronics*, **9** (1), 45-55.

Full Text: Bio Bio9, 45.pdf

Abstract: A fractal analysis of external diffusion limited first-order kinetics for the binding of antigen in solution by immobilized antibody on a fibre-optic biosensor indicates that as the fractal parameter (measure of ‘‘disorder’’ on the surface) increases the rate of binding and the amount of antigen bound to the antibody on the surface decreases. The fractal analysis and exponential type binding rate coefficients are used to analyze the influence of time-dependent binding rate coefficients on external diffusion limited kinetics. A decrease in the binding rate coefficients with time decreases the Damkohler number (decrease in the mass transfer limitations) leading to an increase in the rate of binding and the amount of antigen bound to the antibody on the surface, as expected. An increase in the (exponential) binding rate coefficient with time leads to unusual shapes of the binding curves. The time-dependent binding rate coefficients provide a more realistic picture of the binding of antigen in solution to the antibody covalently attached to the surface, and should assist in the control and manipulation of these interactions at the surface. A value of the fractal dimension of the surface of 2.96 to 2.97 obtained for our system characterizes the anomalies in the reaction-diffusion system and the heterogeneity of the surface.

Keywords: Adsorption, Antigen, Binding Rate Coefficient, Deactivation, Diffusion, External Diffusion, First Order, First-Order Kinetics, Fractal Dimension, Heterogeneity, Immobilized, Kinetics, Limitations, Mass Transfer, Reaction-Diffusion, System

# Title: Bioseparation

Full Journal Title: [Bioseparation](http://www.kluweronline.com/issn/0923-179X/contents); [Bioseparation](http://www.springerlink.com/content/102858/)

ISO Abbreviated Title: Bioseparation

JCR Abbreviated Title: Bioseparation

ISSN: 0923-179X

Issues/Year: 6

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biochemical Research Methods: Impact Factor

Biotechnology & Applied Microbiology: Impact Factor

? Oshannessy, K., Scoble, J. and Scopes, R.K. (1996), A simple and economical procedure for purification of muscle lactate dehydrogenase by batch dye-ligand adsorption. *Bioseparation*, **6** (2), 77-80.

Full Text: 1996\Bioseparation6, 77.pdf

Abstract: A simple, economical and rapid purification procedure for muscle lactate dehydrogenase is described. It makes use of batch adsorption on Procion Red H-3B coupled to agarose through an amine linkage. The enzyme is eluted with NAD (+) and sulphite, and for many purposes no more processing is necessary. Only 70 ml settled volume of adsorbent is required to process extract containing 1 g of lactate dehydrogenase, which is recovered with up to 90% yield, at over 98% purity. The method is readily scalable up or down, and makes an excellent class demonstration of affinity techniques.

? Scoble, J., O’shannessy, K. and Scopes, R.K. (1996), Purification of recombinant Zymomonas mobilis glucose 6-phosphate dehydrogenase and glucokinase using batch dye-ligand adsorption. *Bioseparation*, **6** (4), 243-246.

Full Text: 1996\Bioseparation6, 243.pdf

Abstract: Using simple batchwise adsorption and elution, large-scale purification of recombinant Z. mobilis glucose 6-phosphate dehydrogenase and glucokinase has been achieved. In each case adsorption on the dye Procion Yellow HE-3G was followed by elution, precipitation with ammonium sulphate, and gel filtration, although the latter two steps effected only marginal additional purification. These two enzymes can be used in quantitative diagnostic kits for glucose and for creatine kinase.

? Scoble, J., OShannessy, K., West, J. and Scopes, R.K. (1996), Purification of recombinant Zymomonas mobilis glucose 6-phosphate dehydrogenase and glucokinase using batch dye-ligandadsorption (vol 6, pg 243, (1996)). *Bioseparation*, **6** (5), 323.

Full Text: 1996\Bioseparation6, 323.pdf

? da Costa, A.C.A. and de Franca, F.P. (1996), Biosorption of zinc, cadmium, and copper by a brown seaweed (*Sargassum sp*.) in a continuous fixed-bed laboratory reactor. *Bioseparation*, **6** (6), 335-341.

Full Text: 1996\Bioseparation6, 335.pdf

Abstract: In order to study the biosorption of heavy metals, by a seaweed, a synthetic effluent simultaneously containing zinc, cadmium, and copper in a concentration of 10.0 mg/L, was fed to a fixed bed reactor, designed as a three serial columns system, filled with a biomass of Sargassum sp. The biosorption followed the order Cu>Cd>Zn, and, on the whole, the serial columns were no longer able to accumulate zinc and cadmium after being fed with 95 and 115 liters of effluent, respectively. After 200 liters of effluent pumped to the system, however, the serial columns still presented 80% of copper uptake efficiency. The saturation curves, obtained for each metal and column individually, were mathematically integrated at the residual concentration interval from 0 to 10.0 mg/L for each metal. The results showed an overall metal uptake corresponding to 70.42%, 73.75% and 98.67% for zinc, cadmium and copper, respectively, the continuous laboratory system having worked at high operational stability for more than 300 hours and the biomass maintained its structural integrity and uptake efficiency compatible with the process.

Keywords: Biosorption, Fixed-Bed Reactor, Heavy-Metals, Sargassum

# Title: Biosorbents for Metal Ions

Wase, D.A.J. and Forster, C.F. (1997), Biosorption of heavy metals: An introduction. in *Biosorbents for Metal Ions*, (Edited by Wase, D.A.J. and Forster, C.F.), Taylor and Francis, London and New York, 1-10.

Wase, D.A.J., Forster, C.F. and Ho, Y.S. (1997), Low-cost biosorbents: Batch processes. in *Biosorbents for Metal Ions*, (Edited by Wase, D.A.J. and Forster, C.F.), Taylor and Francis, London and New York, 141-163.

McKay, G. and Allen, S.J. (1997), Low-cost adsorbents in continuous processes. in *Biosorbents for Metal Ions*, (Edited by Wase, D.A.J. and Forster, C.F.), Taylor and Francis, London and New York, 183-220.

# Title: Biosystema

Full Journal Title: Biosystema

ISO Abbreviated Title: Biosystema

JCR Abbreviated Title: Biosystema

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Sigogneau, A. and Barriel, V. (1998), Position of France in systematics characterized by some bibliometric indicators. *Biosystema*, **16**, 27-36.

Keywords: Bibliometric, France

# Title: Biosystems Engineering

Full Journal Title: [Biosystems Engineering](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=7168&_auth=y&_acct=C000011279&_version=1&_urlVersion=0&_userid=1134284&md5=fe82d546d1ad177e9fa48d8d412db6b0)

ISO Abbreviated Title: Biosyst. Eng.

JCR Abbreviated Title: Biosyst Eng

ISSN: 1537-5110

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Academic Press Inc Elsevier Science

Publisher Address: 525 B St, Ste 1900, San Diego, CA 92101-4495

Subject Categories:

Agricultural Engineering: Impact Factor

Akubuo, C.O. and Eje, B.E. (2002), Palm kernel and shell separator. *Biosystems Engineering*, **81** (2), 193-199.

Full Text: [B\Bio Eng81, 193.pdf](B/Bio%20Eng81,%20193.pdf)

Abstract: Based on relevant physical properties of palm kernels and shells, a separator was designed to remove the palm kernels from the shells. The separator has two sections: one to remove and collect the shells, and a second to collect the kernels. The separator is power-driven and can reciprocate at three different crank speeds of 93, 120 and 200 min-1 and five crank radii of 20, 25, 35, 40 and 45 mm. At the crank speed of 93 min-1 and crank radius of 35 mm, kernel purity was 82%, kernel recovery 86.2% and separation efficiency 82.1%. The capacity of the separator is 446 kg h-1 against a manual hand-picking rate of 60 kg h-1 that characterize the dry method of separation in local palm kernel oil mills in Nigeria. (C) 2002 Silsoe Research Institute.

Aviara, N.A., Ajibola, O.O. and Oni, S.A. (2004), Sorption equilibrium and thermodynamic characteristics of soya bean. *Biosystems Engineering*, **87** (2), 179-190.

Full Text: [B\Bio Eng87, 179.pdf](B/Bio%20Eng87,%20179.pdf)

Abstract: Desorption equilibrium moisture content and water activity data for soya bean (*Glycine max*) TGX 1440-1E were determined using the static gravimetric method. Measurements were taken in the water activity range of 0.07–0.98 at four temperatures (40, 50, 60 and 70°C). A non-linear regression programme was used to fit five moisture sorption isotherm models [modified Henderson, modified Chung–Pfost, modified Halsey, modified Oswin and modified Guggenheim–Anderson–de Boer (GAB)] to the experimental data. The models were compared using the standard error of estimate, mean relative percent deviation and residual plots. The modified Oswin model, which gave the least standard error of 1.91% and least mean relative percent deviation of 10.15 among the five models, when equilibrium moisture content was taken as the dependent variable, was considered to be the best for predicting the equilibrium moisture content of soya bean. The moisture sorption isotherms of soya bean were sigmoidal in shape, of the type II and were markedly affected by temperature. The modified Halsey model, which gave the least standard error of 0.07 and least means relative percent deviation of 16.67, when water activity was taken as the dependent variable, was considered the best for predicting the water activity of soya bean.

The desorption equilibrium moisture content and water activity relationships as expressed by the moisture sorption isotherm models that best predicted the experimental data, were used to determine the thermodynamic characteristics of soya bean. The heat of vaporisation of moisture in soya bean decreased with increase in moisture content and approached the latent heat of pure water at a free water point of between 20 and 22% moisture content (d.b.). The surface potential of moisture in the seed increased with increase in water activity, but was not significantly affected by temperature. Net integral enthalpy decreased from a value of 550 J g-1 as the moisture content increased from 5.20% (d.b.). The trend became asymptotic at a value of 80 J g-1 as the moisture content of 13% (d.b.) was approached. Net integral entropy decreased with increase in moisture content to a minimum value of –0.38 J g-1 K-1 at the moisture content of 11% (d.b.), and thereafter, increased with further increase in moisture content.

# Title: Biotech Week

Full Journal Title: Biotech Week

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

(2004), Prenatal mercury exposure via mother’s diet can impair certain brain functions. *Biotech Week*. **16** (5), 224-226.

Full Text: [B\Bio Wee16, 224.pdf](B/Bio%20Wee16,%20224.pdf)

Abstract: This article focuses on a study published in the “Journal of Pediatrics, “ according to which high levels of mercury passed from mother to child in utero were shown in a study to produce irreversible impairment to specific brain functions in children. Some 1, 022 mothers and their children participated in the research. Mercury exposures among the children in the study were assessed through analyses of cord blood samples at birth and hair samples taken at ages 7 and 14. Researchers found that the latency of the electrical transmission from the acoustic nerve to the pons was significantly increased at higher intrauterine exposure to mercury.

# Title: Biotechniques

Full Journal Title: Biotechniques

ISO Abbreviated Title: Biotechniques

JCR Abbreviated Title: Biotechniques

ISSN: 0736-6205

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Eaton Publishing Co

Publisher Address: 154 E. Central St, Natick, MA 01760

Subject Categories:

Biochemical Research Methods: Impact Factor

Biochemistry & Molecular Biology: Impact Factor 1.756, 167/310 (2000)

? Mariscal, A., García, A., Carnero, M., Gómez, E. and Fernández Crehuet, J. (1994), New toxicity determination method that uses fluorescent assay of *Escherichia coli*. *Biotechniques*. **16** (5), 888-893.

Abstract: We describe a new method that uses a fluorogenic bioassay of the beta-glucuronidase conversion of 4-methylumbelliferyl beta-D-glucuronide (MUG) to 4-methylumbelliferone to evaluate the individual toxic effects on *Escherichia coli* of Al3+, Cr6+, Hg2+ and Li+. This work was designed to examine the effectiveness of this method to measure the effects of five ionic concentrations of either Al3+, Cr6+, Hg2+ or Li+, on the growth of E. coli in a minimal medium that had MUG as the only source of carbon. This method was simple and fast, and its toxicity detection sensitivity was equal to, or greater than, existing bacterial bioassays. The use of the MUG substrate minimized the danger of interference by bacteria other than E. coli. Evaluations of toxicity in samples of public drinking water proved equally sensitive.

Keywords: Coliforms, Water, Confirmation

? Ogura, M., Keller, C., Koo, K. and Mitsuhashi, M. (1994), Use of the fluorescent dye yoyo-1 to quantify oligonucleotides immobilized on plastic plates. *Biotechniques*, **16** (6), 1032-1034.

Keywords: Microtiter Wells, DNA, Hybridization, Sensitivity

# Title: Bio-Technology

? Spalding, B.J. (1991), Cancer immunoconjugates: Will clinical success lead to commercial success. *Bio-Technology*, **9** (8), 701+.

# Title: Biotechnologie Agronomie Societe et Environnement

Full Journal Title: Biotechnologie Agronomie Societe et Environnement

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1370-6233

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Thys, E., Harelimana, G. and Mergeai, G. (2011), Analysis of the editorial process of the multidisciplinary rural development journal *Tropicultura*. *Biotechnologie Agronomie Societe et Environnement*, **15** (1), 101-108.

Full Text: [2011\Bio Agr Soc Env15, 101.pdf](2011/Bio%20Agr%20Soc%20Env15,%20101.pdf)

Abstract: Tropicultura is a multidisciplinary journal which aims mainly at releasing research results relevant to rural development in developing countries and at improving the investigation capacities of the researchers who submit manuscripts to its editorial board. The operating process of the journal and its consequences on its output during the period 2002-2009 were analyzed by considering mainly the factors influencing the duration of the editorial work and the final acceptance of the manuscripts. The factors taken into consideration were the field of research, the geographic origin of the data analyzed, the language of writing and the country of origin of the authors. The available data were analyzed using descriptive statistic methods. They were also subjected to parametric and non parametric comparisons. During the investigated period, a total of 1,034 papers have been submitted to Tropicultura in different fields of rural development research, with a large proportion of papers in agronomy sensu lato (60%), and livestock production (19%). Most of the papers submitted (85.1%) came from Sub-Saharan Africa, followed by North Africa (11.2%), Asia (1.6%), Latin America (1.3%), Europe (0.6%), and Oceania (0.3%). The rate of acceptance (27.4%) was very low compared to other journals, mainly because of a poor design of the works or inappropriate research topics. The average time for final decision was 355 days. The non parametric classification analysis retained as major determinants for the acceptance of papers for publication, in decreasing order of influence: time before final decision, language, continent, Belgian cooperation priority countries, Belgian cooperation partner countries, and the field of research. The data obtained are discussed in the light of the literature related to the editorial process of other scientific journals, taking into account the peculiarities of Tropicultura related to its history and to the history of the rural development actions of the Belgian cooperation. This analysis highlighted a series of possible improvements at the level of the operating process of the journal which should enable it to better achieve its goals.

Keywords: Acceptance, Africa, Analysis, Asia, Authors, Bibliometric Analysis, Classification, Cooperation, Country, Country of Origin, Data, Decision, Design, Developing, Developing Countries, Development, Duration, Europe, Field, History, Investigation, Journal, Journals, Latin America, Literature, Livestock, Manuscripts, Methods, Multidisciplinary, North, Origin, Papers, Publication, Rejection, Research, Research Results, Rural, Rural Development, Scientific Journal, Scientific Journals, Work

# Title: Biotechnology

Full Journal Title: Biotechnology

ISO Abbreviated Title: Biotechnology

JCR Abbreviated Title: Biotechnology

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

Impact Factor

? Al-Jlil, S.A. (2009), COD and BOD reduction of domestic wastewater using activated sludge, sand filter and activated carbon in Saudi Arabia. *Biotechnology*, **8** (4), 473-477.

Full Text: [2009\Biotechnology8, 473.pdf](2009/Biotechnology8,%20473.pdf)

# Title: Biotechnology Advances

Full Journal Title: [Biotechnology Advances](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=4986&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=ea2d675d9a77412a8d39106bf7a2f72e)

ISO Abbreviated Title:Biotechnology & Applied Microbiology

JCR Abbreviated Title: Biotechnol Adv

ISSN: 0734-9750

Issues/Year: 8

Journal Country/Territory: England

Language: English

Publisher: Pergamon-Elsevier Science Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 4.455, 15/139 (2005); Impact Factor 5.236, 10/138 (2007); Impact Factor 8.250, 4/152 (2009); Impact Factor 7.600, 9/160 (2010)

Bethesda, M.D. (1989), 1391995 PB89-175269/XAB New directions in bioinformatics: Masys, D.R. Lister Hill Nation Center for Biomedical Communications. *Biotechnology Advances*, **7** (4), 617.

Full Text: [B\Bio Adv11, 617.pdf](B/Bio%20Adv11,%20617.pdf)

Wilde, E.W. and Benemann, J.R. (1993), Bioremoval of heavy metals by the use of microalgae. *Biotechnology Advances*, **11** (4), 781-812.

Full Text: [B\Bio Adv11, 781.pdf](B/Bio%20Adv11,%20781.pdf)

Abstract: Bioremoval, the use of biological systems for the removal of metal ions from polluted waters, has the potential to achieve greater performance at lower cost than conventional wastewater treatment technologies for metal removal. Bioremoval capabilities of microalgae have been extensively studied, and some commercial applications have been initiated. Although microalgae are not unique in their bioremoval capabilities, they offer advantages over other biological materials in some conceptual bioremoval process schemes. Selected microalgae strains, purposefully cultivated and processed for specific bioremoval applications, have the potential to provide significant improvements in dealing with the world-wide problems of metal pollution. In addition to strain selection, significant advances in the technology appear possible by improving biomass containment or immobilization techniques and by developing bioremoval process steps utilizing metabolically active microalgae cultures. The latter approach is especially attractive in applications where extremely low levels of residual metal ions are desired. This review summarizes the current literature, highlighting the potential benefits and problems associated with the development of novel algal-based bioremoval processes for the abatement of heavy metal pollution.

Keywords: Bioremoval, Biosorption, Heavy Metals, Microalgae, Water Pollution

McHale, A.P. and McHale, S. (1993), Microbial biosorption of metals: Potential in the treatment of metal pollution. *Biotechnology Advances*, **12** (4), 647-652.

Full Text: [B\Bio Adv12, 647.pdf](B/Bio%20Adv12,%20647.pdf)

Abstract: The phenomenon of metal biosorption by microorganisms has been thoroughly documented. Although this phenomenon is exhibited by both living and non-living forms of biomass, the purpose of this chapter will be to review biosorption by the latter. In addition, the application of various technological processes required for exploitation of this phenomenon in waste treatment will be examined.

Keywords: Fungal Biomass, Non-Living, Biosorbent, Metals, Poluution

? Wang, J.L. and Chen, C. (2006), Biosorption of heavy metals by *Saccharomyces cerevisiae*: A review. *Biotechnology Advances*, **24** (5), 427-451.

Full Text: [2006\Bio Adv24, 427.pdf](2006/Bio%20Adv24,%20427.pdf)

Abstract: Heavy metal pollution has become one of the most serious environmental problems today. Biosorption, using biomaterials such as bacteria, fungi, yeast and algae, is regarded as a cost-effective biotechnology for the treatment of high volume and low concentration complex wastewaters containing heavy metal(s) in the order of 1 to 100 mg/L. Among the promising biosorbents for heavy metal removal which have been researched during the past decades, Saccharomyces cerevisiae has received increasing attention due to the unique nature in spite of its mediocre capacity for metal uptake compared with other fungi. S. cerevisiae is widely used in food and beverage production, is easily cultivated using cheap media, is also a by-product in large quantity as a waste of the fermentation industry, and is easily manipulated at molecular level.

The state of the art in the field of biosorption of heavy metals by S. cerevisitte not only in China, but also worldwide, is reviewed in this paper, based on a substantial number of relevant references published recently on the background of biosorption achievements and development. Characteristics of S. cerevisiae in heavy metal biosorption are extensively discussed. The yeast can be studied in various forms for different purposes. Metal-binding capacity for various heavy metals by S. cerevisiae under different conditions is compared. Lead and uranium, for instances, could be removed from dilute solutions more effectively in comparison with other metals. The yeast biosorption largely depends on parameters such as pH, the ratio of the initial metal ion and initial biomass concentration, culture conditions, presence of various ligands and competitive metal ions in solution and to a limited extent on temperature. An assessment of the isotherm equilibrium model, as well as kinetics was performed. The mechanisms of biosorption are understood only to a limited extent. Elucidation of the mechanism of metal uptake is a real challenge in the field of biosorption. Various mechanism assumptions of metal uptake by S. cerevisiae are summarized. (c) 2006 Elsevier Inc. All rights reserved.

Keywords : Rhizopus-Arrhizus Biomass, Long-Lived Radionuclides, Waste Brewery Biomass, Bakers-Yeast Biomass, Pb2+ Accumulation, Hexavalent Chromium, Ion-Exchange, Aureobasidium-Pullulans, Copper Biosorption, Molecular-Biology

? Vijayaraghavan, K. and Yun, Y.S. (2008), Bacterial biosorbents and biosorption. *Biotechnology Advances*, **26** (3), 266-291.

Full Text: [2008\Bio Adv26, 266.pdf](2008/Bio%20Adv26,%20266.pdf)

Abstract: Biosorption is a technique that can be used for the removal of pollutants from waters, especially those that are not easily biodegradable such as metals and dyes. A variety of biomaterials are known to bind these pollutants, including bacteria, fungi, algae, and industrial and agricultural wastes. In this review, the biosorption abilities of bacterial biomass towards dyes and metal ions are emphasized. The properties of the cell wall constituents, such as peptidoglycan, and the role of functional groups, such as carboxyl, amine and phosphonate, are discussed on the basis of their biosorption potentials, The binding mechanisms, as well as the parameters influencing the passive uptake of pollutants, are analyzed. A detailed description of isotherm and kinetic models and the importance of mechanistic modeling are presented. A systematic comparison of literature, based on the metal/dye binding capacity of bacterial biomass under different conditions, is also provided. To enhance biosorption capacity, biomass modifications through chemical methods and genetic engineering are discussed. The problems associated with microbial biosorption are analyzed, and suitable remedies discussed. For the continuous treatment of effluents, an up-flow packed column configuration is suggested and the factors influencing its performance are discussed. the present review also highlights the necessity for the examination of biosorbents within real situations, as competition between solutes and water quality may affect the biosorption performance. Thus, this article reviews the achievements and current status of biosorption technology, and hopes to provide insights into this research frontier. (C) 2008 ELSEVIEr Inc. All rights reserved.

Keywords: Biosorption, Bacteria, Metals, Dyes, Wastewater Treatment, Packed Column, Isotherm Model, Kinetic Model, Biomass Reuse, Multicomponent Biosorption, Streptomyces-Rimosus Biomass, Dilute Aqueous-Solutions, Fixed-Bed Column, Heavy-Metal Ions, Immobilized Pseudomonas-Aeruginosa, Lysine Fermentation Process, Chemical-Equilibrium Model, Modified Mycelial Biomass, Modified Fungal Biomass, Gram-Positive Bacteria

? Gemeiner, P., Mislovičová, D., Tkáč, J., Švitel, J., Pätoprstý, V., Hrabárová, E., Kogan, G. and Kožár, T. (2009), Lectinomics II. A highway to biomedical/clinical diagnostics. *Biotechnology Advances*, **27** (1), 1-15.

Full Text: [2009\Bio Adv27, 1.pdf](2009/Bio%20Adv27,%201.pdf)

Abstract: The review assesses current status and attempts to forecast trends in the development of lectin biorecognition technology. The progressive trend is characterized scientometrically and reflects the current transient situation, when standard low-throughput lectin-based techniques are being replaced by a novel microarray-based techniques offering high-throughput of detection. The technology is still in its infancy (validation phase), but already shows promise as an efficient tool to decipher the enormous complexity of the glycocode that influences physiological status of the cell. Further enhancement in robustness and flexibility of lectin microarrays is predicted by using recombinant and artificial lectins that will render production of lectin microarrays cost-effective and more affordable. Mass spectrometry is expected to play an important role to characterize the binding profile of new lectins. Differences in glycan recognition by lectins and anti-carbohydrate antibodies are given on a molecular basis, and strong and weak points of both biorecognition molecules in diagnosis are briefly discussed. (C) 2008 Published by Elsevier Inc.

Keywords: Anti-Carbohydrate Antibodies, Antibodies, Anticarbohydrate Antibodies, Binding, Biomedical Diagnostics, Complexity, Cost-Effective, Detection, Development, Diagnosis, Diagnostics, Escherichia-Coli, Flexibility, Forecast, Glycan, Glycan Microarrays, Highway, Infancy, Influences, Large-Scale Production, Lectin Microarrays, Lectinology, Mannose-Binding Lectin, Mass Spectrometry, Mass-Spectrometry, Modelling of Glycan-Protein Interactions, Molecular, Monoclonal-Antibodies, Oligosaccharide Microarrays, Play, Production, Progressive, Protein-Carbohydrate Interactions, Recognition, Recombinant, Artificial Lectins, Review, Robustness, Role, Spectrometry, Standard, Status, Techniques, Technology, Tool, Transient, Trend, Trends, Validation, Wheat-Germ-Agglutinin, Yeast Pichia-Pastoris

Notes: highly cited

? Wang, J.L. and Chen, C. (2009), Biosorbents for heavy metals removal and their future. *Biotechnology Advances*, **27** (2), 195-226.

Full Text: [2009\Bio Adv27, 195.pdf](2009/Bio%20Adv27,%20195.pdf)

Abstract: A vast array of biological materials. especially bacteria, algae, yeasts and fungi have received increasing attention for heavy metal removal and recovery due to their good performance, low cost and large available quantities. The biosorbent, unlike mono functional ion exchange resins, contains variety of functional sites including carboxyl, imidazole, sulphydryl, amino, phosphate, sulfate, thioether, phenol, carboryl, amide and hydroxyl moieties. Biosorbents are cheaper, more effective alternatives for the removal of metallic elements. especially heavy metals from aqueous solution. In this paper, based on the literatures and our research results, the biosorbents widely used for heavy metal removal were reviewed, mainly focusing on their cellular structure, biosorption performance, their pretreatment, modification, regeneration/reuse, modeling of biosorption (isotherm and kinetic models), the development of novel biosorbents, their evaluation, potential application and future. The pretreatment and modification of biosorbents aiming to improve their sorption capacity was introduced and evaluated. Molecular biotechnology is a potent tool to elucidate the mechanisms at molecular level, and to construct engineered organisms with higher biosorption capacity and selectivity for the objective metal ions. The potential application of biosorption and biosorbents was discussed. Although the biosorption application is facing the great challenge, there are two trends for the development of the biosorption process for metal removal. One trend is to use hybrid technology for pollutants removal, especially using living cells. Another trend is to develop the commercial biosorbents using immobilization technology, and to improve the biosorption process including regeneration/reuse, making the biosorbents just like a kind of ion exchange resin, as well as to exploit the market with great endeavor. (c) 2008 Elsevier Inc. All rights reserved.

Keywords: Biosorbent, Biosorption, Heavy Metal Ions, Bacteria, Fungi, Algae, Biomass, Kinetics, Immobilization, Application, Streptomyces-Rimosus Biomass, Atomic-Absorption Spectrophotometry, Bacterium Bacillus-Thuringiensis, Linked Saccharomyces-Cerevisiae, Fungus Penicillium-Purpurogenum, Pseudomonas-Aeruginosa PU21, Aspergillus-Niger Biomass, Aqueous-Solution, Waste Biomass, Rhizopus-Arrhizus

# Title: Biotechnology and Applied Biochemistry

Full Journal Title: Biotechnology and Applied Biochemistry

ISO Abbreviated Title: Biotechnol. Appl. Biochem.

JCR Abbreviated Title: Biotechnol Appl Bioc

ISSN: 0885-4513

Issues/Year: 6

Journal Country/Territory: United States

Language: English

Publisher: Portland Press

Publisher Address: 59 Portland Place, London W1N 3AJ, England

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 1.216, 208/310 (2000)

Biotechnology & Applied Microbiology: Impact Factor

Sampedro, M.A., Blanco, A., Llama, M.J. and Serra, J.L. (1995), Sorption of heavy metals to *Phormidium laminosum* biomass. *Biotechnology and Applied Biochemistry*, **22**, 355-366.

Abstract: The capacity to adsorb a number of heavy metals [Fe(II), Cr(III), Cd(II), Pb(II), Zn(II), Cu(II) and Ni(II)] by heat-dried biomass of the non-N2-fixing cyanobacterium *Phormidium laminosum* was examined. Pretreatment of biomass with alkaline (1 M NaOH or Na2CO3) washes led to increased metal adsorption, whereas acid treatment was inadequate. Exopolysaccharides present in the mucilaginous layer covering nitrogen-starved cells did not improve the adsorption capacity of the biomass. Biosorption was a very fast and pH-dependent process for most metals investigated. Generally, binding showed a minimum at pH < 3, but increased clearly with pH and reached a maximum at about pH 6-7. In contrast, the amount of metal bound increased with the biomass and the amount of available metal. Constants from Langmuir isotherms were calculated and the order of relative affinities for the studied metals was established according to the sorption intensity. Far from being reduced, the biosorption of the tested metals, with the exception of Ni(II), was slightly enhanced in the presence of high concentrations of Ca2+ (up to 200 p.p.m.). Finally, desorption attempts with 0.1 M H2SO4 succeeded to different degrees depending on the metal. Alkaline-conditioned biomass of *P. laminosum* can constitute an interesting and novel biosorbent of heavy metals to depollute wastewaters, even in hard waters containing a high concentration of Ca2+.

? Weissenborn, M., Hutter, B., Singh, M., Beeskow, T.C. and Anspach, F.B. (1997), A study of combined filtration and adsorption on nylon-based dye-affinity membranes: Separation of recombinant L-alanine dehydrogenase from crude fermentation broth. *Biotechnology and Applied Biochemistry*, **25** (2), 159-168.

Abstract: Dextran, hydroxyethylcellulose (HEC), and poly (vinyl alcohol) (PVA) were covalently linked to bisoxirane-activated nylon membranes, Cibacron Blue F3G-A was immobilized on to these membranes to yield a dye-affinity membrane, The hydrodynamic permeability of affinity membranes was reduced to approximate to 50% of that of the original Nylon membrane due to extension of polymer coils into now-through pores. Adsorption of pre-purified human serum albumin (HSA) and malate dehydrogenase (MDH) displayed highest maximum binding capacities on HEC-coated dye-ligand-affinity membranes, ranging from 163 µg/cm2 for HSA to 316 µg/cm2 for MDH. The protein recovery of HSA was 100% on dextran-coated membranes compared with 70% on PVA-coated membranes, whereas almost 100% recovery was found for MDH, independent of the polymer. Application of crude supernatant from recombinant *Escherichia coli* yielded purification factors of 7.4, 8.9 and 11.2 for recombinant alanine dehydrogenase from *Mycobacterium tuberculosis* for HEC-, dextran-and PVA-coated membranes respectively. Dynamic capacities decreased remarkably to approximate to 3 µg/cm2 due to co-adsorption of host proteins, The presence of cell debris caused only a slight decrease of purification factors, but a dramatic decrease of the permeability of affinity membranes due to development of a particle layer in front of the membranes. Although enzyme recoveries were up to 90% using cell-free supernatant, more than 50% of the product was lost due to polarization, concentration and rejection at particle layers when using crude homogenates. In order to further improve this integrated downstream process, sophisticated membrane techniques are required by which the formation of a filter cake is circumvented. Further refinement of polymer-coated membranes would not help one to avoid this problem.

? Zhao, M. and Duncan, J.R. (1997), Batch removal of sexivalent chromium by Azolla filiculoides. *Biotechnology and Applied Biochemistry*, **26** (Pt3), 179-182.

Abstract: The results of batch adsorption experiments indicate that Azolla filiculoides, a naturally abundant biomass, is able to accumulate large amounts of sexivalent chromium from aqueous solution at low pH values. The adsorption equilibria were found to follow Langmuir models. The maximum adsorption capacity was estimated to be 70.6 mg/g at 18°C and 120.2 mg/g at 32°C, both at pH 2. The metal removal was moderately rapid at low initial Cr6+ concentration.

Keywords: Activated Carbon, Hexavalent Chromium

Raya-Tonetti, G. and Perotti, N.I. (1999), Rapid screening of textile dyes employed as affinity ligands to purify enzymes from yeast. *Biotechnology and Applied Biochemistry*, **29**, 151-156.

Abstract: A rapid method for screening potential dye ligands for use in affinity chromatography is described. Textile dyes were non-covalently coupled to a cross-linked polysaccharide Sepharose(R) matrix, Yeast alcohol dehydrogenase (ADH) was used as the model protein for evaluating the screening system, A homogenate from baker’s yeast was used as the crude source of enzyme. Batchwise adsorption and elution were used to evaluate the individual dyes, The influence of pH and ionic strength in the binding and elution steps was evaluated. Batch isotherms were used to evaluate parameter characteristics. Experimental data obtained were fitted to Langmuir isotherms to determine the maximum binding capacity and the dissociation constant for each dye evaluated in this study. A dynamic binding capacity of 107.6 units of ADH/g of resin was determined for Procion Turquoise MXG dye by frontal analysis. Specific elution with NAD(+) and non-specific elution with 50 mM Tris/HCl buffer, pH 8.5, were tested when Procion Turquoise MXG was used, giving purification factors of 53.5 and 4.4 respectively. This screening technique is inexpensive and can be performed in a few hours. It was possible to predict the performance of different reactive dyes in this way, and the influence of pH and salt on the binding behaviour was demonstrated.

Keywords: Adsorption, Alcohol Dehydrogenase, Baker’s Yeast, Binding, Bovine Heart, Chromatography, Enzymes, Lactate-Dehydrogenase, Performance, Porcine Muscle, Proteins, Purification, Pyruvate-Kinase, Separation, Yeast

? Wernerus, H. and Stahl, S. (2004), Biotechnological applications for surface-engineered bacteria. *Biotechnology and Applied Biochemistry*, **40** (3), 209-228.

Full Text: Bio App Bio40, 209.pdf

Abstract: Display of heterologous proteins on the surface of micro-organisms, enabled by means of recombinant DNA technology, has become an increasingly popular strategy in microbiology, biotechnology and vaccinology. Both Gram-negative and Gram-positive bacteria have been investigated for potential applications. The present review will describe the most commonly used systems for bacterial display, with a focus on the biotechnology applications. Live bacterial vaccine-delivery vehicles have long been investigated through the surface display of foreign antigens and, recently, ‘second-generation’ vaccine-delivery vehicles have been generated by the addition of mucosal targeting signals, as a means to increase immune responses. Engineered bacteria have also the potential to act as novel microbial biocatalysts with heterologous enzymes immobilized as surface exposed on the bacterial cell surface. They provide the potential for new types of whole-cell diagnostic devices, since single-chain antibodies and other type of tailor-made binding proteins can be displayed on bacteria. Bacteria with increased binding capacity for certain metal ions can be created, and potential environmental or biosensor applications for such recombinant bacteria as biosorbents are being explored. Certain bacteria have also been employed to display various polypeptide libraries for use as devices in in vitro selection applications. Part of the present review has been devoted to a more in-depth description of a promising Gram-positive display system, i.e. Staphylococcus carnosus, and its applications. The review describes the basic principles of the different bacterial display systems and discusses current uses and possible future trends of these emerging technologies.

Keywords: Fluorescence-Activated Cell Sorting (FACS), Gram-Positive Bacteria, Surface-Engineered Bacteria, Vaccine Delivery, Cellulose-Binding Domain, Ice-Nucleation Protein, Coli Cell-Surface, Toxin-B-Subunit, Random Peptide Libraries, Outer-Membrane Proteins, Foreign Antigenic Determinants, Organophosphate Nerve Agents, Gram-Positive Bacteria, Lyme-Disease Vaccine

# Title: Biotechnology and Bioengineering

Full Journal Title: [Biotechnology and Bioengineering](http://www3.interscience.wiley.com/cgi-bin/jtoc?ID=71002188)

ISO Abbreviated Title: Biotechnol. Bioeng.

JCR Abbreviated Title: Biotechnol Bioeng

ISSN: 0006-3592

Issues/Year: 25

Journal Country/Territory: United States

Language: English

Publisher: John Wiley & Sons Inc

Publisher Address: 605 Third Ave, New York, NY 10158-0012

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 2.081, 30/134 (2000); Impact Factor 2.037, 35/131 (2001); Impact Factor 2.211, 32/131 (2002); Impact Factor 2.173, 40/132 (2003); Impact Factor 2.216, 40/133 (2004); Impact Factor 2.483, 43/139 (2005); Impact Factor 3.377, 35/152 (2009)

Notes: highly cited

? Andrews, J.F. (1968), A mathematical model for the continuous culture of microorganisms utilizing inhibitory substrates. *Biotechnology and Bioengineering*, **10** (6), 707-723.

Full Text: [1960-80\Bio Bio10, 707.pdf](1960-80/Bio%20Bio10,%20707.pdf)

Abstract: A mathematical model is presented for both batch and continuous cultures of microorganisms utilizing inhibitory substrates. The key feature of the model is the use of a inhibition function to relate substrate concentration and specific growth rate. Simulation studies show that the primary result of inhibition by substrate in a batch culture is an increase in the lag time whereas in continuous culture inhibition by substrate may result in process instability. The model should be of value in investigations of the stability of biological processes used for the treatment of certain industrial wastes such as those containing phenols, thiocyanates, nitrates, ammonia, volatile acids, etc., which are known to be inhibitory to many of the organisms metabolizing them.

? Beltrame, P., Beltrame, P.L. and Carniti, P. (1980), Use of the haldane equation for steady-state substrate-inhibition in biodegradation kinetics. *Biotechnology and Bioengineering*, **22** (11), 2405-2409.

Full Text: [1960-80\Bio Bio22, 2405.pdf](1960-80/Bio%20Bio22,%202405.pdf)

Tsezos, M. and Volesky, B. (1981), Biosorption of uranium and thorium. *Biotechnology and Bioengineering*, **23** (3), 583-604.

Full Text: [1981\Bio Bio23, 583.pdf](1981/Bio%20Bio23,%20583.pdf)

Abstract: Selected samples of waste microbial biomass originating from various industrial fermentation processes and biological treatment plants have been screened for biosorbent properties in conjunction with uranium and thorium in aqueous solutions. Biosorption isotherms have been used for the evaluation of biosorptive uptake capacity of the biomass which was also compared to an activated carbon and the ion exchange resin currently used in uranium production processes. Determined uranium and thorium biosorption isotherms were independent of the initial U or Th solution concentration. Solution pH affected the exhibited uptake. In general, lower biosorptive uptake was exhibited at pH 2 than at pH 4. No discernible difference in uptake was observed between pH 4 and pH 5 where the optimum pH for biosorption lies. The biomass of *Rhizopus Arrhizus* at pH 4 exhibited the highest uranium and thorium biosorptive uptake capacity (g) in excess of 180 mg/g. At an equilibrium uranium concentration of 30 mg/liter, *R. Arrhizus* removed approximately 2.5 and 3.3 times more uranium than the ion exchange resin and activated carbon, respectively. Under the same conditions, *R. Arrhizus* removed 20 times more thorium than the ion exchange resin and 2.3 times more than the activated carbon. *R. Arrhizus* also exhibited higher uptake and a generally more favorable isotherm for both uranium and thorium than all other biomass types examined.

Tsezos, M. and Volesky, B. (1982), The mechanism of uranium biosorption by *Rhizopus Arrhizus*. *Biotechnology and Bioengineering*, **24** (2), 385-401.

Full Text: [1982\Bio Bio24, 385.pdf](1982/Bio%20Bio24,%20385.pdf)

Abstract: Biosorption of elements is a little understood phenomenon exhibited by some types of even nonliving microbial biomass. A common fungus *Rhizopus Arrhizus* has been reported to take up uranium from aqueous solutions to the extent of 180 mg U6+/g. The mechanism of uranium sequestering by this type of biomass was studied by using experimental techniques such as electron microscopy, x-ray energy dispersion analysis, IR spectroscopy, and supporting evidence was obtained for a biosorption mechanism consisting of at least three processes. Uranium coordination and adsorption in the cell-wall chitin structure occur simultaneously and rapidly whereas precipitation of uranylhydroxide within the chitin microcrystalline cell-wall structure takes place at a lower rate. Interference of Fe2+ and Zn2+ coions with uranium biosorption is indicated.

Tsezos, M. and Volesky, B. (1982), The mechanism of thorium biosorption by *Rhizopus Arrhizus*. *Biotechnology and Bioengineering*, **24** (4), 955-969.

Full Text: [1982\Bio Bio24, 955.pdf](1982/Bio%20Bio24,%20955.pdf)

Abstract: Inactive cells of *Rhizopus Arrhizus* have been documented to exhibit a high thorium biosorptive uptake (170 mg/g) from aqueous solutions. The mechanism of thorium sequestering by this biomass type was investigated following the same method as for the uranium biosorption mechanism. The thorium sequestering mechanism appeared somewhat different from that of uranium. Experimental evidence is presented which indicates that, at optimum biosorption pH (4), thorium coordinates with the nitrogen of the chitin cell wall network and, in addition, more thorium is absorbed by the external section of the fungal cell wall. At pH 2 the overall thorium uptake is reduced. The kinetic study of thorium biosorption revealed a very rapid rate of uptake. Unlike uranium at optimum solution pH, Fe2+ and Zn2+ did not interfere significantly with the thorium biosorptive uptake capacity of *R. Arrhizus*.

Tsezos, M. and Keller, D.M. (1983), Adsorption of radium-226 by biological origin absorbents. *Biotechnology and Bioengineering*, **25** (1), 201-215.

Full Text: [1983\Bio Bio25, 201.pdf](1983/Bio%20Bio25,%20201.pdf)

Abstract: Selected samples of waste microbial biomass used in industrial fermentation processes and wastewater biological treatment plants have been studied for their radium biosorption ability from aqueous solutions. Equilibrium biosorption isotherms have been used to quantify the radium uptake capacity of the various types of biomass which were also compared to two types of activated carbon. Solution pH affected the observed uptake significantly. In general, the biomass types that showed appreciable sorption capacity exhibited maximum uptake between pH 7 and 10. The uptake was reduced considerably at pH 4 and little or no uptake was observed at pH 2. Radium biosorptive uptake capacities of the order of 4.5×104 nCi/g, at pH 7 and at an equilibrium radium concentration of 1000 pCi/L, were determined for a mixed culture, while the biomass of *Penicillium Chrysogenum* adsorbed 5×104 nCi/g radium under the same conditions. The highest uptake value for a sample of F-400 granular activated carbon was 3600 nCi/g at pH 7 and 1000 pCi/L radium concentration. The biosorptive radium uptake of microbial biomass is compared to literature values for other types of adsorbents. The most effective biomass types studied exhibited radium removals in excess of 99% of the radium in solution.

Callander, I.J. and Barford, J.P. (1983), Precipitation, chelation, and the availability of metals as nutrients in anaerobic digestion. II. Application. *Biotechnology and Bioengineering*, **25** (8), 1959-1972.

Full Text: [1983\Bio Bio25, 1959.pdf](1983/Bio%20Bio25,%201959.pdf)

Abstract: The relative importance of the individual effects of precipitation and chelation of metal ions in anaerobic digestion is assessed. Experimentally determined soluble metal ion levels are compared with predicted levels obtained by using a previously described methodology.1 It is found that soluble metal complexes may increase the level of soluble metals in the presence of CO32- and S2- by a factor of up to 104. The formation of a soluble complex may increase or decrease the availability of the metal ion in question for microbial uptake. Two case studies are presented, one using a defined medium and one a complex medium. It is possible, in the case of the defined medium, to accurately predict the free metal ion concentration using the methodology previously developed.1 While the identification of the presence of natural chelating compounds in a complex medium is not routinely possible, the significant discrepancy between the measured level of the soluble metal ion Fe2+ and the calculated level in the case studies presented indicates that natural chelating compounds may play a vital role in providing available metal ions to the microorganisms of an anaerobic digester.

Tsezos, M. (1983), The role of chitin in uranium adsorption by *R. Arrhizus*. *Biotechnology and Bioengineering*, **25** (8), 2025-2040.

Full Text: [1983\Bio Bio25, 2025.pdf](1983/Bio%20Bio25,%202025.pdf)

Abstract: In order to further refine and support the uranium biosorption mechanism hypothesis proposed for *Rhizopus Arrhizus*, uranium competitive equilibrium uptake isotherms by chitin were determined at two different solution pH levels and in the presence of different concentrations of competing ions, namely, Cu2+, Zn2+, and Fe2+. The co-ion effect became more poronounced as the co-ion concentration in solution and pH increased. Obtained equilibrium data are in agreement with uranium biosorption data reported earlier. Infrared, mass, and electron paramagnetic resonance (EPR) spectra of chitin before and after uranium uptake in the presence of the competing ions Cu2+, Zn2+, and Fe2+ were recorded. The combination of the spectral data and the information from equilibrium studies supported the hypothesis advanced earlier on the mechanism of uranium uptake by *R.arrhizus.* In addition, the data suggested the participation of a free radical in uranium coordination by the cell wall chitin. The mechanism of reduction of the uranium uptake capacity of the biomass in the presence of competing ions was also elucidated further.

Norberg, A.B. and Persson, H. (1984), Accumulation of heavy-metal ions *by Zoogloea Ramigera*. *Biotechnology and Bioengineering*, **26** (3), 239-246.

Full Text: [1984\Bio Bio26, 239.pdf](1984/Bio%20Bio26,%20239.pdf)

Abstract: Biomass has been produced from glucose using the organism *Zoogloea ramigera* 115. This biomass has been used to remove copper, cadmium, and uranyl ions from water solutions. The metal uptake was studied with two different methods: either by spectrophotometric measurements on the solutions after flocculation or by potentiometric measurements with amalgam electrodes in order to follow the entire complex formation. The metal-biopolymer interaction in 0.1*M* NaClO4 is practically the same as when no neutral salt is added. The metal uptake is dependent on pH and is selective. A reversible process suitable for metal complexation is described.

Norberg, A. and Rydin, S. (1984), Development of a continuous process for metal accumulation by *Zoogloea ramigera*. *Biotechnology and Bioengineering*, **26** (3), 265-268.

Full Text: [1984\Bio Bio26, 265.pdf](1984/Bio%20Bio26,%20265.pdf)

Abstract: Biomass, mainly consisting of an acidic polysaccharide produced by *Zoogloea ramigera*, has been used as an adsorbing agent in a continuous process for the recovery of metal. The adsorption of copper has been studied with respect to retention time, biomass concentration, and reaction pH, in order to determine the optimal conditions for copper recovery. The results indicate that the uptake of copper is rapid and efficient. About 0.17 g Cu is adsorbed per gram of biomass within 10 min. At high biomass concentrations, the total amount of copper removed from solution is high, but the specific amount of copper adsorbed to biomass is low. The biomass exhibits a higher adsorptive uptake at low concentrations.

Tsezos, M. (1984), Recovery of uranium from biological adsorbents: Desorption equilibrium. *Biotechnology and Bioengineering*, **26** (8), 973-981.

Full Text: [1984\Bio Bio26, 973.pdf](1984/Bio%20Bio26,%20973.pdf)

Treen-Sears, M.E., Volesky, B. and Neufeld, R.J. (1984), Ion exchange/complexation of the uranyl ion by *Rhizopus* biosorbent. *Biotechnology and Bioengineering*, **26** (11), 1323-1329.

Full Text: [1984\Bio Bio26, 1323.pdf](1984/Bio%20Bio26,%201323.pdf)

Abstract: Nonliving biomass of nine *Rhizopus* species effectively sequestered the uranyl ion from solution, taking up 150-250 mg U/g dry cells at 300 ppm U equilibrium concentration in solution, and 100-160 mg U/g dry cells with 100 ppm U in solution. The affinity of this biosorbent for the uranyl ion was found to be affected by timing of harvesting and medium composition. Uptake of the uranyl ion by nonliving biomass of *Rhizopus oligosporus* was due to ion exchange or complexation, since binding was reversed by the addition of complexing ligands or the reduction of pH to a value less than 2. Uptake isotherms were interpreted in terms of a model of multiple equilibria. At pH ≤2, or in the presence of NO3-, Cl-, SO42-, or EDTA (ethylenediamine-tetra-acetate), the quantity of UO22+ that was bound was a constant fraction of that bound at pH 4 in the absence of ligands. This action indicated simple competition for uptake sites between H3O+ and UO22+ for uptake sites, or for UO22+ between the biomass and ligands in solution. If oxalate or thiocyanate was present, however, the complexed species were sequestered by the biomass. Biomass of *Rhizopus Arrhizus*, which grew as pellets, was subsequently used in a packed sorption column where it exchanged hydrogen ions for uranyl ions (2 H+: 1 UO22+). Concentrated uranyl solutions were eluted in sulfuric or nitric acids, and the biomass was reused eight times with no apparent deterioration of the biosorbent.

Friis, N. and Myers-Keith, P. (1986), Biosoption of uranium and lead by Streptomyces longwoodensis. *Biotechnology and Bioengineering*, **28** (1), 21-28.

Full Text: [1986\Bio Bio28, 21.pdf](1986/Bio%20Bio28,%2021.pdf)

Abstract: Biosorption of uranium and lead by lyophilized cells of *Streptomyces longwoodensis* was examined as a function of metal concentration, pH, cell concentration, and culture age. Cells harvested from the stationary growth phase exhibited an exceptionally high capacity for uranium (0.44 g U/g dry weight) at pH 5. Calculated values of the distribution coefficient and separation factor indicated a strong preference of the cell mass for uranyl ions over lead ions. The specific uranium uptake was similar for the cell wall and the cytoplasmic fraction. Uranium uptake was associated with an increase in hydrogen ion concentration, and phosphorus analysis of whole cells indicated a simple stoichiometric ratio between uranium uptake and phosphorus content. It is proposed that metal ions are bound to phosphodiester residues present both in the cell wall and cytoplasmic fractions. Based on this model, it was shown that uranium accumulation exhibits a maximum at pH 4.6 that is supported by experimental data from previous investigations.

Sada, E., Katoh, S., Sukai, K., Tohma, M. and Kondo, A. (1986), Adsorption equilibrium in immuno-affinity chromatography with polyclonal and monoclonal antibodies. *Biotechnology and Bioengineering*, **28** (10), 1497-1502.

Full Text: [1986\Bio Bio28, 1497.pdf](1986/Bio%20Bio28,%201497.pdf)

Abstract: The effects of pH, ionic strength, anion species, and antibody concentration on the adsorption equilibrium between immobilized antibodies and antigens were studied by use of anti-BSA, anti-HSA, anti-BlgG, and monoclonal anti-HSA coupled to Sepharose 4B. The polyclonal antibodies possessed average binding affinities of the order of 108*M*-1, and the heterogeneity was accounted for by assuming a normal distribution of the free energy of antibody-antigen combination. The monoclonal antibody, on the other hand, showed a homogeneous affinity of the Langmuir type. Bound antigens could be eluted by lowering pH or adding a chaotropic anion, and their purity was very high. The antibody ligand was sufficiently stable for repeated use.

Tobin, J.M., Cooper, D.G. and Neufeld, R.J. (1987), Influence of anions on metal adsorption by *Rhizopus Arrhizus* biomass. *Biotechnology and Bioengineering*, **30** (7), 882-886.

Full Text: [1987\Bio Bio30, 882.pdf](1987/Bio%20Bio30,%20882.pdf)

Abstract: The presence of anions in solution was found to inhibit the uptake of La3+, Cd2+, Pb2+, UO22+, and Ag+ by *Rhizopus Arrhizus* biomass. The effects ranged from total inhibition of Cd2+ and Pb2+ uptake at equimolar concentrations of EDTA to no change in uptake of La3+ or UO22+ at 12-fold molar excesses of Cl- or CO32-. No anion was found to enhance metal uptake levels, and the degree of inhibition generally followed the series: EDTA ≥ SO42- ≥ Cl-≥ PO43- ≥ glutamate ≥ CO32-

The chemical equilibrium model REDEQL2 was adapted to treat metal uptake by *R. Arrhizus* biomass and used to predict the effects of anions in solution. Comparisons with the experimental results are made and discussed in light of the assumptions underlying the model.

Tobin, J.M., Cooper, D.G. and Neufeld, R.J. (1988), The effects of cation competition on metal adsorption by *Rhizopus Arrhizus* biomass. *Biotechnology and Bioengineering*, **31** (3), 282-286.

Full Text: [1988\Bio Bio31, 282.pdf](1988/Bio%20Bio31,%20282.pdf)

Tsezos, M., Noh, S.H. and Baird, M.H.I. (1988), A batch reactor mass transfer kinetic model for immobilized biomass biosorption. *Biotechnology and Bioengineering*, **32** (4), 545-553.

Full Text: [1988\Bio Bio32, 545.pdf](1988/Bio%20Bio32,%20545.pdf)

Abstract: Inactive cells of *Rhizopus Arrhizus* have been immobilized into the form of particles of desirable particle size using a proprietary immobilization technique. The immobilized biomass particles are porous and are members of a new generation of biological origin adsorbents. The uranium adsorptive behavior of the biosorbent particles was modeled using a batch reactor mass transfer kinetic model of the biosorption process. The model successfully predicts the batch reactor adsorbate (uranium) concentration profiles and has provided significant insights on the way biosorbents function.

Gadd, G.M. and White, C. (1989), Removal of thorium from simulated acid process streams by fungal biomass. *Biotechnology and Bioengineering*, **33** (5), 592-597.

Full Text: [1989\Bio Bio33, 592.pdf](1989/Bio%20Bio33,%20592.pdf)

Abstract: Biomass from several fungal species removed thorium from solution in 1*M* HNO3, pH 0-1. Thorium uptake was saturable with increasing thorium concentration, although the equilibria did not correspond to a simple ad sorption isotherm. Thorium uptake was altered by the biomass concentration, the uptake per unit biomass being reduced at high biomass concentrations. The presence of Al3+ and Fe3+ only slightly inhibited uptake of thorium while Ca2+, Mg2+, and Na+ had no effect. Thus fungal biomass appears capable of removing thorium from solution under chemical conditions existing in acid waste liquors. Thorium uptake was increased by pretreatment using detergent and also, in the case of filamentous fungi, varied with the culture conditions, which implies that the thorium uptake characteristics of fungal biomass are able to be manipulated by these or similar means for optimum performance.

Kuyucak, N. and Volesky, B. (1989), Accumulation of cobalt by marine alga. *Biotechnology and Bioengineering*, **33** (7), 809-814.

Full Text: [1989\Bio Bio33, 809.pdf](1989/Bio%20Bio33,%20809.pdf)

Kuyucak, N. and Volesky, B. (1989), Desorption of cobalt-laden algal biosorbent. *Biotechnology and Bioengineering*, **33** (7), 815-822.

Full Text: [1989\Bio Bio33, 815.pdf](1989/Bio%20Bio33,%20815.pdf)

Abstract: Following an effective accumulation of cobalt by nonliving algal biomass of *Ascophyllum nodosum*, the desorption release of the metal from the biosorbent was examined using H2SO4, HCl, NH4OH, KHCO3, EDTA, KSCN, KCl, and CaCl2 solutions. The solution of CaCl2 (0.05*M*) in HCl appeared to be the best eluant capable of desorbing more than 96% of the sequestered cobalt at the optimum pH 2-3. The optimum solid-to-liquid ratio was more than 10 with the cobalt reuptake capacity of the biosorbent undiminished. The effect of temperature on the elution process and the elution rate was not significant up to 60°C. The infrared (IR) spectra of the native and the eluted biomass did not show significant differences. The electron micrographs of the algal biomass taken after washing it with the CaCl2 (0.1*M*) eluant solution indicated no damage to the cells and cell walls, while strong acid, alkaline, and KSCN treatment resulted in some changes in the cellular structure. The kinetics of the cobalt stripping process was quite rapid. The required contact time for the complete metal removal from the biomass was shorter than 2 h, even for the highest levels of cobalt initially deposited on the biomass.

Kuyucak, N. and Volesky, B. (1989), The mechanism of cobalt biosoption. *Biotechnology and Bioengineering*, **33** (7), 823-831.

Full Text: [1989\Bio Bio33, 823.pdf](1989/Bio%20Bio33,%20823.pdf)

Abstract: Nonliving biomass of the common seaweed *Ascophyllum nodosum* is capable of accumulating cobalt from aqueous solutions to the extent of 160 mg Co2+/g. Successful desorption of cobalt from the biomass by acidic CaCl2 solutions revealed that the metal uptake phenomenon is reversible, implying physical sorption of cobalt. Chemical and instrumental analysis including electron microscopy, infrared (IR) spectroscopy, X-ray dispersion and diffraction analysis provided supporting evidence that the biosorption mechanism involves predominantly ion exchange. Alginates of the cell wall (-COOH groups) play an important role in cobalt binding. Coordination and sorption in the cell wall structure occur simultaneously and rapidly whereas penetration of cobalt into the cell occurs at a lower rate.

Tsezos, M., McCready, R.G.L. and Bell, J.P. (1989), The continuous recovery of uranium from biologically leached solutions using immobilized biomass. *Biotechnology and Bioengineering*, **34** (1), 10-17.

Full Text: [1989\Bio Bio34, 10.pdf](1989/Bio%20Bio34,%2010.pdf)

Abstract: The potential of uranium recovery from the dilute uranium ore bioleach solutions of the Elliot Lake district of Canada was examined using immobilized microbial biomass. Batch and continuous laboratory scale pilot plant experiments were carried out. The results have shown that the immobilized microbial biomass can successfully recover all of the uranium from dilute (less than 300 mg U/L) solutions. The uranium can subsequently be eluted producing a high uranium concentration eluate perhaps exceeding 5000 mg U/L. The biomass maintained its biosorption capacity of about 50 mg U/g over 12 examined successive adsorption-elution cycles with no apparent indication of failure.

Yin, J. and Blanch, H.W. (1989), A bio-mimetic cadmium adsorbent: Design, synthesis, and characterization. *Biotechnology and Bioengineering*, **34** (2), 180-188.

Full Text: [1989\Bio Bio34, 180.pdf](1989/Bio%20Bio34,%20180.pdf)

Abstract: A cadmium-binding adsorbent has been designed based on insights gained from the study of cadmium-binding molecules isolated from living organisms. Cadmium-chelating thiolate groups - common in proteins that bind cadmium - have been covalently attached to a commercially available ion-exchange resin. The new adsorbent exhibits a favorable affinity (2×10-10*M*), selectivity (25-fold greater affinity for Cd2+ than Zn2+), and capacity (1.4 mmol Cd2+/g dry resin) for cadmium ion. Adsorbed Cd2+ may be released with 20m*M* pyro-phosphate at pH 2. The adsorbent also recovers Cd2+ in the presence of NH4CI and KCN.

The apparent adsorption rate at pH 7.0 (2*M*-1 min-1) increases 30-fold as pH is increased to 11. The rate dependence on pH may be due to the inhibition of adsorbent-metal association by intramolecular hydrogen bonding at neutral pH.

Ting, Y.P., Lawson, F. and Prince, I.G. (1989), Uptake of cadmium and zinc by the alga *Chlorella vulgaris*. 1. Individual ion species. *Biotechnology and Bioengineering*, **34** (7), 990-999.

Full Text: [1989\Bio Bio34, 990.pdf](1989/Bio%20Bio34,%20990.pdf)

Abstract: The ability of algae and bacteria to accumulate heavy metals from the surrounding environment is a widely recognized phenomenon that has a number of important implications. This work reports on the development of a quantitative model that addresses the basic mechanisms inherent in many uptake processes. The model postulates two mechanisms: an initial rapid metal ion uptake due to attachment onto the cell wall followed by a relatively slow uptake due to membrane transport of the metal into the cell. The mathematical model has been tested using the alga *Chlorella vulgaris* in the presence of cadmium and zinc in solution under various experimental conditions.

Muraleedharan, T.R. and Venkobachar, C. (1990), Mechanism of biosorption of copper(II) by *Ganoderma lucidum*. *Biotechnology and Bioengineering*, **35** (3), 320-325.

Full Text: [1990\Bio Bio35, 320.pdf](1990/Bio%20Bio35,%20320.pdf)

Komori, K., Rivas, A., Toda, K. and Ohtake, H. (1990), Biological removal of toxic chromium using an *Enterobacter cloacae* strain that reduces chromate under anaerobic conditions. *Biotechnology and Bioengineering*, **35** (9), 951-954.

Full Text: [1990\Bio Bio35, 951.pdf](1990/Bio%20Bio35,%20951.pdf)

Jang, L.K., Lopez, S.L., Eastman, S.L. and Pryfogle, P. (1991), Recovery of copper and cobalt by biopolymer gels. *Biotechnology and Bioengineering*, **37** (3), 266-273.

Full Text: [1991\Bio Bio37, 266.pdf](1991/Bio%20Bio37,%20266.pdf)

Abstract: The recovery of copper from synthetic aqueous media circulating in a loop fluidized bed reactor operated batchwise was investigated by using the following biopolymer systems: (1) a viscous solution of sodium alginate (from kelp) dispensed directly into the reactor fluid containing dissolved copper (sulfate salt) at initial concentrations of 60-200 ppm, (2) partially coagulated calcium alginate spheres for absorbing dissolved copper at initial concentrations of 10-40 ppm, and (3) a mixture of green algae Microcystis and sodium alginate dispensed directly into the reactor fluid. The recovery of copper and cobalt, a strategic metal, from cobalt ore leachate was achieved by a two-step approach: direct dispensing of sodium alginate to absorb the bulk of metals followed by the addition of partially coagulated calcium alginate spheres to “polish” the leachate. Metal binding capacity and conditional stability constant of each biopolymer system as well as the effective diffusivity of cupric ion in the matrix of biopolymer gels are reported.

Keywords: Ion

Ting, Y.P., Lawson, F. and Prince, I.G. (1991), Uptake of cadmium and zine by the alga *Chlorella vulgaris*: II. Multi-ion situation. *Biotechnology and Bioengineering*, **37** (5), 445-455.

Full Text: [1991\Bio Bio37, 445.pdf](1991/Bio%20Bio37,%20445.pdf)

Abstract: Many microorganisms are capable of sequestering and concentrating heavy metals from their aqueous environment. While much research has been carried out on the uptake of single species of metal ions, little attention seems to have been given to the study of multimetal ion systems. A mathematical model has previously been developed to describe the uptake of individual metal species by a microorganism. The model proposes two sequential processes: an initial rapid uptake due to cellular surface adsorption and a subsequent slow uptake due to membrane transport of the metal into the cells. This article extends the treatment by considering the uptake of two metal species together, cadmium and zinc, under different experimental conditions. The results are discussed in terms of possible mechanistic interactions.

Keywords: Heavy-Metal Tolerance, Marine-Phytoplankton, Toxicity, Pyrenoidosa, Copper, Capricornutum

Sadowski, Z., Golab, Z. and Smith, R.W. (1991), Flotation of *Streptomyces pilosus* after lead accumulation. *Biotechnology and Bioengineering*, **37** (10), 955-959.

Full Text: [1991\Bio Bio37, 955.pdf](1991/Bio%20Bio37,%20955.pdf)

Abstract: The flotation of Streptomyces pilosus was studied in the absence and presence of adsorbed Pb(II) ions on the cell walls and with and without using sodium dodecylsulfate (SDS) as collector. Adsorption of SDS onto the organism in the absence and presence of Pb(II) ions was also investigated. It was found that in the absence of adsorbed Pb(II), very little flotation took place with or without the presence of SDS although SDS adsorbed to some extent on the organism. The presence of Pb(II) on the bacterium’s cell walls significantly increased flotation even in the absence of the collector. Addition of SDS, however, further increased both flotation rate and recovery.

Keywords: Flotation, Streptomyces-Pilosus, Lead, Adsorption, Sodium Dodecyl-Sulfate, Heavy-Metals, Microorganisms, Uranium, Biosorbents, Recovery, Biomass

? Lin, J.E., Wang, H.Y. and Hickey, R.F. (1991), Use of Coimmobilized Biological-Systems to Degrade Toxic Organic-Compounds. *Biotechnology and Bioengineering*, **38** (3), 273-279.

Full Text: [1991\Bio Bio38, 273.pdf](1991/Bio%20Bio38,%20273.pdf)

Abstract: The concept of coimmobilizing cell mass (and/or enzyme) and adsorbent in a hydrogel matrix for biodegradation of toxic organic chemicals was introduced. Under defined experimental conditions, the coimmobilized system using activated carbon and *Phanerochaete chrysosporium* was compared with nonimmobilized systems for the degradation of pentachlorophenol (PCP). It was demonstrated that the coimmobilized system degraded PCP more effectively than the nonimmobilized system. A solid substrate included in the coimmobilized system could support the biodegradation. Isolation of the degrading agents from a model interrupting microorganism by the coimmobilized capsule membrane reduced the interference on the biodegradation. In simulated contaminated soil extract and sand, the coimmobilized system also exhibited higher degradative ability and stability than the nonimmobilized systems.

Keywords: Activated Carbon, Adsorption, Biodegradation, Coimmobilization, Degradation, Model, PCP, Pentachlorophenol, *Phanerochaete Chrysosporium*, *Phanerochaete-Chrysosporium*, Soil

Dapaah, S.Y. and Hill, G.A. (1992), Biodegradation of chlorophenol mixtures by *Pseudomonas putida*. *Biotechnology and Bioengineering*, **40** (11), 1353-1358.

Full Text: [1992\Bio Bio40, 1353.pdf](1992/Bio%20Bio40,%201353.pdf)

Abstract: The dynamic growth behavior of Pseudomonas putida has been studied when resting cells were inoculated into a growth medium containing inhibitory concentrations of mixtures of phenol and monochlorophenols. Resting cells inoculated into single carbon substrate media did not demonstrate enhanced cell lysis by any of the phenol substrates. The apparent death rate was reduced as the concentrations of phenol or chlorophenols were increased. This behavior was modeled by employing a constant specific death rate (kd = 0.0075 h-1) and assuming all organic species result in a lag-phase, specific growth rate which may be larger or smaller than Kd.

Logarithmic biomass growth on pure monochlorophenols did not occur within 2 weeks after inoculation. Logarithmic growth phases were only observed when the monochlorophenols were cometabolized with phenol. The delay time over which the lag phase exists increased exponentially with phenol concentration and linearly with monochlorophenol concentration. The log growth yield coefficient decreased linearly with monochlorophenol concentration.

The lag-phase, specific growth rate was found to decrease exponentially with the concentration of monochlorophenols. This resulted in a 50% lag growth rate inhibition for both 3- and 4-chlorophenol of 9 ppm and for 2-chlorophenol of only 2 ppm. The new, empirical correlations are shown to closely model the complete lag and log growth behavior of P. putida on phenol and chorophenol mixtures.

Keywords: Pseudomonas-Putida, Chlorophenol Biodegradation, Kinetics, Phenol, Growth, Model, Degradation, Substrate, Chemostat, Reactor

? Allsop, P.J., Chisti, Y., Mooyoung, M. and Sullivan, G.R. (1993), Dynamics of phenol degradation by pseudomonas-putida. *Biotechnology and Bioengineering*, **41** (5), 572-580.

Full Text: [1993\Bio Bio41, 572.pdf](1993/Bio%20Bio41,%20572.pdf)

Abstract: Pure cultures of Pseudomonas putida (ATCC 17484) were grown in continuous culture on phenol at dilution rates of 0.074-0.085 h-1 and subjected to step increases in phenol feed concentration. Three distinct patterns of dynamic response were obtained depending on the size of the step change used: low level, moderate level, or high level. During low level responses no accumulations of phenol or non-phenol, non-glucose-dissolved organic carbon, DOC(NGP), were observed. Moderate level responses were characterized by the transient accumulation of DOC(NGP) with a significant delay prior to phenol leakage. High level responses demonstrated a rapid onset of phenol leakage and no apparent accumulations of DOC(NGP). The addition of phenol to a continuous culture of the same organism on glucose did not result in transient DOC(NGP) accumulations, although transient phenol levels exceeded 90 mg L-1. These results were consistent with intermediate metabolite production during phenol step tests coupled with substrate-inhibited phenol uptake and suggested that traditional kinetic models based on the Haldane equation may be inadequate for describing the dynamics of phenol degrading systems.

Keywords: Phenol Degradation, Continuous Culture, Pseudomonas-Putida, Growth Data, Microorganisms, Substrate, Biodegradation, Inhibition, Cultures, Kinetics, State

Notes: highly cited

Holan, Z.R., Volesky, B. and Prasetyo, I. (1993), Biosorption of cadmium by biomass of marine algae. *Biotechnology and Bioengineering*, **41** (8), 819-825.

Full Text: [1993\Bio Bio41, 819.pdf](1993/Bio%20Bio41,%20819.pdf)

Abstract: Biomass of nonliving, dried brown marine algae Sargassum natans, Fucus vesiculosus, and Ascophyllum nodosum demonstrated high equilibrium uptake of cadmium from aqueous solutions. The metal uptake by these materials was quantitatively evaluated using sorption isotherms. Biomass of A. nodosum accumulated the highest amount of cadmium exceeding 100 mg Cd2+/g (at the residual concentration of 100 mg Cd/L and pH 3.5), outperforming a commercial ion exchange resin DUOLITE GT-73. A new biosorbent material based on A. nodosum biomass was obtained by reinforcing the algal biomass by formaldehyde cross-linking. The prepared sorbent possessed good mechanical properties, chemical stability of the cell wall polysaccharides and low swelling volume. Desorption of deposited cadmium with 0.1-0.5M HCl resulted in no changes of the biosorbent metal uptake capacity through five subsequent adsorption/desorption cycles. There was no damage to the biosorbent which retained its macroscopic appearance and performance in repeated metal uptake/elution cycles.

Keywords: Metal Biosorption, Algal Biosorbent, Ascophyllum-Nodosum, Cadmium Biosorption, Marine Algae, Cross-Linked Biomass, Metal Uptake, Metal Desorption, Heavy-Metal Pollution, Cobalt, Mechanism

Volesky, B., May, H. and Holan, Z.R. (1993), Cadmium biosorption by *Saccharomyces cerevisiae*. *Biotechnology and Bioengineering*, **41** (8), 826-829.

Full Text: [1993\Bio Bio41, 862.pdf](1993/Bio%20Bio41,%20862.pdf)

Abstract: Cadmium uptake by nonliving and resting cells of Saccharomyces cerevisiae obtained from aerobic or anaerobic cultures from pure cadmium-bearing solutions was examined. The highest cadmium uptake exceeding 70 mg Cd/g was observed with aerobic baker’s yeast biomass from the exponential growth phase. Nearly linear sorption isotherms featured by higher sorbing resting cells together with metal deposits localized exclusively in vacuoles indicate the possibility of a different metal-sequestering mechanism when compared to dry nonliving yeasts which did not usually accumulate more than 20 mg Cd/g. The uptake of cadmium was relatively fast, 75% of the sorption completed in less than 5 min.

Keywords: Accumulation, Baker’s Yeast, Bakers Yeasts, Biosorbent, Biosorption, Brewers Yeasts, Cadmium, Cadmium Biosorption, Mechanism, Metal Uptake, *Saccharomyces Cerevisiae*, *Saccharomyces-Cerevisiae*, Sorption Isotherms, Yeast

Holan, Z.R., Volesky, B. and Prasetyo, I. (1993), Biosorption of cadmium by biomass of marine algae (Vol 41, Pg 819, 1993). *Biotechnology and Bioengineering*, **42** (4), 548.

Full Text: [1993\Bio Bio42, 548.pdf](1993/Bio%20Bio42,%20548.pdf)

Niu, H., Xu, X.S., Wang, J.H. and Volesky, B. (1993), Removal of lead from aqueous solutions by *Penicillium* biomass. *Biotechnology and Bioengineering*, **42** (6), 785-787.

Full Text: [1993\Bio Bio42, 785.pdf](1993/Bio%20Bio42,%20785.pdf)

Abstract: The removal of lead ions from aqueous solutions by adsorption on nonliving *Penicillium Chrysogenum* biomass was studied. Biosorption of the Pb+2 ion was strongly affected by pH. Within a pH range of 4 to 5, the saturated sorption uptake of Pb+2 was 116 mg/g dry biomass, higher than that of activated charcoal and some other microorganisms. At pH 4.5, P. *Chrysogenum* biomass exhibited selectivity for Pb+2 over other metal ions such as Cd+2, Cu+2, Zn+2, and As+3. Sorption preference for metals decreased in the following order: Pb > Cd > Cu > Zn > As. The sorption uptake of Pb+2 remained unchanged in the presence of Cu+2 and As+3, it decreased in the presence of Zn+2, and increased in the presence of Cd+2. (C) 1993 John Wiley & Sons, Inc.

Keywords: Biosorption, Biosorbent, *Penicillium*, Biomass, Lead, Waste-Water Treatment, Biosorption, Accumulation, Uranium, Cu(II), Cobalt

Wada, S., Ichikawa, H. and Tatsumi, K. (1993), Removal of phenols from wastewater by soluble and immobilized tyrosinase. *Biotechnology and Bioengineering*, **42** (7), 854-858.

Full Text: [1993\Bio Bio42, 854.pdf](1993/Bio%20Bio42,%20854.pdf)

Abstract: An enzymatic method for removal of phenols from industrial wastewater was investigated. Phenols in an aqueous solution were removed after treatment with mushroom tyrosinass. The reduction order of substituted phenols is catechol > p-cresol > p-chlorophenol > phenol > p-methoxyphenol. In the treatment of tyrosinase alone, no precipitate was formed but a color change from colorless to dark-brown was observed. The colored products were removed by chitin and chitosan which are available abundantly as shellfish waste. In addition, the reduction rate of phenols was observed to be accelerated in the presence of chitosan. Tyrosinass, immobilized by using amino groups in the enzyme on cation exchange resins, can be used repeatedly. By treatment with immobilized tyrosinase, 100% of phenol was removed after 2 h, and the activity was reduced very little even after 10 repeat treatments. (C) 1993 John Wiley & Sons, Inc.

Keywords: Phenol, Tyrosinase, Immobilization, Chitosan, Immobilized Enzyme, Reaction Chitosan Adsorption, Peroxidase, Water

Holan, Z.R. and Volesky, B. (1994), Biosorption of lead and nickel by biomass of marine algae. *Biotechnology and Bioengineering*, **43** (11), 1001-1009.

Full Text: [1994\Bio Bio43, 1001.pdf](1994/Bio%20Bio43,%201001.pdf)

Abstract: Screening tests of different marine algae biomass types revealed a high passive biosorptive uptake of lead up to 270 mgPb/g of biomass in some brown marine algae. Members of the order Fucales performed particularly well in this descending sequence: Fucus > Ascophyllum > *Sargassum*. Although decreasing the swelling of wetted biomass particles, their reinforcement by crosslinking may significantly affect the biosorption performance. Lead uptakes up to 370 mgPb/g were observed in crosslinked Fucus vesiculosus and Ascophyllum nodosum. At low equilibrium residual concentrations of lead in solution, however, ion exchange resin Amberlite IR-120 had a higher lead uptake than the biosorbent materials. An order-of-magnitude lower uptake of nickel was observed in all of the sorbent materials examined.

Keywords: Lead Biosorption, Nickel Biosorption, Brown Algae, Seaweeds, Biosorption Screening, Biosorption of Heavy Metals, Metal Uptake, Brown-Algae, Heavy-Metals, Accumulation, Toxicity

Volesky, B. and Prasetyo, I. (1994), Cadmium removal in a biosorption column. *Biotechnology and Bioengineering*, **43** (11), 1010-1015.

Full Text: [1994\Bio Bio43, 1010.pdf](1994/Bio%20Bio43,%201010.pdf)

Abstract: New biosorbent material derived from a ubiquitous brown marine alga Ascophyllum nodosum has been examined in packed-bed flow-through sorption columns. It effectively removed 10 mg/L of cadmium down to 1.5 ppb levels in the effluent representing 99.985% removal. The experimental methodology used was based on the early Bohart and Adams sorption model, resulting in quantitative determination of the characteristic process parameters which can be used for performance comparison and process design. An average metal loading of the biosorbent (N-0) determined was 30 mg Cd/g, corresponding closely to that observed for the batch equilibrium metal concentration of 10 mg Cd/L. The critical bed depth (D-min) for the potable water effluent quality standard (0.005 mg Cd/L) varied with the column feed flow rate (2.4 to 9.6 L/h.cm2) from 20 to 50 cm. The sorption column mass transfer and dispersion coefficients were determined, which are also required for solving the sorption model equations. (C) 1994 John Wiley & Sons, Inc.

Keywords: Biosorption, Column Sorption, Trickle Column, Toxicity Removal, Cadmium, Cadmium Removal, Waste-Water Treatment, Heavy-Metal Pollution, Parameters, Algae

Yoshida, H., Nishihara, H. and Kataoka, T. (1994), Adsorption of BSA on strongly basic chitosan: Equilibria. *Biotechnology and Bioengineering*, **43** (11), 1087-1093.

Full Text: [1994\Bio Bio43, 1087.pdf](1994/Bio%20Bio43,%201087.pdf)

Abstract: Equilibrium isotherms for adsorption of bovine serum albumin (BSA) on a new adsorbent, a strongly basic crosslinked chitosan (Chitopearl 2503), which is hard and is not compressed by pressure in a column, have been presented and compared with diethylaminoethyl (DEAE) Sepharose Fast Flow (hard gel), in Chitopearl 2503, when only buffer existed in the BSA solution, the isotherm was not affected by the initial concentration of BSA but it was affected by pH considerably. The isotherm was favorable when pH greater than or equal to pl (congruent to 4.8). When NaCl existed in the BSA solution, the amount of BSA adsorbed on the resin decreased with increasing concentration of NaCl. When the concentration of NaCl was 200 mol/m3, the resin did not adsorb BSA at all. The equilibrium data were correlated by the Langmuir equation reasonably well. The BSA may be, adsorbed mainly by electrostatic attraction between negatively charged BSA and positively charged quaternary ammonium groups at pH > pl and by protonation reaction of the primary ammonium groups by weak acid groups of BSA at pH = pl. These are confirmed by measuring the amount of inorganic ion exchanged for BSA. In DEAE Sepharose Fast Flow, the isotherm was favorable when pH > pl but unfavorable at pH = pl. The saturation capacity of BSA on Chitopearl 2503 is about 1.3 to 2.2 times larger than that on DEAE Sepharose Fast Flow, (C) 1994 John Wiley & Sons, Inc.

Keywords: Adsorption, Ion Exchange, Chitosan, Equilibrium, BSA, Affinity Separations, Biospecific Adsorption, Finite Bath, Performance, Prediction

Matis, K.A. and Zouboulis, A.I. (1994), Flotation of cadmium-loaded biomass. *Biotechnology and Bioengineering*, **44** (3), 354-360.

Full Text: [1994\Bio Bio44, 354.pdf](1994/Bio%20Bio44,%20354.pdf)

Abstract: Biosorption of heavy metal ions such as Cd2+ by dead biomass has been recognized as a potential alternative to existing removal technologies applied to wastewater treatment. Two bacterial strains were studied in the laboratory, Streptomyces griseus and S. clavuligerus, an industrial by-product. Both washed and unwashed samples were examined. Foam flotation is proposed in this work as the separation stage following biosorption. Effective biomass separation was conducted in the presence of a frother, ethanol. The pH of the solution was a crucial parameter for flotation and also for metal binding. Other basic parameters of flotation examined were the initial cadmium concentration in the dilute aqueous solution and the quantity of biomass used. A study of zeta-potential measurements of the actinomycetes was carried out under the conditions used in the separation, surface tension was also measured. These provided useful information on the process. (C) 1994 John Wiley & Sons, Inc.

Keywords: Flotation, Streptomycetes, Cadmium, Biosorption, Xi-Potential, Bacteria, Lead

Chang, J.S. and Hong, J. (1994), Biosorption of mercury by the inactivated cells of *Pseudomonas aeruginosa* PU 21 (Rip64). *Biotechnology and Bioengineering*, **44** (8), 999-1006.

Full Text: [1994\Bio Bio44, 999.pdf](1994/Bio%20Bio44,%20999.pdf)

Abstract: Biomass of a mercury-resistant strain Pseudomonas aeruginosa PU21 (Rip64) and hydrogen-form cation exchange resin (AG 50W-X8) were investigated for their ability to adsorb mercury. The maximum adsorption capacity was approximately 180 mg Hg/g dry cell in deionized water and 400 mg Hg/g dry cell in sodium phosphate solution at pH 7.4, higher than the maximum mercury uptake capacity in the cation exchange resin (100 mg Hg/g dry resin in deionized water). The mercury selectivity of the biomass over sodium ions was evaluated when 50 mM and 150 mM of Na+ were present. Biosorption of mercury was also examined in sodium phosphate solution and phosphate-buffered saline solution (pH 7.0), containing 50 mM and 150 mM of Na+, respectively. It was found that the presence of Na+ did not severely affect the biosorption of Hg2+, indicating a high mercury selectivity of the biomass over sodium ions. In contrast, the mercury uptake by the ion exchange resin was strongly inhibited by high sodium concentrations. The mercury biosorption was most favorable in sodium phosphate solution (pH 7.4), with a more than twofold increase in the maximum mercury uptake capacity. The pH was found to affect the adsorption of Hg2+ by the biomass and the optimal pH value was approximately 7.4. The adsorption of mercury on the biomass and the ion exchange resin appeared to follow the Langmuir or Freundlich adsorption isotherms. (C) 1994 John Wiley and Sons, Inc.

Keywords: Biosorption, Mercury Adsorption, Ion Exchange Resin, Adsorption Isotherm, Pseudomonas Aeruginosa, Resistance, Expression, Metals, Ions, Products, Genes

Chong, K.H. and Volesky, B. (1995), Description of two-metal biosorption equilibria by Langmuir-type models. *Biotechnology and Bioengineering*, **47** (4), 451-460.

Full Text: [1995\Bio Bio47, 451.pdf](1995/Bio%20Bio47,%20451.pdf)

Abstract: A biosorbent prepared from Ascophyllum nodosum seaweed biomass, FCAN2, was examined for its sorption capacity. Equilibrium batch sorption studies were performed using two-metalsystems containing either (Cu + Zn), (Cu + Cd), or (Zn + Cd). In the evaluation of the two-metalsorption system performance, simple isotherm curves had to be replaced by three-dimensional sorption isotherm surfaces. In order to describe the isotherm surfaces mathematically, three Langmuir-type models were evaluated. The apparent one-parameter Langmuir constant (b) was used to quantify FCAN2 “affinity” for one metal in the presence of another one. The uptake of Zn decreased drastically when Cu or Cd were present. The uptake of Cd was much more sensitive to the presence of Cu than to that of Zn. The presence of Cd and Zn alter the “affinity” of FCAN2 for Cu the least at high Cu equilibrium concentrations. The mathematical model of the two-metalsorption system enabled quantitative estimation of one-metal (bio)sorption inhibition due to the influence of a second metal.

Keywords: Biosorption, Cadmium, Copper, Zinc, 2-Metal Systems, Ascophyllum Nodosum, Multicomponent Adsorption, Aqueous-Solutions, Heavy-Metals, Biomass, Removal, Algae

Prádanos, P. and Hernández, A. (1995), Cross-flow ultrafiltration of proteins through asymmetric polysulfonic membranes: I. Retention curves and pore-size distributions. *Biotechnology and Bioengineering*, **47** (6), 617-625.

Full Text: [1995\Bio Bio47, 617.pdf](1995/Bio%20Bio47,%20617.pdf)

Abstract: Flux and retention of 0.1% w/w aqueous solutio ns of several proteins [lysozyme, pepsin, bovine serum albumin (BSA), lipase and gamma-globulin] with molecular weights of 14.6, 36, 67, 80 and 150 kDa are studied when they are tangentially filtered, with transmembrane pressure differences until 1 MPa and circulation velocities in the retentate loop from 0.04 to 1.98 m/s (laminar regime), through two asymmetric polysulfone commercial membranes (E-100 with a nominal pore size of 0.01 µm and E-500 with a nominal pore size of 0.04 µm). Results are analyzed with the film theory for the concentration-polarization phenomenon, obtaining the mass transfer coefficient along with the apparent and true retention coefficients for the cell used, as a function of the feed circulation velocity and the molecular weight of the solute. The standard retention curves lead to pore size distributions differing from the nominal ones. These differences can be attributed to the modifications of the membranes when they are in operational conditions, probably due to protein adsorption.

Keywords: Cross-Flow Ultrafiltration, Polysulfonic Membranes, Proteins, Concentration-Polarization, Pore Size Distributions, Mass-Transfer, Concentration Polarization, Permeation, Transport, Rejection, Shear

? Gerin, P., Bellonfontaine, M.N., Asther, M. and Rouxhet, P.G. (1995), Immobilization of fungal spores by adhesion. *Biotechnology and Bioengineering*, **47** (6), 677-687.

Full Text: [1995\Bio Bio47, 677.pdf](1995/Bio%20Bio47,%20677.pdf)

Abstract: Immobilization of conidiospores of *Phanerochaete chrysosporium* by adhesion was investigated in static and flow conditions on flat and on porous supports. Reducing the electrostatic repulsion between the spores and the support by adsorption of polycations on the support allows a better adhesion efficiency and a higher density of adhering spores and does not affect germination and growth. Formation of spore aggregates either in the suspension (high ionic strength) or on the support tends to decrease the surface coverage and to give an inhomogeneous distribution of adhering spores due to detachment of aggregates. The density of spores adhering from a flowing suspension is lower as compared with static conditions and does not exceed about 2% of surface coverage, this is due to the influence of tangential forces, to the short contact time with the surface, and to perturbation of the hydrodynamics along the surface by the previously immobilized spores. Obtaining a high coverage of the support by immobilized spores requires the absence of a tangential motion. (C) 1995 John Wiley & Sons, Inc.

Keywords: Adsorption, Aggregation, Cells, Flow, Immobilized, Microorganisms, *Phanerochaete Chrysosporium*, *Phanerochaete-Chrysosporium*, Polycarbonate, Polycation, Pulp, Sedimentation, Surface Treatment, Surface-Properties, XPS

Thömmes, J., Weiher, M., Karau, A. and Kula, M.R. (1995), Hydrodynamics and performance in fluidized bed adsorption. *Biotechnology and Bioengineering*, **48** (4), 367-374.

Full Text: [1995\Bio Bio48, 367.pdf](1995/Bio%20Bio48,%20367.pdf)

Abstract: The performance of fluidized bed adsorption is strongly influenced by the hydrodynamics of the fluidization process. Especially axial mixing in the liquid and solid phase may lead to reduced capacity and resolution. In this article axial mixing in the liquid phase of a classified fluidized bed based on porous glass granules is presented. Axial mixing was analyzed by measurements of residence time distributions in a fluidized bed, showing a reduction of mixing at increased ratio of bed height to diameter as well as at increased linear velocity of the liquid stream. These results were transferred to two real adsorption systems on two different scales: In a bench scale (up to 15 mL of adsorbent) the purification of monoclonal antibodies from hybridoma supernatant was performed with a cation exchanger, in a larger scale (up to 750 mL of matrix) the adsorption of bovine serum albumin (BSA) on the same matrix was investigated. The results showed an increase of capacity at increased bed height-to-diameter ratio, with regard to linear velocity a broad range of only slightly changed capacity was found. A shift from dispersion controlled to diffusion controlled adsorption at intermediate linear velocity was proposed by isolating the effect of pore diffusion from the effect of dispersion.

Keywords: Adsorption, Fluidization, Hydrodynamics, Protein Purification

Chong, K.H. and Volesky, B. (1996), Metal biosorption equilibria in a ternary system. *Biotechnology and Bioengineering*, **49** (6), 629-638.

Full Text: [B\Bio Bio49, 629.pdf](B/Bio%20Bio49,%20629.pdf)

Abstract: Equilibrium metal uptake performance of a biosorbent prepared from Ascophyllum nodosum seaweed biomass was studied using aqueous solutions containing copper, cadmium and zinc ions in binary and ternary mixtures. Triangular equilibrium diagrams can graphically represent all the ternary equilibrium sorption data. Application of the multicomponent Langmuir model to describe the three-metalsystem revealed its nonideal characteristics, whereby the value of apparent dissociation constants for the respective metals differed for each system. This restricted the prediction of the ternary equilibria from the binary systems. However, some predictions of the ternary system behavior from the model were consistent with experimental data and with conclusions postulated from the three possible binary subsystems.

? Mirpuri, R., Jones, W. and Bryers, J.D. (1997), Toluene degradation kinetics for planktonic and biofilm-grown cells of *Pseudomonas putida* 54G. *Biotechnology and Bioengineering*, **53** (6), 535-546.

Full Text: [1997\Bio Bio53, 535.pdf](1997/Bio%20Bio53,%20535.pdf)

Abstract: Toluene degradation kinetics by biofilm and planktonic cells of Pseudomonas putida 54G were compared in this study. Batch degradation of C-14 toluene was used to evaluate kinetic parameters for planktonic cells. The kinetic parameters determined for toluene degradation were: specific growth rate, mu max = 10.08±1.2/day; half-saturation constant, K-s = 3.98±1.28 mg/L; substrate inhibition constant, K-I = 42.78±3.87 mg/L. Biofilm cells, grown on ceramic rings in vapor phase bioreactors, were removed and suspended in batch cultures to calculate C-14 toluene degradation rates. Specific activities measured for planktonic and biofilm cells were similar based on toluene degrading cells and total biomass. Long-term toluene exposure reduced specific activities that were based on total biomass for both biofilm and planktonic cells. These results suggest that long-term toluene exposure caused a large portion of the biomass to become inactive, even though the biofilm was not substrate limited. Conversely, specific activities based on numbers of totuene-culturable cells were comparable for both biofilm and planktonically grown cultures. Planktonic cell kinetics are often used in bioreactor models to model substrate degradation and growth of bacteria in biofilms, a procedure we found to be appropriate for this organism. For superior bioreactor design, however, changes in cellular activity that occur during biofilm development should be investigated under conditions relevant to reactor operation before predictive models for bioreactor systems are developed. (C) 1997 John Wiley & Sons, inc.

Keywords: Toluene, Biofilm Kinetics, Planktonic Cell Kinetics, Specific Activity, Injury, Pseudomonas Putida 54G, Vapor Phase Bioreactor, Biological Trickling Filter, Steady-State, Waste Gases, Simplified Model, Cystic-Fibrosis, P-Xylene, Aeruginosa, Biodegradation, Bacteria, Removal

Tsezos, M., Georgousis, Z. and Remoudaki, E. (1997), Mechanism of aluminum interference on uranium biosorption by *Rhizopus Arrhizus*. *Biotechnology and Bioengineering*, **55** (1), 16-27.

Full Text: [B\Bio Bio55, 16.pdf](B/Bio%20Bio55,%2016.pdf)

Abstract: Uranium competitive uptake experiments by *Rhizopus Arrhizus* were carried outat three different solution pH levels and in the presence of different concentrations *of* competing aluminum ions in order to examine the competing ion effect. Thecolon effect became more pronounced as the colon concentration in solution andpH level increased. A preliminary examination of the effect of aluminum on the rate *of* uranium uptake was also completed. Results showed that the presence of aluminum does not interfere with the kinetics of uranium uptake by *R. Arrhizus*.Electron microscopic and energy dispersive X-ray analyses were also performedon samples of the biomass. The combination of spectral data and the informationfrom the equilibrium studies and the kinetic studies suggested that aluminuminterferes with the uranium biosorptive uptake capacity of *R. Arrhizus* by theprecipitation of a metastable amorphous hydroxy polymeric precipitate through amechanism we refer to as steric competition.

Keywords: Hydrolysis-Precipitation, Immobilized Biomass, *Saccharomyces-Cerevisiae*, Metals, Accumulation, Adsorption, Kinetics, Fungi, Model, Zinc, Uranium, Aluminum, Biosorption, *Rhizopus Arrhizus*, Mechanism, Competing Ions

Park, J.K., Jin, Y.B. and Chang, H.N. (1999), Reusable biosorbents in capsules from Zoogloea ramigera cells for cadmium removal. *Biotechnology and Bioengineering*, **63** (1), 116-121.

Full Text: [B\Bio Bio63, 116.pdf](B/Bio%20Bio63,%20116.pdf)

Abstract: A biosorbent was prepared by immobilizing and culturing Zoogloea ramigera cells in calcium alginate capsules to high density. The biosorbent (the cell and its exopolysaccharide “Zooglan”) along with the [calcium] alginate is known to be responsible for cadmium rem ova I. The dry weight of the biosorbent reached 107 g/L after 3 days of cultivation and 220 g/L after 5 days based on the core volume of a 2.0-mm diameter capsule used. The biosorbents were completely contained in the core of the capsule where the cells grew preferentially near the shell of the capsules while the polymer distributed homogeneously in the core. The specific cadmium uptake by the capsule biosorbent was 1.9 mg/g adsorbent at an initial cadmium concentration of 3 mg/L. This is 1.24 times more than the specific cadmium uptake by the 1.8-mm beads prepared under a comparable condition. The capsules crosslinked with 1% triethylene tetramine and 1% glutamic dialdehyde solutions were superior to the uncrosslinked capsules in mechanical strength. The crosslinked capsules maintained their mechanical strength and adsorption/desorption capacity even after 30 cycles of repeated use. (C) 1999 John Wiley & Sons, Inc.

Keywords: Cadmium, Capsule, Biosorption, Zoogloea Ramigera, Yeast-Cells, Microencapsulation, Alginate, Adsorption, Membrane

Notes: highly cited

? Lay, J.J. (2000), Modeling and optimization of anaerobic digested sludge converting starch to hydrogen. *Biotechnology and Bioengineering*, **68** (3), 269-278.

Full Text: [2000\Bio Bio68, 269.pdf](2000/Bio%20Bio68,%20269.pdf)

Abstract: The pH and hydraulic retention time (HRT) of a chemostat reactor were varied according to a central composite design methodology with the aim of modeling and optimizing the conversion of starch into hydrogen by microorganisms in an anaerobic digested sludge. Experimental results from 23 runs indicate that a maximum hydrogen production rate of 1600 L/m3/d under the organic loading rate of 6 kg starch m3/d obtained at pH = 5.2 and HRT = 17 h. Throughout this study, the hydrogen percentage in the biogas was approximately 60% and no methanogenesis was observed. while the reactor was operated with HRT of 17 h, hydrogen was produced within a pH range between 4.7 and 5.7. Alcohol production rate was greater than hydrogen production rate if the pH was lower than 4.3 or higher than 6.1. Supplementary experiments confirm that the optimum conditions evaluated in this study were highly reliable; while a hydrogen production yield of 1.29 l H-2/g starch-GOD was obtained. An examination of the response surfaces, including hydrogen, volatile fatty acids (VFA) and alcohols production, led us to the belief that clostridium sp. predominated in the anaerobic hydrogen-producing microorganisms in this study. Experiment results obtained emphasize that the response of metabolites was a more useful indicator than hydrogenic activity for obtaining efficient hydrogen production. Furthermore, expressions of contour plots indicate that Response-Surface Methodology may provide easily interpretable advice on the operation of a hydrogen-producing bioprocess. (C) 2000 John Wiley & Sons, Inc.

Keywords: Anaerobic-Digested Sludge, Hydrogen, Optimization, Response-Surface Method, Alcohol, Starch, Volatile Fatty Acid, Acetone-Butanol Fermentation, Clostridium-Acetobutylicum, Solvent Production, Methane Production, Waste-Water, Bacterium, Culture, pH, Photoproduction, Fuel

Notes: highly cited

? Powers, M.J., Domansky, K., Kaazempur-Mofrad, M.R., Kalezi, A., Capitano, A., Upadhyaya, A., Kurzawski, P., Wack, K.E., Stolz, D.B., Kamm, R. and Griffith, L.G. (2002), A microfabricated array bioreactor for perfused 3D liver culture. Biotechnology and Bioengineering, 78 (3), 257-269.

Full Text: [2002\Bio Bio78, 257.pdf](2002/Bio%20Bio78,%20257.pdf)

Abstract: We describe the design, fabrication, and performance of a bioreactor that enables both morphogenesis of 3D tissue structures under continuous perfusion and repeated in situ observation by light microscopy. Three-dimensional scaffolds were created by deep reactive ion etching of silicon wafers to create an array of channels (through-holes) with cell-adhesive walls. Scaffolds were combined with a cell-retaining filter and support in a reactor housing designed to deliver a continuous perfusate across the top of the array and through the 3D tissue mass in each channel. Reactor dimensions were constructed so that perfusate flow rates meet estimated values of cellular oxygen demands while providing fluid shear stress at or below a physiological range (>2 dyne cm2), as determined by comparison of numerical models of reactor fluid flow patterns to literature values of physiological shear stresses. We studied the behavior of primary rat hepatocytes seeded into the reactors and cultured for up to 2 weeks, and found that cells seeded into the channels rearranged extensively to form tissue like structures and remained viable throughout the culture period. We further observed that preaggregation of the cells into spheroidal structures prior to seeding improved the morphogenesis of tissue structure and maintenance of viability. We also demonstrate repeated in situ imaging of tissue structure and function using two-photon microscopy.

? Lee, D.S., Jeon, C.O., Park, J.M. and Chang, K.S. (2002), Hybrid neural network modeling of a full-scale industrial wastewater treatment process. *Biotechnology and Bioengineering*, **78** (6), 670-682.

Full Text: [2002\Bio Bio87, 670.pdf](2002/Bio%20Bio87,%20670.pdf)

Abstract: In recent years, hybrid neural network approaches, which combine mechanistic and neural network models, have received considerable attention. These approaches are potentially very efficient for obtaining more accurate predictions of process dynamics by combining mechanistic and neural network models in such a way that the neural network model properly accounts for unknown and nonlinear parts of the mechanistic model. In this work, a full-scale coke-plant wastewater treatment process was chosen as a model system. Initially, a process data analysis was performed on the actual operational data by using principal component analysis. Next, a simplified mechanistic model and a neural network model were developed based on the specific process knowledge and the operational data of the coke-plant wastewater treatment process, respectively. Finally, the neural network was incorporated into the mechanistic model in both parallel and serial configurations. Simulation results showed that the parallel hybrid modeling approach achieved much more accurate predictions with good extrapolation proper-ties as compared with the other modeling approaches even in the case of process upset caused by, for example, shock loading of toxic compounds. These results indicate that the parallel hybrid neural modeling approach is a useful tool for accurate and cost-effective modeling of biochemical processes, in the absence of other reasonably accurate process models. (C) 2002 Wiley Periodicals, Inc.

Keywords: Batch Reactor, Coke Plant Wastewater, Coke-plant Wastewater, Hybrid Modeling, Neural Network, Nutrient Dynatics, Principal Component Analysis, Wastewater, Wastewater Treatment

? Raize, O., Argaman, Y. and Yannai, S. (2004), Mechanisms of biosorption of different heavy metals by brown marine macroalgae. *Biotechnology and Bioengineering*, **87** (4), 451-458.

Full Text: [B\Bio Bio87, 451.pdf](B/Bio%20Bio87,%20451.pdf)

Abstract: The biosorption mechanisms of different heavy metallic cations (Cd, Ni, Pb) to active chemical groups on the cell wall matrix of the nonliving brown marine macro-alga, Sargassum vulgaris in its natural form, were examined by the following instrumental and chemical techniques: Fourier-transform infrared (FTIR) analysis, X-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM), and extraction of alginic acid and sulfated polysaccharides, which act as metal-binding moieties present in cell wall. From the different techniques used and the known chemical composition of the algal cell wall, it was observed that biosorption of the metallic cations to the algal cell wall component was a surface process. The binding capacities of the different metal cations were between 1 and 1.2 mmol metal/g on a dry weight basis. The main chemical groups involved in the metallic cation biosorption were apparently carboxyl, amino, sulfhydryl, and sulfonate. These groups were part of the algal cell wall structural polymers, namely, polysaccharides (alginic acid, sulfated polysaccharides), proteins, and peptidoglycans. The main cadmium cation sequestration mechanism by the algal biomass was apparently chelation, while the nickel cation sequestration mechanism was mainly ion exchange. Lead cations exhibit higher affinity to the algal biomass, and their binding mechanism included a combination of ion exchange, chelation, and reduction reactions, accompanied by metallic lead precipitation on the cell wall matrix. During the ion exchange process, calcium, magnesium, hydrogen cations, and probably other cations (sodium and potassium) in the algal cell wall matrix were replaced by the tested heavy metals. (C) 2004 Wiley Periodicals, Inc.

Keywords: Biosorption Mechanisms, Brown Marine Macroalgae, Sargassum Vulgaris, Heavy Metals, XPS, EDS, FTIR, Binding Capacities, Ion-Exchange, Pretreated Biomass, Aqueous-Solutions, Alginate, Nickel, Algae

Kandelbauer, A., Maute, O., Kessler, R.W., Erlacher, A. and Gübitz, G.M. (2004), Study of dye decolorization in an immobilized laccase enzyme-reactor using online spectroscopy. *Biotechnology and Bioengineering*, **87** (4), 552-563.

Full Text: [B\Bio Bio87, 552.pdf](B/Bio%20Bio87,%20552.pdf)

Abstract: Decolorization of textile dyes by a laccase from Trametes modesta immobilized on gamma-aluminum oxide pellets was studied. An enzyme reactor was equipped with various UV/Vis spectroscopic sensors allowing the continuous online monitoring of the decolorization reactions. Decolorization of the dye solutions was followed via an immersion transmission probe. Adsorption processes were observed using diffuse reflectance measurements of the solid carrier material. Generally, immobilization of the laccase does not seem to sterically affect dye decolorization. A range of commercial textile dyes was screened for decolorization and it was found that the application of this enzymatic remediation system is not limited to a certain structural group of dyes. Anthrachinonic dyes (Lanaset Blue 2R, Terasil Pink 2GLA), some azo dyes, Indigo Carmine, and the triphenylmethane dye Crystal Violet were efficiently decolorized. However, the laccase displayed pronounced substrate specificities when a range of structurally related model azodyes was subjected to the biotransformation. Azodyes containing hydroxy groups in ortho or para position relative to the azo bond were preferentially oxidized. The reactor performance was studied more closely using Indigo Carmine. (C) 2004 Wiley Periodicals, Inc.

Keywords: Azo Dyes, Bleach Plant Effluent, Immobilized, Laccase, Ligninolytic Enzymes, Model Dye, *Phanerochaete-Chrysosporium*, Pleurotus-Ostreatus, Pycnoporus-Cinnabarinus, Textile Dyes, Trametes Modesta, Trametes-Versicolor, Waste-Water Treatment, White-Rot Fungus

Nkhalambayausi-Chirwa, E.M. and Wang, Y.T. (2004), Modeling hexavalent chromium removal in a *Bacillus* sp. fixed-film bioreactor. *Biotechnology and Bioengineering*, **87** (7), 874-883.

Full Text: [B\Bio Bio87, 874.pdf](B/Bio%20Bio87,%20874.pdf)

Abstract: A one-dimensional diffusion-reaction model was developed to simulate Cr(VI) reduction in a Bacillus sp. pure culture biofilm reactor with glucose as a sole supplied carbon and energy source. Substrate utilization and Cr(VI) reduction in the biofilm was best represented by a system of (second-order) partial differential equations (PDEs). The PDE system was solved by the (fourth-order) Runge-Kutta method adjusted for mass transport resistance using the (second-order) Crank-Nicholson and Backward Euler finite difference methods. A heuristic procedure (genetic search algorithm) was used to find global optimum values of Cr(VI) reduction and substrate utilization rate kinetic parameters. The fixed-film bioreactor system yielded higher values of the maximum specific Cr(VI) reduction rate coefficient and Cr(VI) reduction capacity (k(mc) = 0.062 1/h, and R-c = 0.13 mg/mg, respectively) than previously determined in batch reactors (k(mc) = 0.022 1/h and R, = 0.012 mg/mg). The model predicted effluent Cr(VI) concentration well with 98.9% confidence (sigma(y)(2) = 2.37 mg2/L-2 N = 119) and effluent glucose with 96.4% confidence (sigma(y(w))(2) = 5402 mg2/L-2, N = 121, w = 100) over a wide range of Cr(VI) loadings (10-498 mg Cr(VI)/L/d). (C) 2004 Wiley Periodicals, Inc.

Keywords: Chromium(VI), Bacillus sp., Biofilm Kinetics, Mass Transport, Genetic Search Algorithm, Pseudomonas-Putida, Reduction, Bacteria, Cultures

Lodeiro, P., Cordero, B., Grille, Z., Herrero, R. and Sastre de Vicente, M.E. (2004), Physicochemical studies of Cadmium(II) biosorption by the invasive alga in Europe, Sargassum muticum. *Biotechnology and Bioengineering*, **88** (2), 237-247.

Full Text: [B\Bio Bio88, 237.pdf](B/Bio%20Bio88,%20237.pdf)

Abstract: In recent years, there has been a significant increase in the studies concerning brown seaweed as biosorbents for metal removal owing to their high binding ability and low cost. This work reports the results of a study regarding the cadmium binding equilibria of dead biomass from the seaweed *Sargassum muticum*, this alga is a pest fouling organism that competes with the local fucalean species and may also interfere with the “sea industry”, therefore, it would constitute an ideal material to be used as biosorbent. Seven different treatments were tested in order to obtain a stable biomass that could be suitable for industrial use under a broad range of operational conditions. The treatments employed were protonation, chemical cross-linking with formaldehyde, KOH, Ca(OH)2 and CaCl2 or physical treatments with acetone and methanol. The equilibrium adsorption isotherms of Langmuir, Freundlich, and Langmuir-Freundlich were obtained for the quantitative description of the cadmium uptake. The effect of pH on biosorption equilibrium was studied at values ranging from 1 to 6, demonstrating the importance of this parameter for an accurate evaluation of the biosorption process. Maximum biosorption was found pH higher than 4.5. The maximum biosorption uptake for the raw biomass was 65 mg g-1, while for formaldehyde cross-linking biomass the uptake increases to 99 mg g-1 and for protonated biomass to 95 mg g-1. Potentiometric titrations were carried out to estimate the total number of weak acid groups and to obtain their apparent p*K* value, 3.85, using the Katchalsky model. Kinetic studies varying cadmium concentration, algal dose, and ionic strength were carried out. Over 95% of the maximum cadmium uptake was achieved within 45 min, so the process can be considered relatively fast. A pseudo-second-order model, for the kinetics of cadmium biosorption, was shown to be able to reproduce experimental data points with accuracy. © 2004 Wiley Periodicals, Inc.

Keywords: Biosorption, *Sargassum Muticum*, Cadmium(II), Kinetics, Equilibrium, Acid-Base Properties, Cross-Linking

? Ly, M. and Margaritis, A. (2007), Effect of temperature on the extraction kinetics and diffusivity of cyclosporin a in the fungus *Tolypocladium inflatum*. *Biotechnology and Bioengineering*, **96** (5), 945-955.

Full Text: [2007\Bio Bio96, 945.pdf](2007/Bio%20Bio96,%20945.pdf)

Abstract: The influence of temperature on the extraction kinetics of Cyclosporoin (CyA) from the mycelia of Tolypocladium inflatum was examined in this study. the extraction of CyA from mycelia was performed in a 2-L stirred, baffled vessel using 30% v/v acqueous methanol. The temperature range used was from 5 to 45°C. A linear relationship was found between the extraction yield of CyA and temperature. As the temperature increased, the yield of CyA increased with a maximum CyA yield of 18.3% obtained at 45°C, which is 21.3% higher than the yield at 25°C. The activation energy for the extraction of CyA from T. inflatum was found to be 36.7 kJ/mol, which indicates that the extraction of CyA from T. inflatum is controlled by both solubilization of CyA and diffusion of CyA through the solid phase of mycelia. The overall mass transfer coefficient, k(L)a(S), was found to increase from 1.02×10-3 to 1.34×10-2 s-1 as the temperature increased from 5 to 45°C. The effective diffusivity of CyA in the solid matrix of mycelia was found to increase from 1.05×10-15 to 1.43×10-14 m2/s as the temperature increased from 5 to 45°C. A mathematical diffusion model was developed and was used to fit the experimental kinetic data CyA extraction and determination of CyA effective diffusivities at different temperatures. This is the first time CyA diffusivities as a function of extraction temperature are reported in the literature. (c) 2006 Wiley Periodicals, Inc.

Keywords: Cyclosporin A, Fungus Tolypocladium Inflatum, Liquid Extraction Kinetics, Mass Transfer, Effective Diffusivity of Cyclosporin A, Activation Energy of Extraction, Tea Infusion, Caffeine, Biosynthesis, Mechanism, Cell

# Title: Biotechnology and Bioengineering Symposium

Volesky, B. (1986), Biosorbent materials. *Biotechnology and Booengineering Symposium*, **16**, 121-126.

Beveridge, T.J. (1986), The immobilization of soluble metals by bacterial walls. *Biotechnology and Booengineering Symposium*, **16**, 127-139.

# Title: Biotechnology and Bioprocess Engineering

Full Journal Title: Biotechnology and Bioprocess Engineering

ISO Abbreviated Title: Biotechnol. Bioprocess Eng.

JCR Abbreviated Title: Biotechnol Bioproc Eng

ISSN: 1226-8372

Issues/Year: 6

Language: English

Journal Country/Territory: South Korea

Publisher: Korean Soc Biotechnology & Bioengineering

Publisher Address: Korean Science Technology Center, #704 Yeogsam-Dong, Kangnam-Ku, Seoul 135-703, South Korea

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 1.366, 86/140 (2006); Impact Factor 1.412, 100/152 (2009)

? Park, D., Yun, Y.S. and Park, J.M. (2010), The past, present, and future trends of biosorption. *Biotechnology and Bioprocess Engineering*, **15** (1), 86-102.

Full Text: [2010\Bio Bio Eng15, 86.pdf](2010/Bio%20Bio%20Eng15,%2086.pdf)

Abstract: The discovery and further development of biosorption phenomena provide a basis for a whole new technology aimed at the removal of various pollutants or the recovery of valuable resources from aqueous systems. Today, biosorption is one of the main components of environmental and bioresource technology. Since the status of scientific development of a technology can be reflected through analyses of the literatures pertaining to it, in this review, we qualitatively examine almost all aspects of biosorption research. A range of subjects are covered, including the initial history, raw materials, mechanisms, instrumental tools, process factors, modification and immobilization methods, recovery and regeneration, continuous processes, commercial application, and modeling studies of biosorption. Finally, we summarized the important considerations of the current research on biosorption, as well as the suggestions for its future directions. We believe that this review will prove to be useful for scientists and engineers in the performance of their research into biosorption. (C) KSBB.

Keywords: Activated Carbon, Adsorbent, Analyses, Application, Aqueous-Solutions, Biological-Systems, Biosorbent, Biosorption, Development, Discovery, Dyes, Environmental, Fungal Biosorption, Heavy Metals, Heavy-Metal Ions, Hexavalent Chromium, History, Immobilization, Low-Cost Adsorbents, Mechanisms, Methods, Microbial Biosorption, Modeling, Modification, Organic Pollutants, Performance, Pollutants, Precious Metals, Range, Recovery, Regeneration, Removal, Research, Review, Si, Systems, Technology, Waste-Water

# Title: Biotechnology Letters

Full Journal Title: [Biotechnology Letters](http://www.kluweronline.com/issn/0141-5492/contents)

ISO Abbreviated Title: Biotechnol. Lett.

JCR Abbreviated Title: Biotechnol Lett

ISSN: 0141-5492

Issues/Year: 12

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 0.967, 68/134 (2000); Impact Factor 1.108, 89/139 (2005)

Macaskie, L.E. and Dean, A.C.R. (1985), Uranium accumulation by immobilized cells of a *Citrobacter* sp. *Biotechnology Letters*, **7** (7), 457-462.

Full Text: [1985\Bio Let7, 457.pdf](1985/Bio%20Let7,%20457.pdf)

Abstract: Uranium was removed from challenge flows presented to immobilized cells of a*Citrobacter* sp. In excess of 90% of the presented metal was recovered, giving high yields of accumulated metal which could be subsequently released from the immobilized cells*in situ*.

Aksu, Z. and Kutsal, T. (1986), Lactic acid production from molasses utilizing lactobacillus delbrueckii and invertase together. *Biotechnology Letters*, **8** (3), 157-160.

Full Text: [1986\Bio Let8, 157.pdf](1986/Bio%20Let8,%20157.pdf)

Abstract: The prices of the process substrates such as glucose, sucrose and molasses (as $/ton) are 1500, 1600 and 24, respectively. For molasses plus invertase, the price increases to 46 $/ton. Thus compared with the other possible substrates, the lactic acid production procedure used in this study does not cause any appreciable increase in the pruduction cost due to the utilization of invertase, while enhancing the yield of product.

Notes: highly cited

Kuyucak, N. and Volesky, B. (1988), Biosorbents for recovery of metals from industrial solutions. *Biotechnology Letters*, **10** (2), 137-142.

Full Text: [1988\Bio Let10, 137.pdf](1988/Bio%20Let10,%20137.pdf)

Abstract: Biosorbent materials are a potential alternative to conventional processes of metal recovery from industrial solutions. Algal biomass of *Sargassum natans* and *Ascophyllum nodosum* outperformed ion exchange resins in sequestering respectively gold and cobalt from solutions. Non-living biomass of *Saccharomyces cerevisiae* and *Rhizopus arrhizus* exhibited higher metal-uptake capacity than the living biomass for the uptake of copper, zinc, cadmium, uranium. The solution pH affected the metal-uptake capacity of the biomass whereas the equilibrium biosorption isotherms were independent of the initial concentration of the metal in the solution. Desorption of the metal from the biosorbent and recycle of the biosorbent have also been demonstrated.

? Hang, Y.D. (1988), Microbial production of citric acid in fixed-bed column bioreactors. *Biotechnology Letters*, **10** (6), 421-426.

Full Text: [1988\Bio Let10, 421.pdf](1988/Bio%20Let10,%20421.pdf)

Abstract: *Aspergillus niger* NRRL 567 was cultured on the solid substrate, fruit pomace, in fixed-bed column bioreactors to produce citric acid. The rates of substrate consumption and citric acid production were strongly influenced by (1) the rate of aeration, (2) the fermentation temperature, (3) the initial moisture content of the substrate, and (4) the size of the inoculum. This culture method yielded approximately 130 g of citric acid per kg of apple pomace fermented under optimum conditions.

Sağ, Y. and Kutsal, T. (1989), Application of adsorption isotherms to chromium adsorption on *Z. Ramigera*. *Biotechnology Letters*, **11** (2), 141-144.

Full Text: [1989\Bio Let11, 141.pdf](1989/Bio%20Let11,%20141.pdf)

Abstract: Adsorption isotherms for the adsorption of chromium on *Zoogloea ramigera* are developed. The rates were affected by the pH and temperature of adsorption medium. The biomass of *Z. ramigera* at pH 2.0 where the optimum pH for biosorption lies exhibited the highest chromium adsorptive uptake capacity. In general, higher adsorptive uptake was observed at 25°C than 35°C and 45°C.

Sağ, Y. and Kutsal, T. (1989), The use of *Zoogloea-Ramigera* in waste-water treatment containing Cr(VI) and Cd(II) ions. *Biotechnology Letters*, **11** (2), 145-148.

Full Text: [1989\Bio Let11, 145.pdf](1989/Bio%20Let11,%20145.pdf)

Abstract: Optimum fermentation conditions for *Z. ramigera* were determined and various parameters which affected adsorption rates of chromium and cadmium ions on*Z. ramigera* were investigated. At 25°C the optimum adsorption pH of Cr(VI) and Cd(II) ions were 2.0 and 6.0 respectively. The adsorption rate of chromium and cadmium ion increased by increasing initial metal ion concentration up to 75 and 50 ppm respectively: at higher initial metal ion concentrations, the adsorption rates decreased.

Costa, A.C.A. and Leite, S.G.F. (1990), Cadmium and zinc biosorption by *Chlorella homosphaera*. *Biotechnology Letters*, **12** (12), 941-944.

Full Text: [1990\Bio Let12, 941.pdf](1990/Bio%20Let12,%20941.pdf)

Abstract: Cadmium and zinc biosorption by Chlorella homosphaera cells were tested under laboratory conditions, in a range of concentrations from 0.5 to 14.0mg/l. The results indicated two distinct phases for cadmium biosorption: a rapid phase probably associated with metal adsorption around the cell wall and a slower phase associated with the metal transport into the interior of the cells. For zinc biosorption these phases were not well defined probably due to the metabolic use of this metal by the cells.

Keywords: Heavy-Metal Elements, Biological-Systems, Selective Accumulation, Regularis, Algae, Microorganisms, Removal, Uranium

de Carvalho, R.P., Chong, K.H. and Volesky, B. (1994), Effects of leached alginate on metal biosorption. *Biotechnology Letters*, **16** (8), 875-880.

Full Text: [1994\Bio Let16, 875.pdf](1994/Bio%20Let16,%20875.pdf)

Abstract: The Cu, Cd and Zn sorption capacity of formaldehyde-crosslinked seaweed biomass (Ascophyllum nodosum: FCAN) was studied using equilibrium methodology. The shape of sorption isotherms and biosorbent mass losses indicated that in the first uptake cycle the biosorbent leached cellular polysaccharides that formed precipitate with metalsolutions influencing the sorption study and application. However, since the sorption levels of washed and non-washed biosorbents were comparable, the leached cell wall polysaccharide (s) (alginate) could not be the main component responsible for metalsorption in this case.

Kim, Y.H., Yoo, Y.J. and Lee, H.Y. (1995), Characteristics of lead adsorption by *Undaria pinnatifida*. *Biotechnology Letters*, **17** (3), 345-350.

Full Text: [1995\Bio Let17, 345.pdf](1995/Bio%20Let17,%20345.pdf)

Abstract: We report *Undaria pinnatifida* as a potential biosorbent for lead removal. *U. pinnatifida* exhibited approximately 350 mg of lead uptake capacity per gram of dry biomass within a pH range of 3 to 4. The major cellular component of *U. pinnatifida* in lead binding was thought as alginic acid existing in the cell wall. *U. pinnatifida* adsorbed lead ion selectively over other alkaline metal ions such as K’, Na’, Mg-2’ and Ca-2’. It was confirmed by using instrumental analysis including EDX and XPS that *U. pinnatifida* adsorbed lead ions on the surface of itself.

? Donnellan, N., Rollan, A., Mchale, L. and Mchale, A.P. (1995), The effect of electric-field stimulation on the biosorption of uranium by nonliving biomass derived from Kluyveromyces-Marxianus IMB3. *Biotechnology Letters*, **17** (4), 439-442.

Full Text: [1995\Bio Let17, 439.pdf](1995/Bio%20Let17,%20439.pdf)

Abstract: Non-living biomass from the thermotolerant, ethanol-producing yeast strain Kluyveromyces marxianus IMB3 is capable of uranium biosorption. The biomass has an observed biosorption capacity of 115mg uranium/g dry weight of biomass with a calculated value of 127mg uranium/g dry weight. Following exposure of the biomass to electric fields of 2,500 V/cm for 20msec. the maximum biosorption capacity (observed or calculated) for uranium did not differ significantly for the untreated biomass. However, at lower residual concentrations of uranium (< 10mg/L) the capacity of the treated biomass for uranium was significantly increased above values obtained with untreated material.

Keywords: Biomass, Biosorption, Metal, Uranium, Yeast

Naseem Akthar, Md., Sivarama Sastry, K. and Maruthi Mohan, P. (1995), Biosorption of silver ions by processed *Aspergillus niger* biomass. *Biotechnology Letters*, **17** (5), 551-556.

Full Text: [1995\Bio Let17, 551.pdf](1995/Bio%20Let17,%20551.pdf)

Abstract: An alkali treated *A. Niger* biomass was found to efficiently sequester silver ions from dilute as well as concentrated solutions (2.5-1000 ppm Ag+), with an ability to bind it to a level of upto 10% of dry weight. Biosorption of silver ions was not influenced by pH between 5-7. The bound Ag+ could be fully desorb ed by dilute HNO3 and the biosorbent regenerated by washing with Ca2+/Mg2+ solution. This biosorbent is unique in that the mechanism of metal ion sorption has been found to be exclusively by stoichiometric exchange with Ca2+ and Mg2+ of the biosorbent.

Keywords: Accumulation, Biosorbents, Metals, Fungi

Kratochvil, D., Fourest, E. and Volesky, B. (1995), Biosorption of copper by *Sargassum fluitans* biomass in fixed-bed column. *Biotechnology Letters*, **17** (7), 777-782.

Full Text: [1995\Bio Let17, 777.pdf](1995/Bio%20Let17,%20777.pdf)

Abstract: The behavior of native and protonated *Sargassum* fluitans seaweed biomass packed in a fixed-bed was examined during a continuous removal of Cu2+ from 35 mg/L aqueous solution at pH 5.0. The capacity of native and protonated biomass, based on the dry weight of the native biomass, were determined to be 61.5 and 54.1 mg/g, respectively. During the saturation of the native biomass with heavy metal, first Na+ and K+, followed by Mg2+ and Ca2+, were eluted from the fixed-bed before the breakthrough time of the Cu. The pressure drop across the column varied with the ionic composition of the effluent from the bed, yielding an average permeability coefficient of 2.7. 10-12 m2. The void fraction of the interstices in the bed was estimated to be 0.27. No light metals were eluted from the column containing protonated biomass and the pressure drop remained constant throughout the saturation.

Keywords: Breakthrough, Column, Fixed Bed, Fixed-Bed, Removal, Sargassum, Seaweed

Wilhelmi, B.S. and Duncan, J.R. (1995), Metal recovery from *Saccharomyces cerevisiae* biosorption columns. *Biotechnology Letters*, **17** (9), 1007-1012.

Full Text: [1995\Bio Let17, 1007.pdf](1995/Bio%20Let17,%201007.pdf)

Abstract: The bioaccumulation of metal chlorides (Cu, Zn, Co, Cd, Ni and Cr) to immobilised S. cerevisiae was studied in packed-bed continuous flow columns. The metals were eluted from the columns using 0.1 M HCl, with a desorption of greater than or equal to 90 % being attained. Reusability of the biomass was demonstrated. Mixed metal solutions were applied and selective binding and recovery was achieved between copper and cobalt.

? Oxspring, D.A., McMullan, G., Smyth, W.F. and Marchant, R. (1996), Decolourisation and metabolism of the reactive textile dye, Remazol Black B, by an immobilized microbial consortium. *Biotechnology Letters*, **18** (5), 527-530.

Full Text: [1996\Bio Let18, 527.pdf](1996/Bio%20Let18,%20527.pdf)

Abstract: An upflow anaerobic filter was developed with a microbial consortium, consisting predominantly of Alcaligenes faecalis and Commamonas acidovorans, immobilized on a gravel substratum. Remazol Black B, a commercially important textile dye, was decolourised by >95% within 48 h (operating conditions: initial dye concentration, 0.5g/l, pH 7.0, flow rate 0.1 1/hour, room temperature fluctuated between 12 and 20°C).

Keywords: Water

Kim, S.Y., Kim, J.H., Kim, C.J. and Oh, D.K. (1996), Metal adsorption of the polysaccharide produced from Methylobacterium organophilum. *Biotechnology Letters*, **18** (10), 1161-1164.

Full Text: [1996\Bio Let18, 1161.pdf](1996/Bio%20Let18,%201161.pdf)

Abstract: Metal adsorption of the acidic polysaccharide produced from Methylobacterium organophilum was investigated. The polysaccharide non-specifically adsorbed 21% for copper and 18% for lead of the polysaccharide used after 30 minutes of reaction time at pH 7. The metal adsorption may be caused by the interaction between metal cations and negative charges of acidic residues of the polysaccharide such as uronic, pyruvic and acetic acid.

? Karna, R.R., Sajani, L.S. and Mohan, P.M. (1996), Bioaccumulation and biosorption of Co2+ by *Neurospora crassa*. *Biotechnology Letters*, **18** (10), 1205-1208.

Full Text: [1996\Bio Let18, 1205.pdf](1996/Bio%20Let18,%201205.pdf)

Abstract: Mycelial biomass of Wild type and a Co2+-resistant N.crassa (cor) was used to remove Co2+ from aqueous media. Mycelia obtained from growth in nitrate N-medium (NaNO3) was more effective than ammonium N-medium (NH4NO3), in removing Co2++. Co2+-resistant N.crassa cor was more efficient than wild type in removing Co2+ from medium containing higher concentrations (500 mg/L). Metal removal was linear up to 12 h at which 35-60% Co2+ is depleted from medium, reaching near saturation by 24 h (90% removal). Co2+ removal was as efficient even from pure solutions and sodium azide inhibited the process up to 60%. Cell walls prepared from nitrate N-medium grown mycelia bound 3 - 5 fold more Co2+ when compared to ammonium N-medium. The importance of bioaccumulation and biosorption in bioremediating toxic metal ions from effluents is discussed.

Keywords: Biomass, Biosorption, Cell-Wall Composition, Cobalt, Copper, Metal Ions, Metals

Jaspers, C.J. and Penninckx, M.J. (1996), Adsorption effects in the decolorization of a Kraft bleach plant effluent by *Phanerochaete chrysosporium*. *Biotechnology Letters*, **18** (11), 1257-1260.

Full Text: [1996\Bio Let18, 1257.pdf](1996/Bio%20Let18,%201257.pdf)

Abstract: Phanerochaete chrysosporium was proposed for the decolorization and degradation of chlorinated compounds (AOX) present in the E1 stage effluent of the Kraft process. We observed that pellets of the fungus inoculated in the E1 effluent, not supplemented with nutrients, strongly absorb colour and AOX. The data were in agreement with a model describing a multilayer adsorption.

Keywords: White-Rot Fungi, Removal, Biodegradation, Culture, System, Color

Karavaiko, G.I., Kareva, A.S., Avakian, Z.A., Zakharova, V.I. and Korenevsky, A.A. (1996), Biosorption of scandium and yttrium from solutions. *Biotechnology Letters*, **18** (11), 1291-1296.

Full Text: [1996\Bio Let18, 1291.pdf](1996/Bio%20Let18,%201291.pdf)

Abstract: The usage of biosorbents allows separation of scandium and yttrium from each other and from Fe, Al, Ti, Si, and Ca in hydrometallurgical processing of ores and wastes. It was shown that sorption of scandium and yttrium increased with the increase in pH of solution. Initial rate of scandium sorption depended on the biomass type, however 85-98% of scandium was sorbed within 10-30 min with most biomass types tested. The presence of aluminum, iron(III), and titanium in the solution inhibited sorption of scandium and particularly yttrium. After four cycles of sorption, 98.8% of scandium and 87% of yttrium was extracted from red mud leach solution by the biomass of Saccharomyces cerevisiae and *Aspergillus* terreus, respectively. Selectivity of the process of scandium and yttrium recovery could be achieved during sorption and also desorption, when solubilization of sorbed associated elements was inhibited by high pH values.

Keywords: Biomass

Riordan, C., Bustard, M., Putt, R. and McHale, A.P. (1997), Removal of uranium from solution using residual brewery yeast: Combined biosorption and precipitation. *Biotechnology Letters*, **19** (4), 385-388.

Full Text: [B\Bio Let20, 385.pdf](B/Bio%20Let20,%20385.pdf)

Abstract: Whilst unwashed preparations of biomass from a local brewery had an apparent maximum biosorption capacity for uranium of 360 mg/g (dry weight biomass) washing reduced this maximum to 150 mg/g. Homogenization of both biomass preparations and recovery of cellular debris had no significant effect on the maximum biosorption capacities although at lower equilibrium concentrations of uranium differences in the biosorption capacities were detected. When unwashed biomass was retained by a semi-permeable membrane 40% of uranium used in the experiments precipitated outside that membrane. Therefore a significant proportion of the uranium removed from solution, and previously attributed to biosorption by the yeast biomass, resulted from precipitation brought about by interaction with low molecular weight components loosely associated with the biomass.

Dhami, P.S., Gopalakrishnan, V., Kannan, R., Ramanujam, A., Salvi, N. and Udupa, S.R. (1998), Biosorption of radionuclides by *Rhizopus Arrhizus*. *Biotechnology Letters*, **20** (3), 225-228.

Full Text: [B\Bio Let20, 225.pdf](B/Bio%20Let20,%20225.pdf)

Abstract: The sorption of various radionuclides viz. 233U, 239Pu, 241Am, 144Ce, 147Pm, 152+154Eu and 95Zr from aqueous nitrate medium has been studied using biomass *Rhizopus Arrhizus*. The biosorption of 233U and 239Pu was found to be maximum at pH 6-7 whereas for other trivalent actinides and fission products viz. 241Am, 144Ce, 147Pm, 152+154Eu and tetravalent 95Zr, it was more effective at pH 2. This biomass is a promising sorbant for the treatment of radioactive effluents from nuclear industry. © Rapid Science Ltd. 1998

Dhami, P.S., Kannan, R., Gopalakrishnan, V., Ramanujam, A., Salvi, N. and Udupa, S.R. (1998), Sorption of plutonium, americium and fission products from reprocessing effluentsusing *Rhizopus Arrhizus*. *Biotechnology Letters*, **20** (9), 869-872.

Full Text: [B\Bio Let20, 869.pdf](B/Bio%20Let20,%20869.pdf)

Abstract: *Rhizopus Arrhizus* biomass removed more than 95% of Pu-239, Am-241, Zr-95, Ce-144 and 152+154EU from different waste streams generated in Purer as wellas Truer processes after suitable adjustment of pH.

Patil, Y.B. and Paknikar, K.M. (1999), Removal and recovery of metal cyanides using a combination of biosorption and biodegradation processes. *Biotechnology Letters*, **21** (10), 913-919.

Full Text: [B\Bio Let21, 913.pdf](B/Bio%20Let21,%20913.pdf)

Abstract: *Cladosporium cladosporioides* biomass was a highly efficient biosorbent of copper cyanide and nickel cyanide from aqueous solutions. A 32–38 fold concentration of initial 0.5 mM metal cyanides could be achieved when biosorption process was carried out under standardised conditions. Residual, unrecoverable metal cyanide could be completely biodegraded in 5–6 h. The solution treated with the combined biosorption-biodegradation process was fit for discharge in the environment.

Keywords: Biodegradation, Biosorption, *Cladosporium cladosporioides*, Copper Cyanide, Nickel Cyanide, Recovery, Removal

? Son, D.H., Kim, D.W. and Chung, Y.C. (2000), Biological nitrogen removal using a modified oxic/anoxic reactor with zeolite circulation. *Biotechnology Letters*, **22** (1), 35-38.

Full Text: [B\Bio Let22, 35.pdf](B/Bio%20Let22,%2035.pdf)

Abstract: A modified, laboratory-scale, oxic/anoxic process with zeolite circulation achieved a high efficiency (97%) of nitrogen removal from synthetic wastewater. This process lowered the turbidity and the suspended solid concentration in the effluent. The zeolite was effective as a biomedium due to the formation of biofilm on the surface of zeolite and the continuous biological regeneration.

Keywords: Ammonium Ion, Biofilm Formation, Bioregeneration, Nitrogen Removal, Zeolite, Biofilms

Esteves, A.J.P., Valdman, E. and Leite, S.G.F. (2000), Repeated removal of cadmium and zinc from an industrial effluent by waste biomass *Sargassum* sp. *Biotechnology Letters*, **22** (6), 499-502.

Full Text: [B\Bio Let22, 499.pdf](B/Bio%20Let22,%20499.pdf)

Abstract: Waste biomass *Sargassum* sp. biosorbed 100% of Cd2+ and 99.4% of Zn2+ from a 3 and 98 mgl-1 solution (pH 4.5), respectively, at the end of four serial experiments. of the five desorbents studied in consecutive adsorption/desorption cycles, CaCl2 0.05 M eluted nearly 40% of both metals and decreased the biosorption in only 8% and 17% of Cd2+ and Zn2+, respectively. Although NaOH desorbent improved the heavy metal uptake from the second cycle onwards, it did not elute metals from the pre-loaded biomass.

Keywords: Biosorption, Desorption, Microalgae, Cu, Biosorption, Cadmium, Desorption, *Sargassum*, Zinc

Sar, P. and D’souza, S.F. (2002), Biosorption of thorium(IV) by a Pseudomonas biomass. *Biotechnology Letters*, **24** (3), 239-243.

Full Text: [B\Bio Let24, 239.pdf](B/Bio%20Let24,%20239.pdf)

Abstract: Lyophilized biomass of a Pseudomonas soil isolate adsorbed thorium(IV) (430 mg g-1 dry wt) optimally at pH 4, with 91% of equilibrium loading being reached in 1 min. Equilibrium metal sorption showing conformity to Langmuir isotherm model suggested a monolayered thorium binding. Thorium binding remained unaffected or slightly affected (< 20% inhibition) in presence of equimolar (430 μM) concentration of several interfering ions except Fe3+ (40% inhibition). More than 90% of loaded thorium could be recovered using 1 M CaCO3, though mineral acids and Na2CO3 were also effective.

Keywords: Biosorption, Desorption, Isotherm, Pseudomonas, Thorium

Dhami, P.S., Kannan, R., Naik, P.W., Gopalakrishnan, V., Ramanujam, A., Salvi, N.A. and Chattopadhyay, S. (2002), Biosorption of americium using biomasses of various *Rhizopus* species. *Biotechnology Letters*, **24** (11), 885-889.

Full Text: [B\Bio Let24, 885.pdf](B/Bio%20Let24,%20885.pdf)

Abstract: Biomasses from eight different *Rhizopus* species were tested for the sorption of americium from nitric acid medium. *Rhizopus Arrhizus* NCIM 997 showed maximum sorption at pH 2. Laboratory scale experiments were carried out using this biomass in packed columns for the sorption of α-activity from an americium spiked low level waste stream of PUREX process. The biomass was found to be an excellent sorbent for remediation of low level waste streams on once through basis.

Keywords: Americium, Biosorption, Column Process, PUREX Waste, *Rhizopus Arrhizus*

An, S.Y., Min, S.K., Cha, I.H., Choi, Y.L., Cho, Y.S., Kim, C.H. and Lee, Y.C. (2002), Decolorization of triphenylmethane and azo dyes by *Citrobacter* sp. *Biotechnology Letters*, **24** (12), 1037-1040.

Full Text: [B\Bio Let24, 1037.pdf](B/Bio%20Let24,%201037.pdf)

Abstract: A Citrobacter sp., isolated from soil at an effluent treatment plant of a textile and dyeing industry, decolorized several recalcitrant dyes except Bromophenol Blue. More than 90% of Crystal Violet and Methyl Red at 100 μM were reduced within 1 h. Gentian Violet, Malachite Green and Brilliant Green lost over 80% of their colors in the same condition, but the percentage decolorization of Basic Fuchsin and Congo Red were less than the others, 66 and 26%, respectively. Decolorization of Congo Red was mainly due to adsorption to cells. Color removal was optimal at pH 7-9 and 35-40 °C. Decolorization of dyes was also observed with extracellular culture filtrate, indicating the color removal by enzymatic biodegradation.

Keywords: Azo Dye, Biodegradation, *Citrobactor* sp., Decolorization, Triphenylmethane Dye, Microbial Decolorization, Biodegradation, Effluents, Textile

Bhatnagar, M., Bhatnagar, A. and Jha, S. (2002), Interactive biosorption by microalgal biomass as a tool for fluoride removal. *Biotechnology Letters*, **24** (13), 1079-1081.

Full Text: [B\Bio Let24, 1079.pdf](B/Bio%20Let24,%201079.pdf)

Abstract: Maximum biosorption of Ca2+ was at 50 mg Ca2+ l-1 with both Anabaena fertilissima (2.8 mg Ca2+ g-1 dry wt) and Chlorococcum humicola (4.4 mg g-1). Such Ca2+-treated biomasses, accumulated, respectively, 7 mg F g-1 DW from an aqueous solution of 10 mg F l-1 and 4.5 mg F g-1 DW from 15 mg F l-1. Data for both Ca2+ and F- biosorption fitted the Langmuir adsorption isotherm indicating monolayer adsorption at a constant energy.

Keywords: Adsorption Isotherm, Biosorption, Ca2+, Cyanobacteria, Fluoride, Microalgae

? Ramsay, J.A. and Nguyen, T. (2002), Decoloration of textile dyes by *Trametes versicolor* and its effect on dye toxicity. *Biotechnology Letters*, **24** (21), 1756-1760.

Full Text: [2002\Bio Let24, 1756.pdf](2002/Bio%20Let24,%201756.pdf)

Abstract: Amaranth, Tropaeolin O, Reactive Blue 15, Congo Red, and Reactive Black 5 were completely decolorized with no dye sorption by Trametes versicolor. Cibacron Brilliant Red 3G-P, Cibacron Brilliant Yellow 3B-A, and Remazol Brilliant Blue R were partially decolorized with some dye sorbed to the biomass. The Microtox assay before decoloration showed that Amaranth and Tropaeolin O were not toxic [the percent concentration to decrease 20% of the luminescence of Vibrio fischeri (EC20) was greater than 100%]; Cibacron Brilliant Yellow 3B-A, Reactive Blue 15 and Cibacron Brilliant Red 3G-P were moderately non-toxic (100% > EC20 > 75%); Remazol Brilliant Blue R was toxic (75% > EC20 > 50%); and Congo Red and Reactive Black 5 were moderately toxic (50% > EC20 > 25%). After decoloration the toxicity of the solutions containing Amaranth, Tropaeolin O and Reactive Black 5 was unchanged; Reactive Blue 15, Remazol Brilliant Blue R and Cibacron Brilliant Red 3G-P decreased to non-toxic levels; and Cibacron Brilliant Yellow 3B-A and Congo Red became very toxic (EC20 < 25%).

Keywords: Biodegradation, Decoloration, Textile Dyes, Toxicity, Trametes Versicolor, White Rot Fungus, Azo Dyes, Phanerochaete-Chrysosporium, Polymeric Dyes, Decolorization

? Yang, Q.X., Yang, M., Pritsch, K., Yediler, A., Hagn, A., Schloter, M. and Kettrup, A. (2003), Decolorization of synthetic dyes and production of manganese-dependent peroxidase by new fungal isolates. *Biotechnology Letters*, **25** (9), 709-713.

Full Text: [2003\Bio Let25, 709.pdf](2003/Bio%20Let25,%20709.pdf)

Abstract: Two yeasts, Debaryomyces polymorphus, Candida tropicalis, and two filamentous fungi, Umbelopsis isabellina, Penicillium geastrivorus, could completely decolorize 100 mg Reactive Black 5 (RB 5) l-1 within 16-48 h. Manganese-dependent peroxidase (MnP) activities between 60 and 424 U l-1 were detected in culture supernatants of three of these organisms indicating the color removal by enzymatic biodegradation but with P. geastrivorus there was no ligninolytic enzyme activity in its culture and the decolorization was mainly due to biosorption to mycelium. Extensive decolorization by D. polymorphus (69-94%) and C. tropicalis (30-97%) was obtained with five other azo dyes and one anthraquinone dye. Except for Reactive Brilliant Blue KNR and Reactive Yellow M-3R, the four azo dyes, Reactive Red M-3BE, Procion Scharlach H-E3G, Procion Marine H-EXL and Reactive Brilliant Red K-2BP, induced D. polymorphus to produce MnP (105-587 U l-1). However, MnP activities of 198-329 U l-1 were only detected in the culture of C. tropicalis containing Reactive Red M-3BE and Reactive Brilliant Red K-2BP, respectively.

Keywords: Azo, Biodegradation, Biosorption, Candida, Candida Tropicalis, Decolorization, Dye, Dyes, Effluent, Filamentous Fungi, Identification, Manganese-Dependent Peroxidase, Penicillium, Phanerochaete-Chrysosporium, Polymeric Dyes, Reactive Black 5, Removal, Yeast

? Su, H.J., Wang, Z.X. and Tan, T.W. (2003), Adsorption of Ni2+ on the surface of molecularly imprinted adsorbent from *Penicillium chysogenum* mycelium. *Biotechnology Letters*, **25** (12), 949-953.

Full Text: [2003\Bio Let25, 949.pdf](2003/Bio%20Let25,%20949.pdf)

Abstract: The adsorption capacity for Ni2+ on to the surface molecular imprinting adsorbent on *Penicillium chysogenum* mycelium the surface-imprinted adsorbent) was 40 - 45 mg g-1 (using 200 mg Ni2+ l-1), two times of the mycelium adsorbent. The surface-imprinted adsorbent had good stability at pH 2~8. The optimal concentration of EDTA for desorption was 0.1 to 0.5 g l-1. The surface imprinted adsorbent could be reused 15 times without losing its uptake.

Keywords: Adsorption, Adsorption Capacity, Adsorption Property, Biomass, Biosorption, Chitosan, Metal Ion, Metal-Ions, Mycelium, Ni2+, Resin, Surface Molecular Imprinting

Zhang, S.J., Yang, M., Yang, Q.X., Zhang, Y., Xin, B.P. and Pan, F. (2003), Biosorption of reactive dyes by the mycelium pellets of a new isolate of *Penicillium oxalicum*. *Biotechnology Letters*, **25** (17), 1479-1482.

Full Text: [B\Bio Let25, 1479.pdf](B/Bio%20Let25,%201479.pdf)

Abstract: Three reactive dyes were rapidly adsorbed by the mycelium pellets of *Penicillium oxalicum*. Dye removal of Reactive Blue 19 was up to 60% in 10 min and 91% in 80 min. Dye adsorption isotherms fitted Langmuir model well and the maximum adsorption capacities at 20°C were calculated to be 160 mg g-1 for Reactive Blue 19, 122 mg g-1 for Reactive Red 241 and 137 mg g-1 for Reactive Yellow 145, respectively. The pellets exhibited a high dye adsorption capacity (80-180 mg g-1) for all of the 3 dyes over a wide pH range (pH 2-10), and the maximum adsorption was obtained at pH 2. The adsorption capacity was mildly increased by increasing salinity.

Keywords: Biosorption, Decolorization, Mycelium Pellets, *Penicillium oxalicum*, Reactive Dyes, Textile Dyes, Trametes-Versicolor, Aqueous-Solution, Decolorization, Biomass

Iqbal, M. and Edyvean, R.G.J. (2004), Alginate coated loofa sponge discs for the removal of cadmium from aqueous solutions. *Biotechnology Letters*, **26** (2), 165-169.

Full Text: [B\Bio Let26, 165.pdf](B/Bio%20Let26,%20165.pdf)

Abstract: A biosorbent was prepared by coating the fibrous network of loofa sponge (Luffa cylindrica) with a thin film of calcium alginate. Alginate-coated loofa sponge removed Cd(II) rapidly, reaching equilibrium loading of 124 mg g-1 in 30 min. Seventy % of equilibrium uptake was achieved in 10 min. In contrast, it took 240 min for alginate beads to reach a loading equilibrium of 88 mg g-1 under identical conditions. The biosorption behaviour followed the Langmuir adsorption isotherm and the ACLS biosorbent was shown to be highly effective in removing Cd(II) from a 10 mg l-1 solution in a continuous flow fixed-bed column bioreactor.

Keywords: Adsorption, Adsorption Isotherm, Biosorption, Biosorption, Cadmium, Calcium Alginate, Column, Fixed Bed, Fixed Bed Column, Immobilized Cells, Loofa, Loofa Sponge, Luffa Cylindrica, Metals, *Rhizopus-Arrhizus*, Sorption, Sponge

? Riordan, C.R., Bustard, M.T., Hughes, P., Reid, C.N. and Mchale, A.P. (2004), Electric field-assisted biosorption. *Biotechnology Letters*, **26** (6), 533-537.

Full Text: [2004\Bio Let26, 533.pdf](2004/Bio%20Let26,%20533.pdf)

Abstract: A bisorption process using electric fields to facilitate contact between a sorbate and non-living biomass is described. The latter is enclosed within a semi-permeable membrane together with an electrode. The counter electrode is placed in the sorbate solution and an established potential across the electrodes facilitates electrokinetic movement of the sorbate to the biosorbant material.

Keywords: Adsorbents, Biomass, Biosorption, Electrodialysis, Electrokinetic, Heavy-Metals, Ions, Nickel, Non-Living Biomass, Palladium, Recovery, Remediation, Removal, Waste-Water

# Title: Biotechnology Progress

Full Journal Title: [Biotechnology Progress](http://pubs.acs.org/journals/bipret/index.html)

ISO Abbreviated Title: Biotechnol. Prog.

JCR Abbreviated Title: Biotechnol Progr

ISSN: 8756-7938

Issues/Year: 6

Journal Country/Territory: United States

Language: English

Publisher: Amer Chemical Soc

Publisher Address: 1155 16th St, NW, Washington, DC 20036

Subject Categories:

Biotechnology & Applied Microbiology: Impact Factor 2.398, 62/152 (2009)

Food Science & Technology: Impact Factor 2.398, 16/118 (2009)

Iwata, H., Saito, K., Furusaki, S., Sugo, T. and Okamoto, J. (1991), Adsorption characteristics of an immobilized metal affinity membrane. *Biotechnology Progress*, **7** (5), 412-418.

Full Text: [B\Bio Pro10, 412.pdf](B/Bio%20Pro10,%20412.pdf)

Abstract: An immobilized metal affinity (IMA) hollow-fiber membrane was prepared by radiation-induced graft polymerization of glycidy methacrylate (GMA) onto a porous polyethylene hollow fiber, followed by chemical conversion of the produced epoxide group into an iminodiacetate (IDA) group and its chelation with copper(II) ion. The IDA hollow fiber, whose degree of GMA grafting was 120%, was found to retain 0.42 mol of Cu ion/kg of dry weight of the resulting IMA hollow fiber. The pure water flux of the affinity membrane was 0.90 m/h at a filtration pressure of 1×105 Pa. The 0.1 g/L L-histidyl-L-leucine (His-Leu) solution permeated across the IMA hollow fiber, whose inner diameter and thickness were 0.78 and 0.365 mm, respectively, at a prescribed filtration pressure ranging from 0.2×105 to 1.0×105 Pa. The adsorption of His-Leu during permeation of the solution showed that the overall adsorption rate was independent of the filtration pressure, i.e., the residence time, because of the negligible diffusional resistance of His-Leu to the pseudobioaffinity ligand located on the pore surface of the membrane. No deterioration in the adsorption capacity was observed after five cycles of His-Leu adsorption, its elution, and reimmobilization of copper. The adsorption isotherm of bovine serum albumin (BSA) on the IMA hollow fiber was measured and compared with that for the conventional agarose-based bead containing the IDA-Cu ligand. The diol group formed by H2SO4 treatment of the epoxide group remaining after conversion of epoxide into IDA functionality significantly reduced the nonselective adsorptivity of His-Leu and BSA on the membrane.

Keywords: Chromatography, Proteins, Ion, Purification, Albumin

Al-Asheh, S. and Duvnjak, Z. (1994), Effect of glucose concentration on the biomass and phytase productions and the reduction of the phytic acid content in canola meal by *Aspergillus carbonarius* during a solid-state fermentation process. *Biotechnology Progress*, **10** (4), 353-359.

Full Text: [B\Bio Pro10, 353.pdf](B/Bio%20Pro10,%20353.pdf)

Abstract: It was found that an increase in the glucose amount up to and including 6 g per system in the initial solid-state culture medium resulted in an increase in the rates of the biomass growth, enzyme concentration, and phytic acid content reduction in canola meal. Inhibition of the rates of the above processes was noticed in the systems with initial glucose amounts of 12 and 24 g. The canola meal systems with 12 and 24 g of glucose had longer growth phases than those tested with lower glucose amounts, and this resulted in their higher maximum enzyme activities. Logistic law was used to model the biomass production. Models that relate the enzyme production and the phytic acid content reduction with the time of the solid-state fermentation process for each glucose concentration are given, and they fit the experimental data produced in this work reasonably well.

de Carvalho, R.P., Chong, K.H. and Volesky, B. (1995), Evaluation of the Cd, Cu and Zn biosorption in two-metalsystems using an algal biosorbent. *Biotechnology Progress*, **11** (1), 39-44.

Full Text: [B\Bio Pro11, 39.pdf](B/Bio%20Pro11,%2039.pdf)

Abstract: The equilibrium sorption capacity of the formaldehyde-cross-linked brown seaweed Ascophyllum nodosum biomass was studied using two-metalsystems comprising either (Cu + Zn), (Cu + Cd), or (Zn + Cd). Three-dimensional sorption isotherm surfaces were used in the evaluation of sorption performance, replacing simple isotherm curves. While each of the metals tested can inhibit the sorption of the others, at low total residual metal concentrations the total metalsorption uptake increases. At higher total metal concentrations, the total metalsorption uptake either remains constant, or there may be a slight decrease compared to single-metal uptakes. This is an indication of a mutual interference in the sorption uptake of the two metals tested in each system.

Notes: highly cited

Volesky, B. and Holan, Z.R. (1995), Biosorption of heavy metals. *Biotechnology Progress*, **11** (3), 235-250.

Full Text: [B\Bio Pro11, 235.pdf](B/Bio%20Pro11,%20235.pdf)

Abstract: Only within the past decade has the potential of metal. biosorption by biomass materials been well established. For economic reasons, of particular interest are abundant biomass types generated as st waste byproduct of large-scale industrial fermentations or certain metal-binding algae found in large quantities in the sea. These biomass types serve as a basis for newly developed metal biosorption processes foreseen particularly as a very competitive means for the detoxification of metal-bearing industrial effluents. The assessment of the metal-binding capacity of some new biosorbents is discussed. Lead and cadmium, for instance, have been effectively removed from very dilute solutions by the dried biomass of some ubiquitous species of brown marine algae such as Ascophyllum and *Sargassum*, which accumulate more than 30% of biomass dry weight in the metal. Mycelia of the industrial steroid transforming fungi *Rhizopus* and *Absidia* are excellent biosorbents for lead, cadmium, copper, zinc and uranium and also bind other heavy metals up to 25% of the biomass dry weight. Biosorption isotherm curves, derived from equilibrium batch sorption experiments, are used in the evaluation of metal uptake by different biosorbents. Further studies are focusing on the assessment of biosorbent performance in dynamic continuous-flow sorption systems. In the course of this work, new methodologies are being developed that are aimed at mathematical modeling of biosorption systems and their effective optimization. Elucidation of mechanisms active in metal biosorption is essential for successful exploitation of the phenomenon and for regeneration of biosorbent materials in multiple reuse cycles. The complex nature of biosorbent materials makes this task particularly challenging. Discussion focuses on the composition of marine algae polysaccharide structures, which seem instrumental in metal uptake and binding. The state of the art in the field of biosorption is reviewed in this article, with many references to recent reviews and key individual contributions.

Al Asheh, S. and Duvnjak, Z. (1995), Adsorption of copper and chromium by *Aspergillus carbonarius*. *Biotechnology Progress*, **11** (6), 638-642.

Full Text: [B\Bio Pro11, 638.pdf](B/Bio%20Pro11,%20638.pdf)

Abstract: *Aspergillus carbonarius* NRC 401121 adsorbs some copper and chromium from their solutions. The amount of the adsorbed metal per unit of biomass increased with a decrease in the biomass concentration. The increases in the initial concentrations of metals and pH of the solutions resulted in an increase in copper and chromium uptake. The optimum temperature for copper uptake was 25°C. ting of the biomass prior to utilizing it in the adsorption tests decreased its metal adsorption capacity. Preincubation of the biomass with glucose enhanced the metal adsorption. The optimum glucose concentration in this process was 0.1%.

? Ma, Z.D., Tanzil, D., Au, B.W. and Wang, N.H.L. (1996), Estimation of solvent-modulated linear adsorption parameters of taxanes from dilute plant tissue culture broth. *Biotechnology Progress*, **12** (6), 810-821.

Full Text: [1996\Bio Pro12, 810.pdf](1996/Bio%20Pro12,%20810.pdf)

Abstract: A stepwise elution technique is developed to estimate the linear solvent-modulated isotherm parameters of taxanes from dilute plant tissue culture broth. The technique is proven to be robust under various experimental conditions because mass transfer effects are decoupled from isotherm effects on elution bands. Simple algebraic equations are derived to relate isotherm parameters to the retention times at different solvent compositions in stepwise elution under volume overload conditions. A minimum loading volume, which is a function of mass transfer parameters, column geometries, and adsorption affinities, is estimated from moment analysis to ensure that band spreading due to mass transfer does not affect the accuracy of this method. The isotherms of a low-cost solute, phenylalanine, under different ethanol concentrations are measured by a standard multiple frontal chromatography method. The results serve as benchmarks for the parameters that are estimated over the same ethanol concentration range using the stepwise elution technique. The parameters determined from these two independent methods are in close agreement. For paclitaxel and cephalomannine, the retention times and peak shapes from plant tissue culture broth experiments are well predicted from rate model simulations using the parameters estimated from single-component elution data.

Keywords: Gradient Elution Chromatography, Phase Liquid-Chromatography, Stepwise Elution, Taxus-Cuspidata, Taxol Yield, Pacific Yew, Proteins, Drug, Growth

Hu, M.Z.C. and Reeves, M. (1997), Biosorption of uranium by *Pseudomonas aeruginosa* strain CSU immobilized in a novel matrix. *Biotechnology Progress*, **13** (1), 60-70.

Full Text: [B\Bio Pro13, 60.pdf](B/Bio%20Pro13,%2060.pdf)

Abstract: *Pseudomonas aeruginosa* CSU, a nongenetically engineered bacterial strain previously shown to bind dissolved hexavalent uranium (as UO22+ and/or its cationic hydroxy complexes), shows promise as the basis of an immobilized-cell process for removal of dissolved uranium from contaminated wastewaters. A number of polymeric materials, including calcium alginate, polyacrylamide, polysulfone, and polyurethane, were evaluated as possible immobilization matrices for lyophilized biomass of *P. aeruginosa* CSU. Polyurethane-based materials such as hydrogel were identified as superior candidates for biomass immobilization. A novel polyurethane gel-bead fabrication technique was developed and successfully demonstrated at pilot-plant scale for producing mass quantities of spherical, uniform-size beads. The immobilized bacterial biomass was evaluated via the measurement of sorption isotherms and dynamics within a batch, stirred-tank reactor, and loading and elution behavior within a continuous, upflow, packed-bed columnar reactor. Sorption equilibrium and dynamics in a batch stirred tank were modeled with a pore-diffusion mass transfer model, by which a pore-diffusion coefficient was determined to be approximately 2.0×10-6 cm2/s for uranyl ion transport through the polyurethane gel matrix. The biosorbent beads were regenerable with dilute (0.01-0.1 M) sodium carbonate solutions. Preliminary column breakthrough-elution studies indicated that *P. aeruginosa* CSU biomass immobilized within polyurethane gel beads was effective for removal of uranium from low-concentration, acidic wastewaters.

Williams, C.J. and Edyvean, R.G.J. (1997), Ion exchange in nickel biosorption by seaweed materials. *Biotechnology Progress*, **13** (4), 424-428.

Full Text: [B\Bio Pro13, 424.pdf](B/Bio%20Pro13,%20424.pdf)

Abstract: This study focuses upon the nature of the biosorption of nickel by a brown seaweed *Ecklonia maxima* and two seaweed-derived materials, dealginated seaweed waste and alginate fiber. An ion exchange relationship in the sequestration of nickel ions and the concomitant release of calcium ions has been identified. A millimolar equivalent relationship between nickel uptake and calcium release has been elucidated. Alginate fiber was found to adsorb nickel ions faster than either dealginate or *E. maxima*. This study is significant in that it sheds some more light on the chemical interactions that occur in biosorption processes. Full understanding of the mechanisms of biosorption and associated chemical interactions will allow the development of full-scale wastewater treatment systems.

Chen, S.L., Kim, E.K., Shuler, M.L. and Wilson, D.B. (1998), Hg2+ removal by genetically engineered *Escherichia coli* in a hollow fiber bioreactor. *Biotechnology Progress*, **14** (5), 667-671.

Full Text: [B\Bio Pro14, 667.pdf](B/Bio%20Pro14,%20667.pdf)

Abstract: *Escherichia coli* cells engineered to express an Hg2+ transport system and metallothionein accumulated Hg2+ effectively over a concentration range of 0.2-4 mg/L in batch systems. Bioaccumulation was selective against other metal ions and resistant to changes in ambient conditions such as pH, ionic strength, and the presence of common metal chelators or complexing agents (Chen, S.-L., Wilson, D. B. *Appl.* *Environ.* *Microbiol.* **1997**, *63*, 2442-2445, *Biodegradation* **1997**, *8*, 97-103). Here we report the characterization of the bioaccumulation system based on its kinetics and an isotherm. Bioaccumulation was rapid and followed Michaelis-Menten kinetics. A hollow fiber bioreactor was constructed to retain the genetically engineered cells. The bioreactor was capable of removing and recovering Hg2+ effectively at low concentrations, reducing a 2 mg/L solution to about 5 μg/L. A mathematical equation that quantitatively described Hg2+ removal by the bioreactor provides a basis for the optimization and extrapolation of the bioreactor. The genetically engineered *E.* *coli* cells and the bioreactor system have excellent properties for bioremediation of Hg2+-contaminated environments.

Chang, J.S. and Huang, J.C. (1998), Selective adsorption/recovery of Pb, Cu, and Cd with multiple fixed beds containing immobilized bacterial biomass. *Biotechnology Progress*, **14** (5), 735-741.

Full Text: [B\Bio Pro14, 735.pdf](B/Bio%20Pro14,%20735.pdf)

Abstract: Fixed-bed columns packed with calcium alginate (CA)-immobilized biomass of *Pseudomonas aeruginosa* PU21 were utilized to remove lead (Pb), copper (Cu), and cadmium (Cd) from the contaminated water. In the absence of competing metals, saturation capacity of Ca-immobilized cells in batch operations was 1.60, 2.42, and 1.06 mmol/g, for Pb, Cu, and Cd, respectively. The Langmuir constants (K) obtained from the Langmuir isotherm were 157.6, 4.2, and 3.7 mM-1 for Pb, Cu, and Cd, respectively. Results from single-metal biosorption with 10-cm immobilized-cell columns show that, for an influent metal concentration of 193 µM, the total capacities for Pb, Cu, and Cd, respectively, were 5.12, 4.03, and 3.48 mmol, which is nearly 25-30% higher than those obtained from columns containing only cell-free CA matrix. With the influent containing ternary mixtures of Pb, Cu, and Cd, columns with immobilized cells exhibited predominant selectivity to Pb, whereas in the cell-free columns, the dominance of Pb adsorption reduced, along with an appreciable increase in the adsorption of Cu. The metal-laden columns were regenerated by elution with HCl solution (pH 2.0). The metal recovery ratios were 80: 1, 60: 1, and 27: 1 for Cu, Cd, and Pb, respectively. Moreover, with a pH gradient elution, the column-trapped metals can be optimally recovered at distinct pH values. Continuous biosorption of Pb, Cu, and Cu with four columns in series was also conducted. Results from the multibed operation demonstrate that Pb ions strongly inhibited the adsorption of Cu and Cd, which only occurred initially, and subsequently, an essential portion of the adsorbed Cu and Cd ions was replaced by Pb ions due to the ion exchange effect. However, since Pb ions were rapidly removed from the bulk at the onset of metal loading, Pb adsorption in columns 2-4 was negligible for the first 10-30 h, leading to an elevation in the breakthrough time (t (b)) and the capacity for Cu and Cd in columns 2-4. A back-propagation neural network model was shown to be able to predict the breakthrough curves of the three metals in the multicolumn processes with a ternary-metal feed.

Keywords: *Pseudomonas-Aeruginosa* PU21, Heavy-Metals, Strain CsU, Biosorption, Removal, Cadmium, Uranium, Copper

Puranik, P.R. and Paknikar, K.M. (1999), Biosorption of lead, cadmium, and zinc by Citrobacter strain MCM B-181: Characterization studies. *Biotechnology Progress*, **15** (2), 228-237.

Full Text: [B\Bio Pro15, 228.pdf](B/Bio%20Pro15,%20228.pdf)

Abstract: The biosorption process for removal of lead, cadmium, and zinc by Citrobacter strain MCM B-181, a laboratory isolate, was characterized. Effects of environmental factors and growth conditions on metal uptake capacity were studied. Pretreatment of biomass with chemical agents increased cadmium sorption efficiency, however, there was no significant enhancement in lead and zinc sorption capacity. Metal sorption by Citrobacter strain MCM B-181 was found to be influenced by the pH of the solution, initial metal concentration, biomass concentration, and type of growth medium. The metalsorption process was not affected by the age of the culture or change in temperature. Equilibrium metalsorption was found to fit the Langmuir adsorption model. Kinetic studies showed that metal uptake by Citrobacter strain MCM B-181 was a fast process, requiring <20 min to achieve >90% adsorption efficiency. The presence of cations reduced lead, zinc, and cadmium sorption to the extent of 11.8%, 84.3%, and 33.4%, respectively. When biomass was exposed to multimetalsolutions, metals were adsorbed in the order Co2+ < Ni2+ < Cd2+ < Cu2+ < Zn2+ < Pb2+. Among various anions tested, only phosphate and citrate were found to hamper metalsorption capacity of cells. Biosorbent beads prepared by immobilizing the Citrobacter biomass in polysulfone matrix exhibited high metal loading capacities. A new mathematical model used for batch kinetic studies was found to be highly useful in prediction of experimentally Obtained metal concentration profiles as a function of time. Metal desorption studies indicated that Citrobacter beads could, in principle, be regenerated and reused in adsorption-desorption cycles. In an expanded scale trial, biosorbent beads were found to be useful in removal/recovery of metals such as lead from industrial wastewaters.

Keywords: *Rhizopus-Arrhizus* Biomass, Heavy-Metals, *Saccharomyces-Cerevisiae*, Waste Biomass, Adsorption, Removal, Uranium, Copper, Cu(II), CSU

Aretxaga, A., Romero, S., Sarrà, M. and Vicent, T. (2001), Adsorption step in the biological degradation of a textile dye. *Biotechnology Progress*, **17** (4), 664-668.

Full Text: [B\Bio Pro17, 664.pdf](B/Bio%20Pro17,%20664.pdf)

Abstract: This research documents the removal of the dye Gris Lanaset G from aqueous solutions by fungal pellets. Adsorption of the dye by dead biomass pellets of Trametes versicolor was determined and compared with dye removal by enzymatic degradation. Six kinetic equations were fitted to the experimental adsorption data obtained. The results indicate that kinetics such as the Elovich equation, which considers that the rate-controlling step is the diffusion of the dye molecules, show the best fit. Nonlinear Langmuir and Freundlich equations were also fitted into the adsorption data, and it can be concluded that the adsorption equilibrium can be interpreted by the Langmuir isotherm. Adsorption plays an important role in the process of the elimination of color from textile wastewater, although not all of the elimination is due to this physical process when the microorganism is active. The removal of color (around 90%) with active microorganisms is greater than that obtained with the adsorption process.

Keywords: Fungus *Phanerochaete-Chrysosporium*, Biodegradation, Biosorption, Biomass, Removal, Water, Red

Nedelkoska, T.V. and Doran, P.M. (2001), Hyperaccumulation of nickel by hairy roots of *Alyssum* species: Comparison with whole regenerated plants. *Biotechnology Progress*, **17** (4), 752-759.

Full Text: [B\Bio Pro17, 752.pdf](B/Bio%20Pro17,%20752.pdf)

Abstract: Hairy roots were used to investigate nickel uptake by the hyperaccumulator species, *Alyssum bertolonii*, *A. tenium*, and *A. troodii*. The Ni biosorption capacity of *A. tenium* hairy roots was lower than for other types of biomass such as bacteria and algae, in short-term (9-h) equilibrium studies, the highest Ni content measured in the roots was 17 500 μg g-1 dry weight at a liquid concentration of about 4000 ppm. Using long-term hairy root cultures, it was demonstrated that Ni tolerance and hyperaccumulation do not necessarily depend on the presence of shoots or root-shoot translocation. *A. bertolonii* hairy roots remained healthy in appearance and continued to grow in the presence of 20-100 ppm Ni, accumulating up to 7200 μg g-1 dry weight Ni. In contrast, hairy roots of *Nicotiana tabacum* turned dark brown at 20 ppm Ni and growth was negligible. The ability to grow at high external Ni concentrations allowed hyperaccumulator hairy roots to remove much greater amounts of heavy metals from the culture liquid than nonhyperaccumulator hairy roots, even though biomass Ni concentrations were similar. Although hairy roots proved to be a useful tool for investigating Ni hyperaccumulation, there were significant differences in the Ni uptake capacity of hairy roots and whole plants. Regenerated plants of *A. tenium* were much more tolerant of Ni and capable of accumulating higher Ni concentrations than hairy roots of this species.

? Velizarov, S., Crespo, J.G. and Reis, M.A. (2002), Ion exchange membrane bioreactor for selective removal of nitrate from drinking water: Control of ion fluxes and process performance. *Biotechnology Progress*, **18** (2), 296-302.

Full Text: [2002\Bio Pro18, 296.pdf](2002/Bio%20Pro18,%20296.pdf)

Abstract: An ion exchange membrane bioreactor (IEMB), consisting of a monoanion permselective membrane dialyzer coupled to a stirred anoxic vessel with an enriched mixed denitrifying culture, has been studied for nitrate removal from drinking water. The influence of nitrate and chloride concentrations on the selectivity of nitrate transport in the IEMB process was investigated. With appropriate dosing of chloride ions to the IEMB biocompartment, it was possible to regulate the net bicarbonate flux in the system, thus maintaining the bicarbonate concentration in the treated water at the desired level. The latter was not possible to achieve in Donnan dialysis, operated as a single process in which, besides the lower nitrate removal efficiency found, bicarbonate was co-extracted together with nitrate from the polluted water stream. Residual carbon source (ethanol) and nitrite were not detected in the treated water produced in the IEMB system. With a concentration of nitrate in the polluted water three times higher than the maximum contaminant level of 50 mg L-1 allowed, the IEMB process was successfully operated for a period of 1 month before exceeding this limit.

Keywords: Biological Denitrification, Donnan Dialysis, Drinking Water, Ion Exchange, Ion Exchange Membrane Bioreactor, Nitrate Removal

? Tu, M.B., Chandra, R.P. and Saddler, J.N. (2007), Evaluating the distribution of cellulases and the recycling of free cellulases during the hydrolysis of lignocellulosic substrates. *Biotechnology Progress*, **23** (2), 398-406.

Full Text: [2007\Bio Pro23, 398.pdf](2007/Bio%20Pro23,%20398.pdf)

Abstract: The recycling of cellulase enzymes is one potential strategy for reducing the cost of the enzymatic hydrolysis step during the bioconversion of lignocellulosics to ethanol. To determine the influence of lignin on the post-hydrolysis distribution of cellulase enzymes between the liquid and solid phases, the hydrolysis of Avicel was compared to an organosolv-pretreated Douglas fir substrate with a lignin content of 3.0%. After a 12 h hydrolysis reaction on Avicel, 90% of the added cellulases (including beta-glucosidases) remained “free” in the liquid phase compared to only 65% in the case of the hydrolysis of the organosolv-pretreated Douglas fir substrate. The readsorption of free cellulases by supplementing the hydrolysis reaction with fresh substrate was explored as a potential means of recovering the free cellulases that remain in the liquid phase after hydrolysis. The Langmuir adsorption isotherm was used to develop a model predicting that 82% of the free cellulases could be recovered via readsorption onto fresh substrates during the hydrolysis of an ethanol-pretreated mixed softwood substrate with a lignin content of 6%. Recoverable free cellulase values of 85% and 88% based on cellulase activity and protein content, respectively, were obtained after experimental verification of the model. The readsorption of free cellulases onto fresh lignocellulosic substrates was shown to be an effective method for free enzyme recovery.

Keywords: Steam-Pretreated Softwood, Enzymatic-Hydrolysis, Trichoderma-Reesei, Cellobiohydrolase-I, Cellulose Hydrolysis, Adsorption, Ethanol, Lignin, Recovery, Coproducts

# Title: Biotechnology Research International

Full Journal Title: Biotechnology Research International

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

# Title: Biotechnology and Safety Assessment

Thomas, J.A. and Myers, L.A. (1993), *Biotechnology and Safety Assessment*, Raven Press, New York.

# Title: Biotechnology Techniques

Full Journal Title: [Biotechnology Techniques](http://www.kluweronline.com/issn/0951-208X/contents)

ISO Abbreviated Title: Biotechnol. Tech.

JCR Abbreviated Title: Biotechnol Tech

ISSN: 0951-208X

Issues/Year: 12

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biochemical Research Methods: Impact Factor

Biotechnology & Applied Microbiology: Impact Factor

? Schiewer, S. and Volesky, B. (1995), Mathematical evaluation of the experimental and modeling errors in biosorption. *Biotechnology Techniques*, **9** (11), 843-848.

Full Text: Bio Tec9, 843

Abstract: The purpose of the presented work was to investigate the error in the experimental determination of metal. uptake during the batch equilibrium biosorption process. The objective was to quantify the inaccuracies in mass and volume measurement as well as calibration, drift and fluctuation of the Atomic Absorption Spectrophotometer readings for an example of Cd, Cu or Zn sorption by protonated Sargassum fluitans biomass. As a result, a mathematical description of the total error as a function of the initial and final metal concentrations, dilution factor, calibration wavelength, solution volume, sorbent mass and sorbed species was developed. Dilution and insufficient difference between the initial and final concentrations of the sorbed metal were determined to be the largest error sources. A recommendation for the choice of experimental conditions such as the initial concentration and the corresponding solid to liquid ratio is made, so that excessive experimental errors can be avoided. The discrepancies between experimental data and predictions of a previously developed model for metal uptake in multi-metal-systems were found to be of a similar magnitude as the estimated experimental error. Therefore, no significant modeling error could be detected.

? Cordova Lopez, J., Gutierrez Rojas, M., Huerta, S., Saucedo Castaneda, G. and Favela Torres, E. (1996), Biomass estimation of *Aspergillus niger* growing on real and model supports in solid state fermentation. *Biotechnology Techniques*, **10** (1), 1-6.

Full Text: Bio Tec10, 1

Abstract: Direct hydrolysis of *Aspergillus niger* mycelium growth on amberlite IRA-900 or sugar cane bagasse on solid state fermentation followed by the analysis of soluble protein by the dye binding method was carried out. Hydrolysis with phosphoric acid 0.25M during 7 min allowed maxima protein extraction available to be measured. Color interference of medium components was not observed, allowing the use of this method for biomass estimation when amberlite IRA-900 or sugar cane bagasse are used as support in solid state fermentation processes.

Keywords: Dye-Binding, Protein, Growth, Assay

Chitguppa, R., Chu, K.H. and Hashim, M.A. (1997), Reusability of seaweed biosorbent in multiple cycles of cadmium adsorption and desorption. *Biotechnology Techniques*, **11** (6), 379-383.

Full Text: [B\Bio Tec11, 379.pdf](B/Bio%20Tec11,%20379.pdf)

Abstract: The uptake of cadmium by the seaweed Sargassum siliquosum was investigated over five consecutive cycles of adsorption and desorption with HCl as the desorbent. A large fraction of the cadmium loaded in the first cycle was gradually desorbed over the five cycles. The use of a much longer desorption time had no effect on this desorption trend. Only 25-34% of the uptake capacity of the fresh seaweed could be reused in subsequent cycles.

Keywords: Algal Biosorbent

Tam, N.F.Y., Wong, Y.S. and Simpson, C.G. (1998), Repeated removal of copper by alginate beads and the enhancement by microalgae. *Biotechnology Techniques*, **12** (3), 187-190.

Full Text: [B\Bio Tec12, 187.pdf](B/Bio%20Tec12,%20187.pdf)

Abstract: Alginate beads and those immobilised with *Chlorella vulgaris* were suitable for repeated adsorption/desorption cycling for copper under batch conditions. Consistently high copper removal (>95%) and recovery (100% using 0.1 M HCl) were achieved in five consecutive cycles. Majority copper was adsorbed by alginate matrix, not the cells. Freely suspended cells were difficult to handle in repeated cycling, and given inconsistent copper removal and recovery. Heat killed cells performed the same as initially live cells after the first cycle.

Keywords: Metal-Ions, *Chlorella-Vulgaris*, Accumulation, Bacillus, Biomass, Binding, Cells, Gold

# Title: Biotherapy

Full Journal Title: [Biotherapy](http://www.kluweronline.com/issn/0921-299X/contents)

ISO Abbreviated Title: Biotherapy

JCR Abbreviated Title: Biotherapy

ISSN: 0921-299X

Issues/Year: 4

Journal Country/Territory: Netherlands

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Biochemistry & Molecular Biology: Impact Factor 0.870, 242/310 (2000)

Cell Biology Medicine, Research & Experimental: Impact Factor

? Dufour, P., Lang, J.M., Giron, C., Duclos, B., Haehnel, P., Jaeck, D., Jung, J.M. and Oberling, F. (1993), Sodium ditiocarb as adjuvant immunotherapy for high-risk breast-cancer: A randomized study. *Biotherapy*, **6** (1), 9-12.

Abstract: Sixty-four patients with non metastatic high risk breast cancer were randomized in a double blind trial of adjuvant immunotherapy with sodium ditiocarb (DDC) versus placebo. All patients underwent prior surgery (mammectomy according to Patey) then adjuvant FAC chemotherapy±DDC. With a median follow-up of 5 years we observed 6 relapses and 5 deaths in DDC group, 13 relapses and t2 deaths in control group. At 6 years, overall survival is 81% in DDC group versus 55%. Disease free survival (DFS) is 76% in DDC group versus 55%. DDC associated to chemotherapy and locoregional treatment can improve survival and probably DFS in this high risk breast cancer subgroup.

Keywords: Double-Blind, Diethyldithiocarbamate, Levamisole, Infection, Therapy, Adjuvant Immunotherapy, Breast Cancer, Ditiocarb Sodium

# Title: Biotropica

Full Journal Title: Biotropica

ISO Abbreviated Title: Biotropica

JCR Abbreviated Title: Biotropica

ISSN: 0006-3606

Issues/Year: 4

Journal Country/Territory: United States

Language: Multi-Language

Publisher: Assoc Tropical Biology Inc

Publisher Address: 810 East 10th St, Lawrence, KS 66044

Subject Categories:

Ecology: Impact Factor 0.858, /

? Sharpe, J.M. (1993), Plant-growth and demography of the Neotropical herbaceous fern Danaea-wendlandii (Marattiaceae) in a Costa-rican rain-forest. *Biotropica*, **25** (1), 85-94.

Abstract: Danaea wendlandii Reichenb. (Marattiaceae) is a eusporangiate fern which inhabits the herbaceous layer of neotropical rain forests. Morphology and growth of sporophytes from reproductively mature populations at the La Selva Biological Station in Costa Rica were studied. The presence of four morphologically different leaf types allowed plants to be classified into six life history stages, which in turn corresponded to relative age classes determined by counting nodes. One year’s observations indicate that leaves are produced at a rate of 1.6 per year in reproductively mature populations. Approximate ages of sporophytes can be estimated from leaf counts in subadult individuals, and from the leaf length and number of leaflets on the longest sterile leaf in adults. The maximum life span of a sporophyte in reproductively mature populations is estimated to be at least 23 yr. The first vegetative propagules (ramets) from leaf tip buds are produced at an estimated mean plant age of 10 yr. Sexual maturity occurs approximately 3 yr after the first ramet has been produced. Leaf tip ramets become independent within a year after bud expansion and are located at a maximum distance of approximately 21 cm from the parent plant. The reproductively mature population samples studied showed substantial recruitment in the younger age classes.

Keywords: Danaea, Danaea-Wendlandii, Costa-Rica, Ferns, Herbaceous Plant Growth, Plant Age Estimation, Plant Demography, Ramet Production, Tropical Tree-Fern, Ecology, History, Fiji

? Walker, L.R. and Aplet, G.H. (1994), Growth and fertilization responses of Hawaiian tree ferns. *Biotropica*, **26** (4), 378-383.

Abstract: Responses of a tree fern (Cibotium glaucum) to nutrient additions were examined in two rain forest sites in Hawaii Volcanoes National Park, Hawaii. In the younger forest (ca 200 yr old), separate additions of nitrogen and of phosphorus (but not additions of all other macro-and micronutrients) increased fern stem height growth. Nitrogen but not phosphorus increased leaf production, but fertilization had no effect on maximum leaf longevity (39 mo). In the older forest (> 1000 yr old), nitrogen additions did not alter fern growth parameters, fern stem height growth and leaf production were greater in unfertilized plots of the > 1000 yr old forest than in unfertilized plots in the younger forest, and leaf longevity (maximum of 34 mo) was shorter. Leaf production (February-April) and leaf mortality (August-November) were highly seasonal, with mortality occurring several months after expansion of new leaves. The asynchronous leaf recruitment and mortality resulted in cyclic monthly variability in leaves per fern. Our data support other studies suggesting that more rapid leaf turnover occurs in nutrient-rich sites, and that nitrogen appears to be the nutrient most limiting to growth in the early stages of primary succession.

Keywords: Cibotium-Glaucum, Fertilizer Effects, Hawaii, Nitrogen, Phenology, Phosphorus, Tree Ferns, Biological Invasion, Montane Rainforest, Mineral-Nutrition, Soil Nutrients, Myrica-Faya, Demography, Turnover, Foliar, Fiji

? Guariguata, M.R. and Dupuy, J.M. (1997), Forest regeneration in abandoned logging roads in lowland Costa Rica. *Biotropica*, **29** (1), 15-28.

Abstract: We characterized plant regeneration in four old logging roads (700-1000 m long), 12-17 yr after abandonment, in selectively logged forests in lowland Costa Rica. Sets of 4-m2, plots were laid out at 20-m intervals in three distinct microhabitats: road crack (topsoil eliminated), road edge (where removed topsoil accumulates on the sides after road construction), and adjacent logged forest. Density of stems greater than or equal to 1 m tall and less than or equal to 5 cm DBH (included canopy tree, midstory tree, liana, palm, shrub, and tree fern species) was highest in the road edge plots than either the track or logged forest plots. This “edge effect” is presumably due to buried seed germination of light-demanding trees and shrubs after moderate soil disturbance, less compaction, and higher substrate fertility than in road tracks. Species richness was the lowest, but relative dominance the highest, in the crack plots of all roads: 6-9 species comprised alone 50 percent of the Importance Value Index (IVI), in contrast to 11-15 and 16-22 species required to reach 50 percent IVI in edge and forest plots, respectively. We found evidence of soil compaction in tracks of three out of four roads which, in addition to low substrate fertility, and initial lack of on-sire plant propagules, could explain slower recovery of stem density and species richness compared to edge and logged forest plots. For stems >5 cm and less than or equal to 20 cm DBH, density and basal area in the track plots averaged about one-fourth of edge and logged forest plot values. We estimated recovery of basal area in road tracks to take at least 80 yr to reach the status Found in logged forest, and species richness over an even longer period. We suggest that abandoned logging roads serve as long corridors of relatively uniform and long-lasting floristic and structural characteristics that may confer particular ecological roles in selectively logged forests.

Keywords: Costa Rica, Forest Regeneration, Logging Roads, Logging Impacts, Lowland Forest, Selective Logging, Succession, Rain-Forest, Soil Disturbance, North-Queensland, Buried Seeds, Paragominas, Management, Malaysia, Impacts, Amazon

? Bernabe, N., Williams-Linera, G. and Palacios-Rios, M. (1999), Tree ferns in the interior and at the edge of a Mexican cloud forest remnant: Spore germination and sporophyte survival and establishment. *Biotropica*, **31** (1), 83-88.

Abstract: The three most common tree fern species in a Mexican montane cloud forest fragment (Alsophila firma, Lophosoria quadripinnata and Sphaeropteris horrida) were selected for laboratory and transplant experiments. The objectives were (1), to determine the percentage of spore germination and gametophytes producing sporophytes, and (2), to compare early establishment of sporophytes at the edge and in the interior of the forest. Percent spore germination varied between 16 and 86 percent, and the number of gametophytes that produced sporophytes was high (>50%). Survival and growth of sporophytes differed between species and habitats. Survival was greater at the edge than in the forest interior for Lophosoria, but it was similar for Alsophila and Sphaeropteris. Number and length of fronds were higher at the forest edge for individuals of Alsophila and Lophosoria, bur not for Sphaeropteris. RGR was higher at the forest edge than in the forest interior for sporophytes of the three species. This study suggests that the forest edge is an appropriate habitat for establishment of Alsophila and Lophosoria, but Sphaeropteris is apparently a forest interior species.

Keywords: Alsophila Firma, Cloud Forest, Forest Edge, Lophosoria Quadripinnata, Sphaeropteris Horrida, Spore Germination, Survival, Transplant Experiments, Tree Ferns, Cyathea-Pubescens, Demography, Vegetation, Growth, Alsophila, History, Jamaica, Fiji

? Drake, D.R. and Pratt, L.W. (2001), Seedling mortality in Hawaiian rain forest: The role of small-scale physical disturbance. *Biotropica*, **33** (2), 319-323.

Abstract: Most montane rain forests on the island of Hawaii consist of a closed canopy formed by Cibotium spp. tree ferns beneath an open canopy of emergent Metrosideros polymorpha trees. We used artificial seedlings to assess the extent to which physical disturbance caused by the senescing fronds of tree ferns and the activities of feral pigs might limit tree regeneration. Artificial seedlings were established terrestrially (N = 300) or epiphytically (N = 300) on tree fern seems. Half of the seedlings on each substrate were in an exclosure lacking feral pigs and half were in forest with pigs present. After one year, the percentage of seedlings damaged was significantly greater among terrestrial seedlings (25.7%) than epiphytic seedlings (11.3%). Significantly more terrestrial seedlings were damaged in the presence of pigs (31.3%) than in the absence of pigs (20.0%). Senescing fronds of tree ferns were responsible for 60.3 percent of the damaged seedlings. Physical disturbance is potentially a major cause of seedling mortality and may reduce the expected half-life of a seedling cohort to less than two years.

Keywords: Artificial Seedlings, Cibotium, Disturbance, Hawaii, Metrosideros Polymorpha, Montane Rain Forest, Seedling, Tree Ferns, Lava Flows, Metrosideros-Polymorpha, Pioneer Tree, Regeneration, Chronosequence, Damage, Impact, Piper

# Title: Bipolar Disorders

Full Journal Title: Bipolar Disorders

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

? Esmaeili, M.A., Gudarzi, S.S. and Mahdavi, N. (2008), Bibliometric analysis of the research on mood disorders in Iran. *Bipolar Disorders*, **10**, 68

Keywords: Bibliometric, Bibliometric analysis, Iran, research

? Sarris, J., Mischoulon, D. and Schweitzer, I. (2011), Adjunctive nutraceuticals with standard pharmacotherapies in bipolar disorder: A systematic review of clinical trials. *Bipolar Disorders*, **13** (5-6), 454-465.

Full Text: [2011\Bip Dis13, 454.pdf](2011/Bip%20Dis13,%20454.pdf)

Abstract: Objective: Studies using augmentation of pharmacotherapies with nutraceuticals in bipolar disorder (BD) have been conducted and preliminary evidence in many cases appears positive. To date, however, no specialized systematic review of this area has been conducted. We present the first systematic review of clinical trials using nutrient-based nutraceuticals in combination with standard pharmacotherapies to treat BD. A subsequent aim of this report was to discuss posited underlying mechanisms of action. Methods: PubMed, CINAHL, Web of Science, and Cochrane Library databases, and grey literature were searched during mid-2010 for human clinical trials in English using nutraceuticals such as omega-3, N-acetyl cysteine (NAC), inositol, and vitamins and minerals, in combination with pharmacotherapies to treat bipolar mania and bipolar depression. A review of the results including an effect size analysis (Cohen’s d) was subsequently conducted. Results: In treating bipolar depression, positive evidence with large effect sizes were found for NAC (d = 1.04) and a chelated mineral and vitamin formula (d = 1.70). On the outcome of bipolar mania, several nutraceuticals reduced mania with strong clinical effects: a chelated mineral formula (d = 0.83), L-tryptophan (d = 1.47), magnesium (d = 1.44), folic acid (d = 0.40), and branched-chain amino acids (d = 1.60). Mixed, but mainly positive, evidence was found for omega-3 for bipolar depression, while no evidentiary support was found for use in mania. No significant effect on BD outcome scales was found for inositol (possibly due to small samples). Conclusions: BD treatment outcomes may potentially be improved by additional use of certain nutraceuticals with conventional pharmacotherapies. However, caution should be extended in interpreting the large effects of several isolated studies, as they have not yet been replicated in larger trials.

Keywords: Acid, Adjunctive, Analysis, Bipolar Depression, Bipolar Disorder, Clinical Trials, Cochrane, Databases, Depression, Disorder, Docosahexaenoic Acid, Double-Blind, English, Folic Acid, Human, Literature, Magnesium, Major Depressive Disorder, Mania, Mania, Mechanisms, Methods, Mood, Mood Stabilizers, Nutraceuticals, Nutrients, Omega-3, Omega-3-Fatty-Acids, Open-Label Trial, Outcome, Outcomes, Placebo-Controlled-Trial, Polyunsaturated Fatty-Acids, Pubmed, Rating-Scale, Review, Science, Systematic, Systematic Review, Treatment, Treatment Outcomes, Web of Science

# Title: Birth-Issues in Perinatal Care

Full Journal Title: Birth-Issues in Perinatal Care

ISO Abbreviated Title: Birth-Issue Perinat. Care

JCR Abbreviated Title: Birth-Iss Perinat C

ISSN: 0730-7659

Issues/Year: 4

Journal Country/Territory: United States

Language: English

Publisher: Blackwell Publishing Inc

Publisher Address: 350 Main St, Malden, MA 02148

Subject Categories:

Nursing: Impact Factor 1.424, / (2002)

Obstetrics & Gynecology: Impact Factor 1.424, / (2002)

Pediatrics: Impact Factor 1.424, / (2002)

Wu, W.L. (2000), Cesarean delivery in Shantou, China: A retrospective analysis of 1922 women. *Birth-Issues in Perinatal Care*, **27** (2), 86-90.

Full Text: [B\Bir-Iss Per Car27, 86.pdf](B/Bir-Iss%20Per%20Car27,%2086.pdf)

Abstract: Background: In China the cesarean section rate increased significantly during the past four decades. This study examined the frequency and indications of cesarean birth in Shantou, a southern city in China. Methods: An analysis was conducted of the medical records of 1922 women who had cesarean deliveries at Shantou City 2nd People’s Hospital between January 1990 and December 1997. The medical records of 10, 490 women who gave birth during this period were examined. Results: The average rate of cesarean delivery during the 8-year period was 19.4±2.3 percent (means±standard error). From 1990 to 1997 the cesarean delivery rates ranged from 11.05 to 29.9 percent, respectively although during this period the total annual number of deliveries decreased significantly from 1683 to 951. The rates of the most common indications per 100 women for cesarean delivery were failure to progress (23%), premature rupture of membranes (20%), fetal distress (19.4%), breech presentation (18.1%), uterine scar (14.6%), and prolonged pregnancy (11.3%). Conclusion: The cesarean delivery rate in Shantou, China, has increased steadily and significantly between 1990 and 1997, despite a decrease in the total number of births during the same period. This study showed that on an individual basis vaginal delivery was often possible and reduction of the cesarean delivery rate could be achieved safely by paying greater heed to appropriate indications.

Keywords: Decline, Rates

Leung, G.M., Lam, T.H., Thach, T.Q., Wan, S.M. and Ho, L.M. (2001), Rates of cesarean births in Hong Kong: 1987-1999. *Birth-Issues in Perinatal Care*, **28** (3), 166-172.

Full Text: [B\Bir-Iss Per Car28, 166.pdf](B/Bir-Iss%20Per%20Car28,%20166.pdf)

Abstract: Background: High cesarean birth rates are an issue of international public health concern. The purpose of this paper was to examine the annual incidence and secular trend of cesarean births in Hong Kong and to correlate these rates with socioeconomic, demographic, and health indicators for the population since 1987. Methods: This was a descriptive and ecologic study. Annual population rates of cesarean sections were estimated for 1987 from a population-based survey, and for 1993 through 1999 from government data sources. The number of excess cesarean sections was calculated for each year using the 15 percent upper limit as proposed by the World Health Organization. Results: From 1987 to 1999 the overall annual cesarean section rate rose steadily from 16.6 to 27.4 per 100 hospital deliveries, resulting in a 65 percent increase over 12 years. The mean difference in rates of surgical delivery between public (mean(public) = 16.0%) and private (mean(private) 43.4%) institutions was 27.4 percent (95% confidence interval (CI) = 24.1, 30.7, p < 0.001). Conclusions: This is the first systematic report of secular variations of cesarean delivery rates in Asia. The high rates and increasing trend represent an unnecessary excess risk for mothers and their infants. Various strategies combating high cesarean rates have been proposed and have succeeded elsewhere. Concerted action from health care professionals, public health authorities, the general population, and the media is urgently, required to implement solutions to reduce the rate of cesarean delivery.

Keywords: Section Rates, Obstetric Intervention, Health-Insurance, Delivery Rates, Private, China, Women, Audit

# Title: BIT

Full Journal Title: [BIT](http://www.springerlink.com/content/0006-3835)

ISO Abbreviated Title: BIT

JCR Abbreviated Title: BIT

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Britz, D. (1998), An error propagation in the numerical literature. *BIT*, **38** (1), 217-218.

Full Text: [1998\BIT38, 217.pdf](1998/BIT38,%20217.pdf)

Abstract: An important historical paper on the numerical solution of pde’s has regularly, but incorrectly been assigned to the year 1951. The origin of this error of reference is discussed.

Keywords: Error, Error Propagation, Literature, Mar, Numerical Solution of PDE’s, Origin, Reference, Solution

# Title: BJOG-An International Journal of Obstetrics and Gynaecology

Full Journal Title: BJOG-An International Journal of Obstetrics and Gynaecology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Wong, S.F., Chow, K.M. and de Swiet, M. (2003), Severe acute respiratory syndrome and pregnancy. *BJOG-An International Journal of Obstetrics and Gynaecology*, **110** (7), 641-642.

Full Text: [B\BJOG110, 641.pdf](B/BJOG110,%20641.pdf)

Haines, C.J., Chu, Y.W. and Chung, T.K.H. (2003), The effect of Severe Acute Respiratory Syndrome on a hospital obstetrics and gynaecology service. *BJOG-An International Journal of Obstetrics and Gynaecology*, **110** (7), 643-645.

Full Text: [B\BJOG110, 643.pdf](B/BJOG110,%20643.pdf)

? Garside, R., Stein, K., Wyatt, K. and Round, A. (2005), Microwave and thermal balloon ablation for heavy menstrual bleeding: A systematic review. *BJOG-An International Journal of Obstetrics and Gynaecology*, **112** (1), 12-23.

Full Text: [2005\BJOG112, 12.pdf](2005/BJOG112,%2012.pdf)

Abstract: Objective To compare the effectiveness of two second generation endometrial ablation techniques (microwave and thermal balloon endometrial ablation) with first generation techniques of endometrial ablation to treat heavy menstrual bleeding in women. Search strategy We searched the Cochrane Library (issue 3, 2002), the National Research Register, MEDLINE (1966 to August 2002), EMBASE (1980 to August 2002) and Web of Science Proceedings (all years). We also searched reference lists and contacted experts and manufacturers in the field. Selection criteria Randomised controlled trials and controlled trials of microwave endometrial ablation and thermal balloon endometrial ablation versus transcervical resection and rollerball ablation, alone or in combination, to treat heavy menstrual bleeding were included. Data collection and analysis Two reviewers independently selected studies for inclusion and extracted data. As there was considerable clinical and methodological heterogeneity among the studies, meta-analysis was not undertaken and results are presented descriptively. Results Two randomised controlled trials of microwave endometrial ablation and eight trials (six randomised controlled trials) of thermal balloon endometrial ablation were included in the review. No significant differences were found between first and second generation techniques in terms of amenorrhoea, bleeding patterns, pre-menstrual symptoms, patient satisfaction or quality of life. Microwave endometrial ablation and thermal balloon endometrial ablation had significantly shorter operating and theatre times than first generation techniques. Adverse effects were few with all techniques, but there were fewer peri-operative adverse effects with second generation techniques. Conclusion Microwave endometrial ablation and thermal balloon endometrial ablation are alternatives to first generation techniques for treating heavy menstrual bleeding. No head-to-head trials of microwave endometrial ablation and thermal balloon endometrial ablation have been undertaken and there is not yet enough evidence of differences in clinical effectiveness between these two techniques.

Keywords: Adverse Effects, Analysis, Clinical Effectiveness, Cochrane, Effectiveness, Endometrial Ablation, Medline, Meta-Analysis, Multicenter, Patient Satisfaction, Quality of Life, Randomized-Trial, Research, Resection, Review, Rollerball Ablation, Science, Search Strategy, Strategy, Symptoms, Systematic, Systematic Review, Treat Menorrhagia, Web of Science, Women

? Johnson, N.P., Bagrie, E.M., Coomarasamy, A., Bhattacharya, S., Shelling, A.N., Jessop, S., Farquhar, C. and Khan, K.S. (2006), Ovarian reserve tests for predicting fertility outcomes for assisted reproductive technology: the International Systematic Collaboration of Ovarian Reserve Evaluation protocol for a systematic review of ovarian reserve test accuracy. *BJOG-An International Journal of Obstetrics and Gynaecology*, **113** (12), 1472-1480.

Full Text: [2006\BJOG113, 1472.pdf](2006/BJOG113,%201472.pdf)

Abstract: Background The presence of a wide range of tests of ovarian reserve suggests that no single test provides a sufficiently accurate result. Many tests are used without reference to an evidence base. So far, individual studies conducted on these tests are too small to give precise estimates of prognostic accuracy. Objectives To systematically assess the accuracy of the available tests of ovarian reserve in terms of prediction of fertility outcomes. Search strategy The search will be conducted using the name of the respective index test being studied (as listed on the MESH database), if more than 2000 citations are listed, ‘ovary’ and or ‘ovarian’, ‘fertility’ and or ‘reserve’ will be combined with the original search term as required. Studies of the accuracy of tests of ovarian reserve will be obtained without language restrictions from 1980 to 2005 using the following electronic databases and Ovid software: MEDLINE, EMBASE, PUBmed, Biological extracts, Pascal, Cochrane Library (CDSR, DARE, CCTR, HTA), Best Evidence databases, SCISEARCH, Conference Proceedings (ISI Proceedings, Healthstar, Current Contents, Science Citation Index, Cancerlit and Econlit and NHS Economic Evaluation database. The National Research Register, the Medical Research Council’s Clinical Trials Register, MEDION, DARE, and the US Clinical Trials register. Selection criteria Studies will be selected if accuracy of tests are compared with a reference standard and include data that can be abstracted into a two-by-two table to calculate sensitivity and specificity. The studies to be included in this review will examine one of the following index ‘tests’ within a study population of women undergoing assisted reproductive technology: Clinical variables-age, history of cancelled cycles. Basal blood tests-follicle-stimulating hormone (FSH), lutenising hormone (LH), FSH:LH ratios, estradiol (E-2), inhibin A and B, progesterone (P-4), P-4:E-2 ratios, antimullerian hormone, testosterone, vascular endothelial growth factor, insulin-like growth factor-1: insulin-like growth factor binding protein-1 ratios. Dynamic tests-clomiphene citrate challenge test, gonadotropin analogue stimulating test, exogenous FSH ovarian reserve test. Ultrasound tests-antral follicle count, ovarian volume, ovarian stromal peak systolic velocity, including waveform and pulsatility index, ovarian follicular vascularity. Histology-ovarian biopsy. Data collection and analysis Two independent reviewers win perform quality assessment and data extraction. Prognostic accuracy will be determined by calculating positive and negative likelihood ratios for the following outcomes or reference standards: live birth, ongoing pregnancy, clinical pregnancy, biochemical pregnancy, embryos available for transfer, eggs obtained at oocyte retrieval, cycles cancelled prior to oocyte retrieval. Main results and conclusions N/A.

Keywords: Accuracy, Analysis, Anti-Mullerian Hormone, Assessment, Base, Binding, Biochemical, Biopsy, Blood, Citations, Citrate, Clinical, Databases, Day 3 Estradiol, Dec, Diagnostic-Tests, Eggs, Embryo-Transfer, Estradiol, Extraction, Female Infertility, Fertility, Follicle-Stimulating-Hormone, Fsh, Growth, History, In-Vitro Fertilization, Index, Infertility Evaluation, Inhibin-B, Insulin-Like Growth Factor-1, ISI, Language, LH, Likelihood Ratios, Medline, Mesh, Outcomes, Poor Responders, Population, Predicting, Prediction, Pregnancy, Protocol, Quality, Range, Reproductive, Review, Science Citation Index, Sensitivity, Sensitivity And Specificity, Software, Specificity, Standard, Standards, Strategy, Systematic Review, Test, Testosterone, Tests, Transfer, US, Velocity, Women

? Patra, J., Bakker, R., Irving, H., Jaddoe, V.W.V., Malini, S. and Rehm, J. (2011), Dose-response relationship between alcohol consumption before and during pregnancy and the risks of low birthweight, preterm birth and small for gestational age (SGA): A systematic review and meta-analyses. *BJOG-An International Journal of Obstetrics and Gynaecology*, **118** (12), 1411-1421.

Full Text: [2011\BJOG118, 1411.pdf](2011/BJOG118,%201411.pdf)

Abstract: Background Descriptions of the effects of moderate alcohol consumption during pregnancy on adverse pregnancy outcomes have been inconsistent. Objective To review systematically and perform meta-analyses on the effect of maternal alcohol exposure on the risk of low birthweight, preterm birth and small for gestational age (SGA). Search strategy Using Medical Subject Headings, a literature search of MEDLINE, EMBASE, CINAHL, CABS, WHOlist, SIGLE, ETOH, and Web of Science between 1 January 1980 and 1 August 2009 was performed followed by manual searches. Selection criteria Case-control or cohort studies were assessed for quality (STROBE), 36 available studies were included. Data collection and analysis Two reviewers independently extracted the information on low birthweight, preterm birth and SGA using a standardised protocol. Meta-analyses on dose-response relationships were performed using linear as well as first-order and second-order fractional polynomial regressions to estimate best fitting curves to the data. Main results Compared with abstainers, the overall dose-response relationships for low birthweight and SGA showed no effect up to 10 g pure alcohol, day (an average of about 1 drink, day) and preterm birth showed no effect up to 18 g pure alcohol, day (an average of 1.5 drinks, day); thereafter, the relationship showed a monotonically increasing risk for increasing maternal alcohol consumption. Moderate consumption during pre-pregnancy was associated with reduced risks for all outcomes. Conclusions Dose-response relationship indicates that heavy alcohol consumption during pregnancy increases the risks of all three outcomes whereas light to moderate alcohol consumption shows no effect. Preventive measures during antenatal consultations should be initiated.

Keywords: Alcohol, Alcohol Consumption, Analysis, Antenatal, Binge-Drinking, Birthweight, Cigarette-Smoking, Cohort Studies, Delivery, Dose-Response, Embase, Exposure, Fetal-Growth, First Order, Gestational Age, Health-Compromising Behaviors, Information, Literature, Low Birthweight, Maternal Drinking, Medline, Meta-Analysis, National Sample, Neonatal Development, Outcomes, Pregnancy, Prenatal Alcohol, Preterm, Preterm Birth, Protocol, Review, Risk, Science, Search Strategy, Second-Order, Selection, Small For Gestational Age, Strategy, Systematic, Systematic Review, Web of Science, Women

# Title: Blood

Full Journal Title: [Blood](http://bloodjournal.hematologylibrary.org/)

ISO Abbreviated Title: Blood

JCR Abbreviated Title: Blood

ISSN: 0006-4971

Issues/Year: 24

Journal Country/Territory: United States

Language: English

Publisher: Amer Soc Hematology

Publisher Address: 1200 19th St, nw, Ste 300, Washington, DC 20036-2422

Subject Categories:

Hematology: Impact Factor 10.37 (2006)

Notes: highly cited

? Huang, M.E., Ye, Y.C., Chen, S.R., Chai, J.R., Lu, J.X., Zhoa, L., Gu, L.J. and Wang, Z.Y. (1988), Use of all-trans retinoic acid in the treatment of acute promyelocytic leukemia. *Blood*, **72** (2), 567-572.

Full Text: [1988\Blood72, 567.pdf](1988/Blood72,%20567.pdf)

? Brugnara, C., Cap, B. and Demetri, G.D. (1994), Reticulocyte cellular indexes in patients with early breast-cancer treated with chemotherapy plus combination cytokines: Evidence for iron-deficient erythropoiesis and transient macrocytosis. *Blood*, **84** (10 S1), A 580.

# Title: Blood Cells Molecules and Diseases

Full Journal Title: [Blood Cells Molecules and Diseases](http://sdos.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=10799796)

ISO Abbreviated Title: Blood Cells Mol. Dis.

JCR Abbreviated Title: Blood Cell Mol Dis

ISSN: 1079-9796

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Academic Press Inc Elsevier Science

Publisher Address: 525 B St, Ste 1900, San Diego, CA 92101-4495

Subject Categories:

Hematology: Impact Factor 1.772, / (2002)

Lichtman, M.A. and Oakes, D. (2001), The productivity and impact of the leukemia & lymphoma society scholar program: The Apparent positive effect of peer review. *Blood Cells Molecules and Diseases*, **27** (6), 1020-1027.

Full Text: [2001\Blo Cel Mol Dis27, 1020.pdf](2001/Blo%20Cel%20Mol%20Dis27,%201020.pdf)

Abstract: A study was conducted to compare the “productivity” of a cohort of research grant applicants selected by peer review to be scholars of The Leukemia Society of America (now The Leukemia & Lymphoma Society) with a matched cohort of applicants not so selected during the period 1981 to 1990. One hundred and twenty-four scholars and 124 nonfunded applicants were studied. Two bibliometric variables and their derivatives were examined from the Institute of Scientific Information database: the number of papers published and the number of citations to those papers. Published papers were measured through December 31, 1999, and citation counts to these papers through December 31, 2000. Scholars published 10, 301 papers through the period of observation and nonfunded applicants published 6442 papers. Scholars’ papers were cited 419, 798 times, whereas nonfunded applicants’ papers were cited 245,586 times. The mean citations per paper were 52 for scholars and 38 for nonfunded applicants. The papers published per scholar, citations per scholar, and citations per paper per scholar were significantly greater than the corresponding measures for nonfunded applicants (*P* < 0.0001 in each case). Scholar’s papers were cited 30% more often, whereas nonfunded applicants were cited 10% more frequently, than a comparison group of scientists publishing in the same journal in the same year. High-impact papers, e.g., papers that were cited more than 200 times, were nearly three times as frequent among scholars (494 papers) as among nonfunded applicants (173 papers). This difference was highly significant. The good (better than baseline) performance of nonfunded applicants may be a reflection of self-selection among the applicant pool for this competitive award, the more productive performance of the scholars is probably the result of the selection decisions made during the peer-review process.

Keywords: Career Development, Citation Impact, Impact, Peer Review, Research, Research Productivity

# Title: BMC Bioinformatics

Full Journal Title: BMC Bioinformatics

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1471-2105

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Plikus, M.V., Zhang, Z. and Chuong, C.M. (2006), PubFocus: semantic MEDLINE/PubMed citations analytics through integration of controlled biomedical dictionaries and ranking algorithm. *BMC Bioinformatics*, **7**, Article Number 424.

Full Text: [2006\BMC Bio7, 424.pdf](2006/BMC%20Bio7,%20424.pdf)

Abstract: Background: Understanding research activity within any given biomedical field is important. Search outputs generated by MEDLINE/PubMed are not well classified and require lengthy manual citation analysis. Automation of citation analytics can be very useful and timesaving for both novices and experts. Results: PubFocus web server automates analysis of MEDLINE/PubMed search queries by enriching them with two widely used human factor-based bibliometric indicators of publication quality: journal impact factor and volume of forward references. In addition to providing basic volumetric statistics, PubFocus also prioritizes citations and evaluates authors’ impact on the field of search. PubFocus also analyses presence and occurrence of biomedical key terms within citations by utilizing controlled vocabularies. Conclusion: We have developed citations’ prioritisation algorithm based on journal impact factor, forward referencing volume, referencing dynamics, and author’s contribution level. It can be applied either to the primary set of PubMed search results or to the subsets of these results identified through key terms from controlled biomedical vocabularies and ontologies. NCI (National Cancer Institute) thesaurus and MGD (Mouse Genome Database) mammalian gene orthology have been implemented for key terms analytics. PubFocus provides a scalable platform for the integration of multiple available ontology databases. PubFocus analytics can be adapted for input sources of biomedical citations other than PubMed.

Keywords: Activity, Algorithm, Analysis, Bibliometric Indicators, Citation Analysis, Cycle, Database, Databases, Dynamics, Gene Ontology, Human, Impact, Impact Factor, Indicators, Integration, Key, Ontologies, Publication, Quality, Ranking, Referencing, Research, Resource, Sources, Statistics, Tool

? Usie, A., Karathia, H., Teixido, I., Valls, J., Faus, X., Alves, R. and Solsona, F. (2011), Biblio-MetReS: A bibliometric network reconstruction application and server. *BMC Bioinformatics*, **12**, Article Number: 387.

Full Text: [2011\BMC Bio12, 387.pdf\](2011/BMC%20Bio12,%20387.pdf/)

Abstract: Background: Reconstruction of genes and/or protein networks from automated analysis of the literature is one of the current targets of text mining in biomedical research. Some user-friendly tools already perform this analysis on precompiled databases of abstracts of scientific papers. Other tools allow expert users to elaborate and analyze the full content of a corpus of scientific documents. However, to our knowledge, no user friendly tool that simultaneously analyzes the latest set of scientific documents available on line and reconstructs the set of genes referenced in those documents is available. Results: This article presents such a tool, Biblio-MetReS, and compares its functioning and results to those of other user-friendly applications (iHOP, STRING) that are widely used. Under similar conditions, Biblio-MetReS creates networks that are comparable to those of other user friendly tools. Furthermore, analysis of full text documents provides more complete reconstructions than those that result from using only the abstract of the document. Conclusions: Literature-based automated network reconstruction is still far from providing complete reconstructions of molecular networks. However, its value as an auxiliary tool is high and it will increase as standards for reporting biological entities and relationships become more widely accepted and enforced. Biblio-MetReS is an application that can be downloaded from http://metres.udl.cat/. It provides an easy to use environment for researchers to reconstruct their networks of interest from an always up to date set of scientific documents.

Keywords: Analysis, Bibliometric, Biocreative II.5, Biology, Biomedical, Biomedical Literature, Biomedical Research, Challenge, Databases, Environment, Full-Text Articles, Genes, Identification, Information Extraction, Interest, Knowledge, Literature, Molecular, Network, Normalization, Papers, Protein Interactions, Research, Researchers, Standards, System, Text Mining

# Title: BMC Cancer

Full Journal Title: BMC Cancer

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Yu, X.F., Bao, Z.J., Zou, J.A. and Dong, J. (2011), Coffee consumption and risk of cancers: A meta-analysis of cohort studies. *BMC Cancer*, **11**, Article Number: 96.

Full Text: [2011\BMC Can11, 96.pdf](2011/BMC%20Can11,%2096.pdf)

Abstract: Background: Coffee consumption has been shown to be associated with cancer of various sites in epidemiological studies. However, there is no comprehensive overview of the substantial body of epidemiologic evidence. Methods: We searched MEDLINE, EMBASE, Science Citation Index Expanded and bibliographies of retrieved articles. Prospective cohort studies were included if they reported relative risks (RRs) and corresponding 95% confidence intervals (CIs) of various cancers with respect to frequency of coffee intake. We did random-effects meta-analyses and meta-regressions of study-specific incremental estimates to determine the risk of cancer associated with 1 cup/day increment of coffee consumption. Results: 59 studies, consisting of 40 independent cohorts, met the inclusion criteria. Compared with individuals who did not or seldom drink coffee per day, the pooled RR of cancer was 0.87 (95% CI, 0.82-0.92) for regular coffee drinkers, 0.89 (0.84-0.93) for low to moderate coffee drinkers, and 0.82 (0.74-0.89) for high drinkers. Overall, an increase in consumption of 1 cup of coffee per day was associated with a 3% reduced risk of cancers (RR, 0.97; 95% CI, 0.96-0.98). In subgroup analyses, we noted that, coffee drinking was associated with a reduced risk of bladder, breast, buccal and pharyngeal, colorectal, endometrial, esophageal, hepatocellular, leukemic, pancreatic, and prostate cancers. Conclusions: Findings from this meta-analysis suggest that coffee consumption may reduce the total cancer incidence and it also has an inverse association with some type of cancers.

Keywords: Analyses, Association, Bibliographies, Bladder, Bladder-Cancer, Breast-Cancer, Buccal, Caffeine Consumption, Cancer, Citation, Cohort, Colorectal-Cancer, Confidence, Confidence Intervals, Consumption, Criteria, Dose-Response Data, Estimates, Evidence, Incidence, Intervals, Mar, Medline, Meta-Analysis, Metaanalysis, Ovarian-Cancer, Pancreatic-Cancer, Population-Based Cohort, Primary Liver-Cancer, Renal-Cell Cancer, Risk, Risks, Science, Science Citation Index, Science Citation Index Expanded

# Title: BMC Cardiovascular Disorders

Full Journal Title: BMC Cardiovascular Disorders

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? van der Avoort, C.J., Filion, K.B., Dendukuri, N. and Brophy, J.M. (2009), Microvolt T-wave alternans as a predictor of mortality and severe arrhythmias in patients with left-ventricular dysfunction: A systematic review and meta-analysis. *BMC Cardiovascular Disorders*, **9**, Article Number: 5.

Full Text: [2009\BMC Car Dis9, 5.pdf](2009/BMC%20Car%20Dis9,%205.pdf)

Abstract: Background: Studies have demonstrated that the use of implantable cardioverter defibrillators (ICDs) is effective for the primary prevention of arrhythmic events but due to imposing costs, there remains a need to identify which patients will derive the greatest benefit. Microvolt T-wave alternans (MTWA) has been proposed to assist in this stratification. Methods: We systematically searched the literature using MEDLINE, EMBASE, Current Contents, the Cochrane Library, INAHTA, and the Web of Science to identify all primary prevention randomized controlled trials and prospective cohort studies with at least 12 months of follow-up examining MTWA as a predictor of mortality and severe arrhythmic events in patients with severe left-ventricular dysfunction. The search was limited to full-text English publications between January 1990 and May 2007. The primary outcome was a composite of mortality and severe arrhythmias. Data were synthesized using Bayesian hierarchical models. Results: We identified no trials and 8 published cohort studies involving a total of 1,946 patients, including 332 positive, 656 negative, 84 indeterminate, and 874 non-negative (which includes both positive and indeterminate tests) MTWA test results. The risk of mortality or severe arrhythmic events was higher in patients with a positive MTWA compared to a negative test (RR = 2.7, 95% credible interval (CrI) = 1.4, 6.1). Similar results were obtained when comparing non-negative MTWA to a negative test. Conclusion: A positive MTWA test predicts mortality or severe arrhythmic events in a population of individuals with severe left ventricular dysfunction. However, the wide credible interval suggests the clinical utility of this test remains incompletely defined, ranging from very modest to substantial. Additional high quality studies are required to better refine the role of MTWA in the decision making process for ICD implantation.

Keywords: Clinical Utility, Cochrane, Cohort Studies, Congestive-Heart-Failure, Costs, Decision Making, Decision-Making, Dilated Cardiomyopathy, EMBASE, Events, Follow-up, Implantable Cardioverter-Defibrillator, Literature, Medline, Meta-Analysis, Methods, Mortality, Myocardial-Infarction, Outcome, Prevention, Primary, Primary Prevention, Prognostic Value, Publications, Randomized Controlled Trials, Review, Risk, Risk Stratification, Science, Systematic, Systematic Review, Tachyarrhythmia, Trial, Web of Science

# Title: BMC Dermatology

Full Journal Title: BMC Dermatology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Jemec, G.B.E. (2001), Impact Factors of dermatological journals for 1991-2000. *BMC Dermatology*, **1**, 7-10.

Full Text: [B\BMC Der1, 7.pdf](B/BMC%20Der1,%207.pdf)

Abstract: Background: The impact factors of scientific journals are interesting but not unproblematic. It is speculated that the number of journals in which citations can be made correlates with the impact factors in any given speciality.

Methods: Using the Journal Citation Report (JCR) for 1997, a bibliometric analysis was made to assess the correlation between the number of journals available in different fields of clinical medicine and the top impact factor. A detailed study was made of dermatological journals listed in the JCR 1991-2000, to assess the relevance of this general survey.

Results: Using the 1997 JCR definitions of speciality journals, a significant linear correlation was found between the number of journals in a given field and the top impact factor of that field (rs = 0.612, p < 0.05). Studying the trend for dermatological journals 1991 to 2000 a similar pattern was found. Significant correlations were also found between total number of journals and mean impact factor (rs = 0.793, p = 0.006), between the total number of journals and the top impact factor (rs = 0.759, p = 0.011) and between the mean and the top impact factor (rs = 0.827, p = 0.003).

Conclusions: The observations suggest that the number of journals available predict the top impact factor. For dermatology journals the top and the mean impact factor are predicted. This is in good agreement with theoretical expectations as more journals make more print-space available for more papers containing citations. It is suggested that new journals in dermatology should be encouraged, as this will most likely increase the impact factor of dermatological journals generally.

# Title: BMC Gastroenterology

Full Journal Title: BMC Gastroenterology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Bouza, C., López-Cuadrado, T., Alcázar, R., Saz-Parkinson, Z. and Amate, J.M. (2009), Meta-analysis of percutaneous radiofrequency ablation versus ethanol injection in hepatocellular carcinoma. *BMC Gastroenterology*, **9**, Article Number: 31.

Full Text: [2009\BMC Gas9, 31.pdf](2009/BMC%20Gas9,%2031.pdf)

Abstract: Background: Percutaneous radiofrequency ablation (RFA) has gained popularity in the treatment of hepatocellular carcinoma (HCC). However, its role versus other conventional minimally invasive therapies is still a matter of debate. The purpose of this work is to analyse the efficacy and safety of RFA versus that of ethanol injection (PEI), the percutaneous standard approach to treat nonsurgical HCC. Methods: Systematic review and meta-analysis of randomised or quasi-randomised controlled trials published up to August 2008 in PUBMED, ISI Web of Science and The Cochrane Library. Overall survival, local recurrence rate and adverse effects were considered as primary outcomes. Studies were critically appraised and estimates of effect were calculated according to the random-effects model. Inconsistency across studies was evaluated using the I(2) statistic. Sensitivity analyses were conducted to explore statistical heterogeneity. Results: Six studies were eligible. The studies reported data on 396 patients treated by RFA and 391 treated by PEI. In general, subjects were in Child-Pugh class A (74%) and had unresectable HCC (mean size 2.5 cm). Mean follow-up was 25 +/- 11 months. The survival rate showed a significant benefit for RFA over PEI at one, two, three and four years. The advantage in survival increased with time with Relative Risk values of: 1.28 (95% CI:1.12-1.45) and 1.24 95% CI: 1.05-1.48) for RFA versus PEI at 3- and 4-years respectively. Likewise, RFA achieved significantly lower rates of local recurrence (RR: 0.37, 95% CI: 0.23-0.59). The overall rate of adverse events was higher with RFA (RR:2.55, 95% CI: 1.8-3.6) yet no significant differences were found concerning major complications (RR:1.85, 95% CI: 0.68-5.01). There was not enough evidence supporting a better cost-effectiveness ratio for RFA compared to PEI. Conclusion: Available evidence from adequate quality controlled studies support the superiority of RFA versus PEI, in terms of better survival and local control of the disease, for the treatment of patients with relatively preserved liver function and early-stage non-surgical HCC. However, the higher rate of adverse events displayed is something that will have to be tested with appropriate weighting of the possible benefits in each individual case. Overall cost-effectiveness of RFA needs further evaluation.

Keywords: Adverse Effects, Carcinoma, Cirrhosis, Cochrane, Complications, Control, Controlled Studies, Cost-Effectiveness, Design, Disease, Efficacy, Ethanol, Evaluation, Experience, Follow-up, Hepatocellular Carcinoma, ISI, Liver-Tumors, Management, Meta Analysis, Meta-Analysis, Methods, Model, Outcomes, PEI, Primary, PUBMED, Randomized Controlled-Trial, Ratio, Recurrence, Review, Safety, Science, Statistical, Survival, Systematic, Systematic Review, Therapy, Thermal Ablation, Treatment, Web of Science

# Title: BMC Health Services Research

Full Journal Title: [BMC Health Services Research](http://www.biomedcentral.com/bmchealthservres/archive/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Sterud, T., Ekeberg, O. and Hem, E. (2006), Health status in the ambulance services: A systematic review. *BMC Health Services Research*, **6**, Article Number: 82.

Full Text: [2006\BMC Hea Ser Res6, 82.pdf](2006/BMC%20Hea%20Ser%20Res6,%2082.pdf)

Abstract: Background: Researchers have become increasingly aware that ambulance personnel may be at risk of developing work-related health problems. This article systematically explores the literature on health problems and work-related and individual health predictors in the ambulance services. Methods: We identified the relevant empirical literature by searching several electronic databases including Medline, EMBASE, PsychINFO, CINAHL, and ISI Web of Science. Other relevant sources were identified through reference lists and other relevant studies known by the research group. Results: Forty-nine studies are included in this review. Our analysis shows that ambulance workers have a higher standardized mortality rate, higher level of fatal accidents, higher level of accident injuries and a higher standardized early retirement on medical grounds than the general working population and workers in other health occupations. Ambulance workers also seem to have more musculoskeletal problems than the general population. These conclusions are preliminary at present because each is based on a single study. More studies have addressed mental health problems. The prevalence of post-traumatic stress symptom caseness was >20% in five of seven studies, and similarly high prevalence rates were reported for anxiety and general psychopathology in four of five studies. However, it is unclear whether ambulance personnel suffer from more mental health problems than the general working population. Conclusion: Several indicators suggest that workers in the ambulance services experience more health problems than the general working population and workers in other health occupations. Several methodological challenges, such as small sample sizes, non-representative samples, and lack of comparisons with normative data limit the interpretation of many studies. More coordinated research and replication are needed to compare data across studies. We discuss some strategies for future research.

Keywords: Analysis, Anxiety, Comparing Early Retirements, Critical Incident Exposure, Databases, EMBASE, Ems Providers, Follow-up, Health, Interpretation, ISI, Literature, Longitudinal Course, Medical, Medical Grounds, Mental Health, Mental-Health, Methods, Mortality, Personnel, Posttraumatic Stress, Posttraumatic-Stress, Prevalence, Rescue Workers, Research, Researchers, Review, Risk, Science, Stress, Systematic, Systematic Review, Web of Science

? Hutton, C. and Gunn, J. (2007), Do longer consultations improve the management of psychological problems in general practice? A systematic literature review. *BMC Health Services Research*, **7**, Article Number: 71.

Full Text: [2007\BMC Hea Ser Res7, 71.pdf](2007/BMC%20Hea%20Ser%20Res7,%2071.pdf)

Abstract: Background: Psychological problems present a huge burden of illness in our community and GPs are the main providers of care. There is evidence that longer consultations in general practice are associated with improved quality of care; but this needs to be balanced against the fact that doctor time is a limited resource and longer consultations may lead to reduced access to health care. The aim of this research was to conduct a systematic literature review to determine whether management of psychological problems in general practice is associated with an increased consultation length and to explore whether longer consultations are associated with better health outcomes for patients with psychological problems. Methods: A search was conducted on Medline (Ovid) databases up to7 June 2006. The following search terms, were used: general practice or primary health care (free text) or family practice (MeSH) AND consultation length or duration (free text) or time factors (MeSH) AND depression or psychological problems or depressed (free text). A similar search was done in Web of Science, PUBMED, Google Scholar, and Cochrane Library and no other papers were found. Studies were included if they contained data comparing consultation length and management or detection of psychological problems in a general practice or primary health care setting. The studies were read and categories developed to enable systematic data extraction and synthesis. Results: 29 papers met the inclusion criteria. Consultations with a recorded diagnosis of a psychological problem were reported to be longer than those with no recorded psychological diagnosis. It is not clear if this is related to the extra time or the consultation style. GPs reported that time pressure is a major barrier to treating depression. There was some evidence that increased consultation length is associated with more accurate diagnosis of psychological problems. Conclusion: Further research is needed to elucidate the factors in longer consultations that are associated with greater detection of psychological problems, and to determine the association between the detection of psychological problems and the attitude, gender, age or training of the GP and the age, gender and socioeconomic status of the patient. These are important considerations if general practice is to deal more effectively with people with psychological problems.

Keywords: 5 Minute Consultation, Attitude, Burden, Care, Cochrane, Consultation, Databases, Depression, Determinants, Diagnosis, Family Practice, Gender, General Practice, Google Scholar, GPs, Health Care, Health Outcomes, Lead, Length, Literature, Literature Review, Management, Methods, Outcomes, Papers, Practice, Practitioners, Pressure, Primary, Primary Health Care, Psychological, Quality, Quality of Care, Research, Review, Satisfaction, Science, Socioeconomic Status, Systematic, Systematic Literature Review, Time Constraint, Training, Web of Science

? Schneider, N., Lingner, H. and Schwartz, F.W. (2007), Disclosing conflicts of interest in German publications concerning health services research. *BMC Health Services Research*, **7**, Article Number: 78.

Full Text: [2007\BMC Hea Ser Res7, 78.pdf](2007/BMC%20Hea%20Ser%20Res7,%2078.pdf)

Abstract: Background: The influence of the pharmaceutical industry and other stakeholders on medical science has been increasingly criticised. When dealing with conflicts of interest in scientific publications it is important to ensure the best possible transparency. The objective of this work is to examine the disclosure practice of financial and non-financial conflicts of interest in German language publications concerning health services research for the first time. Methods: We performed a systematic literature search in the PubMed data base using the MeSH term “health services research”. The review was conducted on July 10, 2006, setting the limits “dates: published in the last 2 years” and “languages: German” (only articles with abstracts). 124 articles in 31 magazines were found. In the magazines the instructions for authors were examined as to whether a statement on conflicts of interest is expected - and if, in which form. Regarding the articles in the journals which require a statement, we examined whether the statement is explicitly published. The results are descriptively represented. Results: 13 magazines (42%) do not require any statement on conflicts of interest, whereas 18 journals (58%) expect a statement. Two of these 18 magazines refer explicitly to the uniform requirements of the International Committee of the Medical Journal Editors (ICMJE); the remaining 16 magazines give differently accentuated instructions on how to disclose conflicts of interest, whereby the focus is primarily on financial issues. A statement on conflicts of interest is explicitly published in 11 of the 71 articles (15%) which are found in the magazines that require a statement with the submission of a manuscript. Related to the total number of included articles, this means that the reader explicitly receives information on potential conflicts of interest in 9% of the cases (11 of 124 articles). Statements of others that are involved in the publication process (reviewers, editors) are not available in any of the articles examined. Conclusion: A better sensitization for possible conflicts of interest in German publications concerning health services research is necessary. We suggest tightening the criteria for disclosure in the instructions for authors in the scientific journals. Among other things the equivalent consideration of financial and non-financial conflicts of interest as well as the obligatory publication of the statements should be part of good practice.

Keywords: Conflicts of Interest, Criteria, Data, Data Base, Disclosure, Financial Issues, First, Health, Health Services, Health Services Research, Information, Journals, Literature, Medical, Pharmaceutical Industry, Potential, Practice, Publication, Publications, Pubmed, Research, Review, Science, Scientific Journals, Scientific Publications, Sensitization, Services, Stakeholders, Term, Transparency, Work

? Wulff, C.N., Thygesen, M., Sondergaard, J. and Vedsted, P. (2008), Case management used to optimize cancer care pathways: A systematic review. *BMC Health Services Research*, **8**, Article Number: 227.

Full Text: [2008\BMC Hea Ser Res8, 227.pdf](2008/BMC%20Hea%20Ser%20Res8,%20227.pdf)

Abstract: Background: Reports of inadequate cancer patient care have given rise to various interventions to support cancer care pathways which, overall, seem poorly studied. Case management (CM) is one method that may support a cost-effective, high-quality patient-centred treatment and care. The purpose of this article was to summarise intervention characteristics, outcomes of interest, results, and validity components of the published randomized controlled trials (RCTs) examining CM as a method for optimizing cancer care pathways. Methods: PUBMED, EMBASE, Web of Science, CINAHL and The Cochrane Central Register of Controlled Trials were systematically searched for RCTs published all years up to August 2008. Identified papers were included if they passed the following standards. Inclusion criteria: 1) The intervention should meet the criteria for CM which includes multidisciplinary collaboration, care co-ordination, and it should include in-person meetings between patient and the case manager aimed at supporting, informing and educating the patient. 2) The intervention should focus on cancer patient care. 3) The intervention should aim to improve subjective or objective quality outcomes, and effects should be reported in the paper. Exclusion criteria: Studies centred on cancer screening or palliative cancer care. Data extraction was conducted in order to obtain a descriptive overview of intervention characteristics, outcomes of interest and findings. Elements of CONSORT guidelines and checklists were used to assess aspects of study validity. Results: The searches identified 654 unique papers, of which 25 were retrieved for scrutiny. Seven papers were finally included. Intervention characteristics, outcomes studied, findings and methodological aspects were all very diverse. Conclusion: Due to the scarcity of papers included (seven), significant heterogeneity in target group, intervention setting, outcomes measured and methodologies applied, no conclusions can be drawn about the effect of CM on cancer patient care. It is a major challenge that CM shrouds in a “black box”, which means that it is difficult to determine which aspect(s) of interventions contribute to overall effects. More trials on rigorously developed CM interventions (opening up the “black box”) are needed as is the re-testing of interventions and outcomes studied in various settings.

Keywords: Breast-Cancer, Cancer, Cochrane, Collaboration, Consort, Consort Statement, Disease, Guidelines, Health-Care, Interest, Intervention, Interventions, Lung-Cancer, Management, Methods, Nurse Case-Management, Older Women, Outcomes, Overview, Papers, PUBMED, Randomized Controlled Trials, Randomized-Trials, Review, Science, Screening, Standards, Systematic, Systematic Review, Treatment, Validity, Web of Science

? Uiters, E., Deville, W., Foets, M., Spreeuwenberg, P. and Groenewegen, P.P. (2009), Differences between immigrant and non-immigrant groups in the use of primary medical care: A systematic review. *BMC Health Services Research*, **9**, Article Number: 76.

Full Text: [2009\BMC Hea Ser Res9, 76.pdf](2009/BMC%20Hea%20Ser%20Res9,%2076.pdf)

Abstract: Background: Studies on differences between immigrant and non-immigrant groups in health care utilization vary with respect to the extent and direction of differences in use. Therefore, our study aimed to provide a systematic overview of the existing research on differences in primary care utilization between immigrant groups and the majority population. Methods: For this review PUBMED, PsycInfo, Cinahl, Sociofile, Web of Science and Current Contents were consulted. Study selection and quality assessment was performed using a predefined protocol by 2 reviewers independently of each other. Only original, quantitative, peer-reviewed papers were taken into account. To account for this hierarchical structure, logistic multilevel analyses were performed to examine the extent to which differences are found across countries and immigrant groups. Differences in primary care use were related to study characteristics, strength of the primary care system and methodological quality. Results: A total of 37 studies from 7 countries met all inclusion criteria. Remarkably, studies performed within the US more often reported a significant lower use among immigrant groups as compared to the majority population than the other countries. As studies scored higher on methodological quality, the likelihood of reporting significant differences increased. Adjustment for health status and use of culture-/language-adjusted procedures during the data collection were negatively related to reporting significant differences in the studies. Conclusion: Our review underlined the need for careful design in studies of differences in health care use between immigrant groups and the majority population. The results from studies concerning differences between immigrant and the majority population in primary health care use performed within the US might be interpreted as a reflection of a weaker primary care system in the US compared to Europe and Canada.

Keywords: Access, Acculturation, Assessment, Canada, Consultations, Data Collection, Ethnic-Differences, Europe, General-Practice, Health Care, Health Status, Immigrant, Medical, Methods, Mexican-Americans, Overview, Papers, Primary, Primary Care, Primary Health Care, Primary Health-Care, Protocol, PUBMED, Quantitative, Reported Health, Research, Review, Science, Services, Social-Class, Systematic, Systematic Review, US, Utilization, Web of Science

? Langer, A. and Rogowski, W. (2009), Systematic review of economic evaluations of human cell-derived wound care products for the treatment of venous leg and diabetic foot ulcers. *BMC Health Services Research*, **9**, Article Number: 115.

Full Text: [2009\BMC Hea Ser Res9, 115.pdf](2009/BMC%20Hea%20Ser%20Res9,%20115.pdf)

Abstract: Background: Tissue engineering is an emerging field. Novel bioengineered skin substitutes and genetically derived growth factors offer innovative approaches to reduce the burden of diabetic foot and venous leg ulcers for both patients and health care systems. However, they frequently are very costly. Based on a systematic review of the literature, this study assesses the cost-effectiveness of these growth factors and tissue-engineered artificial skin for treating chronic wounds. Methods: On the basis of an extensive explorative search, an appropriate algorithm for a systematic database search was developed. The following databases were searched: BIOSIS Previews, CRD databases, Cochrane Library, EconLit, EMBASE, Medline, and Web of Science. Only completed and published trial-or model-based studies which contained a full economic evaluation of growth factors and bioengineered skin substitutes for the treatment of chronic wounds were included. Two reviewers independently undertook the assessment of study quality. The relevant studies were assessed by a modified version of the Consensus on Health Economic Criteria (CHEC) list and a published checklist for evaluating model-based economic evaluations. Results: Eleven health economic evaluations were included. Three biotechnology products were identified for which topical growth factors or bioengineered skin substitutes for the treatment of chronic leg ulceration were economically assessed: (1) Apligraf (R), a bilayered living human skin equivalent indicated for the treatment of diabetic foot and venous leg ulcers (five studies); (2) Dermagraft (R), a human fibroblast-derived dermal substitute, which is indicated only for use in the treatment of full-thickness diabetic foot ulcers (one study); (3) REGRANEX (R) Gel, a human platelet-derived growth factor for the treatment of deep neuropathic diabetic foot ulcers (five studies). The studies considered in this review were of varying and partly low methodological quality. They calculated that due to shorter treatment periods, fewer complications and fewer inpatient episodes the initial cost of the novel biotechnology products may be offset, making the treatment cost-effective or even cost-saving. The results of most studies were sensitive to initial costs of the products and the evidence of effectiveness. Conclusion: The study results suggest that some growth factors and tissue-engineered artificial skin products feature favourable cost-effectiveness ratios in selected patient groups with chronic wounds. Despite the limitations of the studies considered, it is evident that health care providers and coverage decision makers should take not only the high cost of the biotechnology product but the total cost of care into account when deciding about the appropriate allocation of their financial resources. However, not only the cost-effectiveness but first of all the effectiveness of these novel biotechnology products deserve further research.

Keywords: Assessment, Becaplermin, Biotechnology, Burden, Cochrane, Cost-Effectiveness, Costs, Countries, Coverage, Databases, Effectiveness, Efficacy, Evaluation, Graftskin, Growth Factor-BB, Health, Health Care, Human, Human Skin Equivalent, Literature, Management, Methods, Quality, Research, Review, Safety, Science, Systematic, Systematic Review, Treatment, Web of Science

? Van Herck, P., De Smedt, D., Annemans, L., Remmen, R., Rosenthal, M.B. and Sermeus, W. (2010), Systematic review: Effects, design choices, and context of pay-for-performance in health care. *BMC Health Services Research*, **10**, Article Number: 247.

Full Text: [2010\BMC Hea Ser Res10, 247.pdf](2010/BMC%20Hea%20Ser%20Res10,%20247.pdf)

Abstract: Background: Pay-for-performance (P4P) is one of the primary tools used to support healthcare delivery reform. Substantial heterogeneity exists in the development and implementation of P4P in health care and its effects. This paper summarizes evidence, obtained from studies published between January 1990 and July 2009, concerning P4P effects, as well as evidence on the impact of design choices and contextual mediators on these effects. Effect domains include clinical effectiveness, access and equity, coordination and continuity, patient centeredness, and cost-effectiveness. Methods: The systematic review made use of electronic database searching, reference screening, forward citation tracking and expert consultation. The following databases were searched: Cochrane Library, EconLit, EMBASE, Medline, PsychINFO, and Web of Science. Studies that evaluate P4P effects in primary care or acute hospital care medicine were included. Papers concerning other target groups or settings, having no empirical evaluation design or not complying with the P4P definition were excluded. According to study design nine validated quality appraisal tools and reporting statements were applied. Data were extracted and summarized into evidence tables independently by two reviewers. Results: One hundred twenty-eight evaluation studies provide a large body of evidence -to be interpreted with caution-concerning the effects of P4P on clinical effectiveness and equity of care. However, less evidence on the impact on coordination, continuity, patient-centeredness and cost-effectiveness was found. P4P effects can be judged to be encouraging or disappointing, depending on the primary mission of the P4P program: supporting minimal quality standards and/or boosting quality improvement. Moreover, the effects of P4P interventions varied according to design choices and characteristics of the context in which it was introduced. Future P4P programs should (1) select and define P4P targets on the basis of baseline room for improvement, (2) make use of process and (intermediary) outcome indicators as target measures, (3) involve stakeholders and communicate information about the programs thoroughly and directly, (4) implement a uniform P4P design across payers, (5) focus on both quality improvement and achievement, and (6) distribute incentives to the individual and/or team level. Conclusions: P4P programs result in the full spectrum of possible effects for specific targets, from absent or negligible to strongly beneficial. Based on the evidence the review has provided further indications on how effect findings are likely to relate to P4P design choices and context. The provided best practice hypotheses should be tested in future research.

Keywords: Citation, Clinical Effectiveness, Cochrane, Consultation, Cost-Effectiveness, Databases, Development, Diabetes Care, Effectiveness, Evaluation, Evaluation Studies, Evidence-Based Medicine, Health Care, Hospital, Impact, Improve Quality, Incentives, Information, Interventions, Medicaid Managed Care, Medicine, Methods, Outcome, Outcomes-Framework, Physician Financial Incentives, Practice, Preventive Care, Primary, Primary Care, Quality Improvement, Quality-of-Care, Randomized-Trial, Research, Review, Science, Screening, Smoking-Cessation, Standards, Systematic, Systematic Review, Web of Science

? Gagliardi, A.R. and Dobrow, M.J. (2011), Paucity of qualitative research in general medical and health services and policy research journals: Analysis of publication rates. *BMC Health Services Research*, **11**, Article Number: 268.

Full Text: [2011\BMC Hea Ser Res11, 268.pdf](2011/BMC%20Hea%20Ser%20Res11,%20268.pdf)

Abstract: Background: Qualitative research has the potential to inform and improve health care decisions but a study based on one year of publications suggests that it is not published in prominent health care journals. A more detailed, longitudinal analysis of its availability is needed. The purpose of this study was to identify, count and compare the number of qualitative and non-qualitative research studies published in high impact health care journals, and explore trends in these data over the last decade. Methods: A bibliometric approach was used to identify and quantify qualitative articles published in 20 top general medical and health services and policy research journals from 1999 to 2008. Eligible journals were selected based on performance in four different ranking systems reported in the 2008 ISI Journal Citation Reports. Qualitative and non-qualitative research published in these journals were identified by searching MEDLINE, and validated by hand-searching tables of contents for four journals. Results: The total number of qualitative research articles published during 1999 to 2008 in ten general medical journals ranged from 0 to 41, and in ten health services and policy research journals from 0 to 39. Over this period the percentage of empirical research articles that were qualitative ranged from 0% to 0.6% for the general medical journals, and 0% to 6.4% for the health services and policy research journals. Conclusions: This analysis suggests that qualitative research it is rarely published in high impact general medical and health services and policy research journals. The factors that contribute to this persistent marginalization need to be better understood.

Keywords: Analysis, Appraisal, Bibliometric, Care, Citation, Context, Health Care, Health Services, Impact, Isi, Journal, Journal Citation Reports, Journals, Medical, Medical Journals, Medline, Methods, Policy, Publication, Publications, Qualitative Research, Ranking, Reports, Research, Strategies, Trends

# Title: BMC Infectious Diseases

Full Journal Title: [BMC Infectious Diseases](http://www.biomedcentral.com/bmcinfectdis)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Kalantri, S., Pai, M., Pascopella, L., Riley, L. and Reingold, A. (2005), Bacteriophage-based tests for the detection of *Mycobacterium tuberculosis* in clinical specimens: A systematic review and meta-analysis. *BMC Infectious Diseases*, **5**, Article Number: 59.

Full Text: [2005\BMC Inf Dis5, 59.pdf](2005/BMC%20Inf%20Dis5,%2059.pdf)

Abstract: Background: Sputum microscopy, the most important conventional test for tuberculosis, is specific in settings with high burden of tuberculosis and low prevalence of non tuberculous mycobacteria. However, the test lacks sensitivity. Although bacteriophage-based tests for tuberculosis have shown promising results, their overall accuracy has not been systematically evaluated. Methods: We did a systematic review and meta-analysis of published studies to evaluate the accuracy of phage-based tests for the direct detection of M. tuberculosis in clinical specimens. To identify studies, we searched Medline, EMBASE, Web of science and BIOSIS, and contacted authors, experts and test manufacturers. Thirteen studies, all based on phage amplification method, met our inclusion criteria. Overall accuracy was evaluated using forest plots, summary receiver operating (SROC) curves, and subgroup analyses. Results: The data suggest that phage-based assays have high specificity (range 0.83 to 1.00), but modest and variable sensitivity (range 0.21 to 0.88). The sensitivity ranged between 0.29 and 0.87 among smear-positive, and 0.13 to 0.78 among smear-negative specimens. The specificity ranged between 0.60 and 0.88 among smear-positive and 0.89 to 0.99 among smear- negative specimens. SROC analyses suggest that overall accuracy of phage-based assays is slightly higher than smear microscopy in direct head-to-head comparisons. Conclusion: Phage-based assays have high specificity but lower and variable sensitivity. Their performance characteristics are similar to sputum microscopy. Phage assays cannot replace conventional diagnostic tests such as microscopy and culture at this time. Further research is required to identify methods that can enhance the sensitivity of phage-based assays without compromising the high specificity.

Keywords: Accuracy, Assay, Authors, Burden, Culture, EMBASE, Fastplaquetb, Meta-Analysis, Methods, Microscopy, Phage, Prevalence, Pulmonary Tuberculosis, Rapid Diagnosis, Research, Review, Science, South-Africa, Sputum, Systematic, Systematic Review, TB, Tools, Tuberculosis, Web of Science

? Morgan, M., Kalantri, S., Flores, L. and Pai, M. (2005), A commercial line probe assay for the rapid detection of rifampicin resistance in Mycobacterium tuberculosis: A systematic review and meta-analysis. *BMC Infectious Diseases*, **5**, Article Number: 62.

Full Text: [2005\BMC Inf Dis5, 62.pdf](2005/BMC%20Inf%20Dis5,%2062.pdf)

Abstract: Background: Mycobacterium tuberculosis is a leading cause of death worldwide. In multi-drug resistant tuberculosis (MDR-TB) infectiousness is frequently prolonged, jeopardizing efforts to control TB. The conventional tuberculosis drug susceptibility tests are sensitive and specific, but they are not rapid. The INNO-LiPA Rif. TB(R) (LiPA) is a commercial line probe assay designed to rapidly detect rifampicin resistance, a marker of MDR-TB. Although LiPA has shown promising results, its overall accuracy has not been systematically evaluated. Methods: We did a systematic review and meta-analysis to evaluate the accuracy of LiPA for the detection of rifampicin-resistant tuberculosis among culture isolates and clinical specimens. We searched Medline, EMBASE, Web of Science, BIOSIS, and Google Scholar, and contacted authors, experts and the manufacturer. Fifteen studies met our inclusion criteria. of these, 11 studies used culture isolates, one used clinical specimens, and three used both. We used a summary receiver operating characteristic (SROC) curve and Q\* index to perform meta-analysis and summarize diagnostic accuracy. Results: Twelve of 14 studies that applied LiPA to isolates had sensitivity greater than 95%, and 12 of 14 had specificity of 100%. The four studies that applied LiPA directly to clinical specimens had 100% specificity, and sensitivity that ranged between 80% and 100%. The SROC curve had an area of 0.99 and Q\* of 0.97. Conclusion: LiPA is a highly sensitive and specific test for the detection of rifampicin resistance in culture isolates. The test appears to have relatively lower sensitivity when used directly on clinical specimens. More evidence is needed before LiPA can be used to detect MDR-TB among populations at risk in clinical practice.

Keywords: Accuracy, Authors, Complex, Control, Countries, Culture, Curve, Diagnostic-Test, Drug, Gene, Google Scholar, Hybridization Assay, Lipa, Mdr-Tb, Meta-Analysis, Methods, Practice, Resistance, Review, Risk, Rpob Mutations, Science, Specimens, Susceptibility, Systematic, Systematic Review, TB, Tuberculosis, Web of Science

? Falagas, M.E., Papastamataki, P.A. and Bliziotis, I.A. (2006), A bibliometric analysis of research productivity in Parasitology by different world regions during a 9-year period (1995-2003). *BMC Infectious Diseases*, **6** (56), 1-6.

Full Text: [2006\BMC Inf Dis6, 1.pdf](2006/BMC%20Inf%20Dis6,%201.pdf)

Abstract: Background: The objective of this study was to estimate the research productivity of different world regions in the field of Parasitology. Methods: Using the PubMed database we retrieved articles from journals included in the “Parasitology” category of the “Journal Citation Reports” database of the Institute for Scientific Information for the period 1995 - 2003. Research productivity was evaluated based on a methodology we developed and used in other bibliometric studies by analysing: (1) the total number of publications, (2) the mean impact factor of all papers, and (3) the product of the above two parameters, (4) the research productivity in relation to gross domestic product of each region, and (5) the research productivity in relation to gross national income per capita and population of each region. Results: Data on the country of origin of the research was available for 18,110 out of 18,377 articles (98.6% of all articles from the included journals). Western Europe exceeds all world regions in research production for the period studied (34.8% of total articles), with USA ranking second (19.9%), and Latin America & the Caribbean ranking third (17.2%). The mean impact factor in articles published in Parasitology journals was highest for the USA (1.88). Oceania ranked first in research productivity when adjustments for both the gross national income per capita (GNIPC) and population were made. Eastern Europe almost tripled the production of articles from only 1.9% of total production in 1995 to 4.3% in 2003. Similarly, Latin America and the Caribbean and Asia doubled their production. However, the absolute and relative production by some developing areas, including Africa, is still very low, despite the fact that parasitic diseases are major public health problems in these areas. Conclusion: Our data suggest that more help should be provided by the developed nations to developing areas for improvement of the infrastructure of research.

Keywords: Africa, Analysis, Asia, Bibliometric Analysis, Caribbean, Diseases, Eastern Europe, Europe, Health, Impact, Impact Factor, Income, Indexes, Latin America, Low, Made, Methodology, Parameters, Population, Production, Productivity, Public Health, Publications, Ranking, Research, Research Productivity, Science, USA

? Uthman, O.A. (2008), HIV/AIDS in Nigeria: A bibliometric analysis. *BMC Infectious Diseases*, **8**, 19.

Full Text: [2008\BMC Inf Dis8, 19.pdf](2008/BMC%20Inf%20Dis8,%2019.pdf)

Abstract: BACKGROUND: Nigeria is home to more people living with HIV than any other country in the world, except South Africa and India-where an estimated 2.9 million [1.7 million - 4.2 million] people were living with the virus in 2005. A systematic assessment of recent HIV/AIDS research output from Nigeria is not available. Without objective information about the current deficiencies and strengths in the HIV research output from Nigeria, it is difficult to plan substantial improvements in HIV/AIDS research that could enhance population health. The aim of this study was to analyse the trends in Nigeria’s SCI publications in HIV/AIDS from 1980 to 2006. Special attention was paid to internationally collaborated works that were identified based on the countries of the authors’ affiliation. METHODS: A bibliometric analysis regarding Nigerian HIV/AIDS research was conducted in the ISI databases for the period of 1980 to 2006. An attempt was made to identify the patterns of the growth in HIV/AIDS literature, as well as type of document published, authorship, institutional affiliations of authors, and subject content. International collaboration was deemed to exist in an article if any co-author’s affiliation was located outside Nigeria. The impact factors in the 2006 Journal Citations Reports Science Edition was arbitrarily adopted to estimate the quality of articles. RESULTS: Nigeria’s ISI publications in HIV/AIDS increased from one articles in 1987 to 33 in 2006, and the articles with international collaboration increased from one articles in 1980 to 16 in 2006. Articles with international collaboration appeared in journals with higher impact factors and received more citations. A high pattern of co-authorship was found. Over 85% of the articles were published in collaboration among two or more authors. The USA, as the most important collaborating partner of Nigeria’s HIV/AIDS researchers, contributed 30.8% of articles with international collaboration. CONCLUSION: Nigeria has achieved a significant increase in the number of SCI publications and collaborations in HIV literature from 1987 to 2005. There is need to challenge the status, scientists from Nigeria should forge multiple collaborations beyond historical, political, and cultural lines to share knowledge and expertise on HIV/AIDS.

Keywords: Affiliation, Africa, AID, AIDS, Analysis, Assessment, Attention, Authors, Authorship, Bibliometric, Bibliometric Analysis, Challenge, Citations, Collaboration, Collaborations, Content, Country, Cultural, Databases, European-Union, Expertise, Factors, Growth, Health, HIV, HIV, AIDS, Home, Impact, Impact Factors, India, Information, Institutional, International, ISI, Journals, Knowledge, Literature, Living, Nigeria, Objective, Pattern, Population, Population Health, Publications, Quality, Quality of, Research, SCI, South Africa, Status, Systematic, Trends, USA, Virus, World

? Abba, K., Sinfield, R., Hart, C.A. and Garner, P. (2009), Antimicrobial drugs for persistent diarrhoea of unknown or non-specific cause in children under six in low and middle income countries: Systematic review of randomized controlled trials. *BMC Infectious Diseases*, **9**, Article Number: 24.

Full Text: [2009\BMC Inf Dis9, 24.pdf](2009/BMC%20Inf%20Dis9,%2024.pdf)

Abstract: Background: A high proportion of children with persistent diarrhoea in middle and low income countries die. The best treatment is not clear. We conducted a systematic review to evaluate the effectiveness of antimicrobial drug treatment for persistent diarrhoea of unknown or non-specific cause. Methods: We included randomized comparisons of antimicrobial drugs for the treatment of persistent diarrhoea of unknown or non-specific cause in children under the age of six years in low and middle income countries. We searched the electronic databases MEDLINE, EMBASE, LILACS, WEB of SCIENCE, and the Cochrane Central Register of Controlled Trials (CENTRAL) to May 2008 for relevant randomized or quasi randomized controlled trials. We summarised the characteristics of the eligible trials, assessed their quality using standard criteria, and extracted relevant outcomes data. Where appropriate, we combined the results of different trials. Results: Three trials from South East Asia and one from Guatemala were included, all were small, and three had adequate allocation concealment. Two were in patients with diarrhoea of unknown cause, and two were in patients in whom known bacterial or parasitological causes of diarrhoea had been excluded. No difference was demonstrated for oral gentamicin compared with placebo (presence of diarrhoea at 6 or 7 days; 2 trials, n = 151); and for metronidazole compared with placebo (presence of diarrhoea at 3, 5 and 7 days; 1 trial, n = 99). In one small trial, sulphamethoxazole-trimethoprim appeared better than placebo in relation to diarrhoea at seven days and total stool volume (n = 55). Conclusion: There is little evidence as to whether or not antimicrobials help treat persistent diarrhoea in young children in low and middle income countries.

Keywords: Antimicrobials, Asia, Children, Cochrane, Cryptosporidiosis, Databases, Drug, Effectiveness, EMBASE, Escherichia-Coli, Human-Immunodeficiency-Virus, Income, Infection, Medline, Methods, Of-Science, Outcomes, Randomized Controlled Trials, Review, Science, Systematic, Systematic Review, Treatment, Web, Web-of-Science

? Zheng, H.C., Yan, L., Cui, L., Guan, Y.F. and Takano, Y. (2009), Mapping the history and current situation of research on John Cunningham virus: A bibliometric analysis. *BMC Infectious Diseases*, **9**, Article Number: 28.

Full Text: [2009\BMC Inf Dis9, 28.pdf](2009/BMC%20Inf%20Dis9,%2028.pdf)

Abstract: Background: John Cunningham virus (JCV) constitutes a family of polyoma viruses, which plays important roles in the progressive multifocal leukoencephalopathy (PML) and tumorigenesis. However, no bibliometric investigation has been reported to guide the researchers and potential readers. Methods: Papers were collected from database SCI-expanded and PubMED until May 22, 2008. The highly-productive authors, institutes and countries, highly-cited authors and journals were ranked. The highly-cited articles were subjected to co-citation and chronological analysis with highly-frequent MeSH words for co-occurrence analysis. Results: Until now, 1785 articles about JCV were indexed in SCI-expanded and 1506 in Pubmed. The main document type was original article. USA, Japan and Italy were the largest three producers about JCV. Temple University published 128 papers and ranked the top, followed by University of Tokyo. Khalili K and Yogo Y became the core authors due to more than 20 documents produced. Journal of Neurovirology published more than 15 papers and ranked the top. Padgett BL and Berger JR were the first two highly-cited authors. Journal of Virology and Journal of Neurovirology respectively ranked to the first two highly-cited journals. These top highly-cited articles were divided into 5 aspects: (1) The correlation between JC virus and tumors; (2) Causal correlation of JCV with PML; (3) Polyoma virus infection and its related diseases in renal-allograft recipients; (4) Detection of JCV antibody, oncogene and its encoding protein; (5) Genetics and molecular biology of JCV. The MeSH/subheadings were classified into five groups: (1) JCV and virus infectious diseases; (2) JCV pathogenicity and pathological appearance of PML; (3) JCV isolation and detection; (4) Immunology of JCV and PML; (5) JCV genetics and tumors. Conclusion: JCV investigation mainly focused on its isolation and detection, as well as its correlation with PML and tumors. Establishment of transgenic animal model using JCV T antigen would be a hopeful and useful project in the further study.

Keywords: Analysis, Animal Model, Antibody, Authors, Bibliometric, Bibliometric Analysis, Bibliometric Investigation, Biology, Cancer, Co-Citation, Cocitation, Correlation, Database, Detection, Diseases, Family, First, Genetics, Groups, History, Human Polyomavirus, Infection, Infectious Diseases, Investigation, Isolation, Italy, Japan, JC-Virus, Journals, Load, Mar, Model, Molecular, Molecular Biology, Papers, Pathogenicity, PML, Potential, Progressive, Progressive Multifocal Leukoencephalopathy, Protein, Research, Roles, Tumorigenesis, Tumors, USA, Virus

? Abba, K., Sinfield, R., Hart, C.A. and Garner, P. (2009), Pathogens associated with persistent diarrhoea in children in low and middle income countries: Systematic review. *BMC Infectious Diseases*, **9**, Article Number: 88.

Full Text: 2009\BMC Inf Dis9, 88.pdf

Abstract: Background: Persistent diarrhoea in children is a common problem in low and middle income countries. To help target appropriate treatment for specific pathogens in the absence of diagnostic tests, we systematically reviewed pathogens most commonly associated with persistent diarrhoea in children. Methods: We sought all descriptive studies of pathogens in the stool of children with diarrhoea of over 14 days duration in low and middle income countries with a comprehensive search of the MEDLINE, EMBASE, LILACS and WEB of SCIENCE databases. We described the study designs and populations, assessed the quality of the laboratory tests, and extracted and summarised data on pathogens. For Escherichia coli, we calculated high and low prevalence estimates of all enteropathic types combined. Results across studies were compared for geographical patterns. Results: Nineteen studies were included. Some used episodes of diarrhoea as the unit of analysis, others used children. The quality of reporting of laboratory procedures varied, and pathogens (particularly E. coli types) were classified in different ways. As there were no apparent regional differences in pathogen prevalence, we aggregated data between studies to give a guide to overall prevalence. Enteropathic E. coli types were commonly found in children with persistent diarrhoea (up to 63%). Various other organisms, including viruses, bacteria and parasites, were detected but across all studies their prevalence was under 10%. However, these pathogens were also found in similar frequencies in children without diarrhoea. Conclusion: A number of pathogens are commonly associated with persistent diarrhoea in children, but in children without diarrhoea the pathogens are found with similar frequencies. New research with carefully selected controls and standardised laboratory investigations across countries will help map causes and help explore effective options for presumptive treatment.

Keywords: Analysis, Bacteria, Bangladesh, Children, Databases, Descriptive Studies, Duration, EMBASE, Epidemiology, Escherichia-Coli, HIV, Income, Infection, Malnutrition, Medline, Methods, Northeastern Brazil, Of-Science, Prevalence, Research, Review, Risk-Factors, Science, Systematic, Systematic Review, Treatment, Web, Web-of-Science, Zambian Children

? Uthman, O.A. (2010), Pattern and determinants of HIV research productivity in sub-Saharan Africa: Bibliometric analysis of 1981 to 2009 PubMed papers. *BMC Infectious Diseases*, **10**, Article Number: 47.

Full Text: [2010\BMC Inf Dis10, 47.pdf](2010/BMC%20Inf%20Dis10,%2047.pdf)

Abstract: Background: Several bibliometric studies have been published on AIDS. The findings obtained from these studies have provided a general picture of the history and growth of AIDS literature. However, factors related to variation in HIV research productivity in sub-Saharan Africa have not been examined. Therefore, this study aims to fill some of the gap in existing research to provide insights into factors associated with HIV research productivity in sub-Saharan Africa. Methods: A bibliometric analysis regarding sub-Saharan Africa HIV/AIDS research was conducted in the PubMed database for the period of 1981 to 2009. The numbers of HIV research articles indexed in PubMed was used as surrogate for total HIV research productivity. Series of univariable and multivariable negative binomial regression models were used to explore factors associated with variation in HIV research productivity in sub-Saharan Africa. Results: First authors from South Africa, Uganda and Kenya contributed almost half of the total number of HIV articles indexed in PubMed between 1981 and 2009. Uganda, Zimbabwe and Malawi had better records when the total production was adjusted for gross domestic product (GDP). Comoros, the Gambia and Guinea-Bissau were the most productive countries when the total products were normalized by number of people with HIV. There were strong positive and statistically significant correlation between countries number of indexed journal (Pearson correlation r = 0.77, p = .001), number of higher institutions (r = 0.60, p = .001), number of physicians (r = 0.83, p = .001) and absolute numbers of HIV articles. Conclusions: HIV research productivity in Africa is highly skewed. To increase HIV research output, total expenditure on health (% of GDP), private expenditure on health, and adult literacy rate may be important factors to address.

Keywords: Africa, AIDS, Articles, Bibliometric, Bibliometric Analysis, Bibliometric Studies, Database, Growth, Health, History, HIV, Immunodeficiency-Syndrome AIDS, Journal, Literature, Models, Positive, Productivity, Regression, Research, Research Output, Research Productivity, South Africa

? Gillet, E., Meys, J.F.A., Verstraelen, H., Bosire, C., De Sutter, P., Temmerman, M. and Broeck, D.V. (2011), Bacterial vaginosis is associated with uterine cervical human papillomavirus infection: A meta-analysis. *BMC Infectious Diseases*, **11**, Article Number: 10.

Full Text: [2011\BMC Inf Dis11, 10.pdf](2011/BMC%20Inf%20Dis11,%2010.pdf)

Abstract: Background: Bacterial vaginosis (BV), an alteration of vaginal flora involving a decrease in Lactobacilli and predominance of anaerobic bacteria, is among the most common cause of vaginal complaints for women of childbearing age. It is well known that BV has an influence in acquisition of certain genital infections. However, association between BV and cervical human papillomavirus (HPV) infection has been inconsistent among studies. The objective of this meta- analysis of published studies is to clarify and summarize published literature on the extent to which BV is associated with cervical HPV infection. Methods: Medline and Web of Science were systematically searched for eligible publications until December 2009. Articles were selected based on inclusion and exclusion criteria. After testing heterogeneity of studies, meta-analysis was performed using random effect model. Results: Twelve eligible studies were selected to review the association between BV and HPV, including a total of 6,372 women. The pooled prevalence of BV was 32%. The overall estimated odds ratio (OR) showed a positive association between BV and cervical HPV infection (OR, 1.43; 95% confidence interval, 1.11-1.84). Conclusion: This meta- analysis of available literature resulted in a positive association between BV and uterine cervical HPV infection.

Keywords: Analysis, Articles, Bacteria, Chlamydia-Trachomatis, Clue Cells, Dysbacteriosis, Epidemiology, HPV, Human, Human Papillomavirus, Infection, Intraepithelial Neoplasia, Literature, Meta-Analysis, Methods, Model, Natural-History, Prevalence, Publications, Ratio, Review, Risk-Factors, Science, Simplex-Virus Type-2, Smears, Web of Science, Women

# Title: BMC Medical Education

Full Journal Title: BMC Medical Education

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Walker, R.L., Sykes, L., Hemmelgarn, B.R. and Quan, H.D. (2010), Authors’ opinions on publication in relation to annual performance assessment. *BMC Medical Education*, **10**, Article Number: 21.

Full Text: [2010\BMC Med Edu10, 21.pdf](2010/BMC%20Med%20Edu10,%2021.pdf)

Abstract: Background: In the past 50 years there has been a substantial increase in the volume of published research and in the number of authors per scientific publication. There is also significant pressure exerted on researchers to produce publications. Thus, the purpose of this study was to survey corresponding authors in published medical journals to determine their opinion on publication impact in relation to performance review and promotion. Methods: Cross-sectional survey of corresponding authors of original research articles published in June 2007 among 72 medical journals. Measurement outcomes included the number of publications, number of authors, authorship order and journal impact factor in relation to performance review and promotion. Results: Of 687 surveys, 478 were analyzed (response rate 69.6%). Corresponding authors self-reported that number of publications (78.7%), journal impact factor (67.8%) and being the first author (75.9%) were most influential for their annual performance review and assessment. Only 17.6% of authors reported that the number of authors on a manuscript was important criteria for performance review and assessment. A higher percentage of Asian authors reported that the number of authors was key to performance review and promotion (41.4% versus 7.8 to 22.2%). compared to authors from other countries. Conclusions: The number of publications, authorship order and journal impact factor were important factors for performance reviews and promotion at academic and non-academic institutes. The number of authors was not identified as important criteria. These factors may be contributing to the increase in the number of authors per publication.

Keywords: Assessment, Author, Authors, Authorship, Cross-Sectional Survey, History, Impact, Impact Factor, Journal, Journal Impact, Journal Impact Factor, Journals, Measurement, Medical, Medical Journals, Methods, Outcomes, Pressure, Promotion, Publication, Publications, Published Research, Research, Researchers, Review, Scientific Publication, Survey

# Title: BMC Medical Ethics

Full Journal Title: [BMC Medical Ethics](http://www.biomedcentral.com/bmcmedethics/archive/)

ISO Abbreviated Title:

JCR Abbreviated Title: BMC Med Ethics

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Holm, S. and Williams-Jones, B. (2006), Global bioethics -- myth or reality? *BMC Medical Ethics*, **7**, E10.

Abstract: BACKGROUND: There has been debate on whether a global or unified field of bioethics exists. If bioethics is a unified global field, or at the very least a closely shared way of thinking, then we should expect bioethicists to behave the same way in their academic activities anywhere in the world. This paper investigates whether there is a ‘global bioethics’ in the sense of a unified academic community. METHODS: To address this question, we study the web-linking patterns of bioethics institutions, the citation patterns of bioethics papers and the buying patterns of bioethics books. RESULTS: All three analyses indicate that there are geographical and institutional differences in the academic behavior of bioethicists and bioethics institutions. CONCLUSION: These exploratory studies support the position that there is no unified global field of bioethics. This is a problem if the only reason is parochialism. But these regional differences are probably of less concern if one notices that bioethics comes in many not always mutually understandable dialects.

Keywords: Analyses, Background, Behavior, Bioethics, Citation, Citation Patterns, Community, Field, Global Bioethics, Institutions, Methods, Papers, Regional, Support, World

# Title: BMC Medical Informatics and Decision Making

Full Journal Title: [BMC Medical Informatics and Decision Making](http://www.biomedcentral.com/bmcmedinformdecismak)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? DeShazo, J.P., LaVallie, D.L. and Wolf, F.M. (2009), Publication trends in the medical informatics literature: 20 years of “Medical Informatics” in MeSH. *BMC Medical Informatics and Decision Making*, **9**, Article Number: 7.

Full Text: [2009\BMC Med Inf Dec Mak9, 7.pdf](2009/BMC%20Med%20Inf%20Dec%20Mak9,%207.pdf)

Abstract: Background: The purpose of this study is to identify publication output, and research areas, as well as descriptively and quantitatively characterize the field of medical informatics through publication trend analysis over a twenty year period (1987-2006). Methods: A bibliometric analysis of medical informatics citations indexed in Medline was performed using publication trends, journal frequency, impact factors, MeSH term frequencies and characteristics of citations. Results: There were 77,023 medical informatics articles published during this 20 year period in 4,644 unique journals. The average annual article publication growth rate was 12%. The 50 identified medical informatics MeSH terms are rarely assigned together to the same document and are almost exclusively paired with a non-medical informatics MeSH term, suggesting a strong interdisciplinary trend. Trends in citations, journals, and MeSH categories of medical informatics output for the 20-year period are summarized. Average impact factor scores and weighted average impact factor scores increased over the 20-year period with two notable growth periods. Conclusion: There is a steadily growing presence and increasing visibility of medical informatics literature over the years. Patterns in research output that seem to characterize the historic trends and current components of the field of medical informatics suggest it may be a maturing discipline, and highlight specific journals in which the medical informatics literature appears most frequently, including general medical journals as well as informatics-specific journals.

Keywords: Analysis, Bibliometric, Bibliometric Analysis, Characteristics, Citations, Factor Scores, Factors, Field, General, Growth, Growth Rate, Health-Care, Impact, Impact Factor, Impact Factor Scores, Impact Factors, Informatics, Interdisciplinary, Inventory, Journal, Journals, Literature, Medical, Medical Informatics, Medical Journals, Presence, Publication, Purpose, Research, Science, Scientific Literature, Systems, Term, Trend, Trend Analysis, Trends, Visibility

? Spreckelsen, C., Deserno, T.M. and Spitzer, K. (2011), Visibility of medical informatics regarding bibliometric indices and databases. *BMC Medical Informatics and Decision Making*, **11**, Article Number: 24.

Full Text: [2011\BMC Med Inf Dec Mak11, 24.pdf](2011/BMC%20Med%20Inf%20Dec%20Mak11,%2024.pdf)

Abstract: Background: The quantitative study of the publication output (bibliometrics) deeply influences how scientific work is perceived (bibliometric visibility). Recently, new bibliometric indices and databases have been established, which may change the visibility of disciplines, institutions and individuals. This study examines the effects of the new indices on the visibility of Medical Informatics. Methods: By objective criteria, three sets of journals are chosen, two representing Medical Informatics and a third addressing Internal Medicine as a benchmark. The availability of index data (index coverage) and the aggregate scores of these corpora are compared for journal-related (Journal impact factor, Eigenfactor metrics, SCImago journal rank) and author-related indices (Hirsch-index, Egghes G-index). Correlation analysis compares the dependence of author-related indices. Results: The bibliometric visibility depended on the research focus and the citation database: Scopus covers more journals relevant for Medical Informatics than ISI/Thomson Reuters. Journals focused on Medical Informatics’ methodology were negatively affected by the Eigenfactor metrics, while the visibility profited from an interdisciplinary research focus. The correlation between Hirsch-indices computed on citation databases and the Internet was strong. Conclusions: The visibility of smaller technology-oriented disciplines like Medical Informatics is changed by the new bibliometric indices and databases possibly leading to suitably changed publication strategies. Freely accessible author-related indices enable an easy and adequate individual assessment.

Keywords: Assessment, Bibliometric, Bibliometric Indices, Bibliometrics, Citation, Citation Analysis, Correlation, Databases, Hirsch Index, Impact Factor, Journal, Journal Impact, Journal Impact Factor, Journals, Medical, Methodology, Metrics, Principles, Publication, Research, Scimago, Scopus, Visibility, Web Sites

# Title: BMC Medical Research Methodology

Full Journal Title: [BMC Medical Research Methodology](http://www.pubmedcentral.nih.gov/tocrender.fcgi?journal=43&action=archive)

ISO Abbrev. Title: BMC Med. Res. Methodol.

JCR Abbrev. Title: BMC Med Res Methodol

ISSN: 1471-2288

Issues/Year: 0

Language: English

Journal Country/Territory: England

Publisher: Biomed Central Ltd

Publisher Address: 236 Grays Inn Rd, Floor 6, London WC1X 8HL, England

Subject Categories:

Health Care Sciences & Services: Impact Factor 2.303, 22/69 (2009)

? Galandi, D., Schwarzer, G. and Antes, G. (2006), The demise of the randomised controlled trial: Bibliometric study of the German-language health care literature, 1948 to 2004. *BMC Medical Research Methodology*, **6**, Article Number: 30.

Full Text: [2006\BMC Med Res Met6, 30.pdf](2006/BMC%20Med%20Res%20Met6,%2030.pdf)

Abstract: BACKGROUND: In order to reduce systematic errors (such as language bias) and increase the precision of the summary treatment effect estimate, a comprehensive identification of randomised controlled trials (RCT), irrespective of publication language, is crucial in systematic reviews and meta-analyses. We identified trials in the German general health care literature. METHODS: Eight German language general health care journals were searched for randomised controlled trials and analysed with respect to the number of published RCTs each year and the size of trials. RESULTS: A total of 1618 trials were identified with a median total number of 43 patients per trial. Between 1970 and 2004 a small but constant rise in sample size from a median number of 30 to 60 patients per trial can be observed. The number of published trials was very low between 1948 and 1970, but increased between 1970 and 1986 to a maximum of 11.2 RCTs per journal and year. In the following time period a striking decline of the number of RCTs was observed. Between 1999 and 2001 only 0.8 RCTs per journal and year were published, in the next three years, the number of published trials increased to 1.7 RCTs per journal and year. CONCLUSION: German language general health care journals no longer have a role in the dissemination of trial results. The slight rise in the number of published RCTs in the last three years can be explained by a change of publication language from German to English of three of the analysed journals.

Keywords: Background, Bias, Bibliometric, Bibliometric Study, Care, Controlled Trial, Errors, General, Health, Health Care, Identification, Journal, Journals, Literature, Methods, Patients, Precision, Publication, Randomised, Randomised Controlled Trial, Randomised Controlled Trials, RCT, Reviews, Role, Sample Size, Size, Small, Systematic Reviews, Treatment, Trial

? Weisscher, N., de Haan, R.J. and Vermeulen, M. (2007), The impact of disease-related impairments on disability and health-related quality of life: A systematic review. *BMC Medical Research Methodology*, **7**, Article Number: 24.

Full Text: [2007\BMC Med Res Met7, 24.pdf](2007/BMC%20Med%20Res%20Met7,%2024.pdf)

Abstract: Background: To investigate the interchangeability of measures of disability and healthrelated quality of life (HRQL) by comparing their associations patterns with diseaserelated impairment measures in patients with a variety of conditions. Methods: A systematic literature search of MEDLINE, EMBASE, Web of Science and a hand search of reference lists through January 2006. Studies were included if they reported associations patterns between impairment and disability and between impairment and HRQL. Correlation coefficients were transformed to Fisher’s z effect size (ES(z)). Weighted averages were reported as pooled ES(z) with 95% confidence intervals (CI). Results: The relationship between impairment and disability was stronger (pooled ES(z) = 0.69; 95% CI, 0.66 0.72) than between impairment and HRQL (pooled ES(z) = 0.38; 95% CI, 0.36-0.41). The physical component score (pooled ES(z) = 0.43; 95% CI, 0.39 0.47) and diseasespecific HRQL (pooled ES(z) = 0.46; 95% CI, 0.40 0.51) were stronger associated with impairments than the mental component score (pooled ES(z) = 0.28; 95% CI, 0.20 0.36) and generic HRQL (pooled ES(z) = 0.36; 95% CI, 0.33 0.39). Conclusion: This study shows measures of disability and different HRQL domains were not equally related to impairment. Patient’s impairments are better reflected in disability measures, than in HRQL instruments. There are many outcomes of interest and precisely defining them and measuring them will improve assessing the impact of new interventions.

Keywords: Comprehensive Assessment, Confidence Intervals, Correlation, EMBASE, Functional Status, Health-Related Quality of Life, Impact, Interest, Interventions, Literature, Medline, Methods, Multiple-Sclerosis, Outcome Measures, Outcomes, Parkinsons-Disease, Quality of Life, Review, Rheumatoid-Arthritis, Scales, Science, Spinal-Cord Injury, Status Questionnaire, Systematic, Systematic Review, Validity, Web of Science

? Benamer, H.T.S. and Bakoush, O. (2009), Arab nations lagging behind other Middle Eastern countries in biomedical research: A comparative study. *BMC Medical Research Methodology*, **9**, Article Number: 26.

Full Text: [2009\BMC Med Res Met9, 26.pdf](2009/BMC%20Med%20Res%20Met9,%2026.pdf)

Abstract: Background: Analysis of biomedical research and publications in a country or group of countries is used to monitor research progress and trends. This study aims to assess the performance of biomedical research in the Arab world during 2001-2005 and to compare it with other Middle Eastern non-Arab countries.

Methods: PubMed and Science Citation Index Expanded (SCI-expanded) were searched systematically for the original biomedical research publications and their citation frequencies of 16 Arab nations and three non-Arab Middle Eastern countries (Iran, Israel and Turkey), all of which are classified as middle or high income countries.

Results: The 16 Arab countries together have 5775 and 14,374 original research articles listed by PubMed and SCI-expanded, respectively, significantly less (p < 0.001) than the other three Middle Eastern countries (25,643 and 49,110). The Arab countries also scored less when the data were normalized to population, gross domestic product (GDP), and GDP/capita. The publications from the Arab countries also have a significantly lower (p < 0.001) citation frequency.

Conclusion: The Arab world is producing fewer biomedical publications of lower quality than other Middle Eastern countries. Studies are needed to clarify the causes and to propose strategies to improve the biomedical research status in Arab countries.

Keywords: Publications, Geography, Journals, Impact, Index

? Takahashi-Omoe, H., Omoe, K. and Okabe, N. (2009), New journal selection for quantitative survey of infectious disease research: Application for Asian trend analysis. *BMC Medical Research Methodology*, **9**, Article Number: 67.

Full Text: [2009\BMC Med Res Met9, 67.pdf](2009/BMC%20Med%20Res%20Met9,%2067.pdf)

Abstract: Background: Quantitative survey of research articles, as an application of bibliometrics, is an effective tool for grasping overall trends in various medical research fields. This type of survey has been also applied to infectious disease research; however, previous studies were insufficient as they underestimated articles published in non-English or regional journals. Methods: Using a combination of Scopus (TM) and PubMed, the databases of scientific literature, and English and non-English keywords directly linked to infectious disease control, we identified international and regional infectious disease journals. In order to ascertain whether the newly selected journals were appropriate to survey a wide range of research articles, we compared the number of original articles and reviews registered in the selected journals to those in the ‘Infectious Disease Category’ of the Science Citation Index Expanded (TM) (SCI Infectious Disease Category) during 1998-2006. Subsequently, we applied the newly selected journals to survey the number of original articles and reviews originating from 11 Asian countries during the same period. Results: One hundred journals, written in English or 7 non-English languages, were newly selected as infectious disease journals. The journals published 14,156 original articles and reviews of Asian origin and 118,158 throughout the world, more than those registered in the SCI Infectious Disease Category (4,621 of Asian origin and 66,518 of the world in the category). In Asian trend analysis of the 100 journals, Japan had the highest percentage of original articles and reviews in the area, and no noticeable increase in articles was revealed during the study period. China, India and Taiwan had relatively large numbers and a high increase rate of original articles among Asian countries. When adjusting the publication of original articles according to the country population and the gross domestic product (GDP), Singapore and Taiwan were the most productive. Conclusion: A survey of 100 selected journals is more sensitive than the SCI Infectious Disease Category from the viewpoint of avoiding underestimating the number of infectious disease research articles of Asian origin. The survey method is applicable to grasp global trends in disease research, although the method may require further development.

Keywords: Articles, Bibliometric Analysis, Bibliometrics, Countries, Epidemiology, Europe, Fields, Japan Contribution, Medicine, Public-Health Research, Research Productivity

# Title: BMC Medicine

Full Journal Title: [BMC Medicine](http://www.biomedcentral.com/bmcmed/about/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? McKibbon, K.A., Wilczynski, N.L. and Haynes, R.B. (2004), What do evidence-based secondary journals tell us about the publication of clinically important articles in primary healthcare journals? *BMC Medicine*, **2**, Article Number: 33.

Full Text: [2004\BMC Med2, 33.pdf](2004/BMC%20Med2,%2033.pdf)

Abstract: BACKGROUND: We conducted this analysis to determine i) which journals publish high-quality, clinically relevant studies in internal medicine, general/family practice, general practice nursing, and mental health; and ii) the proportion of clinically relevant articles in each journal. METHODS: We performed an analytic survey of a hand search of 170 general medicine, general healthcare, and specialty journals for 2000. Research staff assessed individual articles by using explicit criteria for scientific merit for healthcare application. Practitioners assessed the clinical importance of these articles. Outcome measures were the number of high-quality, clinically relevant studies published in the 170 journal titles and how many of these were published in each of four discipline-specific, secondary “evidence-based” journals (ACP Journal Club for internal medicine and its subspecialties; Evidence-Based Medicine for general/family practice; Evidence-Based Nursing for general practice nursing; and Evidence-Based Mental Health for all aspects of mental health). Original studies and review articles were classified for purpose: therapy and prevention, screening and diagnosis, prognosis, etiology and harm, economics and cost, clinical prediction guides, and qualitative studies. RESULTS: We evaluated 60,352 articles from 170 journal titles. The pass criteria of high-quality methods and clinically relevant material were met by 3059 original articles and 1073 review articles. For ACP Journal Club (internal medicine), four titles supplied 56.5% of the articles and 27 titles supplied the other 43.5%. For Evidence-Based Medicine (general/family practice), five titles supplied 50.7% of the articles and 40 titles supplied the remaining 49.3%. For Evidence-Based Nursing (general practice nursing), seven titles supplied 51.0% of the articles and 34 additional titles supplied 49.0%. For Evidence-Based Mental Health (mental health), nine titles supplied 53.2% of the articles and 34 additional titles supplied 46.8%. For the disciplines of internal medicine, general/family practice, and mental health (but not general practice nursing), the number of clinically important articles was correlated with Science Citation Index (SCI) Impact Factors. CONCLUSIONS: Although many clinical journals publish high-quality, clinically relevant and important original studies and systematic reviews, the articles for each discipline studied were concentrated in a small subset of journals. This subset varied according to healthcare discipline; however, many of the important articles for all disciplines in this study were published in broad-based healthcare journals rather than subspecialty or discipline-specific journals.

? Dandona, L., Raban, M.Z., Guggilla, R.K., Bhatnagar, A. and Dandona, R. (2009), Trends of public health research output from India during 2001-2008. *BMC Medicine*, **7**, Article Number: 59.

Full Text: [2009\BMC Med7, 59.pdf](2009/BMC%20Med7,%2059.pdf)

Abstract: Background: An understanding of how public health research output from India is changing in relation to the disease burden and public health priorities is required in order to inform relevant research development. We therefore studied the trends in the public health research output from India during 2001-2008 that was readily available in the public domain. Methods: The scope and type of the published research from India in 2007 that was included in the PubMed database was assessed and compared with a previous similar assessment for 2002. Papers were classified based on the review of abstracts and original public health research papers were assessed in detail. Impact factors for the journals were used to compute quality-adjusted research output. The websites of governmental organizations, academic and research institutions and international organizations were searched in order to identify and review reports on original public health research produced in India from 2001 to 2008. The reports were classified based on the topics covered and quality and their trends over time were assessed. Results: The number of original health research papers from India in PubMed doubled from 4494 in 2002 to 9066 in 2007. This included a 3.1-fold increase in public health research papers, but these comprised only 5% of the total papers in 2007. Within public health, the increase was lowest for the health system and policy category. Several major causes of disease burden in India continued to be underrepresented in the quality-adjusted public health research output in 2007. The number of papers evaluating population health interventions increased from 2002 to 2007, but there were none on the leading non-communicable causes of disease burden or on road traffic injuries. The number of identified original public health research reports increased by 64.7% from 204 in 2001-2004 to 336 in 2005-2008. The proportion of reports on reproductive and child health was very high but decreased slightly from 38.7% of the total in 2001-2004 to 31.5% in 2005-2008 (P = 0.09); those on the leading chronic non-communicable conditions and injuries increased from 6.4% to 13.4% (P = 0.01) but this was still much lower than their contribution to the disease burden. Health system/policy issues were the topic in 27.4% reports but health information issues were covered in a miniscule 0.6% reports. The proportion of reports that were evaluations increased slightly from 26% in 2001-2004 to 31.5% in 2005-2008, with this proportion being higher among the reports commissioned by international organizations (P < 0.001). The proportion of reports commissioned by Indian governmental organizations alone, or in collaboration with international organizations, doubled from 2001-2004 to 2005-2008 (P < 0.001). Only 25% of the total 540 reports had a quality score of adequate or better. The quality of reports produced by collaborations between Indian and international organizations was higher than those produced by Indian or international organizations alone (P < 0.001). Conclusion: This is the first analysis from India that includes research reports in addition to published papers. It provides the most up-to-date understanding of public health research output from India. The increase in available public health research output and the increase in commissioning of this research by Indian governmental organizations are encouraging. However, the distribution of research topics and the quality of research reports continue to be unsatisfactory. It is necessary for health policy to address these continuing deficits in public health research in order to reduce the very large disease burden in India.

Keywords: Bibliometric Analysis, Diseases, Policy, Trials

? Atsou, K., Chouaid, C. and Hejblum, G. (2011), Variability of the chronic obstructive pulmonary disease key epidemiological data in Europe: Systematic review. *BMC Medicine*, **9**, Article Number: 7.

Full Text: [2011\BMC Med9, 7.pdf](2011/BMC%20Med9,%207.pdf)

Abstract: Background: Chronic obstructive pulmonary disease (COPD) is predicted to become a major cause of death worldwide. Studies on the variability in the estimates of key epidemiological parameters of COPD may contribute to better assessment of the burden of this disease and to helpful guidance for future research and public policies. In the present study, we examined differences in the main epidemiological characteristics of COPD derived from studies across countries of the European Union, focusing on prevalence, severity, frequency of exacerbations and mortality, as well as on differences between the studies’ methods. Methods: This systematic review was based on a search for the relevant literature in the Science Citation Index database via the Web of Science and on COPD mortality rates issued from national statistics. Analysis was finally based on 65 articles and Eurostat COPD mortality data for 21 European countries. Results: Epidemiological characteristics of COPD varied widely from country to country. For example, prevalence estimates ranged between 2.1% and 26.1%, depending on the country, the age group and the methods used. Likewise, COPD mortality rates ranged from 7.2 to 36.1 per 10(5) inhabitants. The methods used to estimate these epidemiological parameters were highly variable in terms of the definition of COPD, severity scales, methods of investigation and target populations. Nevertheless, to a large extent, several recent international guidelines or research initiatives, such as GOLD, BOLD or PLATINO, have boosted a substantial standardization of methodology in data collection and have resulted in the availability of more comparable epidemiological estimates across countries. On the basis of such standardization, severity estimates as well as prevalence estimates present much less variation across countries. The contribution of these recent guidelines and initiatives is outlined, as are the problems remaining in arriving at more accurate COPD epidemiological estimates across European countries. Conclusions: The accuracy of COPD epidemiological parameters is important for guiding decision making with regard to preventive measures, interventions and patient management in various health care systems. Therefore, the recent initiatives for standardizing data collection should be enhanced to result in COPD epidemiological estimates of improved quality. Moreover, establishing international guidelines for reporting research on COPD may also constitute a major contribution.

Keywords: Accuracy, Age, Air-Flow, Airways Obstruction, Assessment, Availability, Burden, Care, Cause of Death, Characteristics, Chronic, Chronic Obstructive Pulmonary Disease, Chronic-Bronchitis, Collection, Country, Data, Data Collection, Database, Death, Decision, Decision Making, Decision-Making, Disease, Estimates, Europe, European Union, General-Population, Gold, Guidance, Guidelines, Health, Health Care, Health-Care, International, International Guidelines, Interventions, Investigation, Literature, Lung-Disease, Management, Methodology, Methods, Mortality, Northern Sweden, Policies, Populations, Prevalence, Public, Quality, Rates, Reporting, Research, Respiratory Symptoms, Review, Scales, Science Citation Index, Standardization, Standardizing, Statistics, Systematic Review, Systems, United-States, Variability, Web of Science, Young-Adults

? White, H.L. and Glazier, R.H. (2011), Do hospitalist physicians improve the quality of inpatient care delivery? A systematic review of process, efficiency and outcome measures. *BMC Medicine*, **9**, Article Number: 58.

Full Text: [2011\BMC Med9, 58.pdf](2011/BMC%20Med9,%2058.pdf)

Abstract: Background: Despite more than a decade of research on hospitalists and their performance, disagreement still exists regarding whether and how hospital-based physicians improve the quality of inpatient care delivery. This systematic review summarizes the findings from 65 comparative evaluations to determine whether hospitalists provide a higher quality of inpatient care relative to traditional inpatient physicians who maintain hospital privileges with concurrent outpatient practices. Methods: Articles on hospitalist performance published between January 1996 and December 2010 were identified through MEDLINE, Embase, Science Citation Index, CINAHL, NHS Economic Evaluation Database and a hand-search of reference lists, key journals and editorials. Comparative evaluations presenting original, quantitative data on processes, efficiency or clinical outcome measures of care between hospitalists, community-based physicians and traditional academic attending physicians were included (n = 65). After proposing a conceptual framework for evaluating inpatient physician performance, major findings on quality are summarized according to their percentage change, direction and statistical significance. Results: The majority of reviewed articles demonstrated that hospitalists are efficient providers of inpatient care on the basis of reductions in their patients’ average length of stay (69%) and total hospital costs (70%); however, the clinical quality of hospitalist care appears to be comparable to that provided by their colleagues. The methodological quality of hospitalist evaluations remains a concern and has not improved over time. Persistent issues include insufficient reporting of source or sample populations (n = 30), patients lost to follow-up (n = 42) and estimates of effect or random variability (n = 35); inappropriate use of statistical tests (n = 55); and failure to adjust for established confounders (n = 37). Conclusions: Future research should include an expanded focus on the specific structures of care that differentiate hospitalists from other inpatient physician groups as well as the development of better conceptual and statistical models that identify and measure underlying mechanisms driving provider-outcome associations in quality.

Keywords: Citation, Clinical-Outcomes, Controlled-Trial, Development, Evaluation, General Medicine Service, Health Maintenance Organization, Heart-Failure, Journals, Length-of-Stay, Medline, Patient Outcomes, Pediatric Hospitalists, Pneumonia Care, Research, Resource Utilization, Review, Science Citation Index, Statistical, Systematic Review

# Title: BMC Musculoskeletal Disorders

Full Journal Title: BMC Musculoskeletal Disorders

ISO Abbreviated Title:

JCR Abbreviated Title: BMC Musculoskeletal Disorders

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Eechaute, C., Vaes, P., Van Aerschot, L., Asman, S. and Duquet, W. (2007), The clinimetric qualities of patient-assessed instruments for measuring chronic ankle instability: A systematic review. *BMC Musculoskeletal Disorders*, **8**, Article Number: 6.

Full Text: [2007\BMC Mus Dis, 8, 6.pdf](2007/BMC%20Mus%20Dis,%208,%206.pdf)

Abstract: Background: The assessment of outcomes from the patient’s perspective becomes more recognized in health care. Also in patients with chronic ankle instability, the degree of present impairments, disabilities and participation problems should be documented from the perspective of the patient. The decision about which patient-assessed instrument is most appropriate for clinical practice should be based upon systematic reviews. Only rating scales constructed for patients with acute ligament injuries were systematically reviewed in the past. The aim of this study was to review systematically the clinimetric qualities of patient-assessed instruments designed for patients with chronic ankle instability. Methods: A computerized literature search of Medline, EMBASE, Cinahl, Web of Science, Sport Discus and the Cochrane Controlled Trial Register was performed to identify eligible instruments. Two reviewers independently evaluated the clinimetric qualities of the selected instruments using a criteria list. The interobserver reliability of both the selection procedure and the clinimetric evaluation was calculated using modified kappa coefficients. Results: The inter-observer reliability of the selection procedure was excellent (k =.86). Four instruments met the eligibility criteria: the Ankle Joint Functional Assessment Tool (AJFAT), the Functional Ankle Outcome Score (FAOS), the Foot and Ankle Disability Index (FADI) and the Functional Ankle Ability Measure (FAAM). The inter-observer reliability of the quality assessment was substantial to excellent (k between .64 and .88). Test-retest reliability was demonstrated for the FAOS, the FADI and the FAAM but not for the AJFAT. The FAOS and the FAAM met the criteria for content validity and construct validity. For none of the studied instruments, the internal consistency was sufficiently demonstrated. The presence of floor- and ceiling effects was assessed for the FAOS but ceiling effects were present for all subscales. Responsiveness was demonstrated for the AJFAT, FADI and the FAAM. Only for the FAAM, a minimal clinical important difference (MCID) was presented. Conclusion: The FADI and the FAAM can be considered as the most appropriate, patient-assessed tools to quantify functional disabilities in patients with chronic ankle instability. The clinimetric qualities of the FAAM need to be further demonstrated in a specific population of patients with chronic ankle instability.

Keywords: Ankle Instability, Assessment, Chronic Ankle Instability, Cochrane, Evaluation, Follow-Up, Foot, Functional, Functionally Unstable Ankles, Health Care, Joint Position Sense, Lateral Ligament, Literature, Methods, Of-Life, Outcome Measures, Outcomes, Practice, Reliability, Review, Science, Strength, Systematic, Systematic Review, Systematic Reviews, Validity, Web of Science

? Siebelt, M., Siebelt, T., Pilot, P., Bloem, R.M., Bhandari, M. and Poolman, R.W. (2010), Citation analysis of orthopaedic literature; 18 major orthopaedic journals compared for Impact Factor and SCImago. *BMC Musculoskeletal Disorders*, **11**, Article Number: 4.

Full Text: [2010\BMC Mus Dis, 11, 4.pdf](2010/BMC%20Mus%20Dis,%2011,%204.pdf)

Abstract: Background: One of the disadvantages of the Impact Factor (IF) is self-citation. The SCImago Journal Rank (SJR) indicator excludes self-citations and considers the quality, rather than absolute numbers, of citations of a journal by other journals. The present study re-evaluated the influence of self-citation on the 2007 IF for 18 major orthopaedic journals and investigated the difference in ranking between IF and SJR. Methods: The journals were analysed for self-citation both overall and divided into a general group (n = 8) and a specialized group (n = 10). Self-cited and self-citing rates, as well as citation densities and IFs corrected for self-citation (cIF), were calculated. The rankings of the 18 journals by IF and by SJR were compared and the absolute difference between these rankings (Delta R) was determined. Results: Specialized journals had higher self-citing rates (p = 0.01, Delta median = 9.50, 95%CI-19.42 to 0.42), higher self-cited rates (p = 0.0004, Delta median = -10.50, 95% CI-15.28 to -5.72) and greater differences between IF and cIF (p = 0.003, Delta median = 3.50, 95%CI -6.1 to 13.1). There was no significant correlation between self-citing rate and IF for both groups (general: r = 0.46, p = 0.27; specialized: r = 0.21, p = 0.56). When the difference in ranking between IF and SJR was compared between both groups, sub-specialist journals were ranked lower compared to their general counterparts (Delta R: p = 0.006, Delta median = 2.0, 95% CI -0.39 to 4.39). Conclusions: Citation analysis shows that specialized orthopaedic journals have specific self-citation tendencies. The correlation between self-cited rate and IF in our sample was large but, due to small sample size, not significant. The SJR excludes self-citations in its calculation and therefore enhances the underestimation in ranking of specialized journals.

Keywords: Analysis, Citation, Citation Analysis, Citations, Impact Factor, Journals, Self-Citation, Self-Citations

? Descatha, A., Jauffret, P., Chastang, J.F., Roquelaure, Y. and Leclerc, A. (2011), Should we consider Dupuytren’s contracture as work-related? A review and meta-analysis of an old debate. *BMC Musculoskeletal Disorders*, **12**, Article Number: 96.

Full Text: [2011\BMC Mus Dis, 12, 96.pdf](2011/BMC%20Mus%20Dis,%2012,%2096.pdf)

Abstract: Background: In view of the conflicting opinions published, a meta-analysis was undertaken on epidemiological studies in order to assess any association between Dupuytren’s contracture and work exposure. Methods: Using the key words: “occupational disease”, “work” and “Dupuytren contracture” without limitation on language or year of publication, epidemiological studies were selected from four databases (Pub-Med, EMBASE, Web of science, BDSP) after two rounds (valid control group, valid work exposure). A quality assessment list was constructed and used to isolate papers with high quality methodological criteria (scores of 13 or above, HQMC). Relevant associations between manual work, vibration exposure (at work) and Dupuytren’s contracture were extracted from the articles and a metarisk calculated using the generic variance approach (meta-odds ratios, meta-OR). Results: From 1951 to 2007, 14 epidemiological studies (including 2 cohort studies, 3 case-control studies, and 9 cross-sectional studies/population surveys) were included. Two different results could be extracted from five studies (based on different types of exposure), leading to 19 results, 12 for manual work (9 studies), and 7 for vibration exposure (5 studies). Six studies met the HQMC, yielding 9 results, 5 for manual work and 4 for vibration exposure. Five studies found a dose-response relationship. The meta-OR for manual work was 2.02[1.57;2.60] (HQMC studies only: 2.01[1.51;2.66]), and the meta-OR for vibration exposure was 2.88 [1.36;6.07] (HQMC studies only: 2.14 [1.59;2.88]). Conclusion: These results support the hypothesis of an association between high levels of work exposure (manual work and vibration exposure) and Dupuytren’s contracture in certain cases.

Keywords: Alcohol, Assessment, Associations, Case-Control Studies, Cohort Studies, Control, Databases, Disease, Disorders, Dose-Response, Dupuytren Contracture, Epidemiology, Hand, Meta-Analysis, Methods, Observational Studies, Occupation, Occupational, Papers, Prevalence, Pub Med, Publication, PUBMED, Review, Science, Vibration, Web of Science, White Finger

? Tijssen, M., van Cingel, R., van Melick, N. and de Visser, E. (2011), Patient-Reported Outcome questionnaires for hip arthroscopy: A systematic review of the psychometric evidence. *BMC Musculoskeletal Disorders*, **12**, Article Number: 117.

Full Text: [2011\BMC Mus Dis, 12, 117.pdf](2011/BMC%20Mus%20Dis,%2012,%20117.pdf)

Abstract: Background: Hip arthroscopies are often used in the treatment of intra-articular hip injuries. Patient-reported outcomes (PRO) are an important parameter in evaluating treatment. It is unclear which PRO questionnaires are specifically available for hip arthroscopy patients. The aim of this systematic review was to investigate which PRO questionnaires are valid and reliable in the evaluation of patients undergoing hip arthroscopy. Methods: A search was conducted in PUBMED, Medline, CINAHL, the Cochrane Library, Pedro, EMBASE and Web of Science from 1931 to October 2010. Studies assessing the quality of PRO questionnaires in the evaluation of patients undergoing hip arthroscopy were included. The quality of the questionnaires was evaluated by the psychometric properties of the outcome measures. The quality of the articles investigating the questionnaires was assessed by the COSMIN list. Results: Five articles identified three questionnaires; the Modified Harris Hip Score (MHHS), the Nonarthritic Hip Score (NAHS) and the Hip Outcome Score (HOS). The NAHS scored best on the content validity, whereas the HOS scored best on agreement, internal consistency, reliability and responsiveness. The quality of the articles describing the HOS scored highest. The NAHS is the best quality questionnaire. The articles describing the HOS are the best quality articles. Conclusions: This systematic review shows that there is no conclusive evidence for the use of a single patient-reported outcome questionnaire in the evaluation of patients undergoing hip arthroscopy. Based on available psychometric evidence we recommend using a combination of the NAHS and the HOS for patients undergoing hip arthroscopy.

Keywords: Checklist, Cochrane, Consensus, Cosmin, EMBASE, Evaluation, Femoroacetabular Impingement, Methods, Outcome, Outcomes, Prevalence, Quality, Questionnaire, Questionnaires, Reliability, Review, Science, Score, Status Measurement Instruments, Systematic, Systematic Review, Treatment, Validity, Web of Science

# Title: BMC Nursing

Full Journal Title: [BMC Nursing](http://www.pubmedcentral.nih.gov/tocrender.fcgi?journal=51&action=archive)

ISO Abbreviated Title:

JCR Abbreviated Title: BMC Nurs

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Gallagher, A., Li, S., Wainwright, P., Jones, I.R. and Lee, D. (2008), Dignity in the care of older people - a review of the theoretical and empirical literature. *BMC Nursing*, **7** (11), 1-12.

Full Text: [2008\BMC Nur7, 1.pdf](2008/BMC%20Nur7,%201.pdf)

Abstract: ABSTRACT: BACKGROUND: Dignity has become a central concern in UK health policy in relation to older and vulnerable people. The empirical and theoretical literature relating to dignity is extensive and as likely to confound and confuse as to clarify the meaning of dignity for nurses in practice. The aim of this paper is critically to examine the literature and to address the following questions: What does dignity mean? What promotes and diminishes dignity? And how might dignity be operationalised in the care of older people? This paper critically reviews the theoretical and empirical literature relating to dignity and clarifies the meaning and implications of dignity in relation to the care of older people. If nurses are to provide dignified care clarification is an essential first step. METHODS: This is a review article, critically examining papers reporting theoretical perspectives and empirical studies relating to dignity. The following databases were searched: Assia, BHI, CINAHL, Social Services Abstracts, IBSS, Web of Knowledge Social Sciences Citation Index and Arts & Humanities Citation Index and location of books a chapters in philosophy literature. An analytical approach was adopted to the publications reviewed, focusing on the objectives of the review. RESULTS AND DISCUSSION: We review a range of theoretical and empirical accounts of dignity and identify key dignity promoting factors evident in the literature, including staff attitudes and behaviour; environment; culture of care; and the performance of specific care activities. Although there is scope to learn more about cultural aspects of dignity we know a good deal about dignity in care in general terms. CONCLUSION: We argue that what is required is to provide sufficient support and education to help nurses understand dignity and adequate resources to operationalise dignity in their everyday practice. Using the themes identified from our review we offer proposals for the direction of future research.

Keywords: Approach, Attitudes, Background, Behaviour, Care, Cultural, Culture, Databases, Education, Empirical Studies, Environment, First, General, Health, Health Policy, Literature, Location, Methods, Nurses, Older People, Papers, Performance, Philosophy, Policy, Practice, Publications, Reporting, Research, Review, Reviews, Scope, Support, UK

# Title: BMC Pediatrics

Full Journal Title: BMC Pediatrics

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Barnard, K., Thomas, S., Royle, P., Noyes, K. and Waugh, N. (2010), Fear of hypoglycaemia in parents of young children with type 1 diabetes: A systematic review. *BMC Pediatrics*, **10**, Article Number: 50.

Full Text: [2010\BMC Ped10, 50.pdf](2010/BMC%20Ped10,%2050.pdf)

Abstract: Background: Many children with type 1 diabetes have poor glycaemic control. Since the Diabetes Control and Complications Trial (DCCT) showed that tighter control reduces complication rates, there has been more emphasis on intensified insulin therapy. We know that patients and families are afraid of hypoglycaemia. We hypothesised that fear of hypoglycaemia might take precedence over concern about long-term complications, and that behaviour to avoid hypoglycaemia might be at the cost of poorer control, and aimed to evaluate the effectiveness of any interventions designed to prevent that. The objective of this review was to systematically review studies concerning the extent and consequences of fear of hypoglycaemia in parents of children under 12 years of age with type 1 diabetes, and interventions to reduce it. Methods: Data Sources: MEDLINE, EMBASE, PsycINFO, The Cochrane Library, Web of Science, meeting abstracts of EASD, ADA and Diabetes UK, Current Controlled Trials, ClinicalTrials.gov, UK CRN, scrutiny of bibliographies of retrieved papers and contact with experts in the field. Inclusions: Relevant studies of any design of parents of children under 12 years of age with Type 1 diabetes were included. The key outcomes were the extent and impact of fear, hypoglycaemia avoidance behaviour in parents due to parental fear of hypoglycaemia in their children, the effect on diabetes control, and the impact of interventions to reduce this fear and hypoglycaemia avoidance behaviour. Results: Eight articles from six studies met the inclusion criteria. All were cross sectional studies and most were of good quality. Parental fear of hypoglycaemia, anxiety and depression were reported to be common. There was a paucity of evidence on behaviour to avoid hypoglycaemia, but there were some suggestions that higher than desirable blood glucose levels might be permitted in order to avoid hypoglycaemia. No studies reporting interventions to reduce parental fear of hypoglycaemia were found. Conclusions: The evidence base was limited. Parents of children with Type 1 diabetes reported considerable parental fear of hypoglycaemia, affecting both parental health and quality of life. There is some suggestion that hypoglycaemia avoidance behaviours by parents might adversely affect glycaemic control. Trials of interventions to reduce parental anxiety and hypoglycaemia avoidance behaviour are needed. We suggest that there should be a trial of structured education for parents of young children with Type 1 diabetes.

Keywords: Adolescents, Anxiety, Blood, Children, Cochrane, Cohort, Complications, Control, Depression, Diabetes, Education, Effectiveness, EMBASE, Families, Hypoglycaemia, Impact, Insulin, Interventions, Medline, Mellitus, Methods, Mothers, Outcomes, Papers, Parents, Quality of Life, Review, Science, Sources, Systematic, Systematic Review, Therapy, Type 1, Type 1 Diabetes, UK, Web of Science

? Meerpohl, J.J., Wolff, R.F., Antes, G. and von Elm, E. (2011), Are pediatric Open Access journals promoting good publication practice? An analysis of author instructions. *BMC Pediatrics*, **11**, Article Number: 27.

Full Text: [2011\BMC Ped11, 27.pdf](2011/BMC%20Ped11,%2027.pdf)

Abstract: Background: Several studies analyzed whether conventional journals in general medicine or specialties such as pediatrics endorse recommendations aiming to improve publication practice. Despite evidence showing benefits of these recommendations, the proportion of endorsing journals has been moderate to low and varied considerably for different recommendations. About half of pediatric journals indexed in the Journal Citation Report referred to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (ICMJE) but only about a quarter recommended registration of trials. We aimed to investigate to what extent pediatric open-access (OA) journals endorse these recommendations. We hypothesized that a high proportion of these journals have adopted recommendations on good publication practice since OA electronic publishing has been associated with a number of editorial innovations aiming at improved access and transparency. Methods: We identified 41 journals publishing original research in the subject category “Health Sciences, Medicine (General), Pediatrics” of the Directory of Open Access Journals http://www.doaj.org. From the journals’ online author instructions we extracted information regarding endorsement of four domains of editorial policy: the Uniform Requirements for Manuscripts, trial registration, disclosure of conflicts of interest and five major reporting guidelines such as the CONSORT (Consolidated Standards of Reporting Trials) statement. Two investigators collected data independently. Results: The Uniform Requirements were mentioned by 27 (66%) pediatric OA journals. Thirteen (32%) required or recommended trial registration prior to publication of a trial report. Conflict of interest policies were stated by 25 journals (61%). Advice about reporting guidelines was less frequent: CONSORT was referred to by 12 journals (29%) followed by other reporting guidelines (MOOSE, PRISMA or STARD) (8 journals, 20%) and STROBE (3 journals, 7%). The EQUATOR network, a platform of several guideline initiatives, was acknowledged by 4 journals (10%). Journals published by OA publishing houses gave more guidance than journals published by professional societies or other publishers. Conclusions: Pediatric OA journals mentioned certain recommendations such as the Uniform Requirements or trial registration more frequently than conventional journals; however, endorsement is still only moderate. Further research should confirm these exploratory findings in other medical fields and should clarify what the motivations and barriers are in implementing such policies.

Keywords: Barriers, Citation, Conflict of Interest, Conflict-of-Interest, Epidemiology, Germany, Impact, Information, Journal, Journals, Medical, Methods, Open Access, Policies, Policy, Professional, Publication, Publishing, Quality, Randomized Controlled-Trials, Registration, Research, Statement

# Title: BMC Psychiatry

Full Journal Title: BMC Psychiatry

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Tovilla-Zárate, C., Juárez-Rojop, I., Ramón-Frias, T., Villar-Soto, M., Pool-García, S., Medellín, B.C., Mendoza, A.D.G., Narvaez, L.L. and Humberto, N. (2011), No association between COMT val158met polymorphism and suicidal behavior: Meta-analysis and new data. *BMC Psychiatry*, **11**, Article Number: 151.

Full Text: [2011\BMC Psy11, 151.pdf](2011/BMC%20Psy11,%20151.pdf)

Abstract: Background: The polymorphism COMTval158met has been associated with suicidal behavior in case-control and meta-analysis studies, but results and conclusions remain controversial. The objective of this study was to examine the association between COMT val158met with suicidal behavior in a case-control study and to assess the combined evidence -this case-control study and available data from other related studies-we carried out a meta-analysis. Methods: We conducted a case-control study with 105 patients with suicide attempts and 236 controls. Subsequently, we performed a meta-analysis of published genetic association studies by searching through Medline, PubMed and Web of Science databases. Results: No significant differences were found in the distribution of alleles (chi(2) = 0.33, 1 df, p = 0.56) or genotypes (chi(2) = 2.36, 2 df, p = 0.26). The meta-analysis comprising 12 association studies (including the present one) showed that the risk COMTmet allele of COMTval158/met is not associated with suicidal behavior (OR: 1.09, 95% CI: 0.97-1.23), even in the absence of heterogeneity (OR: 1.09, 95% CI: 0.97-1.23). Conclusion: Our results showed no association between COMTval158/met and suicidal behavior. However, more studies are necessary to determine conclusively an association between COMT and suicidal behavior.

Keywords: Anger Traits, Behavior, Case-Control, Case-Control Study, Catechol-O-Methyltransferase, Databases, Differences, Disorders, Functional Polymorphism, Gene-Gene Interaction, Genetic, Genotype, Medline, Meta Analysis, Meta-Analysis, Metabolites, Methods, Patients, Personality, Polymorphism, Pubmed, Risk, Schizophrenia, Science, Treatment Response, Web of Science

# Title: BMC Public Health

Full Journal Title: [BMC Public Health](http://www.pubmedcentral.nih.gov/tocrender.fcgi?journal=63&action=archive)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1471-2458

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? López-Abente, G. and Muñoz-Tinoco, C. (2005), Time trends in the impact factor of Public Health journals. *BMC Public Health*, **5**, Article Number: 24.

Full Text: [2005\BMC Pub Hea5, 24.pdf](2005/BMC%20Pub%20Hea5,%2024.pdf)

Abstract: Background: Journal impact factor (IF) is linked to the probability of a paper being cited and is progressively becoming incorporated into researchers’ curricula vitae. Furthermore, the decision as to which journal a given study should be submitted, may well be based on the trend in the journal’s overall quality. This study sought to assess time trends in journal IF in the field of public, environmental and occupational health.

Methods: We used the IFs of 80 public health journals that were registered by the Science Citation Index from 1992 through 2003 and had been listed for a minimum period of the previous 3 years. Impact factor time trends were assessed using a linear regression model, in which the dependent variable was IF and the independent variable, the year. The slope of the model and its statistical significance were taken as the indicator of annual change.

Results: The IF range for the journals covered went from 0.18 to 5.2 in 2003. Although there was no statistical association between annual change and mean IF, most of the fastest growing journals registered mean IFs in excess of 1.5, and some represented emerging areas of public health research. Graphs displaying IF trends are shown.

Conclusion: In view of the delay between the publication of IFs and that of any given paper, knowing the trend in IF is essential in order to make a correct choice of journal.

? Latthe, P., Latthe, M., Say, L., Gulmezoglu, M. and Khan, K.S. (2006), WHO systematic review of prevalence of chronic pelvic pain: A neglected reproductive health morbidity. *BMC Public Health*, **6**, Article Number: 177.

Full Text: [2006\BMC Pub Hea6, 177.pdf](2006/BMC%20Pub%20Hea6,%20177.pdf)

Abstract: Background: Health care planning for chronic pelvic pain (CPP), an important cause of morbidity amongst women is hampered due to lack of clear collated summaries of its basic epidemiological data. We systematically reviewed worldwide literature on the prevalence of different types of CPP to assess the geographical distribution of data, and to explore sources of variation in its estimates. Methods: We identified data available from Medline (1966 to 2004), Embase (1980 to 2004), PsycINFO (1887 to 2003), LILACS (1982 to 2004), Science Citation index, CINAHL (January 1980 to 2004) and hand searching of reference lists. Two reviewers extracted data independently, using a piloted form, on participants’ characteristics, study quality and rates of CPP. We considered a study to be of high quality (valid) if had at least three of the following features: prospective design, validated measurement tool, adequate sampling method, sample size estimation and response rate > 80%. We performed both univariate and multivariate meta-regression analysis to explore heterogeneity of results across studies. Results: There were 178 studies (459975 participants) in 148 articles. Of these, 106 studies were (124259 participants) on dysmenorrhoea, 54 (35973 participants) on dyspareunia and 18 (301756 participants) on noncyclical pain. There were only 19/95 (20%) less developed and 1/45 (2.2%) least developed countries with relevant data in contrast to 22/43 (51.2%) developed countries. Metaregression analysis showed that rates of pain varied according to study quality features. There were 40 (22.5%) high quality studies with representative samples. Amongst them, the rate of dysmenorrhoea was 16.8 to 81%, that of dyspareunia was 8 to 21.8%, and that for noncyclical pain was 2.1 to 24%. Conclusion: There were few valid population based estimates of disease burden due to CPP from less developed countries. The variation in rates of CPP worldwide was due to variable study quality. Where valid data were available, a high disease burden of all types of pelvic pain was found.

Keywords: Citation, Community, Dysmenorrhea, Endometriosis, Epidemiology, Heterogeneity, Literature, Menstrual Symptoms, Metaanalysis, Middle-Aged Women, Primary-Care, Young-Women

? Pavlin, N.L., Gunn, J.M., Parker, R., Fairley, C.K. and Hocking, J. (2006), Implementing chlamydia screening: What do women think? A systematic review of the literature. *BMC Public Health*, **6**, Article Number: 221.

Full Text: [2006\BMC Pub Hea6, 221.pdf](2006/BMC%20Pub%20Hea6,%20221.pdf)

Abstract: Background: Chlamydia trachomatis is a common sexually transmitted infection that can have serious consequences. It is universally agreed that screening for chlamydia infection should be offered to sexually active young women. We undertook a literature review to document the views, attitudes and opinions of women about being screened, tested and diagnosed with Chlamydia trachomatis. Methods: Online databases (MEDLINE, Meditext, PsycINFO, Web of Science) and reference lists searched up to August 2005. Search terms: chlamydia, attitude, attitude to health, interview, qualitative, women. Eligibility criteria: about chlamydia, included women, involved interviews/surveys/focus groups, looked at women’s views/opinions/attitudes, published in English. Thematic analysis identified the main and recurrent themes emerging from the literature. We compared our thematic analysis with the Theory of Planned Behaviour to provide a model that could assist in planning chlamydia screening programs. Results: From 561 identified articles, 25 fulfilled inclusion criteria and were reviewed. 22: USA, UK; 3: Holland, Sweden, Australia. Major themes identified: need for knowledge and information, choice and support; concerns about confidentiality, cost, fear, anxiety and stigma. Women are more likely to find chlamydia screening/testing acceptable if they think chlamydia is a serious, common condition which can cause infertility and if they understand that chlamydia infection can be asymptomatic. Women want a range of options for chlamydia testing including urine tests, self-administered swabs, pelvic exams and clinician-collected swabs, home-testing and community-based testing. Tests should be free, easy and quick. Women want support for dealing with the implications of a chlamydia diagnosis, they feel chlamydia diagnoses need to be normalised and destigmatised and they want assistance with partner notification. Women need to know that their confidentiality will be maintained. Conclusion: Our review found that women from various countries and ethnic backgrounds share similar views regarding chlamydia screening, testing and diagnosis. The acknowledged importance of women’s views in planning an effective chlamydia screening program is expanded in this review which details the nature and complexity of such views and considers their likely impact.

Keywords: Acceptability, Analysis, Anxiety, Attitude, Behaviour, Databases, Diagnosis, Family-Planning Clinics, Genital-Infection, Gonorrhea, Health, Impact, Infection, Information, Knowledge, Life-Styles, Literature, Literature Review, Medline, Methods, Model, Review, Science, Screening, Sexual Attitudes, Systematic, Systematic Review, Theory, Trachomatis Infections, UK, Urine, Web of Science, Women, Young-Women

? Sanz-Casado, E., Pau, M.R.S., Suárez-Balseiro, C.A., Iribarren-Maestro, I. and de Pedro-Cuesta, J. (2006), Trends in scientific activity addressing transmissible spongiform encephalopathies: A bibliometric study covering the period 1973–2002. *BMC Public Health*, **6**, Article Number: 245.

Full Text: [2006\BMC Pub Hea6, 245.pdf](2006/BMC%20Pub%20Hea6,%20245.pdf)

Abstract: Background

The purpose of this study is to analyse the trends in scientific research on transmissible spongiform encephalopathies by applying bibliometric tools to the scientific literature published between 1973 and 2002.

Methods

The data for the study were obtained from Medline database, in order to determine the volume of scientific output in the above period, the countries involved, the type of document and the trends in the subject matters addressed. The period 1973–2002 was divided in three sub-periods.

Results

We observed a significant growth in scientific production. The percentage of increase is 871.7 from 1973 to 2002. This is more evident since 1991 and particularly in the 1996–2001 period. The countries found to have the highest output were the United States, the United Kingdom, Japan, France and Germany. The evolution in the subject matters was almost constant in the three sub-periods in which the study was divided. In the first and second sub-periods, the subject matters of greatest interest were more general, i.e Nervous system or Nervous system diseases, Creutzfeldt-Jakob disease, Scrapie, and Chemicals and Drugs, but in the last sub-period, some changes were observed because the Prion-related matters had the greatest presence.

Collaboration among authors is small from 1973 to 1992, but increases notably in the third sub-period, and also the number of authors and clusters formed. Some of the authors, like Gajdusek or Prusiner, appear in the whole period.

Conclusion

The study reveals a very high increase in scientific production. It is related also with the beginnings of research on bovine spongiform encephalopathy and variant Creutzfeldt-Jakob disease, with the establishment of progressive collaboration relationships and a reflection of public health concerns about this problem.

Keywords: Activity, Bibliometric Study, Bovine, Clusters, Collaboration, Databases, Disease, Diseases, Evolution, France, General, Germany, Growth, Health, Japan, Output, Production, Public Health, Research, Scientific Production, Tools, Trends, United Kingdom, United States

? Soteriades, E.S. and Falagas, M.E. (2006), A bibliometric analysis in the fields of preventive medicine, occupational and environmental medicine, epidemiology, and public health. *BMC Public Health*, **6**, Article Number: 301.

Full Text: [2006\BMC Pub Hea6, 301.pdf](2006/BMC%20Pub%20Hea6,%20301.pdf)

ABSTRACT: BACKGROUND: Research in the fields of Preventive Medicine, Occupational / Environmental Medicine, Epidemiology and Public Health play an important role in the advancement of knowledge. In order to map the research production around the world we performed a bibliometric analysis in the above fields. METHODS: All articles published by different world regions in the above mentioned scientific fields and cited in the Journal Citation Reports (JCR) database of the Institute for Scientific Information (ISI) during the period 1995 and 2003, were evaluated. The research production of different world regions was adjusted for: a) the gross domestic product in 1995 US dollars, and b) the population size of each region. RESULTS: A total of 48,861 articles were retrieved and categorized. The USA led the research production in all three subcategories. The percentage of articles published by USA researchers was 43%, 44% and 61% in the Preventive Medicine, Epidemiology, and Public Health subcategories, respectively. Canada and Western Europe shared the second position in the first two subcategories, while Oceania researchers ranked second in the field of Public Health. CONCLUSIONS: USA researchers maintain a leadership position in the production of scientific articles in the fields of Preventive Medicine, Occupational / Environmental Medicine and Epidemiology, at a level similar to other scientific disciplines, while USA contribution to science in the field of Public Health is by all means outstanding. Less developed regions would need to support their researchers in the above fields in order to improve scientific production and advancement of knowledge in their countries.

Keywords: Analysis, Articles, Bibliometric, Bibliometric Analysis, Canada, DEC, Diseases, Environmental, Environmental Medicine, Epidemiology, Europe, Health, Impact-Factor, Institute for Scientific Information, Interventions, ISI, Journal Citation Reports, Journals, Knowledge, Leadership, Medicine, Occupational, Order, Population, Position, Preventive Medicine, Production, Public Health, Research, Role, Science, Scientific Production, Size, Support, Trend, US, USA

? Patra, J., Taylor, B., Irving, H., Roerecke, M., Baliunas, D., Mohapatra, S. and Rehm, J. (2010), Alcohol consumption and the risk of morbidity and mortality for different stroke types: A systematic review and meta-analysis. *BMC Public Health*, **10**, Article Number: 258.

Full Text: [2010\BMC Pub Hea10, 258.pdf](2010/BMC%20Pub%20Hea10,%20258.pdf)

Abstract: Background: Observational studies have suggested a complex relationship between alcohol consumption and stroke, dependent on sex, type of stroke and outcome (morbidity vs. mortality). We undertook a systematic review and a meta-analysis of studies assessing the association between levels of average alcohol consumption and relative risks of ischemic and hemorrhagic strokes separately by sex and outcome. This meta-analysis is the first to explicitly separate morbidity and mortality of alcohol-attributable stroke and thus has implications for public health and prevention. Methods: Using Medical Subject Headings (alcohol drinking, ethanol, cerebrovascular accident, cerebrovascular disorders, and intracranial embolism and thrombosis and the key word stroke), a literature search of MEDLINE, EMBASE, CINAHL, CABS, WHOlist, SIGLE, ETOH, and Web of Science databases between 1980 to June 2009 was performed followed by manual searches of bibliographies of key retrieved articles. From twenty-six observational studies (cohort or case-control) with ischemic or hemorrhagic strokes the relative risk or odds ratios or hazard ratios of stroke associated with alcohol consumption were reported; alcohol consumption was quantified; and life time abstention (manually estimated where data for current abstainers were given) was used as the reference group. Two reviewers independently extracted the information on study design, participant characteristics, level of alcohol consumption, stroke outcome, control for potential confounding factors, risk estimates and key criteria of study quality using a standardized protocol. Results: The dose-response relationship for hemorrhagic stroke had monotonically increasing risk for increasing consumption, whereas ischemic stroke showed a curvilinear relationship, with a protective effect of alcohol for low to moderate consumption, and increased risk for higher exposure. For more than 3 drinks on average/day, in general women had higher risks than men, and the risks for mortality were higher compared to the risks for morbidity. Conclusions: These results indicate that heavy alcohol consumption increases the relative risk of any stroke while light or moderate alcohol consumption may be protective against ischemic stroke. Preventive measures that should be initiated are discussed.

Keywords: Alcohol, Alcohol Consumption, Alcohol Drinking, British Men, Cerebrovascular Disorders, Cerebrovascular-Disease, Cigarette-Smoking, Computed-Tomography, Confounding, Control, Coronary-Heart-Disease, Databases, Dose-Response, Drinking, EMBASE, Ethanol, Follow-Up, Information, Ischemic-Stroke, Japanese Men, Literature, Medline, Meta-Analysis, Methods, Morbidity, Mortality, Observational Studies, Outcome, Prevention, Protocol, Public Health, Relative Risk, Review, Risk, Science, Stroke, Subarachnoid Hemorrhage, Systematic, Systematic Review, Thrombosis, Web of Science, Women

? Malta, M., Magnanini, M.M.F., Mello, M.B., Pascom, A.R.P., Linhares, Y. and Bastos, F.I. (2010), HIV prevalence among female sex workers, drug users and men who have sex with men in Brazil: A systematic review and meta-analysis. *BMC Public Health*, **10**, Article Number: 317.

Full Text: [2010\BMC Pub Hea10, 317.pdf](2010/BMC%20Pub%20Hea10,%20317.pdf)

Abstract: Background: The Brazilian response towards AIDS epidemic is well known, but the absence of a systematic review of vulnerable populations ? men who have sex with men (MSM), female sex workers (FSW), and drug users (DU) remains a main gap in the available literature. Our goal was to conduct a systematic review and meta-analysis of studies assessing HIV prevalence among MSM, FSW and DU, calculating a combined pooled prevalence and summarizing factors associated the pooled prevalence for each group. Methods: Nine electronic databases (MEDLINE via PUBMED, EMBASE, Cochrane CENTRAL, AIDSLINE, AMED, CINAHL, TOXNET, SciELO, and ISI-Web of Science) were searched for peer-reviewed papers published in English, French, Spanish or Portuguese, from 1999 to 2009. To be included in the review, studies had to measure HIV prevalence and/or incidence as the primary outcome among at least one specific population under analysis. Results: The studies targeting the three populations analyzed mostly young participants aged 30 years or less. Among FSW, eight studies were selected (3,625 participants), consistently identifying higher condom use with sexual clients than with occasional and stable partners. The combined HIV prevalence for FSW was 6.2 (95% CI: 4.4-8.3). Ten studies targeting MSM were identified (6,475 participants). Unprotected anal intercourse was commonly reported on those studies, but with great variability according to the nature of the relationship - stable vs. occasional sex partners - and sexual practice - receptive vs. insertive anal sex. Pooled HIV prevalence for MSM was 13.6 (95% CI: 8.2-20.2). Twenty nine studies targeting DU were identified (13,063 participants). Those studies consistently identified injection drug use and syringe/needle sharing as key predictors of HIV-infection, as well as engagement in sex work and male-to-male sex. The combined HIV prevalence across studies targeting DU was 23.1 (95% CI: 16.7-30.2). Conclusions: FSW, MSM and DU from Brazil have a much risk of acquiring HIV infection compared to the general population, among which HIV prevalence has been relatively low (similar to 0.6%). Those vulnerable populations should be targeted by focused prevention strategies that provide accurate information, counseling and testing, as well as concrete means to foster behavior change (e. g. access to condoms, drug abuse treatment, and clean syringes in the case of active injecting drug users), tailored to gender and culture-specific needs. Programs that provide these services need to be implemented on public health services throughout the country, in order to decrease the vulnerability of those populations to HIV infection.

Keywords: Aged, Aid, Aids, Analysis, Belo-Horizonte, Brazil, Cocaine Users, Cochrane, Consort Statement, Databases, Drug, Drug Use, EMBASE, Gender, Genetic Diversity, Health Services, Hiv, Infection, Information, Literature, Medline, Meta Analysis, Meta-Analysis, Methods, Outcome, Papers, Porto-Alegre, Practice, Prevalence, Prevention, Primary, Project Horizonte, Public Health, PUBMED, Randomized Trials, Review, Rio-De-Janeiro, Risk, Risk-Factors, Sao-Paulo, Scielo, Science, Systematic, Systematic Review, Treatment, Variability, Vulnerability, Vulnerable Populations

? Lai, J.K.C., Lucas, R.M., Clements, M.S., Roddam, A.W. and Banks, E. (2010), Hip fracture risk in relation to vitamin D supplementation and serum 25-hydroxyvitamin D levels: A systematic review and meta-analysis of randomised controlled trials and observational studies. *BMC Public Health*, **10**, Article Number: 331.

Full Text: [2010\BMC Pub Hea10, 331.pdf](2010/BMC%20Pub%20Hea10,%20331.pdf)

Abstract: Background: Vitamin D supplementation for fracture prevention is widespread despite conflicting interpretation of relevant randomised controlled trial (RCT) evidence. This study summarises quantitatively the current evidence from RCTs and observational studies regarding vitamin D, parathyroid hormone (PTH) and hip fracture risk. Methods: We undertook separate meta-analyses of RCTs examining vitamin D supplementation and hip fracture, and observational studies of serum vitamin D status (25-hydroxyvitamin D (25(OH)D) level), PTH and hip fracture. Results from RCTs were combined using the reported hazard ratios/relative risks (RR). Results from case-control studies were combined using the ratio of 25(OH)D and PTH measurements of hip fracture cases compared with controls. Original published studies of vitamin D, PTH and hip fracture were identified through PUBMED and Web of Science databases, searches of reference lists and forward citations of key papers. Results: The seven eligible RCTs identified showed no significant difference in hip fracture risk in those randomised to cholecalciferol or ergocalciferol supplementation versus placebo/control (RR = 1.13[95% CI 0.98-1.29]; 801 cases), with no significant difference between trials of <800 IU/day and >= 800 IU/day. The 17 identified case-control studies found 33% lower serum 25(OH)D levels in cases compared to controls, based on 1903 cases. This difference was significantly greater in studies with population-based compared to hospital-based controls (X(1)(2) (heterogeneity) = 51.02, p < 0.001) and significant heterogeneity was present overall (X(16)(2) (heterogeneity) = 137.9, p < 0.001). Serum PTH levels in hip fracture cases did not differ significantly from controls, based on ten case-control studies with 905 cases (X(9)(2) (heterogeneity) = 149.68, p < 0.001). Conclusions: Neither higher nor lower dose vitamin D supplementation prevented hip fracture. Randomised and observational data on vitamin D and hip fracture appear to differ. The reason for this is unclear; one possible explanation is uncontrolled confounding in observational studies. Post-fracture PTH levels are unrelated to hip fracture risk.

Keywords: Beta-Carotene, Breast-Cancer Risk, Case-Control Studies, Citations, Confounding, D-Binding Protein, Databases, Double-Blind, Elderly Control Subjects, Femoral-Neck, Fracture, Interpretation, Meta-Analysis, Methods, Multiple-Sclerosis, Observational Studies, Papers, Parathyroid-Hormone, Placebo-Controlled Trial, Prevention, PUBMED, Randomised Controlled Trial, Ratio, Review, Risk, Science, Secondary Hyperparathyroidism, Systematic, Systematic Review, Vitamin D, Web of Science

? Akl, E.A., Aleem, S., Gunukula, S.K., Honeine, R., bou Jaoude, P. and Irani, J. (2010), Survey instruments used in clinical and epidemiological research on waterpipe tobacco smoking: A systematic review. *BMC Public Health*, **10**, Article Number: 415.

Full Text: [2010\BMC Pub Hea10, 415.pdf](2010/BMC%20Pub%20Hea10,%20415.pdf)

Abstract: Background: The primary objective was to systematically review the medical literature for instruments validated for use in epidemiological and clinical research on waterpipe smoking. Methods: We searched the following databases: MEDLINE, EMBASE, and ISI the Web of Science. We selected studies using a two-stage duplicate and independent screening process. We included papers reporting on the development and/or validation of survey instruments to measure waterpipe tobacco consumption or related concepts. Two reviewers used a standardized and pilot tested data abstraction form to collect data from each eligible study using a duplicate and independent screening process. We also determined the percentage of observational studies assessing the health effects of waterpipe tobacco smoking and the percentage of studies of prevalence of waterpipe tobacco smoking that have used validated survey instruments. Results: We identified a total of five survey instruments. One instrument was designed to measure knowledge, attitudes, and waterpipe use among pregnant women and was shown to have internal consistency and content validity. Three instruments were designed to measure waterpipe tobacco consumption, two of which were reported to have face validity. The fifth instrument was designed to measure waterpipe dependence and was rigorously developed and validated. One of the studies of prevalence and none of the studies of health effects of waterpipe smoking used validated instruments. Conclusions: A number of instruments for measuring the use of and dependence on waterpipe smoking exist. Future research should study content validity and cross cultural adaptation of these instruments.

Keywords: Adaptation, Clinical Research, Cross-Cultural Adaptation, Databases, Development, EMBASE, Face, ISI, Knowledge, Lebanon, Literature, Medical, Medline, Methods, Observational Studies, Papers, Prevalence, Primary, Questionnaire, Research, Review, Science, Screening, Smoking, Survey, Systematic, Systematic Review, Tobacco, Validation, Validity, Web of Science, Women

? Akl, E.A., Gunukula, S.K., Aleem, S., Obeid, R., bou Jaoude, P., Honeine, R. and Irani, J. (2011), The prevalence of waterpipe tobacco smoking among the general and specific populations: A systematic review. *BMC Public Health*, **11**, Article Number: 244.

Full Text: [2011\BMC Pub Hea11, 244.pdf](2011/BMC%20Pub%20Hea11,%20244.pdf)

Abstract: Background: The objective of this study was to systematically review the medical literature for the prevalence of waterpipe tobacco use among the general and specific populations. Methods: We electronically searched MEDLINE, EMBASE, and the ISI the Web of Science. We selected studies using a two-stage duplicate and independent screening process. We included cohort studies and cross sectional studies assessing the prevalence of use of waterpipe in either the general population or a specific population of interest. Two reviewers used a standardized and pilot tested form to collect data from each eligible study using a duplicate and independent screening process. We stratified the data analysis by country and by age group. The study was not restricted to a specific context. Results: of a total of 38 studies, only 4 were national surveys; the rest assessed specific populations. The highest prevalence of current waterpipe smoking was among school students across countries: the United States, especially among Arab Americans (12%-15%) the Arabic Gulf region (9%-16%), Estonia (21%), and Lebanon (25%). Similarly, the prevalence of current waterpipe smoking among university students was high in the Arabic Gulf region (6%), the United Kingdom (8%), the United States (10%), Syria (15%), Lebanon (28%), and Pakistan (33%). The prevalence of current waterpipe smoking among adults was the following: Pakistan (6%), Arabic Gulf region (4%-12%), Australia (11% in Arab speaking adults), Syria (9%-12%), and Lebanon (15%). Group waterpipe smoking was high in Lebanon (5%), and Egypt (11%-15%). In Lebanon, 5%-6% pregnant women reported smoking waterpipe during pregnancy. The studies were all cross-sectional and varied by how they reported waterpipe smoking. Conclusion: While very few national surveys have been conducted, the prevalence of waterpipe smoking appears to be alarmingly high among school students and university students in Middle Eastern countries and among groups of Middle Eastern descent in Western countries.

Keywords: Adults, Analysis, Arab, Attitudes, Beirut, Cigarette-Smoking, Cohort Studies, EMBASE, Hepatitis-C, Interest, ISI, Lebanon, Literature, Medical, Medline, Methods, Pakistan, Pregnancy, Prevalence, Review, Risk-Factors, School-Students, Science, Screening, Smoking, Students, Syria, Systematic, Systematic Review, Tobacco, United Kingdom, University, University-Students, Web of Science, Women

? Bonell, C., Harden, A., Wells, H., Jamal, F., Fletcher, A., Petticrew, M., Thomas, J., Whitehead, M., Campbell, R., Murphy, S. and Moore, L. (2011), Protocol for a systematic review of the effects of schools and school-environment interventions on health: Evidence mapping and syntheses. *BMC Public Health*, **11**, Article Number: 453.

Full Text: [2011\BMC Pub Hea11, 453.pdf](2011/BMC%20Pub%20Hea11,%20453.pdf)

Abstract: Background: Schools may have important effects on students’ and staff’s health. Rather than treating schools merely as sites for health education, ‘school-environment’ interventions treat schools as settings which influence health. Evidence concerning the effects of such interventions has not been recently synthesised. Methods/design: Systematic review aiming to map and synthesise evidence on what theories and conceptual frameworks are most commonly used to inform school-environment interventions or explain school-level influences on health; what effects school-environment interventions have on health/health inequalities; how feasible and acceptable are school-environment interventions; what effects other school-level factors have on health; and through what processes school-level influences affect health. We will examine interventions aiming to promote health by modifying schools’ physical, social or cultural environment via actions focused on school policies and practices relating to education, pastoral care and other aspects of schools beyond merely providing health education. Participants are staff and students age 4-18 years. We will review published research unrestricted by language, year or source. Searching will involve electronic databases including Embase, ERIC, PubMed, PsycInfo and Social Science Citation Index using natural-language phrases plus reference/citation checking. Stage 1 will map studies descriptively by focus and methods. Stage 2 will involve additional inclusion criteria, quality assessment and data extraction undertaken by two reviewers in parallel. Evidence will be synthesised narratively and statistically where appropriate (undertaking subgroup analyses and meta-regression and where no significant heterogeneity of effect sizes is found, pooling these to calculate a final effect size). Discussion: We anticipate: finding a large number of studies missed by previous reviews; that non-intervention studies of school effects examine a greater breadth of determinants than are addressed by intervention studies; and that intervention effect estimates are greater than for school-based health curriculum interventions without school-environment components.

Keywords: Assessment, Behavioral Interventions, Citation, Databases, Education, Environment, Health Education, Implementation, Interventions, Metaanalysis, Policies, Prevention, PUBMED, Randomized Controlled-Trials, Research, Review, Schools, Science Citation Index, Students, Systematic Review

? Stergiopoulos, E., Cimo, A., Cheng, C.C., Bonato, S. and Dewa, C.S. (2011), Interventions to improve work outcomes in work-related PTSD: A systematic review. *BMC Public Health*, **11**, Article Number: 838.

Full Text: [2011\BMC Pub Hea11, 838.pdf](2011/BMC%20Pub%20Hea11,%20838.pdf)

Abstract: Background: Posttraumatic stress disorder acquired at work can be debilitating both for workers and their employers. The disorder can result in increased sick leave, reduced productivity, and even unemployment. Furthermore, workers are especially unlikely to return to their previous place of employment after a traumatic incident at work because of the traumatic memories and symptoms of avoidance that typically accompany the disorder. Therefore, intervening in work-related PTSD becomes especially important in order to get workers back to the workplace. Methods: A systematic literature search was conducted using Medline, PsycINFO, Embase, and Web of Science. The articles were independently screened based on inclusion and exclusion criteria, followed by a quality assessment of all included articles. Results: The systematic search identified seven articles for inclusion in the review. These consisted of six research articles and one systematic review. The review focused specifically on interventions using real exposure techniques for anxiety disorders in the workplace. In the research articles addressed in the current review, study populations included police officers, public transportation workers, and employees injured at work. The studies examined the effectiveness of EMDR, cognitive-behavioural techniques, and an integrative therapy approach called brief eclectic psychotherapy. Interestingly, 2 of the 6 research articles addressed add-on treatments for workplace PTSD, which were designed to treat workers with PTSD who failed to respond to traditional evidence-based psychotherapy. Conclusions: Results of the current review suggest that work-related interventions show promise as effective strategies for promoting return to work in employees who acquired PTSD in the workplace. Further research is needed in this area to determine how different occupational groups with specific types of traumatic exposure might respond differently to work-tailored treatments.

Keywords: Anxiety, Anxiety Disorders, Assessment, Debilitating, Disorder, Effectiveness, Employment, Exposure, Eye-Movement Desensitization, Follow-up, Injury, Interventions, Literature, Medline, Metaanalysis, Methods, Occupational, Outcomes, Posttraumatic Stress Disorder, Posttraumatic-Stress-Disorder, Productivity, Psychotherapy, PTSD, Quality, Research, Return to Work, Review, Science, Stress, Symptoms, Systematic, Systematic Review, Therapy, Traditional, Transportation, Trauma, Web of Science, Workplace

# Title: BMJ Quality & Safety

Full Journal Title: BMJ Quality & Safety

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Angelow, A. and Black, N. (2011), The use and impact of national confidential enquiries in high-income countries. *BMJ Quality & Safety*, **20** (1), 38-45.

Full Text: [2011\BMJ Qua Saf20, 38.pdf](2011/BMJ%20Qua%20Saf20,%2038.pdf)

Abstract: Objective: To describe the use and characteristics of national confidential enquiries (NCEs) into adverse outcomes of healthcare in high-income countries and to review the evidence of their impact. Method: Systematic search of bibliometric databases plus review of cited references and search of websites. Eleven characteristics of NCEs were extracted. Studies evaluating the impact of three NCEs were searched for. Data were extracted and tabulated, and a narrative review conducted. Results: Establishment of NCEs has been limited with only 27 examples identified in over 50 years and only nine currently functioning. They have been particularly popular in the nations of the UK (17 of the 27) and in services around childbirth (15/27). NCEs mostly include all cases (19/23) and include adverse outcomes both during and after the initial hospital episode (17/23). The annual volume of cases varies from four to over 6000. With one exception, NCEs make no attempt to use ‘controls.’ Research evidence of the impact of the recommendations from three of the largest and longest running NCEs is poor, with no time-series analyses or experimental studies, and is restricted to considering their impact on the structure and process rather than the outcome of care. Conclusions: The lack of scientific evidence on the impact of NCEs on improving safety, combined with uncertainty as to the validity of their recommendations and their high cost, suggests the need for rigorous evaluation and a reconsideration of their contribution. One option is to nest NCEs within prospective national clinical audits.

Keywords: Adverse Outcomes, Analyses, Asthma Deaths, Bibliometric, Care, Characteristics, Childbirth, Clinical, Confidential, Cost, Databases, Evaluation, Evidence, Experimental, Hospital, Impact, Maternal Mortality, Nations, Outcome, Outcomes, Prospective, Recommendations, References, Research, Review, Safety, Scientific Evidence, Services, Structure, Time Series, UK, Uncertainty, Validity, Volume, Wales

? Okuyama, A., Martowirono, K. and Bijnen, B. (2011), Assessing the patient safety competencies of healthcare professionals: A systematic review. *BMJ Quality & Safety*, **20** (11), 991-1000.

Full Text: [2011\BMJ Qua Saf20, 991.pdf](2011/BMJ%20Qua%20Saf20,%20991.pdf)

Abstract: Background: Patient safety training of healthcare professionals is a new area of education. Assessment of the pertinent competencies should be a part of this education. This review aims to identify the available assessment tools for different patient safety domains and evaluate them according to Miller’s four competency levels. Methods: The authors searched PubMed, MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, psycINFO and the Education Resource Information Center (ERIC) from the start of each database to December 2010 for English-language articles that evaluated or described tools for the assessment of the safety competencies of individual medical and, or nursing professionals. Reports on the assessment of technical, clinical, medication and disclosure skills were excluded. Results: Thirty-four assessment tools in 48 studies were identified: 20 tools for medical professionals, nine tools for nursing professionals, and five tools for both medical and nursing professionals. Twenty of these tools assessed the two highest Miller levels (‘shows how’ and ‘does’) and four tools were directed at multiple levels. Most of the tools that aimed at the higher levels assessed the skills of working in teams (17 tools), risk management (15 tools), and communication (11 tools). Internal structure (reliability, 22 tools) and content validity (14 tools) when described were found to be moderate. Only a small number of tools addressed the relationship between the tool itself and (1) other assessments (concurrent, predictive validity, eight tools), and (2) educational outcomes (seven tools). Conclusions: There are many tools designed to assess the safety competencies of healthcare professionals. However, a reliable and valid toolbox for summative testing that covers all patient safety domains at Miller’s four competency levels cannot yet be constructed. Many tools, however, are useful for formative feedback.

Keywords: Assessment, Authors, Behavioral Marker System, Clinical Skills, Communication, Crisis-Resource-Management, Critically-Ill Patients, Disclosure, Education, Feedback, Health, Healthcare Professionals, Literature, Management, Medical, Medical-Education, Medication, Medline, Methods, Nontechnical Skills, Nursing, Outcomes, Patient Safety, Pubmed, Randomized-Trial, Reliability, Reports, Review, Risk, Safety, Science, Simulated Operating-Theater, Students Knowledge, Systematic, Systematic Review, Teaching Quality Improvement, Training, Validity, Web of Science

# Title: Boletin de Malariologia y Salud Ambiental

Full Journal Title: Boletin de Malariologia y Salud Ambiental

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Feliciangeli, M.D. (2010), Science, technology and health action trough the 50 years of the *Boletin de Malariologia y Salud Ambiental*. *Boletin de Malariologia y Salud Ambiental*, **50** (2), 161-173.

Full Text: [2010\Bol Mal Sal Amb50, 161.pdf](2010/Bol%20Mal%20Sal%20Amb50,%20161.pdf)

Abstract: The Boletin de Malariologia y Salud Ambiental is one of Venezuela’s oldest journals in the area of Public Health. During 50 years of uninterrupted publication, its pages reflect the science, technology and environmental sanitation that have contributed to the prevention and control of parasitic and arborviral diseases with a greatest impact on the Venezuelan population. Authors and events are outlined, which, over the decades, have influenced the evolution of this journal. In recent years, high specificity, social relevance and scientific quality have earned its inclusion in major indexes such as Global Health, SciELO Venezuela and the WEB Science Citation Index Expanded (TM) 2010. Thus, thanks to the modern communication technology, this magazine has achieved a greater participation of the Ibero-American scientists and wider visibility. Within this framework, we see a renewed support of the Venezuelan scientific community and its sponsor, the “Instituto de Altos Estudios Dr. Arnoldo Gabaldon” with the Boletin de Malariologia y Salud Ambiental magazine, that has contributed to making available worldwide, a major Venezuelan scientific heritage, with high social commitment in the field of Public Health!

Keywords: Areas, Boletin De Malariologia Y Salud Ambiental, Citation, Commitment, Communication, Community, Control, Diseases, Environmental, Environmental Health, Epidemiology, Events, Evolution, Field, Framework, Health, Impact, Journal, Journals, Malaria, Medical Entomology, Parasitology, Participation, Population, Prevention, Prevention and Control, Public Health, Publication, Quality, Recent, Relevance, Sanitation, Scielo, Science, Science Citation Index, Social, Specificity, State, Support, Technology, Tropical Medicine, Venezuela, Venezuela, Visibility, Web

# Title: Boletin Latinoamericano y del Caribe de Plantas Medicinales y Aromaticas

Full Journal Title: Boletin Latinoamericano y del Caribe de Plantas Medicinales y Aromaticas

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? La Torre-Cuadros, M.D. (2008), One hundred twelve years of scientific research on ethnic groups in the Peruvian Amazon. *Boletin Latinoamericano y del Caribe de Plantas Medicinales y Aromaticas*, **7** (3), 171-179.

Abstract: This bibliographic study aimed to evaluate and to quantify the contribution of science to current knowledge on 41 ethnic groups (19 linguistic families) from the Peruvian Amazon. A total of 790 papers were selected through a literature review by key words in titles and abstracts compiled in two data bases: ISI Web of Science and Anthropology Plus (1895-2007). The most highly cited ethnic groups were Machiguenga (103), Ashaninka (60) and Yanesha (43) [arawaks], Shipibo-Conibo (78) [panos] and Aguaruna (64) [jibaros]. Over the period of study, a transition from linguistic to ecological themes was observed, while the amount of publications increased notably between 1970 and 1990. These trends can be accounted for by the gradual establishment of global environmental agenda, as well as by patterns of population density, geographical location and cultural preservation. Finally, a new field of research is proposed which should integrate traditional knowledge and natural resource management.

Keywords: Amazonia, Bibliographic, Contribution, Environmental, Ethnicity, Ethnobiology, Families, Highly-Cited, ISI, Knowledge, Linguistic Family, Literature, Literature Review, Management, Papers, Peru, Publications, Research, Review, Science, Scientific Research, Traditional, Traditional Knowledge, Trends, Web of Science

# Title: Boletin de la Oficina Sanitaria Panamericana

Full Journal Title: Boletin de la Oficina Sanitaria Panamericana

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Spinak, E. (1996), Quantitative analysis of scientific literature and its validity for the assessment of Latin-American production. *Boletin de la Oficina Sanitaria Panamericana*, **120** (2), 139-146

# Title: Boletin de la Sociedad Chilena de Quimica

Full Journal Title: Boletin de la Sociedad Chilena de Quimica

ISO Abbreviated Title: Bol. Soc. Chilena Quim.

JCR Abbreviated Title: Bol Soc Chil Quim

ISSN: 0366-1644

Issues/Year: 4

Journal Country/Territory: Chile

Language: Multi-Language

Publisher: Sociedad Chilena De Quimica

Publisher Address: Casilla 2613, Concepcion, Chile

Subject Categories:

Chemistry, Multidisciplinary: Impact Factor 0.308, 89/118 (2000)

? Krauskopf, M. (1988), Development of chemical-research in Chile: Scientometric Indicators. *Boletin de la Sociedad Chilena de Quimica*, **33** (4), 157-162

Keywords: Chile

? Canessa, G.S. and Rivas, B.L. (1994), Boletin de la Sociedad Chilena de Quimica in its 45th anniversary. *Boletin de la Sociedad Chilena de Quimica*, **39** (4), 255-262.

Keywords: Relative Citation Impact, Publication Output, Life Sciences, Version, Figures, Facts

? Palma, G., Alvear, M. and Salazar, I. (2002), Use of celullosic wasres in preparation of controlled release formulations of simazine and trifluraline herbicides. *Boletin de la Sociedad Chilena de Quimica*, **47** (2), 175-180.

Abstract: Cellulose from Pinus radiata sawdust was utilized to obtain cellulose xanthates used as matrixes in controlled release formulations of simazine (6-chloro-N-2, N-4-diethyl-1,3,5-triazine-2,4-diamine)and trifluraline (2,6 dinitro-N,N- dipropyl-4-trifluoromethylaniline) herbicides. Cellulose was extracted from sawdust using ethanolic solution acidified with nitric acid, obtaining a 35% of yield. The xanthate matrixes were prepared suspending cellulose, sodium hydroxide and carbon disulfide to obtain xanthates with sulfur incorporation ranging between 700-2800 mgkg-1 of xanthate. Then three xanthate matrixes were selected to encapsulate the herbicides by addition of hydrogen peroxide. Formulations selected with minor content of sulfur did not show any control in the release of herbicides. The other two selected formulations showed a further control of release to both herbicides and were very similar between them. At the beginning these formulations released over 50-60% of the herbicides, but after ten days they release under 1% daily. The characteristics showed by these formulations could minimize the adsorption of these herbicides in soils, but they require a further development to be evaluated under field conditions

Keywords: Adsorption, Alachlor, Cellulose, Cellulose Xanthate, Controlled Release, Efficacy, Granule, Herbicides, Metribuzin, Polymeric Microcapsules, Preparation, Sawdust, Simazine, Soil, Starch-Encapsulated Atrazine, Trifluraline, Water, Yield

# Title: Boletin de la Sociedad Espanola de Ceramica y Vidrio

Full Journal Title: [Boletín de la Sociedad Española de Cerámica y Vidrio](http://dialnet.unirioja.es/servlet/revista?tipo_busqueda=CODIGO&clave_revista=2757)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0366-3175

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? (1999), The *Boletín de la Sociedad Española de Cerámica y Vidrio* now in the Science Citation Index. *Boletín de la Sociedad Española de Cerámica y Vidrio*, **38** (1), 3.

Keywords: Citation, Science Citation Index, Y

? Palomar, T., García-Heras, M. and Villegas, M.A. (2009), Archaeological and historical glasses: A bibliometric study. *Boletín de la Sociedad Española de Cerámica y Vidrio*, **48** (4), 187-194.

Full Text: [2009\Bol Soc Esp Cer Vid48, 187.pdf](2009/Bol%20Soc%20Esp%20Cer%20Vid48,%20187.pdf)

Abstract: Glass is one of the materials more widely developed throughout History. In the last decades, it has been stated a growing demand in the application of chemical-physical techniques to obtain more detailed information oil technology and production of glasses in past societies. This research field lies within the domain of archaeometry. Results of a bibliometric study undertaken oil 201 scientific articles published oil ancient and historical glasses between 1 87 and 2008 are presented in this paper. The study was carried out with the aim to address the evolution of glass archaeometric investigations in the last 20 years. Date of publication, journal and article types, topic, glass typology, analytical techniques, origin country of authors, and geographic location of samples were analyzed in this study, among other parameters. Resulting data indicate that archaeometric research on glasses has experienced all exponential growth in the period 2000-2008. Roman and Medieval glasses have been the materials more frequently investigated.

Keywords: Ancient Glasses, Archaeometry, Bibliometric Study, Bronze-Age Glasses, Chemical Corrosion, Glass, Medieval Glass, Optically Stimulated Luminescence, Research, Roman Glass, Scientific Analysis, Stained Glasses, Valdelsa Florence, Vitreous Finds

? Rojas-Sola, J.I. and Jordá-Albiñana, B. (2009), Bibliometric analysis of Spanish scientific publications in the subject materials science, ceramics in JCR (SCI) database (1997-2008). *Boletín de la Sociedad Española de Cerámica y Vidrio*, **48** (5), 255-260.

Full Text: [2009\Bol Soc Esp Cer Vid48, 255.pdf](2009/Bol%20Soc%20Esp%20Cer%20Vid48,%20255.pdf)

Abstract: In this paper we show for selected period (1997-2008), the journals in the subject Materials Science, Ceramics in which were for spanish authors published in Spain (24), analyzed from a bibliometric point of view the publications found (1240) the document type (Journal Article or Review), detailing the bibliometric results (number of documents weighted impact factor, relative impact factor and the ratio between the number of citations and the number of documents) from an institutional standpoint. Among those with a scientific representative stands out prominently the Institute of Ceramics and Glass. Impact Factor highlighted by the Institute of Construction Science Eduardo Torroja. Furthermore, the journal Boletin de la Sociedad Espanola de Ceramica y Vidrio brings together the 32.74% of the Spanish scientific output, being also the first journal for number of documents in that subject. It also confirmed a moderate international collaboration, with France and the United States as the main countries from that standpoint.

Keywords: Bibliometric, Bibliometric Analysis, Ceramic Materials, Citations, Collaboration, Database, France, Impact, Impact Factor, Impact Factors, Indicators, International Collaboration, Journals, Publications, Research Centres, Review, SCI, Science, Scientific Publications, Spain, Spanish Universities, Universities

? Rojas-Sola, J.I., Jordá-Albiñana, B. and Criado-Herrero, E. (2009), Bibliometric analysis of Latin American, Spanish and Portuguese Scientific Publications in the subject materials science, ceramics in JCR (SCI) database (1997-2008). *Boletín de la Sociedad Española de Cerámica y Vidrio*, **48** (6), 297-310.

Full Text: [2009\Bol Soc Esp Cer Vid48, 297.pdf](2009/Bol%20Soc%20Esp%20Cer%20Vid48,%20297.pdf)

Abstract: The Latin American scientific community is becoming increasingly significant in many areas, particularly, in the ceramic field because of its proximity to the processes of generation of infrastructure and housing demand in developing societies. The present study is devoted to determine the specific weight that each country, research institution and author have adquired. The thirty journals included in journal Citation Reports, under the category “Materials Science, Ceramics” along 1997-2008 period, have been selected and articles from Latin America and Portugal, have been analyzed Under a bibliometric approach. Thus, Within the document type “Journal Article or Review” 1423 papers have been collected and Studied from all institutional perspective; different bibliometric indicators (number of documents weighted impact factor, relative impact factor and the ratio between the number of citations and the number of documents) have been elaborated. Among the research centers showing a scientific highlight the most relevant is the University of Aveiro (Portugal) and the Universidade Federal de Sao Carlos (Brazil), followed by the Universidade Estadual Paulista and Universidade de Sao Paulo, both belonging to Brazil. The latter is also notable for its high weighted impact factor. Regarding publications, the Journal of Non-Crystalline Solids ranked first, by bringing together the 20.45% of scientific production in Latin America and Portugal published in the JCR (1423 items). However, if data from Spain were collected, the magazine Bulletin of the Spanish Society of Ceramics and Glass, it is the most relevant, taking into account the higher number of articles (524), that represents for 19.68% of total records founded (2663). It has also confirmed a remarkable international collaboration, mainly with Spain, France, Brazil, USA, England and Portugal, and highlighting the situation of the latter country, carrying out 49.11% of scientific production analyzed in international collaboration. Finally, it was found that the annual impact factor of scientific publications has been a growing trend in all Countries and particularly, in Brazil.

Keywords: Articles, Bibliometric, Bibliometric Analysis, Bibliometric Indicators, Ceramic Materials, Ceramic Research Institutions, Citation, Citations, Collaboration, Cooperation, Database, France, Impact, Impact Factor, Indicators, International Collaboration, Journals, Latin America, Latinoamerican, Publications, Research, Research Centres, SCI, Science, Scientific Production, Scientific Publications, Spain, Universities, USA

? Navarro, J.M.F. (2010), The Spanish Society of Ceramics and Glass along half a century. *Boletín de la Sociedad Española de Cerámica y Vidrio*, **49** (6), 377-392.

Full Text: [2010\Bol Soc Esp Cer Vid49, 377.pdf](2010/Bol%20Soc%20Esp%20Cer%20Vid49,%20377.pdf)

Abstract: The double objective of this lecture is to commemorate, on the occasion of its golden jubilee, the work performed by the Spanish Society of Ceramics and Glass and to pay a special homage to the memory of its main promoter and supporter, Professor Antonio Garcia Verduch. Since its foundation in 1960 the Society has contributed to join all the experts in ceramics and glass, as well as to promote and spread among them scientific and technical knowledge related to both areas, while adapting itself to the investigation trends of each moment in time and to the interests of the different industrial sectors. Along its half century of history it has organized some hundred and twenty-five national congresses and specialized technical meetings and nine national congresses. It represents Spain in five international associations. The Society’s main contribution, together with its international activities, has been the uninterrupted publication of its bimonthly magazine, the Society’s Bulletin, which since 1999 is included in the database of the Science Citation index. Furthermore, the Society keeps a permanent relationship with investigation centres, universities, museums, technicians’ and manufacturers’ associations and fairground institutions. As a sign of its promotion of technical development, the Society grants every year since 1977 its Alfa de Oro Awards to the most outstanding industrial products shown in the Valencia Fair, in order to highlight quality, technological innovation and design. In 1999 the Society’s Electroceramics group created the Epsilon de Oro Awards which are granted every two years to the people or institutions that have produced the main scientific contribution in a given field.

Keywords: Ceramic, Ceramic Society, Database, Design, Development, Experts, Field, Glass, History, Index, Innovation, Institutions, International, Investigation, Knowledge, Memory, Permanent, Promotion, Publication, Quality, Spain, Technological Innovation, Trends, Universities, Work

? Peña-Poza, J., García-Heras, M. and Villegas, M.A. (2011), The archaeometric study of ceramic materials in JCR journals and conference proceedings during the last decade (2000-2010). *Boletin de la Sociedad Espanola de Ceramica y Vidrio*, **50** (4), 185-192.

Full Text: [2011\Bol Soc Esp Cer Vid50, 185.pdf](2011/Bol%20Soc%20Esp%20Cer%20Vid50,%20185.pdf)

Abstract: Ceramic is the oldest synthetic material created by the mankind and has been present in human societies from around ten thousand years ago. During the last few decades, within the research field of Archaeometry, the study of archaeological and historical ceramic materials has experienced a significant increase in the application of chemical-physical techniques to obtain information on technology and production of these materials in the past. This paper presents the results obtained in a bibliometric study undertaken on 589 articles published on this subject in JCR journals and conference proceedings during the last decade (2000-2010). The main purpose of this research was to address the recent evolution and trends of this kind of investigations. The parameters analyzed were: date of publication, type of journal, topic, cultural-chronological classification of materials studied, origin country of authors, and analytical techniques used. Resulting data indicated a continual, stable, and growing publication rate on the subject in journals and conference proceedings of the three JCR indexes, namely SCI, AHCI, and SSCI, which evidences a high level of interdisciplinarity. Authors from Europe and the United States carried out the majority of contributions.

Keywords: Ancient Ceramics, Archaeometry, Authors, Bibliometric, Bibliometric Study, Ceramics, Europe, Evolution, Human, Indexes, Induced Plasma Spectroscopy, Information, Interdisciplinarity, JCR, JCR Conference Proceedings, JCR Journals, Journal, Journals, Pottery, Pottery, Publication, Research, SCI, SSCI, Terra-Sigillata, Trends

# Title: Bone Marrow Transplantation

Full Journal Title: Bone Marrow Transplantation

ISO Abbreviated Title: Bone Marrow Transplant.

JCR Abbreviated Title: Bone Marrow Transpl

ISSN: 0268-3369

Issues/Year: 24

Journal Country/Territory: England

Language: English

Publisher: Stockton Press

Publisher Address: Houndmills, Basingstoke RG21 6XS, Hampshire, England

Subject Categories:

Oncology: Impact Factor 3.378, 45/114 (2002)

Hematology: Impact Factor 2.554, / (2001)

Immunology: Impact Factor 2.554, / (2001)

Transplantation: Impact Factor 2.554, / (2001)

Uderzo, C., Marraro, G., Riva, A., Bonanomi, E., Vaj, P.L., Marchi, P.F., Locasciulli, A. and Masera, G. (1993), Pulmonary thromboembolism in leukemic children undergoing bone- marrow transplantation. *Bone Marrow Transplantation*, **11** (3), 201-203.

Abstract: of 67 leukaemic children transplanted in our BMT unit 3 presented with severe acute respiratory syndrome associated with pulmonary thromboembolism (PTE) as diagnosed by scintiscan and/or angiography in the first month after BMT. Intervention with continuous positive pressure ventilation, urokinase (loading dose, then continuous infusion for 12-18 h) and heparin (continuous infusion for an average of 10 days) has been carried out successfully in two cases. In conclusion, when evaluating patients undergoing BMT and developing early pulmonary complications, PTE must be considered. The pathogenesis of PTE is still difficult to ascertain but urokinase therapy may reduce early morbidity.

Keywords: Thrombosis, Embolism

? Ageitos, A.G., Ino, K., Ozerol, I., Tarantolo, S., Heimann, D.G. and Talmadge, J.E. (1997), Restoration of T-cell-function and NK-cell-function in GM-CSF mobilized stem-cell products from breast-cancer patients by monocyte depletion. *Bone Marrow Transplantation*, **20** (2), 117-123.

Abstract: Rapid immune reconstitution is observed following autologous peripheral blood stem cell transplantation (PSCT) as compared to autologous bone marrow transplantation (ABMT), although it is depressed compared to that observed in normal individuals, The immune dysfunction occurs despite the restoration of normal lymphoid cell numbers and may be associated with the immunologic characteristics of the infused peripheral blood stem cell (PSC) product, We report herein that the in vitro T cell proliferation and NK activity in PSC products of breast cancer patients are significantly increased following the removal of CD14 (+) monocytes (33±2% of the PSC product) by carbonyl iron magnetic cell isolation (CI), In vitro expansion of PSC cells cultured for 7-21 days in the presence of interleukin-2 (IL-2) is also significantly increased by depletion of the phagocytic cells, The PHA and IL-2 mitogenic responses, as well as NK activity of the expanded cells, was also significantly increased by the depletion of the phagocytes. In summary, the depletion of phagocytic monocytes from PSC products restores the proliferative and functional properties of T and NK lymphocytes and may facilitate adoptive cellular therapy, as well as rapid immunologic reconstitution post-PSCT.

Keywords: Monocytes, NK, T Cell, Suppression, Tolerance, Bone-Marrow Transplantation, High-Dose Chemotherapy, Non-Hodgkins-Lymphoma, Suppressor Cells, Killer-Cells, Blood, Interleukin-2, Macrophages, Lipopolysaccharide, Inhibition

# Title: Book Collector

Full Journal Title: Book Collector

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Baer, A. (2011), The ‘gravy soup’ plagiarism biblio-Vignettes I. *Book Collector*, **60** (1), 99-100.

Full Text: 2011\Boo Col60, 99.pdf

Keywords: Plagiarism

# Title: Botanical Journal of the Linnean Society

Full Journal Title: [Botanical Journal of the Linnean Society](http://www.blackwell-synergy.com/servlet/useragent?func=showIssues&code=boj)

ISO Abbreviated Title: Bot. J. Linnean Soc.

JCR Abbreviated Title: Bot J Linn Soc

ISSN: 0024-4074

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Academic Press Ltd

Publisher Address: 24-28 Oval Rd, London NW1 7DX, England

Subject Categories:

Plant Sciences: Impact Factor 1.125, /

? Tanner, E.V.J. (1983), Leaf demography and growth of the tree-fern cyathea-pubescens mett Ex Kuhn in Jamaica. *Botanical Journal of the Linnean Society*, **87** (3), 213-227.

# Title: Botanical Magazine-Tokyo

Full Journal Title: Botanical Magazine-Tokyo

ISO Abbreviated Title: Bot. Mag. Tokyo

JCR Abbreviated Title: Bot Mag Tokyo

ISSN: 0006-808X

Issues/Year:

Journal Country/Territory:

Language:

Publisher: Botanical Soc Japan, Tokyo

Publisher Address:

Subject Categories:

: Impact Factor

? Nishida, H. (1989), Structure and affinities of the petrified plants from the cretaceous of Japan and saghalien. 5. Tree fern stems from Hokkaido, Paracyathocaulis-Ogurae Gen et comb NOV and Cyathocaulis-Yezopteroides sp-NOV. *Botanical Magazine-Tokyo*, **102** (1066), 255-282.

# Title: Botanica Marina

Full Journal Title: Botanica Marina

ISO Abbreviated Title: Bot. Marina

JCR Abbreviated Title: Bot Mar

ISSN: 0006-8055

Issues/Year: 6

Journal Country/Territory: Germany

Language: Multi-Language

Publisher: Walter de Gruyter & Co

Publisher Address: Genthiner Strasse 13, D-10785 Berlin, Germany

Subject Categories:

Plant Sciences: Impact Factor 0.744, 76/137 (2000)

Marine & Freshwater Biology: Impact Factor 0.744, / (2000)

? Critchley, A.T., Farnham, W.F., Yoshida, T. and Norton, T.A. (1990), A bibliography of the invasive alga *Sargassum-muticum* (Yendo) *Fensholt* (Fucales, Sargassaceae). *Botanica Marina*, **33** (6), 551-562.

? Stirk, W.A. and van Staden, J. (2000), Removal of heavy metals from solution using dried brown seaweed material. *Botanica Marina*, **43** (5), 467-473.

Abstract: The heavy metal adsorption capacity of a waste product from the manufacture of the seaweed concentrate Kelpak, made from Ecklonia maxima, was tested to determine its heavy metal adsorbance capacity. Three dried and milled Phaeophyta-Ecklonia maxima, Macrocystis angustifolia and Laminaria pallida were also tested for comparative purposes. Copper, zinc and cadmium adsorption was measured over time (0-24 h) and at a range of concentrations likely to be encountered in waste water situations (0-100 mg L-1). All the algal biomasses tested were able to sequester ions from solutions. Zinc adsorbance was the least effective. Adsorbance by the Kelpak waste was equal or superior to the other algal biomasses, suggesting that there is potential to develop this for industrial purposes.

Keywords: Derivatives, Biosorption, Adsorption, Cadmium

# Title: Bothalia

Full Journal Title: Bothalia

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0006-8241

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Archer, R.H. and VanWyk, A.E. (1996), Celastraceae - Correct orthography and author citation for Elaeodendron. *Bothalia*, **26** (1), 41-42.

# Title: Brain

Full Journal Title: [Brain](http://brain.oxfordjournals.org/)

ISO Abbreviated Title: Brain

JCR Abbreviated Title: Brain

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Hodges, J.R. (2006), Alzheimer’s centennial legacy: Origins, landmarks and the current status of knowledge concerning cognitive aspects. *Brain*, **129**, 2811-2822.

Full Text: [2006\Brain129, 2811.pdf](2006/Brain129,%202811.pdf)

Abstract: This review commemorates 100 years of research into Alzheimer’s disease and, by happy coincidence, the publication of 100 papers in Brain on the topic. The first part of the review traces the evolution of concepts and landmarks in the modern history of Alzheimer’s disease. It highlights the continuing role of careful clinico-pathological studies which have set the stage for each major leap forwards, such as the emergence of the cholinergic hypothesis, and the realistation that subjects pass through an amnestic prodrome which is thought to reflect dysfunction of the hippocampal formation before the onset of full blown dementia. The contribution of structural and functional imaging is briefly described. The important contribution of publications in Brain is illustrated throughout the first section. The second part attempts to review the current status of our knowledge concerning behavioural, neuropsychological and neuropsychiatric aspects of the disease, emphasizing areas of continuing controversy.

? Gibson, C.L., Gray, L.J., Bath, P.M.W. and Murphy, S.P. (2008), Progesterone for the treatment of experimental brain injury: A systematic review. *Brain*, **131**, 318-328.

Full Text: 2008\Brain131, 318.pdf

Abstract: Steroid sex hormones are potential neuroprotective candidates following CNS injury. All clinical trials to date have examined the effects of oestrogen alone or oestrogen-progestin combination therapy. Experimental studies have suggested that progesterone, in its own right, is a potential neuroprotective agent following acute cerebral injury. We performed a systematic review of controlled animal studies that administered progesterone before, or after, acute cerebral injury and measured lesion volume. Relevant studies were found from searching PUBMED, EMBASE and Web of Science. From 119 identified publications, data from 18 studies using 480 experimental subjects met specific criteria and were analysed using the Cochrane Review Manager software. Following cerebral ischaemia, a significant benefit of progesterone was observed regardless of the assigned study quality score (P=0.0002) whereas, following traumatic brain injury (TBI) a significant benefit of progesterone was only observed in studies that obtained the highest quality score of 5 (P= 0.02). Progesterone reduced lesion volume in a dose-dependent manner following either cerebral ischaemia (P< 0.001) or TBI (P= 0.03) with the most effective progesterone dose varying according to experimental injury model used. Progesterone treatment was only effective at reducing lesion volume when administered immediately following (i.e. 0-2 h) cerebral ischaemia (P= 0.0008). No studies using models of cerebral ischaemia or TBI assessed efficacy when progesterone was administered at later than 6 h following the onset of cerebral injury. Limited data were available for different groups of animals according to age/hormonal status and the full dose-response relationship was not available in all experimental groups. Although this systematic review provides some supporting evidence for a neuroprotective role of progesterone following either cerebral ischaemia or TBI importantly it highlights areas which need further pre-clinical investigation.

Keywords: Brain, Cerebral-Artery Occlusion, Clinical Trials, Cochrane, Cognitive Deficits, Combination Therapy, Dose-Response, Efficacy, Experimental Ischemic-Stroke, Factor Expression, Gender-Differences, Induced Neuroprotection, Infarct Volume, Inflammatory Response, Injury, Ischaemia, Model, Neuronal Loss, Neuroprotection, Oestrogen, Progesterone, Publications, PUBMED, Review, Science, Senescent Female Rats, Sex Hormones, Software, Stroke, Systematic, Systematic Review, TBI, Therapy, Traumatic Brain Injury, Treatment, Web of Science

# Title: Brain, Behavior, and Immunity

Full Journal Title: [Brain, Behavior, and Immunity](http://www.sciencedirect.com/science/journal/08891591)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Bonneau, R.H., Padgett, D.A. and Sheridan, J.F. (2007), Twenty years of psychoneuroimmunology and viral infections in *Brain, Behavior, and Immunity*. *Brain, Behavior, and Immunity*, **21** (3), 273-280.

Full Text: [2007\Bra Beh Imm21, 273.pdf](2007/Bra%20Beh%20Imm21,%20273.pdf)

Abstract: For 20 years, Brain, Behavior, and Immunity has provided an important venue for the publication of studies in psychoneuroimmunology. During this time period, psychoneuroinummology has matured into an important multidisciplinary science that has contributed significantly to our knowledge of mind, brain, and body interactions. This review will not only focus on the primary research papers dealing with psychoneuroimmunology, viral infections, and anti-viral vaccine responses in humans and animal models that have appeared on the pages of Brain, Behavior, and Immunity during the past 20 years, but will also outline a variety of strategies that could be used for expanding our understanding of the neuroimmune-viral pathogen relationship. (c) 2006 Elsevier Inc. All rights reserved.

Keywords: Antiviral, Brain, Humans, Infections, Knowledge, Models, Multidisciplinary, Papers, Pathogen, Primary, Publication, Research, Review, Rights, Science, Understanding, Vaccine, Viral

? Chida, Y. and Vedhara, K. (2009), Adverse psychosocial factors predict poorer prognosis in HIV disease: A meta-analytic review of prospective investigations. *Brain, Behavior, and Immunity*, **23** (4), 434-445.

Abstract: There is a growing epidemiological literature focusing on the association between psychosocial stress and human immunodeficiency virus (HIV) disease progression or acquired immunodeficiency syndrome (AIDS), but inconsistent findings have been published. We aimed to quantify the association between adverse psychosocial factors and HIV disease progression. We searched Medline; PsycINFO; Web of Science; PUBMED up to 19 January 2009, and included population studies with a prospective design that investigated associations between adverse psychosocial factors and HIV disease progression or AIDS. Two reviewers independently extracted data on study characteristics, quality, and estimates of associations. The overall meta-analysis examined 36 articles including 100 psychosocial and disease related relationships. It exhibited a small, but robust positive association between adverse psychosocial factors and HIV progression (correlation coefficient as combined size effect 0.059, 95% confidence interval 0.043-0.074, p < 0.001). Notably, sensitivity analyses showed that personality types or coping styles and psychological distress were more strongly associated with greater HIV disease progression than stress stimuli per se, and that all of the immunological and clinical outcome indicators (acquired immunodeficiency syndrome stage, CD4+ T-cell decline, acquired immunodeficiency syndrome diagnosis, acquired immunodeficiency syndrome mortality, and human immunodeficiency virus disease or acquired immunodeficiency syndrome symptoms) except for viral load exhibited detrimental effects by adverse psychosocial factors. In conclusion, the current review reveals a robust relationship between adverse psychosocial factors and HIV disease progression. Furthermore, there would appear to be some evidence for particular psychosocial factors to be most strongly associated with HIV disease progression. (C) 2009 Elsevier Inc. All rights reserved.

Keywords: Acquired Immunodeficiency Syndrome, Active Antiretroviral Therapy, AID, AIDS, CD4 Cell Count, Clinical Progression, Coping Style, Depression And Anxiety, Depressive Symptoms, Diagnosis, Disease, Distress, Gay Men, HIV, Human, Human-Immunodeficiency-Virus, Immune Function, Literature, Meta-Analysis, Mortality, Outcome, Personality, Positive Homosexual Men, Prognosis, Psychoneuroimmunology, Psychosocial, Psychosocial Stress, PUBMED, Review, Science, Social Support, Social Support, Stress, Stressful Life Events, Symptoms, Web of Science

? Chida, Y. and Mao, X. (2009), Does psychosocial stress predict symptomatic herpes simplex virus recurrence? A meta-analytic investigation on prospective studies. *Brain, Behavior, and Immunity*, **23** (7), 917-925.

Abstract: Previous psychological studies have paid extensive attention to the association between psychosocial stress and symptomatic herpes simplex virus (HSV) recurrence, but subsequent research has been conducted and conflicting findings have been published. We aimed to quantify the longitudinal association between psychosocial stress and recurrent HSV in the contemporary literature. We searched Medline; PsycINFO; Web of Science; PUBMED up to March 2009, and included prospective studies that investigated associations between psychosocial stress and symptomatic HSV recurrence. Two reviewers independently extracted data on study characteristics, quality, and estimates of associations. The overall meta-analysis examining 11 articles (17 psychosocial and disease related relationships) exhibited a robust positive association between psychosocial stress and symptomatic HSV recurrence (correlation coefficient as combined effect size 0.083, 95% confidence interval 0.025-0.141, p = 0.005). This finding was supported by more conservative analysis of aggregate effects and by sensitivity analysis of the methodologically strong studies. There were indications of publication bias in some analyses. Intriguingly, sensitivity analyses demonstrated that psychological distress was more strongly associated with symptomatic HSV recurrence than stress stimuli per se, and that psychosocial stress tended to be more strongly associated with oral than genital herpes recurrence. In conclusion, the current review reveals a robust relationship between psychosocial stress and symptomatic HSV recurrence, justifying further research in this field, especially clinical trials evaluating the efficacy of stress reduction interventions on HSV recurrence. (C) 2009 Elsevier Inc. All rights reserved.

Keywords: Analysis, Attention, Bias, Clinical Trials, Controlled-Trials, Disease, Distress, Efficacy, Epidemiology, Genital Herpes, Herpes Simplex Virus, Infections, Interventions, Literature, Management, Meta-Analysis, Pathogenesis, Prospective Evidence, Prospective Studies, Psychological Stress, Psychoneuroimmunology, Psychosocial, Psychosocial Stress, Publication, Publication Bias, PUBMED, Reactivation, Recurrence, Research, Review, Science, Stress, Type-1, Web of Science

# Title: Brain and Language

Full Journal Title: Brain and Language

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Friederici, A.D., Meyer, M. and von Cramon, D.Y. (1996), Auditory language comprehension: An event-related fMRI study on the processing of syntactic and lexical information. *Brain and Language*, **74** (2), 289-300.

Full Text: [B\Bra Lan74, 289.pdf](B/Bra%20Lan74,%20289.pdf)

Abstract: The functional specificity of different brain areas recruited in auditory language processing was investigated by means of event-related functional magnetic resonance imaging (fMRI) while subjects listened to speech input varying in the presence or absence of semantic and syntactic information. There were two sentence conditions containing syntactic structure, i.e., normal speech (consisting of function and content words), syntactic speech (consisting of function words and pseudowords), and two word-list conditions, i.e., real words and pseudowords. The processing of auditory language, in general, correlates with significant activation in the primary auditory cortices and in adjacent compartments of the superior temporal gyrus bilaterally. Processing of normal speech appeared to have a special status, as no frontal activation was observed in this case but was seen in the three other conditions. This difference may point toward a certain automaticity of the linguistic processes used during normal speech comprehension. When considering the three other conditions, we found that these were correlated with activation in both left and right frontal cortices. An increase of activation in the planum polare bilaterally and in the deep portion of the left frontal operculum was found exclusively when syntactic processes were in focus. Thus, the present data may be taken to suggest an involvement of the left frontal and bilateral temporal cortex when processing syntactic information during comprehension.

Keywords: Functional Magnetic Resonance Imaging (fMRI), Syntax, Language, Speech

Friederici, A.D., Meyer, M. and von Cramon, D.Y. (1996), Auditory language comprehension: An event-related fMRI study on the processing of syntactic and lexical information: Volume 74, Number 2 (2000), pages 289-300. *Brain and Language*, **75** (3), 465-477.

Full Text: [B\Bra Lan75, 465.pdf](B/Bra%20Lan75,%20465.pdf)

Abstract: Due to conversion errors, mathematical symbols have been replaced by numbers or incorrect symbols. The following errors occur in the legend to Fig. 1 and in footnote 2 on page 294 and in the first and third paragraphs of page 296: The numeral 2 appears instead of the multiplication sign, the numeral 4 instead of the equals sign, the quotation mark instead of the greater than or equal to sign, and the plus sign instead of the less than sign. For the reader’s convenience, the entire rapid communication is reprinted on the following pages.

# Title: Brain Research Bulletin

Full Journal Title: Brain Research Bulletin

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Dunnett, S.B. (2004), Impact factor rises again. *Brain Research Bulletin*, **64** (4), 285-287.

# Title: Brazilian Journal of Biology

Full Journal Title: Brazilian Journal of Biology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Padial, A.A., Bini, L.M. and Thomaz, S.M. (2008), The study of aquatic macrophytes in Neotropics: A scientometrical view of the main trends and gaps. *Brazilian Journal of Biology*, **68** (4), 1051-1059.

Full Text: [2008\Bra J Bio68, 1051.pdf](2008/Bra%20J%20Bio68,%201051.pdf)

Abstract: Aquatic macrophytes comprises a diverse group of organisms including angiosperms, ferns, mosses, liverworts and some macroalgae that occur in seasonally or permanently wet environments. Among other implications, aquatic macrophytes are highly productive and with an important structuring role on aquatic environments. Ecological studies involving aquatic plants substantially increased in the last years. However, a precise view of researches devoted to aquatic macrophytes in Neotropics is necessary to reach a reliable evaluation of the scientific production. In the current study, we performed a scientometrics analysis of the scientific production devoted to Neotropical macrophytes in an attempt to find the main trends and gaps of researches concerning this group. The publication devoted to macrophytes in Neotropics increased conspicuously in the last two decades. Brazil, Argentina, Mexico and Chile were the most productive among Neotropical countries. Our analyses showed that the Studies dealt mostly with the influences of aquatic macrophytes on organisms and abiotic features. Studies with a predictive approach or aiming to test ecological hypothesis are scarce. In addition, researches aiming to describe unknown species are still necessary. This is essential to support conservation efforts and to Subsidize further investigations testing ecological hypotheses.

Keywords: Analyses, Analysis, Approach, Aquatic Macrophytes, Aquatic Plants, Argentina, Brazil, Chile, Conservation, Ecological, Evaluation, Fish Assemblages, Floodplain, Fresh-Water, Group, Influences, Investigations, Lacks, Macroalgae, Macrophytes, Mexico, Nations, Neotropics, NOV, Parana, Plants, Predictive, Production, Publication, Role, Science, Scientific Production, Scientometrics, Species, Structuring, Support, Testing, Trends, Water-Hyacinth

# Title: Brazilian Journal of Chemical Engineering

Full Journal Title: [Brazilian Journal of Chemical Engineering](http://www.scielo.br/scielo.php?script=sci_serial&pid=0104-6632&lng=en&nrm=iso)

ISO Abbreviated Title: Braz. J. Chem. Eng.

JCR Abbreviated Title: Braz J Chem Eng

ISSN: 0104-6632

Issues/Year: 4

Journal Country/Territory: Brazil

Language: English

Publisher: Brazilian Soc Chemical Eng

Publisher Address: Rua Libero Badaro 152-11 Andar, Cep 01008-90 Sao Paulo, Brazil

Subject Categories:

Engineering, Chemical: Impact Factor 0.355 (2003), Impact Factor 0.212, 101/116 (2004); Impact Factor 0.385, 83/116 (2005)

Gabai, B., dos Santos, N.A.A., Azevêdo, D.C.S., Brandani, S. and Cavalcante, Jr., C.L. (1997), Removal of copper electrolyte contaminants by adsorption. *Brazilian Journal of Chemical Engineering*, **14** (3), ??-??.

Full Text: [B\Bra J Che Eng14, Gabai.pdf](B/Bra%20J%20Che%20Eng14,%20Gabai.pdf)

How to cite this article:

ISO Format

Gabai, B, dos Santos, N.A.A., Azevêdo, D.C.S., Brandani, S. and Cavalcante, Jr., C.L. Removal of copper electrolyte contaminants by adsorption. *Braz. J. Chem. Eng.*, Sept. 1997, vol.14, no.3. ISSN 0104-6632.

Electronic Document Format (ISO)

Gabai, B, dos Santos, N.A.A., Azevêdo, D.C.S., Brandani, S. and Cavalcante, Jr., C.L. Removal of copper electrolyte contaminants by adsorption. *Braz. J. Chem. Eng.* [online]. Sept. 1997, vol.14, no.3 [cited 09 June 2004] Available from World Wide Web: <http: //www.scielo.br/scielo.php?script=sci\_arttext&pid=S0104-66321997000300002&lng=en&nrm=iso>. ISSN 0104-6632.

Abstract: Selective adsorbents have become frequently used in industrial processes. Recent studies have shown the possibility of using adsorption to separate copper refinery electrolyte contaminants, with better results than those obtained with conventional techniques. During copper electrorefinning, many impurities may be found as dissolved metals present in the anode slime which forms on the electrode surface, accumulated in the electrolyte or incorporated into the refined copper on the cathode by deposition. In this study, synthetic zeolites, chelating resins and activated carbons were tested as adsorbents to select the best adsorbent performance, as well as the best operating temperature for the process. The experimental method applied was the finite bath, which consists in bringing the adsorbent into contact with a finite volume of electrolyte while controlling the temperature. The concentration of metals in the liquid phase was continuously monitored by atomic absorption spectrophotometry (AAS)

Keywords: Electrorefining, Adsorption, Copper

Moreira, R.F.P.M., Peruch, M.G. and Kuhnen, N.C. (1998), Adsorption of textile dyes on alumina: Equilibrium studies and contact time effects. *Brazilian Journal of Chemical Engineering*, **15** (1), ??-??.

Full Text: [B\Bra J Che Eng15, Moreira.pdf](B/Bra%20J%20Che%20Eng15,%20Moreira.pdf)

How to cite this article:

ISO Format

Moreira, R.F.P.M., Peruch, M.G. and Kuhnen, N.C. Adsorption of textile dyes on alumina: Equilibrium studies and contact time effects. *Braz. J. Chem. Eng.*, Mar. 1998, vol.15, no.1. ISSN 0104-6632.

Electronic Document Format (ISO)

Moreira, R.F.P.M., Peruch, M.G. and Kuhnen, N.C. Adsorption of textile dyes on alumina: Equilibrium studies and contact time effects. *Braz. J. Chem. Eng.* [online]. Mar. 1998, vol.15, no.1 [cited 09 June 2004] Available from World Wide Web: <http: //www.scielo.br/scielo.php?script=sci\_arttext&pid=S0104-66321998000100002&lng=en&nrm=iso>. ISSN 0104-6632.

Abstract: The use of nonconventional adsorbents, particularly those that can be easily regenerated, to replace activated carbon in the removal of color from dye wastewaters has been recently proposed. This work shows a thermodynamic and kinetic study of the adsorption of reactive dyes (yellow monochlorotriazine and yellow dichlorotriazine), in liquid phase, on commercial alumina. The basic thermodynamic data were obtained using the static method, with a thermostatic bath at four different temperatures (30, 40, 50 and 60oC) and different pH values. The kinetic data were obtained by adding a known quantity of adsorbent to a dye solution at a constant temperature and under controlled stirring conditions. It was possible to draw the uptake curves, using the effects of the stirring on the adsorption rate. The intraparticle effective diffusivity was estimated using the film and pore diffusion model. The results were compared with the data obtained using a commercial activated carbon.

Keywords: Dye Wastewater, Activated Alumina

Barrozo, M.A.S., Oliveira, D.T., Sancineti, G.P. and Rodrigues, M.V. (2000), A study of the desorption isotherms of lentils. *Brazilian Journal of Chemical Engineering*, **17** (1), 105-109.

Full Text: [B\Bra J Che Eng17, 105.pdf](B/Bra%20J%20Che%20Eng17,%20105.pdf)

Abstract: The aim of this work was to analyze the main equilibrium equations used for grains to find the best way to represent the equilibrium conditions between lentil and air. The experimental study was based on the static method using saturated salt solutions. We developed criteria for distinguish between some existing equations used for grains. To distinguishing between these equations we explored some nonlinearity measures. The results obtained showed that the Halsey modified equation was the best model in terms of nonsignificance for bias and nonlinearity measures.

Keywords: Desorption, Lentils, Equilibrium Equations

Moreira, R.F.P.M., Soares, J.L., Jose, H.J. and Rodrigues, A.E. (2001), The removal of reactive dyes using high-ash char. *Brazilian Journal of Chemical Engineering*, **18** (3), 327-336.

Full Text: [B\Bra J Che Eng18, 327.pdf](B/Bra%20J%20Che%20Eng18,%20327.pdf)

Abstract: The thermodynamics and kinetics of adsorption of reactive dyes on high-ash char was studied. Equilibrium data were obtained using the static method with controlled agitation at temperatures in the range of 30 to 60°C. The Langrnuir isotherm model was used to describe the equilibrium of adsorption, and the equilibrium parameters, R-L, in the range of 0 to 1 indicate favorable adsorption. The amount of dye adsorbed increased as temperature increased from 30 to 40°C, but above 40°C the increase in temperature resulted in a decrease in the amount of dye adsorbed.

The kinetic data presented are for controlled agitation at 50 rpm and constant temperature with dye concentrations in the range of 10 ppm to 50 ppm. The film mass transfer coefficient, K-f, and the effective diffusivity inside the particle, D-e, were fitted to the experimental data. The results indicate that internal diffusion governs the adsorption rate.

Keywords: Color Removal, Dyestuffs, High Ash, Char, Activated Carbon, Fly-Ash, Adsorption, Carbon

Silva, E.A., Cossich, E.S., Tavares, C.G., Cardozo, L. and Guirardello, R. (2003), Biosorption of binary mixtures of Cr(III) and Cu(II) ions by *Sargassum* sp. *Brazilian Journal of Chemical Engineering*, **20** (3), 213-227.

Full Text: [B\Bra J Che Eng20, 213.pdf](B/Bra%20J%20Che%20Eng20,%20213.pdf)

Abstract: The adsorption of two metal ions, Cr(III) and Cu(II), in single-component and binary systems by Sargassum sp., a brown alga, was studied. Equilibrium batch sorption studies were carried out at 30°C and pH 3.5. Kinetic tests were done for a binary mixture (chromium + copper) for a contact time of 72 hours to guarantee that equilibrium was reached. The monocomponent equilibrium data obtained were analyzed using the Langmuir and Freundlich isotherms. The binary equilibrium data obtained were described using four Langmuir-type and Freundlich isotherms. The F-test showed a statistically significant fit for all binary isotherm models. The parameters for isotherms of the Langmuir-type were used to determine the affinity of one metal for the biosorbent in the presence of another metal. The chromium ion showed a greater affinity for Sargassum sp. than the copper ion.

Keywords: Biosorption, Chromium, Copper, Isotherm, Multicomponent, Sargassum, Heavy-Metals, Equilibria, Arrhizus, Models, Zinc

Barros Júnior, L.M., Macedo, G.R., Duarte, M.M.L., Silva, E.P. and Lobato, A.K.C.L. (2003), Biosorption of cadmium using the fungus *Aspergillus niger*. *Brazilian Journal of Chemical Engineering*, **20** (3), 229-239.

Full Text: [B\Bra J Che Eng20, 229.pdf](B/Bra%20J%20Che%20Eng20,%20229.pdf)

Abstract: Sorption experiments using the *Aspergillus niger* fungus for cadmium removal were carried out to study the factors influencing and optimizing the biosorption of this metal. The effects of pH, time, biomass concentration, and initial concentration of the heavy metal on the rate of metallic biosorption were examined. An experimental design was also used to determine the values of the under study variables that provided the greatest biosorption efficiency. A technique for biomass recovery was also developed with the objective of determining the capacity of the regenerated biomass to biosorb the metals in solution. This research proved that with a pH of 4.75, a biomass concentration of 0.7 g/L, and a heavy metal concentration varying between 5 and 10 mg/L a biosorption process of biosorption with *Aspergillus niger* could be successfully used for heavy metal removal from oil field water in the oil industry.

Keywords: *Aspergillus niger*, Biosorption, Experimental Planning, Metals

Cremasco, M.A., Guirardello, R. and Wang, N.H.L. (2003), Adsorption of aromatic amino acids in a fixed bed column. *Brazilian Journal of Chemical Engineering*, **20** (3), 327-334.

Full Text: [B\Bra J Che Eng20, 327.pdf](B/Bra%20J%20Che%20Eng20,%20327.pdf)

Abstract: Phenylalanine (Phe) and tyrosine (Tyr) are two of the twenty amino acids in proteins, they are classified as aromatic amino acids, because both have a benzene ring in their structures. These amino acids are important in the synthesis of several biologically active amines, such as beta-endorphin, a neurotransmitter. Amino acids can be separated by ion-exchange chromatography. In this case, it is important that fixed-bed adsorber design adequately predict the breakthrough curve. This work presents a mathematical model for both fluid and porous phases. In the solution proposed for this model the liquid- phase concentration inside the particles is solved analytically and is related to the liquid-phase concentration in the bed using Duhamel’s theorem. The solution for liquid-phase concentration in the bed is then solved numerically instead of nalytically. The basic mass transfer parameters are from the literature. The results from the model are compared with those obtained experimentally using Phe and Tyr diluted in aqueous solutions in a fixed bed of PVP (poly-4-vinylpyridine) resin.

Keywords: Adsorption, Amino Acids, Blood-Pressure, Breakthrough, Breakthrough Curve, Chromatography, Cognitive Performance, Column, Diffusion, Fixed Bed, Fixed Bed Column, Ion Exchange, L-Tyrosine, Longitudinal Dispersion, Model, Model, Packed-Beds, Particles, Stress

Ramos Vianna, M.M.G., Franco, J.H.R., Pinto, C.A., Valenzuela Díaz, F.R. and Büchler, P.M. (2004), Sorption of oil pollution by organoclays and a coal/mineral complex. *Brazilian Journal of Chemical Engineering*, **21** (2), 239-245.

Full Text: [B\Bra J Che Eng21, 239.pdf](B/Bra%20J%20Che%20Eng21,%20239.pdf)

Abstract: Recently, increasing concern about pollution of groundwater by organic chemicals has led to research on the use of various adsorbents. This study addressed the sorption of phenol and organic compounds by two organoclays and a coal/mineral complex (ARO). The organoclays used were a bentonite from Brazil (SVC) and Wyoming bentonite (SWy) with quaternary ammonium salt (ABDMA). Swelling capacity of the sorbents in toluene, diesel, gas, Varsol and kerosene were measured. Absorption of organic compounds served as an ASTM D 281-95 base, which resulted in the following order for ABDMA-SVC: gas > toluene > kerosene > diesel > Varsol. ABDMA-SWy absorbed in the following order: gas > toluene > Varsol > diesel > kerosene. ARO absorbed: gas > toluene >diesel > Varsol > kerosene. Sorption of phenol followed the order of ABDMA-SVC > ABDMA-SWy > ARO. The adsorption data show that the materials prepared were effective in sorbing phenol, and that the Brazilian clay was the most efficient of the three materials.

Keywords: Adsorption, Sorption, Absorption, Organoclay, Hydrocarbon, Phenol

Carneiro, D.G.P., Mendes, A.F. and Coelho, G.L.V. (2004), Desorption of toluene from modified clays using supercritical carbon dioxide. *Brazilian Journal of Chemical Engineering*, **21** (4), 641-646.

Full Text: [B\Bra J Che Eng21, 641.pdf](B/Bra%20J%20Che%20Eng21,%20641.pdf)

Abstract: The main objective of this work is to study the regeneration capacity of modified clays using supercritical fluid. These modified clays are used as organic compound adsorvents. The experimental step was done using a packed column with the clay contaminated by toluene. The results obtained showed the influence of the density of the supercritical CO2 and of the organic modifier in the desorption process. These data were modeled with first- and second-order models. Better results were obtained using the second-order model. This study makes possible the scale-up of the desorption process for regeneration of solid matrices using supercritical fluids.

Keywords: Supercritical Fluid, Desorption Process, Organic Compound Adsorvents, Activated Carbon, Adsorption, Extraction, Equilibrium, Soil

? Ho, Y.S. (2005), Comment on ‘Biosorption of cadmium using the fungus *Aspergillus niger*’. by Barros, L.M., Macedo, G.R., Duarte, M.M.L., Silva, E.R and Lobato, A.K.C.L. *Brazilian Journal of Chemical Engineering*, **22** (2), 319-322.

Full Text: [2005\Bra J Che Eng22, 319.pdf](2005/Bra%20J%20Che%20Eng22,%20319.pdf)

Keywords: Sugarcane Bagasse Pith, Sphagnum Moss Peat, Aqueous-Solution, Activated Carbons, Kinetic-Models, Sorption Kinetics, Heavy-Metals, Dye Removal, Basic-Dyes, Congo-Red

? Cardoso, S.P., Gomes, J.A.C.P., Borges, L.E.P. and Hollauer, E. (2007), Predictive QSPR analysis of corrosion inhibitors for super 13% Cr steel in hydrochloric acid. *Brazilian Journal of Chemical Engineering*, **24** (4), 547-559.

Full Text: [2007\Bra J Che Eng24, 547.pdf](2007/Bra%20J%20Che%20Eng24,%20547.pdf)

Abstract: An experimental and theoretical study on the inhibition corrosion efficiencies of twenty three compounds in hydrochloric acid (15% w/v) on 13% Cr modified stainless steel (martensitic) has been carried out. This inhibitor set includes amines, thiourea derivatives and acetylenic alcohols. Experimental weight losses at 60°C were correlated with group and quantum AMI descriptors obtained from QSPR analysis. Such data, for a large set of molecules, offer a unique opportunity for searching for correlations between inhibition corrosion efficiency and molecular properties. Calculations based on three different statistical methodologies were carried out. The first method, using calibration procedures, employs an ordinary least squares (OLS) methodology with a simple descriptor selection based on R-2 values. From this procedure, we obtained a model, Y-15, having a R-2 value of 0,979 and a Q(2) value of 0.786. The second method employs a descriptor selection based on the second-order cross-validation OLS procedure (SOCV-OLS). In this process, the variables are chosen according to their ability to predict molecular inhibition efficiencies. The best model obtained using this methodology, Q(5), had R-2 and Q(2) values of 0.859 and 0.785, respectively. The third method, based on regular partial least squares (PLS), resulted in R-2 and Q(2) values of 0.859 and 0.754, respectively. All calculations were carried out for the weight isoesteric Langmuir adsorption function (WILA function), ln(theta M/(1-theta)) or ln K-ads. A careful comparison between the calibration and the cross-validation descriptor selection indicated that they had very few descriptors in common. This article presents some key equations and the most relevant descriptors. We are unaware of any similar QSPR study on super 13% Cr stainless steel in the literature.

Keywords: Acid, Adsorption, Alcohols, AM1, AMI, Amines, Analysis, Calibration, Cinnamaldehyde, Comparison, Correlations, Corrosion, Corrosion Inhibitors, Cr, Derivatives, Efficiency, Equations, Experimental, Function, Group, HCl, Hydrochloric Acid, Inhibition, Inhibition Corrosion, Inhibitor, Inhibitors, Iron, Key, Langmuir, Langmuir Adsorption, Least Squares, Least-Squares, Literature, Losses, Mechanism, Method, Methodology, Model, Modified, Partial Least Squares, PLS, Predict, Process, Properties, QSPR, Searching, Second Order, Selection, Stainless Steel, Steel, Super-13 Steel, Theoretical Study, Thiourea, Thiourea Derivatives, Value

? Calero, M., Hernáinz, F., Blázquez, G., Martín-Lara, M.A. and Tenorio, G. (2009), Biosorption kinetics of Cd (II), Cr (III) and Pb (II) in aqueous solutions by olive stone. *Brazilian Journal of Chemical Engineering*, **26** (2), 265-273.

Full Text: [2009\Bra J Che Eng26, 265.pdf](2009/Bra%20J%20Che%20Eng26,%20265.pdf)

Abstract: A by-product from olive oil production, olive stone, was investigated for the removal of Cd(II), Cr(III) and Pb(II) from aqueous solutions. The kinetics of biosorption are studied, analyzing the effect of the initial concentration of metal and temperature. Pseudo-first-order, pseudo-second-order, Elovich and intraparticle diffusion models have been used to represent the kinetics of the process and obtain the main kinetic parameters. The results show that the pseudo-second order model is the one that best describes the biosorption of the three metal ions for all the range of experimental conditions investigated. For the three metal ions, the maximum biosoption capacity and the initial biosorption rate increase when the initial metal concentration rises. However, the kinetic constant decreases when the initial metal concentration increases. The temperature effect on biosorption capacity for Cd(II) and Cr(III) is less significant; however, for Pb (II) the effect of temperature is more important, especially when temperature rises from 25 to 40°C. The biosorption capacity at mmol/g of olive stone changes in the following order: Cr>Cd>Pb. Thus, for an initial concentration of 220 mg/l, a maximum sorption capacity of 0.079 mmol/g for Cr(III), 0.065 mmol/g for Cd (II) and 0.028 mmol/g for Pb (II) has been obtained.

Keywords: Aqueous Solutions, Biomass, Biosorption, Cadmium(II), Capacity, Cd, Changes, Chromium, Concentration, Diffusion, Elovich, Equilibrium, Experimental, Extraction Algal Waste, Heavy Metals, Intraparticle Diffusion, Ions, Kinetic, Kinetic Parameters, Kinetics, Lead Biosorption, Metal, Metal Ions, Metal-Ions, Model, Models, Olive Stone, Pb, Pb(II), Pseudo Second Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second Order Model, Pseudo-Second-Order, Removal, Solutions, Sorption, Sorption Capacity, Temperature, Temperature Effect, Wastewater, Zinc

? Akar, S.T., Akar, T. and Cabuk, A. (2009), Decolorization of a textile dye, Reactive Red 198 (RR198), by *Aspergillus parasiticus* fungal biosorbent. *Brazilian Journal of Chemical Engineering*, **26** (2), 399-405.

Full Text: [2009\Bra J Che Eng26, 399.pdf](2009/Bra%20J%20Che%20Eng26,%20399.pdf)

Abstract: The decolorization potential of textile dye Reactive Red 198 (RR198) by Aspergillus parasiticus fungal biosorbent has been investigated as a function of initial pH, contact time, biosorbent and initial dye concentration in a batch system. Maximum dye biosorption capacity 1.03×10-4 mol g-1 was observed at pH 2.0 and 2.0 g L-1 of biosorbent concentration. Biosorption equilibrium was attained within 50 min. The equilibrium data followed Langmuir, Freundlich and Dubinin-Radushkevich isotherm models at 20, 30, 40 and 50 C. An increase in the biosorption capacity of A. parasiticus with temperature showed that the decolorization process is endothermic. Results indicated that Aspergillus parasiticus was an effective candidate for textile dye RR198 removal from aqueous solutions.

Keywords: Activated-Sludge, Adsorption, Aqueous, Aqueous-Solutions, Aspergillus Parasiticus, Batch System, Biosorbent, Biosorption, Biosorption Performance, Capacity, Cu(II) Ions, Decolorization, Dye, Endothermic, Equilibrium, Freundlich, Isotherm, Langmuir, Models, Ph, Pretreated Biomass, Reactive Red 198, Removal, Rhizopus-Arrhizus, Saccharomyces-Cerevisiae, Solutions, System, Temperature, Textile Dye, Water

? Mousavi, H.Z., Hosseynifar, A., Jahed, V. and Dehghani, S.A.M. (2010), Removal of lead from aqueous solution using waste tire rubber ash as an adsorbent. *Brazilian Journal of Chemical Engineering*, **27** (1), 79-87.

Full Text: [2010\Bra J Che Eng27, 79.pdf](2010/Bra%20J%20Che%20Eng27,%2079.pdf)

Abstract: The purpose of this study was to investigate the possibility of the utilization of waste tire rubber ash (WTRA) as a low cost adsorbent for removal of lead (II) ion from aqueous solution. The effect of different parameters (such as contact time, sorbate concentration, adsorbent dosage, of the medium and temperature) were investigated. The sorption process was relatively fast and equilibrium was reached after about 90 min of contact. The experimental data were analyzed by the Freundlich isotherm and the Langmuir isotherm. Equilibrium data fitted well with the Langmuir model with maximum adsorption capacity of 22.35 mg/g. The adsorption kinetics was investigated and the best fit was achieved by a first-order equation. The results of the removal process show that the Pb (II) ion adsorption on WTRA is an endothermic and spontaneous process. The procedure developed was successfully applied for the removal of lead ions in aqueous solutions.

Keywords: Activated Carbons, Adsorbent, Adsorbent Dosage, Adsorption, Adsorption Capacity, Adsorption Kinetics, Aqueous Solution, Aqueous Solutions, Cadmium, Capacity, Concentration, Cost, Data, Endothermic, Equilibrium, Experimental, First Order, Fly-Ash, Freundlich, Freundlich Isotherm, Heavy-Metals, Ions, Isotherm, Kinetics, Langmuir, Langmuir Isotherm, Langmuir Model, Lead, Low Cost, Low Cost Adsorbent, Low-Cost Adsorbents, Model, Pb, Pb2+, Procedure, Purpose, Removal, Rice Husk, Solution, Solutions, Sorbate, Sorption, Sorption Process, Temperature, Time, Utilization, Waste, Waste Tire, Waste Tire Rubber Ash, Water

? Schimmel, D., Fagnani, K.C., dos Santos, J.B.O., Barros, M.A.S.D. and da Silva, E.A. (2010), Adsorption of Turquoise Blue Qg reactive dye on commercial activated carbon in batch reactor: Kinetic and equilibrium studies. *Brazilian Journal of Chemical Engineering*, **27** (2), 289-298.

Full Text: Bra J Che Eng27, 289.pdf

Abstract: The adsorption of reactive turquoise blue QG dye on commercial activated carbon was investigated in a batch reactor to obtain isotherm and kinetic data under different experimental conditions. The adsorbent was characterized by a FTIR method to analyze surface area and pH(PZC) and to identify functional groups. Experiments were conducted to obtain equilibrium data at 30ºC, with the pH effect being assayed in the range of 2 to 8. Experiments were then carried out under the optimal pH condition for dye removal to obtain equilibrium data at 30ºC, 45ºC and 60ºC. Adsorption isotherm models were used to correlate the equilibrium data. Maximum dye removal capacity was observed at a pH of 2 and temperature of 30 degrees C. The kinetic experiments were carried out at a pH of 2 and at three different temperatures: 30ºC, 45ºC and 60ºC. Pseudo-second-order models were used to describe the kinetics of dye adsorption.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Isotherm, Agricultural Waste, Aqueous-Solution, Ash, Batch, Batch Reactor, Capacity, Carbon, Data, Dye, Dye Adsorption, Dye Removal, Enthalpy of Adsorption, Equilibrium, Experimental, Experiments, FTIR, Functional Groups, Isotherm, Isotherm, Kinetic, Kinetics, Models, pH, pH Effect, Phase, Pseudo-Second-Order, Reactive Dye, Removal, Surface, Surface Area, Temperature

? Torab-Mostaedi, M., Ghassabzadeh, H., Ghannadi-Maragheh, M., Ahmadi, S.J. and Taheri, H. (2010), Removal of cadmium and nickel from aqueous solution using expanded perlite. *Brazilian Journal of Chemical Engineering*, **27** (2), 299-308.

Full Text: Bra J Che Eng27, 299.pdf

Abstract: The adsorption characteristics of cadmium and nickel onto expanded perlite from aqueous solution have been investigated with respect to changes in pH of solution, adsorbent dosage, contact time and temperature of the solution. The maximum removal efficiency of Cd(II) is 88.8% at pH 6 and exposure to 10 g/L expanded perlite, while for Ni(II), it is 93.3% at the same pH and exposure to 8 g/L adsorbent. For the adsorption of both metals, the Freundlich isotherm model fitted the equilibrium data better than the Langmuir isotherm model. Experimental data are also evaluated in terms of kinetic characteristics of adsorption and it was found that the adsorption process for both metal ions follows well pseudo-second-order kinetics. Thermodynamic functions, the change of free energy (ΔGº), enthalpy (ΔHº) and entropy (ΔSº) of adsorption are also calculated for each metal ion. The results show that the adsorption of these metal ions on expanded perlite is feasible and exothermic at 20-50ºC.

Keywords: Adsorbent, Adsorbent Dosage, Adsorption, Adsorption Characteristics, Aqueous Solution, Bagasse Fly-Ash, Biosorption, Cadmium, Cd, Changes, Characteristics, Copper(II), Data, Efficiency, Energy, Enthalpy, Entropy, Equilibrium, Exothermic, Expanded Perlite, Exposure, Freundlich, Freundlich Isotherm, Freundlich Isotherm Model, Functions, Heavy-Metals, Ions, Isotherm, Isotherm Model, Kinetic, Kinetics, Kinetics, Langmuir, Langmuir Isotherm, Langmuir Isotherm Model, Metal, Metal Ions, Metals, Model, Nickel, Perlite, pH, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Red Mud, Removal, Removal Efficiency, Solution, Sorption, Temperature, Thermodynamic, Waste-Water

? Yilmaz, M., Tay, T., Kivanc, M. and Turk, H. (2010), Removal of copper(II) ions from aqueous solution by A lactic acid bacterium. *Brazilian Journal of Chemical Engineering*, **27** (2), 309-314.

Full Text: Bra J Che Eng27, 309.pdf

Abstract: *Enterococcus faecium*, a lactic acid bacterium (LAB), was evaluated for its ability to remove copper(II) ions from water. The effects of the pH, contact time, initial concentration of copper(II) ions, and temperature on the biosorption rate and capacity were studied. The initial concentrations of copper(II) ions used to determine the maximum amount of biosorbed copper(II) ions onto lyophilised lactic acid bacterium varied from 25 mg L-1 to 500 mg L-1. Maximum biosorption capacities were attained at pH 5.0 and 6.0. Temperature variation between 20ºC and 40ºC did not affect the biosorption capacity of the bacterial biomass. The highest copper(II) ion removal capacity was 106.4 mg per g dry biomass. The correlation regression coefficients show that the biosorption process can be well defined by the Freundlich equation. The change in biosorption capacity with time was found to fit a pseudo-second-order equation.

Keywords: Adsorption, Bacterium, Biomass, Biosorption, Biosorption Kinetics, Cadmium, Capacity, Concentration, Copper(II), Correlation, Dry Biomass, Enterococcus, *Enterococcus faecium*, Equilibrium, Freundlich, Freundlich Equation, Fungal Biomass, Heavy-Metals, Ions, L1, Lactic Acid, Lactic Acid Bacterium, pH, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Equation, Regression, Removal, *Sargassum* sp, Sludge, Temperature, Waste Biomass, Water

? Kumar, P.S., Vincent, C., Kirthika, K. and Kumar, K.S. (2010), Kinetics and equilibrium studies of Pb2+ ion removal from aqueous solutions by use of nano-silversol-coated activated carbon. *Brazilian Journal of Chemical Engineering*, **27** (2), 339-346.

Full Text: Bra J Che Eng27, 339.pdf

Abstract: The ability of nano-silversol-coated activated carbon (NSSCAC) to adsorb Pb2+ from aqueous solution has been investigated through batch experiments. The adsorption of lead onto NSSCAC has been found to depend on adsorbent dose, initial concentration and contact time. The experiments were carried out at natural solution pH. Equilibrium data fitted well with the Langmuir model and Freundlich model with a maximum adsorption capacity of 23.81 mg of Pb/g of NSSCAC. The experiments showed that the highest removal rate was 92.42% for Pb2+ under optimal conditions. The sorption of Pb2+ on NSSCAC was rapid during the first 30 min and the equilibrium attained within 60 min. The kinetic processes of Pb2+ adsorption on NSSCAC were described by applying pseudo-first-order and pseudo-second-order kinetic models. The kinetic data for the adsorption process obeyed a pseudo-second-order kinetic model, suggesting that the adsorption process is chemisorption. The NSSCAC investigated in this study showed good potential for the removal of Pb2+ from aqueous solution.

Keywords: Acid, Activated Carbon, Adsorbent, Adsorbent Dose, Adsorption, Adsorption Capacity, Adsorption Isotherms, Aqueous Solution, Batch, Batch Adsorption, Batch Experiments, Biomass, Biosorption, Capacity, Carbon, Chemisorption, Column, Concentration, Data, Equilibrium, Experiments, First, Freundlich, Freundlich Model, Kinetic, Kinetic Model, Kinetic Models, Kinetics, Langmuir, Langmuir Model, Lead, Lead (Pb2+), Model, Models, Natural, Pb(II), Pb2+, Pb2+ Adsorption, pH, Potential, Pseudo First Order, Pseudo Second Order, Pseudo-First-Order, Pseudo-Second-Order, Pseudo-Second-Order Kinetic Model, Recovery, Removal, Solution, Sorption, Waste-Water

? Kumar, P.S., Ramakrishnan, K., Kirupha, S.D. and Sivanesan, S. (2010), Thermodynamic and kinetic studies of cadmium adsorption from aqueous solution onto rice husk. *Brazilian Journal of Chemical Engineering*, **27** (2), 347-355.

Full Text: Bra J Che Eng27, 347.pdf

Abstract: The adsorption behavior of rice husk for cadmium ions from aqueous solutions has been investigated as a function of appropriate equilibrium time, adsorbent dose, temperature, adsorbate concentrations and pH in a batch system. Studies showed that the pH of aqueous solutions affected cadmium removal with the result that removal efficiency increased with increasing solution pH. The maximum adsorption was 98.65% at solution pH 6, contact time 60 min and initial concentration of 25 mg/L. The experimental data were analysed by the Langmuir, Freundlich and Temkin models of adsorption. The characteristic parameters for each isotherm and related correlation coefficients have been determined. Thermodynamic parameters such as ΔGº, ΔHº and ΔSº have also been evaluated and it has been found that the sorption process was feasible, spontaneous and exothermic in nature. The kinetics of the sorption were analysed using the pseudo-first order and pseudo-second order kinetic models. Kinetic parameters, rate constants, equilibrium sorption capacities and related correlation coefficients for each kinetic model were calculated and discussed. It was shown that the adsorption of cadmium could be described by the pseudo-second order equation, suggesting that the adsorption process is presumably a chemisorption. The rice husk investigated in this study showed good potential for the removal of cadmium from aqueous solutions. The goal for this work is to develop inexpensive, highly available, effective metal ion adsorbents from natural waste as alternative to existing commercial adsorbents.

Keywords: Adsorbent, Adsorbent Dose, Adsorbents, Adsorption, Adsorption Behavior, Alternative, Aqueous Solutions, Batch, Batch System, Behavior, Cadmium, Cadmium Ions, Cd(II), Chemisorption, Concentration, Correlation, Data, Efficiency, Equilibrium, Exothermic, Experimental, Freundlich, Function, Heavy-Metals, Ions, Isotherm, Isotherms, Kinetic, Kinetic Model, Kinetic Models, Kinetic Parameters, Kinetics, Langmuir, Metal, Model, Models, Natural, pH, Potential, Pseudo First Order, Pseudo Second Order, Pseudo-First Order, Pseudo-First Order And Pseudo-Second Order, Pseudo-First-Order, Pseudo-Second Order, Pseudo-Second-Order, Rate Constants, Removal, Removal Efficiency, Rice, Rice Husk, Rice-Husk, Solution, Solutions, Sorbents, Sorption, Sorption Process, Temperature, Thermodynamic, Thermodynamic Parameters, Thermodynamics, Waste, Waste-Water, Work

? Gottipati, R. and Mishra, S. (2010), Application of biowaste (Waste Generated in Biodiesel Plant) as an adsorbent for the removal of hazardous dye - methylene blue - from aqueous phase. *Brazilian Journal of Chemical Engineering*, **27** (2), 357-367.

Full Text: Bra J Che Eng27, 357.pdf

Abstract: Solid waste (SW) from a biodiesel plant has been successfully used for the removal of the hazardous cationic water soluble dye - methylene blue (MB) - from an aqueous phase. Batch adsorption studies were earned out by monitoring the pH, amount of adsorbent, initial dye concentration and contact time. Attempts have also been made to monitor the adsorption process through Langmuir, Freundlich, Temkin and D-R adsorption isotherm models. Relevant thermodynamic parameters were calculated and it was found that the adsorption process was exothermic and feasible at low temperatures. The nature and randomness of the adsorption process was determined by calculating the thermodynamic parameters such as Gibbs free energy (ΔGº), change in entropy (ΔSº) and heat of adsorption (ΔHº). The kinetics of the adsorption indicates that the process is pseudo-second-order and also reveals the involvement of bulk diffusion and intraparticle diffusion mechanisms.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption, Adsorption Isotherm, Adsorption Isotherm Models, Aqueous Phase, Basic-Dyes, Batch Adsorption, Concentration, Congo Red, Diffusion, Dye, Energy, Entropy, Equilibrium, Error Analysis, Exothermic, Freundlich, Gibbs Free Energy, Heat of Adsorption, Intraparticle Diffusion, Isotherm, Kinetics, Kinetics, Langmuir, MB, Mechanism, Mechanisms, Methylene Blue, Models, Monitoring, pH, Plant, Pseudo Second Order, Pseudo-Second-Order, Pyrolysis, Randomness, Removal, Sorption, Thermodynamic, Thermodynamic Parameters, Thermogravimetry, Waste, Water

? Chmielewská, E. Sabová, L. Peterlik, H. and Wu, A. (2011), Batch-wise adsorption, SAXS and microscopic studies of zeolite pelletized with biopolymeric alginate. *Brazilian Journal of Chemical Engineering*, **28** (1), 63-71.

Full Text: [2011\Bra J Che Eng28, 63.pdf](2011/Bra%20J%20Che%20Eng28,%2063.pdf)

Abstract: Removal of nitrates, sulfate and Zn(II) ions from aqueous solutions through adsorption onto biopolymeric alginate/clinoptilolite-rich tuff pellets was studied by using an equilibrium batch technique. The idea of this approach of biosorbent fabrication is to promote the native zeolite adsorption performance and thus to prepare more efficient amphoteric tailor-made products for specific environmental targets. A flexible component, i.e., alginate biopolymer, and a rigid component (pulverized) zeolite were crosslinked using Fe(III) and Ca(II) chlorides, additively. The extent of adsorption was found to be considerably higher than with the other mostly natural adsorbents examined towards similar pollutants. The equilibrium adsorption data for the above pollutants were satisfactorily fitted to Freundlich and Langmuir isotherms, respectively. According to the linscale SAXS pattern, there was a strong background visible, which may indicate the presence of a considerable amount of biopolymeric phase in the composite samples analysed. Scanning Tunneling, Electron and Atomic Force Microscopies helped visualize their surface texture and morphology.

Keywords: Zeolite, Removal of Nitrates, Sulfate and Zn(II) Ions, Biopolymeric Alginate/Clinoptilolite-Rich Tuff Pellets, Freundlich and Langmuir Isotherms, SAXS, SEM, STM, AFM

# Title: Brazilian Journal of Medical and Biological Research

Full Journal Title: [Brazilian Journal of Medical and Biological Research](http://www.scielo.br/scielo.php?script=sci_serial&pid=0100-879X&lng=en&nrm=iso); [Brazilian Journal of Medical and Biological Research](http://www.bjournal.com.br/)

ISO Abbreviated Title: Brazilian J. Med. Biol. Res.

JCR Abbreviated Title: Braz J Med Biol Res

ISSN: 0100-879X

Issues/Year: 12

Journal Country/Territory: Brazil

Language: English

Publisher: Assoc Bras Divulg Cientifica

Publisher Address: Faculdade Medicina, Sala 21, 14049 Ribeirao Preto, Sao Paulo, Brazil

Subject Categories:

Biology: Impact Factor 0.824, 43/64 (2004)

Medicine, Research & Experimental: Impact Factor 0.824, 56/71 (2004)

? Corso, C.R., Marcanti, I. and Yamaoka, E.M.T. (1987), Applicability of the equations of Freundlich and Langmuir to the adsorption of the azo dye procion scarlet on paramorphic colonies of neurospora-crassa. *Brazilian Journal of Medical and Biological Research*, **20** (5), 623-626.

Full Text: Bra J Med Bio Res20, 623.pdf

? Linardi, P.M., Coelho, P.M.Z. and Costa, H.M.A. (1996), The “impact factor” as a criterion for the quality of scientific production is a relative, not absolute, measure. *Brazilian Journal of Medical and Biological Research*, **29** (5), 555-561.

Full Text: Bra J Med Bio Res29, 555.pdf

Keywords: Impact Factor, Citation Index, Bibliometric Evaluation, Scientific Quality, Cited Half-Life, Immediacy Index, Science, Journals

? Rumjanek, V.M. and Leta, J. (1996), An evaluation of immunology in Brazil (1981-1993). *Brazilian Journal of Medical and Biological Research*, **29** (8), 923-931

Full Text: Bra J Med Bio Res29, 923.pdf

Keywords: Evaluation, Immunology, Scientific Production, Scientometrics

Rodrigues, P.S., Fonseca, L. and Chaimovich, H. (2000), Mapping cancer, cardiovascular and malaria research in Brazil. *Brazilian Journal of Medical and Biological Research*, **33** (8), 853-867.

Full Text: [2000\Bra J Med Bio Res33, 853.pdf](2000/Bra%20J%20Med%20Bio%20Res33,%20853.pdf)

Abstract: This paper presents performance indicators for the Brazilian cancer, cardiovascular and malaria research areas from 1981 to 1995. The data show an increasing number of papers since 1981 and author numbers indicate a continuous growth of the scientific community and suggest an expected impact of scientific activity on biomedical education. The data also characterize cardiovascular research as a well-established area and cancer research as a faster growing consolidating field. The 1989-1994 share of Brazilian articles among world publications shows a growing trend for the cancer (1.61) and cardiovascular (1.59) areas, and a decrease for the malaria area (0.89). The burden of the three diseases on society is contrasted by the small number of consolidated Brazilian research groups, and a questionable balance of thematic activity, especially with regard to malaria. Brazilian periodicals play an important role in increasing the international visibility of science produced in the country. Cancer and cardiovascular research is strongly concentrated in the Southeastern and in Southern regions of Brazil, especially in Sao Paulo (at least one address from Sao Paulo in 64.5% of the 962 cancer articles and in 66.9% of the 2250 cardiovascular articles, the second state being Rio de Janeiro with at least one address in 14.1 and 11% of those articles, respectively). Malaria research (468 articles) is more evenly distributed across the country, following the pattern of the endemic distribution of the disease. Surveying these national indicator trends can be useful to establish policies in the decision process about health sciences, medical education and public health.

Keywords: Cancer, Cardiovascular Research, Malaria, Bibliometric Indicators, Health Indicators

? Krieger, E.M. and Ferreira, S.H. (2003), *Brazilian Journal of Medical and Biological Research* 1981-2002. *Brazilian Journal of Medical and Biological Research*, **36** (1), 1-2.

Full Text: [2003\Bra J Med Bio Res36, 1.pdf](2003/Bra%20J%20Med%20Bio%20Res36,%201.pdf)

Coelho, P.M.Z., Antunes, C.M.F., Costa, H.M.A., Kroon, E.G., Lima, M.C.S. and Linardi, P.M. (2003), The use and misuse if the “impact factor” as a parameter for evaluation of scientific publication quality: A proposal to rationalize its application. *Brazilian Journal of Medical and Biological Research*, **36** (12), 1605-1612.

Full Text: [2003\Bra J Med Bio Res36, 1605.pdf](2003/Bra%20J%20Med%20Bio%20Res36,%201605.pdf)

Abstract: We present a critical analysis of the generalized use of the “impact factor”. By means of the Kruskal-Wallis test, it was shown that it is not possible to compare distinct disciplines using the “impact factor” without adjustments. After assigning the median journal the value of one (1.000), the “impact factor” value for each journal was calculated by the rule of three. The adjusted values were homogeneous, thus permitting comparison among distinct disciplines.

Keywords: Impact Factor, Multidisciplinary Adjustment, Citation Index, Bibliometric Evaluation

? Bressan, R.A., Gerolin, J. and Mari, J.J. (2005), The modest but growing Brazilian presence in psychiatric, psychobiological and mental health research: Assessment of the 1998-2002 period. *Brazilian Journal of Medical and Biological Research*, **38** (5), 649-659.

Full Text: [2005\Bra J Med Bio Res38, 649.pdf](2005/Bra%20J%20Med%20Bio%20Res38,%20649.pdf)

Abstract: The objective of the present survey was to assess the Brazilian scientific production in psychiatry, psychobiology, and mental health during the 1998-2002 period. The universities’ graduate programs concentrate the vast majority of the scientific production in Brazil. We assessed the annual reports from the graduate programs to the Brazilian Ministry of Education concerning master’s and doctoral theses and the articles published in journals indexed by the Institute of Scientific Information (IST). There are nine Master’s and Doctoral graduate programs dedicated to research in psychiatry, neuropsychiatry, psychobiology, and mental health in the country, seven being located in southern states. During the 5-year period, from 1998 to 2002, 186 students received their doctorate degree (37/year). The programs published 637 articles in journals indexed by ISI, the majority of them in journals with an impact factor higher than 2. The research advisors’ productivity varied among graduate programs, ranging from 0.6 to 2.0 articles per year in ISI-indexed journals. Despite the substantial barriers faced by the Brazilian scientific community (mainly financial and writing difficulties), Brazil’s scientific mental health production is on the rise. The number of articles published in ISI-indexed journals has doubled without a significant increase in the number of graduate theses, suggesting that there was an improvement in both the quality of the scientific production and the productivity of the graduate programs. Based on these data, it is reasonable to predict a tendency to an increase in production over the next few years.

Keywords: Bibliometric Analysis, Brazil, Impact Factor, ISI, Journals, Mental Health, MSc and PhD Students, Psychiatry, Public and Private Universities, Publish or Perish, Research, Scientific Production, Scientometrics, Universities

? de Araujo, K.M., Mourao, P.A.S. and Leta, J. (2005), Balance between education- and research-oriented publications from a Brazilian University Hospital. *Brazilian Journal of Medical and Biological Research*, **38** (9), 1285-1291.

Full Text: [2005\Bra J Med Bio Res38, 1285.pdf](2005/Bra%20J%20Med%20Bio%20Res38,%201285.pdf)

Abstract: We analyzed the trends of scientific output of the University Hospital, Federal University of Rio de Janeiro. A total of 1420 publications were classified according to pattern and visibility. Most were non-research publications with domestic visibility. With time, there was a tendency to shift from non-research (or education-oriented) publications with domestic visibility to research publications with international visibility. This change may reflect new academic attitudes within the institution concerning the objectives of the hospital and the establishment of scientific research activities. The emphasis of this University Hospital had been on the training of new physicians. However, more recently, the production of new knowledge has been incorporated as a new objective. The analysis of the scientific production of the most productive sectors of the hospital also showed that most are developing non-research studies devoted to the local public while a few of the sectors are carrying out research studies published in journals with international status. The dilemma of quality versus quantity and of education versus research-oriented publication seems, however, to continue to exist within The specialized sectors. The methodology described here to analyze the scientific production of a university hospital can be used as a tool to better understand the evolution of medical research in Brazil and also to help formulate public policies and new strategies to include research among the major objectives of University Hospitals.

Keywords: Bibliometrics, Brazil, Pattern of Publications, Publication, Publication Visibility, Publications, Research, Scientific Production, Scientific Publications, University Hospital

? Helene, A.F. and Xavier, G.F. (2006), Financial support of graduate programs in Brazil: *Quo vadis*? *Brazilian Journal of Medical and Biological Research*, **39** (7), 839-849.

Full Text: [2006\Bra J Med Bio Res39, 839.pdf](2006/Bra%20J%20Med%20Bio%20Res39,%20839.pdf)

Abstract: Graduate programs provide the highest level of formal education and thus are crucial for the development of any country. However, official Brazilian data clearly show a dramatic decrease in the number and values of scholarships available to graduate programs in Brazil over the last few years, despite the importance and growth of such programs. Between 1995 and 2004, investment by the Coordenadoria de Aperfeicoamento de Pessoal do Ensino Superior (CAPES, subordinate to the Ministry of Education and Culture) in funding scholarships, corrected for inflation in the period, actually decreased by 51%. In addition, during the period between 1994 and 2004, there was a loss of about 60% in the purchasing power of the graduate scholarships provided by CAPES and the National Council for Science and Technology (CNPq). To reverse this trend, we propose the development of sectorial funding for Brazilian graduate programs to guarantee the availability and continuity of financial support for this strategic activity.

Keywords: Availability, Brazil, Country, Data, Development, Education, Financial Support, Funding, Graduate, Growth, Power, Strategic, Support, Trend

? Cunha-Melo, J.R., Santos, G.C. and Andrade, M.V. (2006), Brazilian medical publications: Citation patterns for Brazilian-edited and non-Brazilian literature. *Brazilian Journal of Medical and Biological Research*, **39** (8), 997-1002.

Full Text: [2006\Bra J Med Bio Res39, 997.pdf](2006/Bra%20J%20Med%20Bio%20Res39,%20997.pdf)

Abstract: Today, the quality of a scientific article depends on the periodical in which it is published and on the number of times the article is cited in the literature. In Brazil, the criteria for the evaluation of this scientific production are improving. However, there is still some resistance, with authors arguing that Brazilian publications must be preferentially addressed to the national readers and, therefore, they should ideally be written in Portuguese. In order to determine the kind of scientific journals cited in the reference lists of articles published in medical periodicals edited in Brazil, in the present study we determine the rate of Portuguese/English citations. Three issues of 43 periodicals (19 indexed in SciELO, 10 in PubMed, 10 in LILACS, and 4 in the ISI-Thompson base) of different medical specialties were analyzed, and the number of both Portuguese and English citations in the reference list of each article was recorded. The results showed that in Brazilian-edited journals the mean number of citations/article was 20.9±6.9 and the percentage of citations of international non-Brazilian periodicals was 86.0±11.2%. of the latter, 94.4±7.0 are indexed by ISI-Thompson. Therefore, we conclude that Brazilian medical scientists cite the international non-Brazilian periodicals more than the national journals, and most of the cited papers are indexed by ISI-Thompson.

Keywords: Bibliometrics, Brazil, Brazilian Medical Journals, Brazilian Scientific Journals, Citation Patterns, English, Journals, Language, Publications, Publish, Quality, Scientific Production

Araujo, C.R., Moreira, M.A. and Lana-Peixoto, M.A. (2006), Profile of the Brazilian scientific production in multiple sclerosis. *Brazilian Journal of Medical and Biological Research*, **39** (9), 1143-1148.

Full Text: [2006\Bra J Med Bio Res39, 1143.pdf](2006/Bra%20J%20Med%20Bio%20Res39,%201143.pdf)

Abstract: This paper analyzes the profile of the Brazilian output in the field of multiple sclerosis from 1981 to 2004. The search was conducted through the MEDLINE and LILACS databases, selecting papers in which the term “multiple sclerosis” was defined as the main topic and “Brazil” or “Brasil” as others. The data were analyzed regarding the themes, the state in Brazil and institution where the papers were produced, the journals where the papers were published, journal’s impact factor, and language. The search disclosed 141 documents (91 from MEDLINE and LILACS, and 50 from LILACS only) published in 44 different journals (23 of them MEDLINE-indexed). A total of 111 documents were produced by 17 public universities, 29 by 3 private medical schools and 1 by a non-governmental organization. There were 65 original contributions, 37 case reports, 20 reviews, 6 PhD dissertations, 5 guidelines, 2 validation studies, 2 clinical trials, 2 chapters in textbooks, 1 Master of Science thesis, and 1 patient education handout. The journal impact factor ranged from 0.0217 to 6.039 (median 3.03). of 91 papers from MEDLINE, 65 were published by Arquivos de Neuro-Psiquiatria. More than 90% of the papers were written in Portuguese. Sao Paulo was the most productive state in the country, followed by Rio de Janeiro, Minas Gerais and Parana. Eighty-two percent of the Brazilian output came from the Southeastern region.

? Zorzetto, R., Razzouk, D., Dubugras, M.T.B., Gerolin, J., Schor, N., Guimaraes, J.A. and Mari, J.J. (2006), The scientific production in health and biological sciences of the top 20 Brazilian universities. *Brazilian Journal of Medical and Biological Research*, **39** (12), 1513-1520.

Full Text: [2006\Bra J Med Bio Res39, 1513.pdf](2006/Bra%20J%20Med%20Bio%20Res39,%201513.pdf)

Abstract: Brazilian scientific output exhibited a 4-fold increase in the last two decades because of the stability of the investment in research and development activities and of changes in the policies of the main funding agencies. Most of this production is concentrated in public universities and research institutes located in the richest part of the country. Among all areas of knowledge, the most productive are Health and Biological Sciences. During the 1998-2002 period these areas presented heterogeneous growth ranging from 4.5% (Pharmacology) to 191% (Psychiatry), with a median growth rate of 47.2%. In order to identify and rank the 20 most prolific institutions in these areas, searches were made in three databases (DataCAPES, ISI and MEDLINE) which permitted the identification of 109,507 original articles produced by the 592 Graduate Programs in Health and Biological Sciences offered by 118 public universities and research institutes. The 20 most productive centers, ranked according to the total number of ISI-indexed articles published during the 1998-2003 period, produced 78.7% of the papers in these areas and are strongly concentrated in the Southern part of the country, mainly in Sao Paulo State.

Keywords: Bibliometric Analysis, Databases, DEC, Development, Funding, Growth, Growth Rate, Health, Health Sciences, Heterogeneous, Human-Resources, Identification, Impact, Information Science, Institutions, ISI, Knowledge, Made, Medline, Order, Output, Production, Rank, Rate, Research, Research and Development, Sciences, Scientific Output, Scientific Production, Scientific Publications, Scientometrics, Stability, Universities

? Torro-Alves, N., Herculano, R.D., Tercariol, C.A.S., Filho, O.K. and Graeff, C.F.O. (2007), Hirsch’s index: A case study conducted at the Faculdade de Filosofia, Ciencias e letras de Ribeirao Preto, Universidade de Sao Paulo. *Brazilian Journal of Medical and Biological Research*, **40** (11), 1529-1536.

Full Text: [2007\Bra J Med Bio Res40, 1529.pdf](2007/Bra%20J%20Med%20Bio%20Res40,%201529.pdf)

Abstract: An analysis of scientific bibliographic productivity using the Hirsch h-index, information from the Institute of Scientific Information database and the Curriculum Lattes (CNPq, Brazil) was performed at the Faculdade de Filosofia, Ciencias e Letras de Ribeirao Preto, Universidade de Sao Paulo (FFCLRP-USP) that has four departments in natural, biological and social sciences. Bibliometric evaluations of undergraduate programs showed a better performance of the departments of Chemistry (P < 0.001) and Biology (P < 0.001) when compared to the departments of Physics and Mathematics and Psychology and Education. We also analyzed the scientific output of the six graduate programs of FFCLRP: Psychology, Psychobiology, Chemistry, Physics Applied to Medicine and Biology, Comparative Biology, and Entomology. The graduate program in Psychology presented a lower h-index (P < 0.001) and had fewer papers indexed by the ISI web of science (P < 0.001) when compared to the other graduate programs. The poorer performance of the Psychology program may be associated with the limited coverage by the Thompson Institute of Scientific Information database.

Keywords: Analysis, Brazil, Case Study, Database, Graduate, h Index, h-Index, h-In\dex, Hirsch h-Index, Information, ISI, Papers, Ranking, Science, Science in Brazil, Sciences, Scientific Output, Scientists, Scientometrics, Social Sciences, Undergraduate, Web

? Mugnaini, R., Packer, A.L. and Meneghini, R. (2008), Comparison of scientists of the Brazilian Academy of Sciences and of the National Academy of Sciences of the USA on the basis of the *h*-index. *Brazilian Journal of Medical and Biological Research*, **41** (4), 258-262.

Full Text: [2008\Bra J Med Bio Res41, 258.pdf](2008/Bra%20J%20Med%20Bio%20Res41,%20258.pdf)

Abstract: A new scientometric indicator, the h-index, has been recently proposed (Hirsch JE. Proc Natl Acad Sci 2005; 102: 16569-16572). The index avoids some shortcomings of the calculation of the total number of citations as a parameter to evaluate scientific performance. Although it has become known only recently, it has had widespread acceptance. A comparison of the average h-index of members of the Brazilian Academy of Sciences (BAS) and of the National Academy of Sciences of the USA (NAS-USA) was carried out for 10 different areas of science. Although, as expected, the comparison was unfavorable to the members of the BAS, the imbalance was distinct in different areas. Since these two academies represent, to a significant extent, the science of top quality produced in each country, the comparison allows the identification of the areas in Brazil that are closer to the international stakeholders of scientific excellence. The areas of Physics and Mathematics stand out in this context. The heterogeneity of the h-index in the different areas, estimated by the median dispersion of the index, is significantly higher in the BAS than in the NAS-USA. No elements have been collected in the present study to provide an explanation for this fact.

Keywords: Acceptance, Articles, Bibliometrics, Brazil, Citations, Comparison, Explanation, h Index, h-Index, Identification, Index h, Indicator, International, Quality, Science, Science Evaluation, Scientific Academy, Scientometric, Scientometrics, USA

? Chaves, C., Marque, C.R., Trzesniak, C., de Sousa, J.P.M., Zuardi, A.W., Crippa, J.A.S., Dursun, S.M. and Hallak, J.E. (2009), Glutamate-N-methyl-D-aspartate receptor modulation and minocycline for the treatment of patients with schizophrenia: An update. *Brazilian Journal of Medical and Biological Research*, **42** (11), 1002-1014.

Full Text: [2009\Bra J Med Bio Res42, 1002.pdf](2009/Bra%20J%20Med%20Bio%20Res42,%201002.pdf)

Abstract: Growing consistent evidence indicates that hypofunction of N-methyl-D-aspartate (NMDA) transmission plays a pivotal role in the neuropathophysiology of schizophrenia. Hence, drugs which modulate NMDA neurotransmission are promising approaches to the treatment of schizophrenia. The aim of this article is to review clinical trials with novel compounds acting on the NMDA receptor (NMDA-R). This review also includes a discussion and translation of neuroscience into schizophrenia therapeutics. Although the precise mechanism of action of minocycline in the brain remains unclear, there is evidence that it blocks the neurotoxicity of NMDA antagonists and may exert a differential effect on NMDA signaling pathways. We, therefore, hypothesize that the effects of minocycline on the brain may be partially modulated by the NMDA-R or related mechanisms. Thus, we have included a review of minocycline neuroscience. The search was performed in the PubMed, Web of Science, SciELO, and Lilacs databases. The results of glycine and D-cycloserine trials were conflicting regarding effectiveness on the negative and cognitive symptoms of schizophrenia. D-serine and D-alanine showed a potential effect on negative symptoms and on cognitive deficits. Sarcosine data indicated a considerable improvement as adjunctive therapy. Finally, minocycline add-on treatment appears to be effective on a broad range of psychopathology in patients with schizophrenia. The differential modulation of NMDA-R neurosystems, in particular synaptic versus extrasynaptic NMDA-R activation and specific subtypes of NMDA-R, may be the key mediators of neurogenesis and neuroprotection. Thus, psychotropics modulating NMDA-R neurotransmission may represent future monotherapy or add-on treatment strategies in the treatment of schizophrenia.

Keywords: Activated Protein-Kinase, Clinical Trial, Conventional Neuroleptic Treatment, Cycloserine Adjuvant Therapy, D-Serine, Double-Blind, Glutamate, Glycine, High-Dose Glycine, Minocycline, Negative Symptoms, NMDA Agonist, Placebo-Controlled Trial, Schizophrenia, Transporter-I Inhibitor, Treatment-Resistant Schizophrenia

? Meneghini, R. (2011), Citations to papers from Brazilian institutions: A more effective indicator to assess productivity and the impact of research in graduate programs. *Brazilian Journal of Medical and Biological Research*, **44** (8), 738-747.

Full Text: [2011\Bra J Med Bio Res44, 738.pdf](2011/Bra%20J%20Med%20Bio%20Res44,%20738.pdf)

Abstract: A recent assessment of 4400 postgraduate courses in Brazil by CAPES (a federal government agency dedicated to the improvement of the quality of and research at the postgraduate level) stimulated a large amount of manifestations in the press, scientific journals and scientific congresses. This gigantic effort to classify 16,400 scientific journals in order to provide indicators for assessment proved to be puzzling and methodologically erroneous in terms of gauging the institutions from a metric point of view. A simple algorithm is proposed here to weigh the scientometric indicators that should be considered in the assessment of a scientific institution. I conclude here that the simple gauge of the total number of citations accounts for both the productivity of scientists and the impact of articles. The effort spent in this exercise is relatively small, and the sources of information are fully accessible. As an exercise to estimate the value of the methodology, 12 institutions of physics (10 from Brazil, one from the USA and one from Italy) have been evaluated.

Keywords: Assessment, Brazil, Capes, Citations, Exercise, Impact, Index, Information, Institutional Assessment, Italy, Journals, Methodology, Papers, Productivity, Qualis, Research, Scientific Journals, Scientific-Research Output, Scientometrics

# Title: Brazilian Journal of Pharmaceutical Sciences

Full Journal Title: Brazilian Journal of Pharmaceutical Sciences

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Funchal-Witzel, M.D.R., de Castro, L.L.C., Romano-Lieber, N.S. and Narvai, P.C. (2011), Brazilian scientific production on pharmaceutical care from 1990 to 2009. *Brazilian Journal of Pharmaceutical Sciences*, **47** (2), 409-420.

Full Text: [2011\Bra J Pha Sci47, 409.pdf](2011/Bra%20J%20Pha%20Sci47,%20409.pdf)

Abstract: Brazilian scientific production on pharmaceutical care was identified based on articles indexed on the Medline, Embase, Lilacs, Web of Science and International Pharmaceutical Abstracts databases. Sixty-three articles published in both national and international journals were retrieved. With regard to authors, 72.3% were from the Southeast and South Regions, and 60.8% were affiliated to public universities. In relation to the type of studies, 85.7% were descriptive, and the most frequently researched fields were community pharmacies, hospitals and primary health care units. Articles were original in 65.1% of cases, updates in 20.6%, and reviews in 7.9%. An increase in publications commenced in 2006. In 31.7% of cases, authors had adopted a bibliographical study design, 28.6% qualitative study, 23.8% intervention, and 15.9% observational study design. The most researched subjects were elderly with chronic diseases. The importance of stimulating the conducting of experimental and qualitative studies, as well as amplifying authorship affiliated with the service area, foreign authors and with research in a wide variety of practice settings were highlighted. Despite the limited quantity of articles, an increase in their number as well as in their scope and quality is expected, so as to create further knowledge that contributes to the recognition of pharmacists’ actions by patient healthcare teams.

Keywords: Articles, Authors, Authorship, Chronic Diseases, Databases, Design, Elderly, Experimental, Health Care, Hospitals, Intervention, Journals, Knowledge, Observational, Pharmaceutical Assistance, Pharmaceutical Care, Pharmaceutical Services, Pharmacies, Pharmacists, Practice, Primary, Primary Health Care, Public Health, Publications, Research, Science, Scientific Production, Web of Science

# Title: Breast Cancer Research

Full Journal Title: [Breast Cancer Research](http://breast-cancer-research.com/home)

ISO Abbreviated Title: Breast Cancer Res.

JCR Abbreviated Title: Breast Cancer Res

ISSN: 1465-542X

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: Biomed Central Ltd

Publisher Address: Middlesex House, 34-42 Cleveland St, London W1T 4LB, England

Subject Categories:

Oncology: Impact Factor 2.817 / (2002)

Maskarinec, G. and Meng, L.X. (2001), An investigation of soy intake and mammographic characteristics in Hawaii. *Breast Cancer Research*, **3** (2), 134-141.

Full Text: [B\Bre Can Res3, 134.pdf](B/Bre%20Can%20Res3,%20134.pdf)

Abstract: This cross-sectional investigation in Hawaii explored the relation between soy foods and mammographic characteristics using two food frequency questionnaires and a computer-assisted density assessment method. Japanese and Chinese women reported significantly greater soy food intake than Caucasian women. Whereas soy intake and the size of the dense areas were not related, soy intake and percent mammographic densities were positively associated. The size of the entire breast and the nondense area (ie the fatty part of the breast) were inversely related to soy intake. These results suggest the hypothesis that soy foods by themselves or as part of an Asian dietary pattern may affect the growth of the female breast before adulthood, but the possible mechanisms of action have to be explored in future studies.

Keywords: Breast Cancer, Ethnicity, Mammographic Densities, Nutrition, Prevention, Soy, Breast-Cancer Risk, Multiethnic Cohort, Menopausal Status, Randomized Trial, Los-Angeles, Densities, Diet, Patterns, Association, Singapore

? Mulvany, F. and Ponder, B.A.J. (2008), *Breast Cancer Research* - the first ten years. *Breast Cancer Research*, **10** (2), Article Number: 103.

Full Text: [2008\Bre Can Res10, 103.pdf](2008/Bre%20Can%20Res10,%20103.pdf)

? Glynn, R.W., Scutaru, C., Kerin, M.J. and Sweeney, K.J. (2010), Breast cancer research output, 1945-2008: A bibliometric and density-equalizing analysis. *Breast Cancer Research*, **12** (6), Article Number: R108.

Full Text: [2010\Bre Can Res12, R108.pdf](2010/Bre%20Can%20Res12,%20R108.pdf)

Abstract: Introduction: Breast cancer is the most common form of cancer among women, with an estimated 194,280 new cases diagnosed in the United States in 2009 alone. The primary aim of this work was to provide an in-depth evaluation of research yield in breast cancer from 1945 to 2008, using large-scale data analysis, the employment of bibliometric indicators of production and quality, and density-equalizing mapping. Methods: Data were retrieved from the Web of Science (WOS) Science Citation Expanded database; this was searched using the Boolean operator, ‘OR’, with different terms related to breast cancer, including “breast cancer”, “mammary ductal carcinoma” and “breast tumour”. Data were then extracted from each file, transferred to Excel charts and visualised as diagrams. Mapping was performed as described by Groneberg-Kloft et al. in 2008. Results: A total of 180,126 breast cancer-associated items were produced over the study period; these had been cited 4,136,224 times. The United States returned the greatest level of output (n = 77,101), followed by the UK (n = 18,357) and Germany (n = 12,529). International cooperation peaked in 2008, with 3,127 entries produced as a result; relationships between the United States and other countries formed the basis for the 10 most common forms of bilateral cooperation. Publications from nations with high levels of international cooperation were associated with greater average citation rates. A total of 4,096 journals published at least one item on breast cancer, although the top 50 most prolific titles together accounted for over 43% (77,517/180,126) of the total output. Conclusions: Breast cancer-associated research output continues to increase annually. In an era when bibliometric indicators are increasingly being employed in performance assessment, these findings should provide useful information for those tasked with improving that performance.

Keywords: Analysis, Assessment, Bibliometric, Bibliometric Indicators, Breast Cancer, Cancer, Citation, Cooperation, Data, Data Analysis, Database, Employment, Evaluation, Forms, Germany, Indicators, Information, International, International Cooperation, Journals, Mapping, Nations, Performance, Primary, Publications, Quality, Rates, Research, Science, UK, United States, Web of Science, Women, Work, WoS

# Title: Breast Cancer Research and Treatment

Full Journal Title: [Breast Cancer Research and Treatment](http://www.kluweronline.com/issn/0167-6806/)

ISO Abbreviated Title: Breast Cancer Res. Treat.

JCR Abbreviated Title: Breast Cancer Res Treat

ISSN: 0167-6806

Issues/Year: 18

Journal Country/Territory: United States

Language: English

Publisher: Kluwer Academic Publ

Publisher Address: Spuiboulevard 50, PO Box 17, 3300 AA Dordrecht, Netherlands

Subject Categories:

Oncology: Impact Factor 2.817, 38/114 (2002)

? Elliott, R.L., Head, J.F. and Mccoy, J.L. (1994), Relationship of serum and tumor levels of iron and iron-bindingproteins to lymphocyte immunity against tumor-antigen in breast-cancer patients. *Breast Cancer Research and Treatment*, **30** (3), 305-309.

Full Text: [1994\Bre Can Res Tre30, 305.pdf](1994/Bre%20Can%20Res%20Tre30,%20305.pdf)

Abstract: Fifty-two breast cancer patients were evaluated for levels of several molecules related to iron metabolism including determining their turner tissue and serum ferritin levels, serum transferrin levels, and serum iron levels. In addition the patients’ lymphocyte immunity against autologous tumor antigen was investigated. Forty percent (21 of 52) of the patients had lymphocyte immunity against tumor antigen. Iron metabolism molecules were expressed in abnormal quantities in some breast cancer patients: 27% (13 of 49) had elevated tumor tissue ferritin levels, 4% (2 of 49) had abnormally high serum ferritin, 10% (5 of 49) had abnormally low serum transferrin levels, and 43% (21. of 49) had depressed serum iron levels. None of these abnormalities in iron metabolism are associated with tumor immunity. These iron metabolism molecules may be indicative of rates of cell proliferation or may influence growth of breast cancer cells, but do not appear to influence host lymphocyte immunity against tumor associated antigens.

Keywords: Tissue Ferritin Concentration, Carcinoma, Transferrin, Breast Cancer, Immunity, Tumor Antigen, Ferritin, Iron, Transferrin

? Bull, A.A., Meyerowitz, B.E., Hart, S., Mosconi, P., Apolone, G. and Liberati, A. (1999), Quality of life in women with recurrent breast cancer. *Breast Cancer Research and Treatment*, **54** (1), 47-57.

Full Text: [B\Bre Can Res Tre54, 47.pdf](B/Bre%20Can%20Res%20Tre54,%2047.pdf)

Abstract: Although the psychosocial concomitants of early-stage breast cancer have been well-documented, the relationship between cancer recurrence and quality of life remains less clear. We conducted a prospective, longitudinal study in order to clarify the relationship between recurrent cancer and quality of life, and to determine predictors of quality of life following recurrence. Sixty-nine women with recurrent breast cancer completed questionnaires assessing multiple components of quality of life at three time points: prior to recurrence, immediately after the diagnosis of recurrence, and at follow-up 6 months later. Perceptions of overall quality of life, general health status, emotional, social, and physical functioning were poorer immediately following the diagnosis of recurrence than they had been prior to recurrence. These women also evidenced significant improvement in several domains of quality of life between initial recurrence and follow-up, nonetheless, most areas of quality of life were impaired compared to pre-recurrence. Self-reported physical symptoms were a strong predictor of post-recurrence ratings of overall quality of life. These data suggest that the recurrence of breast cancer is associated with significant changes in quality of life. Quality of life did not progressively deteriorate, however, attesting to the resilience of women coping with this major stressor. These data shed light on issues of potential importance to patients managing this serious illness and may have implications for health-care professionals working with this population.

Keywords: Of-Life, Adjustment, Diagnosis, Disease, Breast Cancer, Cancer Recurrence, Psychosocial, Quality of Life

? Pierce, B.L., Neuhouser, M.L., Wener, M.H., Bernstein, L., Baumgartner, R.N., Ballard-Barbash, R., Gilliland, F.D., Baumgartner, K.B., Sorensen, B., McTiernan, A. and Ulrich, C.M. (2009), Correlates of circulating C-reactive protein and serum amyloid A concentrations in breast cancer survivors. *Breast Cancer Research and Treatment*, **114** (1), 155-167.

Full Text: [2009\Bre Can Res Tre114, 155.pdf](2009/Bre%20Can%20Res%20Tre114,%20155.pdf)

Abstract: Introduction Inflammatory status may be an important prognostic factor for breast cancer. Correlates of markers of inflammation in breast cancer survivors have not been thoroughly evaluated. Methods Using data from, the Health, Eating, Activity, and Lifestyle (HEAL) Study (a population-based, multiethnic prospective cohort study of female breast cancer patients) we evaluated the associations between circulating markers of inflammation (C-reactive protein [CRP] and serum amyloid A [SAA], measured similar to 31 months after diagnosis) and several demographic, lifestyle, and clinical characteristics in 741 disease-free breast cancer survivors. Analysis of variance and regression methods were used for statistical analyses of log-transformed values of CRP and SAA. Results After adjusting for age, BMI, ethnicity, and study site, higher concentrations of CRP were associated with increasing concentration of SAA (P-trend < 0.0001), increasing age (P-trend < 0.0001), increasing BMI (P-trend < 0.0001), increasing waist circumference (P-trend < 0.0001), positive history of heart failure (P = 0.0007), decreasing physical activity (P-trend = 0.005), Hispanic ethnicity (P = 0.05 vs. non-Hispanic white), and current smoking (P = 0.03 vs. never smoking). Vitamin E supplementation (P = 0.0005), tamoxifen use (P = 0.008), and radiation treatment (compared to no chemotherapy or radiation; P = 0.04) were associated with reduced CRP. Associations of CRP with clinical characteristics were not significant in the adjusted models. In a multivariate analysis, CRP showed significant associations with waist circumference, BMI, age, history of heart failure, tamoxifen use, and vitamin E supplementation (R-2 = 0.35). Similar, yet fewer, associations were observed for SAA (R-2 = 0.19). Conclusions This study highlights important correlates of inflammatory status in breast cancer patients. Our results are consistent with those from similar studies of healthy women.

Keywords: Acute-Phase Response, Alpha-Tocopherol, Body Mass Index, Breast Cancer, C-Reactive Protein, Cancer, Coronary-Heart-Disease, Curative Resection, Inflammation, Nonsteroidal Antiinflammatory Drugs, Physical-Activity Levels, Prevent Colorectal Adenomas, Randomized-Trial, Serum Amyloid A, Systemic Inflammatory Response, Treatment, Weight-Loss

? Ma, X.Y., Chen, C.H., Xiong, H.Y., Fan, J., Li, Y.F., Lin, H., Xu, R.F., Huang, G.R. and Xu, B. (2010), No association between SOD2 Val16Ala polymorphism and breast cancer susceptibility: A meta-analysis based on 9,710 cases and 11,041 controls. *Breast Cancer Research and Treatment*, **122** (2), 509-514.

Full Text: [2010\Bre Can Res Tre122, 509.pdf](2010/Bre%20Can%20Res%20Tre122,%20509.pdf)

Abstract: Breast cancer is the most common cancer in women worldwide, but its etiology is still unclear. It is believed that oxidative stress plays an essential role in the development of breast cancer, while SOD2 is one of the primary enzymes that directly convert potential harmful oxidizing species to harmless metabolites. The association of SOD2 Val16Ala polymorphism and breast cancer risk has been widely reported, but results of previous studies were somewhat contradictory and underpowered. To overcome the limitations of individual study and to understand the real situation, we conducted a systematic review and meta-analysis toward the association between SOD2 Val16Ala polymorphism and breast cancer. Through retrieving MEDLINE, PUBMED, EMBASE, and Web of Science, a total of 17 studies with 9,710 cases and 11,041 controls were identified. The results showed that no significant associations were found for the allele contrast (allele Ala vs. allele Val: OR = 1.020, 95% CI = 0.979-1.062), additive genetic model (Ala/Ala vs. Val/Val: OR = 1.091, 95% CI = 0.969-1.229), dominant genetic model (Ala/Ala +Ala/Val vs. Val/Val: OR = 1.045, 95% CI = 0.961-1.136), and recessive genetic model (Ala/Ala vs. Val/Val +Ala/Val: OR = 1.027, 95% CI = 0.956-1.102). In the stratified analysis by ethnicity and menopausal status, significant associations were also not detected in all genetic models. Conclusively, this meta-analysis strongly suggests that SOD2 Val16Ala polymorphism is not associated with breast cancer susceptibility.

Keywords: Ala-9val Polymorphism, Analysis, Antioxidants, Breast Cancer, Cancer, Clinical-Trials, Development, Environmental Modifiers, Ethnicity, Etiology, Genetic, Genotype, Manganese Superoxide-Dismutase, Medline, Meta-Analysis, Metabolites, Mnsod Gene Polymorphism, Model, Oxidative Stress, Polymorphism, Population, Primary, PUBMED, Review, Risk, Science, SOD2, Stress, Susceptibility, Systematic, Systematic Review, Web of Science, Women

? Ma, X.Y., Chen, C.H., Xiong, H.Y. and Li, Y.F. (2010), Transforming growth factor beta 1 L10P variant plays an active role on the breast cancer susceptibility in Caucasian: Evidence from 10,392 cases and 11,697 controls. *Breast Cancer Research and Treatment*, **124** (2), 453-457.

Full Text: [2010\Bre Can Res Tre124, 453.pdf](2010/Bre%20Can%20Res%20Tre124,%20453.pdf)

Abstract: In view of the essential role of Transforming Growth Factor beta 1 (TGFB1) on both inhibiting the development of early benign breast tumors as well as promoting tumor invasion, the association of TGFB1 L10P polymorphism and breast cancer risk has been widely reported, but results of previous studies were somewhat contradictory and underpowered. To overcome the limitations of individual study and to understand the real situation, we conducted a systematic review and meta-analysis towards the association between TGFB1 L10P polymorphism and breast cancer. Through retrieving MEDLINE, PUBMED, EMBASE, and Web of Science, a total of 16 studies with 10,392 cases and 11,697 controls were identified. The results showed that significant association was found in the recessive genetic model for Caucasian (OR = 1.152, 95% CI = 1.020-1.301). However, we did not find any associations in additive genetic model (PP vs. LL for total: OR = 1.026, 95% CI = 0.940-1.121), allele contrast (L vs. P for total: OR = 1.004, 95% CI = 0.966-1.044), and dominant genetic model (PP + LP vs. LL for total: OR = 1.001, 95% CI = 0.946-1.061). Conclusively, this meta-analysis strongly suggests that TGFB1 L10P polymorphism may play a low penetrance role in breast cancer susceptibility in Caucasian. Large well-designed epidemiological studies will be necessary to validate the risk identified in the current meta-analysis.

Keywords: Association, Breast Cancer, Cancer, Clinical-Trials, Development, Genetic, Genotype, Growth-Factor-Beta, Medline, Meta-Analysis, Metaanalysis, Model, Polymorphism, Polymorphisms, Predict, PUBMED, Review, Risk, Science, Susceptibility, Systematic, Systematic Review, Tgf-Beta-1, Tgfb1, Transforming-Growth-Factor-Beta-1 Gene, Web of Science

? Yu, K.D., Rao, N.Y., Chen, A.X., Fan, L., Yang, C. and Shao, Z.M. (2011), A systematic review of the relationship between polymorphic sites in the estrogen receptor-beta (ESR2) gene and breast cancer risk. *Breast Cancer Research and Treatment*, **126** (1), 37-45.

Full Text: [2011\Bre Can Res Tre126, 37.pdf](2011/Bre%20Can%20Res%20Tre126,%2037.pdf)

Abstract: The estrogen signal is mediated by the estrogen receptor (ER). The specific role of ER-beta, a second ER, in breast carcinogenesis is not known. A number of association studies have been carried out to investigate the relationship between polymorphic sites in the ESR2 gene and breast cancer risk, however, the results are inconsistent. We searched PUBMED, Medline, and Web of Science database (updated to 10 January 2010) and identified 13 relevant case-control studies, and approximately 28 single-nucleotide polymorphisms (SNPs) and one micro-satellite marker were reported in the literature. The median number of study subjects was 776 (range 158-13,550). Three genetic variants [(CA)n, rs2987983, and rs4986938] showed significant overall associations with breast cancer, and rs4986938 was reported twice. Because rs4986938 and rs1256049 were the most extensively studied polymorphisms, we subsequently conducted a meta-analysis to evaluate their relationship with breast cancer risk (9 studies of 10,837 cases and 16,021 controls for rs4986938; 8 studies of 11,652 cases and 15,726 controls for rs1256049). For rs4986938, the women harboring variant allele seemed to be associated with a decreased risk either in the dominant model [pooled OR = 0.944, 95% confidence interval (95% CI) 0.897-0.993, fixed-effects] or in the co-dominant model (AG vs. GG) (OR = 0.944, 95% CI 0.895-0.997, fixed-effects). rs1256049 was not associated with breast cancer risk in any model. Five studies had investigated the effect of haplotypes in the ESR2 gene on breast cancer risk, and four of them had positive outcomes. In summary, the present systematic review suggests that SNP rs4986938 as well as haplotypes in the ESR2 gene might be associated with breast cancer. The need for additional studies examining these issues seems of vital importance.

Keywords: Alpha, Association, Breast Cancer, Cancer, Carcinogenesis, Case-Control Studies, Disease, ER-Beta, ESR2, Estrogen, Genetic, Haplotypes, Literature, Meta-Analysis, Model, Outcomes, Polymorphism, Polymorphisms, Promoter Region, PUBMED, Review, Risk, Science, Sequence Variants, Single Nucleotide, Susceptibility, Systematic, Systematic Review, Web of Science, Women

? Healy, N.A., Glynn, R.W., Scutaru, C., Groneberg, D., Kerin, M.J. and Sweeney, K.J. (2011), The *h* index and the identification of global benchmarks for breast cancer research output. *Breast Cancer Research and Treatment*, **127** (3), 845-851.

Full Text: [2011\Bre Can Res Tre127, 845.pdf](2011/Bre%20Can%20Res%20Tre127,%20845.pdf)

Abstract: The h index is used to assess an individual’s contribution to the literature. This metric should not be employed to compare individuals across research areas; rather each subject should have its own baseline and standard. This work aimed to identify global bibliometric benchmarks for those involved in breast cancer research, and specifically, to describe the bibliographic characteristics of breast surgeons in the UK and Ireland. Authorship data was extracted from breast cancer related output from 1945 to 2008, as indexed in the Web of Science. Authors’ publications, citations and h indexes were identified. The breast-related output of 277 UK and Irish breast surgeons was evaluated, and a citation report generated for each. Strong correlation was noted between the h index and number of publications (r = 0.642, P < 0.001) and number of total citations (r = -0.922, P < 0.001). The author with the highest h index is B Fisher (h index = 80). 23.0% of surgeons had not published original research pertaining to the breast; the remainder had together produced 2,060 articles, accounting for 59,002 citations. The top quartile was responsible for 83% of output; the 90th percentile was 20 publications. The range of h index values for the surgeons was 0-50, with a median h index returned of 3 (IQR 1-6); the 90th percentile was 13.5. This work has identified bibliometric benchmarks to which those involved in breast cancer research might aspire. Our findings suggest that there is need for wider involvement of surgeons in the research process and raises questions regarding the future of scientific breast surgery.

Keywords: h Index, Breast Surgeon, Research Output, Breast Cancer, Scientists

? Peng, S.H., Lu, B.J., Ruan, W.J., Zhu, Y.M., Sheng, H.Q. and Lai, M.D. (2011), Genetic polymorphisms and breast cancer risk: Evidence from meta-analyses, pooled analyses, and genome-wide association studies. *Breast Cancer Research and Treatment*, **127** (2), 309-324.

Full Text: [2011\Bre Can Res Tre127, 309.pdf](2011/Bre%20Can%20Res%20Tre127,%20309.pdf)

Abstract: To address the association between variants and breast cancer, an increasing number of articles on genetic association studies, genome-wide association studies (GWASs), and related meta- and pooled analyses have been published. Such studies have prompted an updated assessment of the associations between gene variants and breast cancer risk. We searched PUBMED, Medline, and Web of Science and retrieved a total of 87 meta- and pooled analyses, which addressed the associations between 145 gene variants and breast cancer. Analyses met the following criteria: (1) breast cancer was the outcome, (2) the articles were all published in English, and (3) in the recent published meta- and pooled analyses, the analyses with more subjects were selected. Among the 145 variants, 46 were significantly associated with breast cancer and the other 99 (in 62 genes) were not significantly associated with breast cancer. The summary ORs for the 46 significant associations (P < 0.05) were further assessed by the method of false-positive report probability (FPRP). Our results demonstrated that 10 associations were noteworthy: CASP8 (D302H), CHEK2 (\*1100delC), CTLA4 (+49G > A), FGFR2 (rs2981582, rs1219648, and rs2420946), HRAS (rare alleles), IL1B (rs1143627), LSP1 (rs3817198), and MAP3K1 (rs889312). In addition, eight GWASs were identified, in which 25 loci were obtained (14 in nine genes, six near a gene or genes, and five intergenic loci). of the 25 SNPs, 20 were noteworthy: C6orf97 (rs2046210 and rs3757318), FGFR2 (rs2981579, rs1219648, and rs2981582), LSP1 (rs909116), RNF146 (rs2180341), SLC4A7 (rs4973768), MRPS30 (rs7716600), TOX3 (rs3803662 and rs4784227), ZNF365 (rs10995190), rs889312, rs614367, rs13281615, rs13387042, rs11249433, rs1011970, rs614367, and rs1562430. In summary, in this review of genetic association studies, 31.7% of the gene-variant breast cancer associations were significant, and 21.7% of these significant associations were noteworthy. However, in GWASs, 80% of the significant associations were noteworthy.

Keywords: Assessment, Breast Cancer, Cancer, Complex Traits, Contributes, Diseases, Epidemiology, Family, FGFR2, Genetic, Genome-Wide Association Study, Greater-Than, Meta-Analysis, Outcome, Polymorphism, Polymorphisms, Pooled Analysis, PUBMED, Review, Risk, Science, Sequence, Susceptibility Loci, Variants, Web of Science

? van den Broek, A.J., Broeks, A., Horlings, H.M., Canisius, S.V.M., Braaf, L.M., Langerod, A., Van’t Veer, L.J. and Schmidt, M.K. (2011), Association between polymorphisms of the renin-angiotensin system genes and breast cancer risk: A meta-analysis. *Breast Cancer Research and Treatment*, **130** (2), 599-608.

Full Text: [2011\Bre Can Res Tre130, 599.pdf](2011/Bre%20Can%20Res%20Tre130,%20599.pdf)

Abstract: The renin-angiotensin system (RAS) has been considered to be implicated in the development of breast cancer. However, the results are inconsistent. In this study, we conducted a meta-analysis to assess the association between four polymorphisms, including angiotensin I-converting enzyme (ACE) I/D and A240T, angiotensin II type 1 receptor (AGTR1) A1166C and angiotensinogen (AGT) M235T polymorphisms, and breast cancer risk. Published literature from PubMed, ISI web of science, and Embase databases were retrieved. All studies evaluating the association between ACE I/D, ACE A240T, AGTR1 A1166C, or AGT M235T polymorphism and breast cancer risk were included. Pooled odds ratio (OR) with 95% confidence interval (CI) was calculated using fixed- or random-effects model. Ten studies (1,650 cases and 9,283 controls) on ACE I/D polymorphism, six studies (1,316 cases and 2,632 controls) on ACE A240T polymorphism, three studies (235 cases and 601 controls) on AGTR1 A1166C polymorphism, and two studies (273 cases and 3,547 controls) on AGT M235T polymorphism were included. Overall, the meta-analysis showed no significant association between I/D or A240T polymorphism and breast cancer risk in either genetic model. Further subgroup analysis by ethnicity also revealed non-significant association in Caucasian or Asian populations except for Africans (the statistically significant association for ACE I/D or A240T polymorphism in Africans derived from only one study). A marginally significant association was observed for AGTR1 A1166C polymorphism in Caucasians (CC vs. AA: OR = 0.31, 95% CI 0.10-0.99). In addition, there was a significant association between AGT M235T polymorphism and breast cancer risk in Caucasians (OR = 1.45, 95% CI 1.12-1.88). The present meta-analysis suggested that ACE I/D and A240T polymorphisms might not be a good predictor of breast cancer risk, while AGTR1 A1166C and AGT M235T polymorphisms might be implicated in the pathogenesis of breast cancer. Given the limited sample size, the findings warrant further investigation.

Keywords: Analysis, Author, Breast Cancer, Breast Cancer Survival, Cancer, Databases, Development, Ethnicity, Expression Signature, Gene Expression Profiling, Genetic, ISI, Li-Fraumeni-Syndrome, Literature, MDM2, MDM2 SNP309, Meta Analysis, Meta-Analysis, Model, Mutations, P53 Gene, Pathogenesis, Polymorphism, Polymorphisms, Prognosis, Psychosocial, Pubmed, Ratio, Risk, Science, Single Nucleotide Polymorphism, Survival, TP53, TP53 Codon-72 Polymorphism, Tumor Subgroups, Tumor-Suppressor Pathway, Type 1, Web of Science

? Zhao, S., Liu, Y.P., Zhang, Q.Y., Li, H.B., Zhang, M.H., Ma, W.J., Zhao, W.H., Wang, J.X. and Yang, M.P. (2011), The prognostic role of circulating tumor cells (CTCs) detected by RT-PCR in breast cancer: A meta-analysis of published literature. *Breast Cancer Research and Treatment*, **130** (3), 809-816.

Full Text: [2011\Bre Can Res Tre130, 809.pdf](2011/Bre%20Can%20Res%20Tre130,%20809.pdf)

Abstract: The prognostic significance of circulating tumor cells (CTCs) in patients with breast cancer is controversial. We performed a meta-analysis of published literature to assess whether the detection of CTCs in patients diagnosed with primary breast cancer can be used as a prognostic factor. We searched Medline, Science Citation Index, and Embase databases as well as reference lists of relevant articles (including review articles) for studies that assessed the prognostic relevance of tumor cell detection in the peripheral blood (PB). A total of 24 eligible studies with 4,013 cases and 1,333 controls were included. Meta-analyses were performed using a random-effects model, using the hazard ratio (HR) and 95% confidence intervals (95% CIs) as effect measures. The positive detection of CTCs in patients was significantly associated with poor overall survival (OS) (HR = 3.00 [95% CI 2.29-3.94], n = 17, P < 0.0001) and recurrence-free survival (RFS) (HR = 2.67 [95% CI 2.09-3.42], n = 22, P < 0.0001). CTC-positive breast cancers were significantly associated with high histological grade (HR = 1.21 [95% CI 1.09-1.35], n = 34, P < 0.0001), tumor size (> 2 cm) (HR = 1.12 [95% CI 1.02-1.22], n = 31, P = 0.01). and nodal status (a parts per thousand yen1) (HR = 1.10 [95% CI 1.00-1.21], n = 32, P = 0.037), but cytokeratin-19 (CK-19) mRNA-positive CTCs were not associated with these clinicopathological parameters of breast cancer. Furthermore, the presence of CTCs was not associated with estrogen receptor (ER) negativity, progesterone receptor (PR) negativity, or human epidermal growth factor receptor type 2 (HER2) positivity. Detection of CTCs in the PB indicates poor prognosis in patients with primary breast cancer. Larger clinical studies are required to further evaluate the role of these markers in clinical practice.

Keywords: Adjuvant Chemotherapy, Blood, Bone-Marrow, Breast Cancer, Cancer, Circulating Tumor Cells, Citation, Confidence Intervals, Cytokeratin-19, Databases, Estrogen, Expression, Growth, HER2, Human, Literature, Mammaglobin Messenger-RNA, Medline, Meta Analysis, Meta-Analysis, Model, Molecular-Detection, Patients, Pb, Peripheral-Blood, Practice, Primary, Progesterone, Prognosis, Ratio, Review, RNA-Positive Cells, RT-PCR, Science, Science Citation Index, Survival, Survivin, Type 2

# Title: Brennstoff-Warme-Kraf

Full Journal Title: Brennstoff-Warme-Kraft

ISO Abbreviated Title: Brennst.-Warme-Kraft

JCR Abbreviated Title: Brennst-Warme-Kraft

ISSN: 0006-9612

Issues/Year: 9

Journal Country/Territory: Germany

Language: English

Publisher: Springer-V D I Verlag GmbH

Publisher Address: Attn: Mrs. Claudia Banos, Heinrichstrasse 24, D-40239 Dusseldorf, Germany

Subject Categories:

Thermodynamics: Impact Factor

Energy & Fuels: Impact Factor

Engineering, Mechanical: Impact Factor

? (1993), Construction and operation of an incinerator in BONN. *Brennstoff-Warme-Kraft*, **45** (10), E11-??.

? Furmaier, B. (1993), New special waste incinerator in ebenhausen. *Brennstoff-Warme-Kraft*, **45** (10), E19-??.

? Kanczarek, A. and Marko, R. (1996), Low-temperature incinerator in Furth shortly before completion. *Brennstoff-Warme-Kraft*, **48** (10), A30 (4 pages).

# Title: The British Accounting Review

Full Journal Title: The British Accounting Review

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Beattie, V. and Goodacre, A. (2004), Publishing patterns within the UK accounting and finance academic community. *The British Accounting Review*, **36** (1), 7-44.

Full Text: [B\Bri Acc Rev36, 7.pdf](B/Bri%20Acc%20Rev36,%207.pdf)

Abstract: This study reports on publishing patterns in the UK and Irish accounting and finance academic community for the 2-year period 1998–1999 using the data contained in the *BAR Research Register*. It is found that the community has been growing modestly since 1991, with a doubling in the number of PhD-qualified staff (to 30%) and a reduction in the number with a professional qualification (from 81 to 58%). Nearly half of all outputs appear in other than academic journals. The mean number of publications is 1.76 per capita, with significantly more staff active in publishing than in 1991 (44% compared to 35%). However, only 17% publish in a subset of 60 ‘top’ journals. Just over half of all articles are published in the core discipline journals, the rest appearing mainly in management, economics, sociology, education and IT journals. This may indicate a growing maturity in the disciplines, whereby applied research findings are flowing back into related foundation and business disciplines. Nearly two-thirds of academic articles are co-authored, with 25% of contributions coming from outside the community, indicating an openness to interdisciplinary collaboration, collaboration with overseas academics and collaboration with individuals in practice. The findings of this study will be of assistance to those making career decisions (either their own career or decisions involving other people’s careers). They also raise awareness of the way in which the accounting and finance disciplines are developing.

Keywords: Co-Authorship, Journals, Non-Serial Publications, Publication Media, Scholarly Knowledge Development

# Title: British Dental Journal

Full Journal Title: [British Dental Journal](http://www.nature.com/bdj/archive/index.html)

ISO Abbreviated Title: Br. Dent. J.

JCR Abbreviated Title: Brit Dent J

ISSN: 0007-0610

Issues/Year: 24

Journal Country/Territory: England

Language: English

Publisher: Prof Sci Publ

Publisher Address: Tavistock House East, Tavistock Square, London, England WC1H 9JR

Subject Categories:

Dentistry, Oral Surgery & Medicine: Impact Factor

? Macfadyen, E.E., Mcnee, S.G. and Weetman, D.A. (1982), Fluoride content of some bottled spring waters. *British Dental Journal*, **153** (12), 423-424.

? Stephen, K.W. (1984), Children and swallowed toothpaste. *British Dental Journal*, **156** (8), 274-274.

? Clarkson, J. (1992), A European view of fluoride supplementation. *British Dental Journal*, **172** (9), 357-357.

Abstract: During the autumn of 1991 a meeting was convened in Brussels by Colgate entitled ‘European view of fluoride supplementation’. Throughout Europe, product dosage and age related dose recommendations for fluoride supplements vary widely. With the advent of 1992, different instructions on the same packet would cause considerable confusion in a more integrated Europe with its mobile and multilingual society. Colgate therefore decided to convene a meeting of European experts to explore the possibility of reaching a consensus on a common dosage regime of fluoride tablets and drops for Europe. The meeting consisted of a series of short papers by European experts in the field followed by detailed discussion.

? Toumba, K.J., Levy, S. and Curzon, M.E.J. (1994), The fluoride content of bottled drinking waters. *British Dental Journal*, **176** (7), 266-268.

Abstract: Sales of bottled drinking waters in the United Kingdom have tripled over the last 5 years. The fluoride content of 12 bottled waters purchased from two Leeds supermarkets was determined by both the direct and acid diffusion methods and found to vary from 0.10-0.80 mg/l fluoride (ie ppm fluoride). This article shows that bottled drinking waters contain differing concentrations of fluoride. There is no apparent difference between the direct and acid diffusion methods for the determination of fluoride concentrations of drinking waters. The manufacturers’ labelling of fluoride concentrations are mainly inaccurate. Dentists should be aware of the fluoride concentrations of the drinking water of their child patients, be they municipal or bottled drinking water, when prescribing fluoride supplements. Also, some parents are using bottled waters to prepare baby milk formulations which themselves may contain high levels of fluoride and subject their children to the risk of dental fluorosis.

? Burt, B.A. (1995), Fifty years of water fluoridation. *British Dental Journal*, **178** (2), 49-50.

Abstract: On January 25, 1945, the city of Grand Rapids, Michigan, began adding sodium fluoride to its drinking water. This action culminated a 14-year period of research which continues to have far-reaching effects on both public health and the practice of dentistry. The fact that the oral health of children and young adults today has never been higher is a direct consequence of this research. These events, and the group of rather extraordinary people who were the principal actors in them, are so important a part of dentistry’s development that they are worth a brief retelling.

? Watt, R. and Sheiham, A. (1999), Inequalities in oral health: A review of the evidence and recommendations for action. *British Dental Journal*, **187** (1), 6-12.

Abstract: Reducing inequalities in health has become one of the main health policy issues in the late 1990s. TheLabour Government set vp an independent inquiry into inequalities in health under Sir DonaldAcheson to make recommendations on approaches to reducing health inequalities. This paper reviewsthe evidence on inequalities in oral health in Britain.Dramatic improvements in dental health in children and young adults have taken place in the past 30years. The levels of caries in permanent teeth of children is low. Widening inequalities in oral healthhowever exist between social classes, regions of England, and among certain minority ethnic groups inpre-school children. The main social class and minority ethnic differences in dental caries is inpre-school children. Wide district and regional differences also exist in prevalence of caries in youngchildren. The area differences relate very strongly to deprivation. In adults the differences in decayexperience is less unequal than in children but there are marked social class inequalities inedentulousness.Dental caries decreased in all social classes in the United Kingdom. The main causes of theinequalities are differences in patterns of consumption of non milk extrinsic sugars and fluoridatedtoothpaste. Improvements in oral health that have occurred over the last 30 years have been largely aresult of fluoride toothpaste and social, economic and environmental factors. Oral health inequalitieswill only be reduced through the implementation of effective and appropriate oral health promotionpolicy. Treatment services will never successfully cackle the underlying cause of oral diseases.

Keywords: Periodontal-Diseases, Caries Experience, United-States, Dental-Health, Tooth Loss, Fluoridation, Deprivation, Cancer, Water

? Luther, F. (2007), TMD and occlusion part I. Damned if we do? Occlusion: the interface of dentistry and orthodontics. *British Dental Journal*, **202** (1), ??-??.

Abstract: Objectives To review how occlusion, facial growth, TM disc position and malocclusion may relate to TMD; to review clinical studies investigating TMD pre- and post-orthodontic treatment as well as other studies linking occlusal features with TMD highlighting their limitations; and to make suggestions for improved study designs in the future in order to provide an evidence-base for clinical practice. Design Review article. Methods Electronic databases (MEDLINE and the Cochrane Database of Systematic Reviews) were used to select relevant and frequently cited studies (mean: 28 citations). Citation rate was confirmed using the Web of Science. Study designs are reviewed and weaknesses discussed. Results Evidence is lacking to suggest static occlusal factors cause TMD. Conclusions Poor study designs have led to much of the controversy over whether occlusal factors (including orthodontics) ‘cause’ TMD. In order to provide an evidence-base for future clinical practice, suggestions to improve study designs are made.

Keywords: Asymptomatic Volunteers, Citation, Citations, Cochrane, Craniomandibular Disorders, Databases, Disk Displacement, Functional Occlusion, Lateral Cephalometric Analysis, Long-Term, Mandibular Dysfunction, Medline, Methods, Pediatric Internal Derangements, Practice, Review, Science, Symptomatic Patients, Systematic, Temporomandibular-Joint Disorders, Treatment, Web of Science

? Luther, F. (2007), TMD and occlusion part II. Damned if we don’t? Functional occlusal problems: TMD epidemiology in a wider context. *British Dental Journal*, **202** (1), ??-??.

Abstract: Objectives To review studies investigating how functional occlusion may relate to TMD and how bruxism may relate to TMD; to review the epidemiology of TMD and relate this to the context of clinical occlusal studies and other aetiological factors. Deficiencies in study design are highlighted and suggestions made to improve future study designs in order to provide an evidence-base for clinical practice. Design Review article. Methods Electronic databases (MEDLINE and the Cochrane Database of Systematic Reviews) were used to select relevant and frequently cited studies (mean: 40 citations). Citation rate was confirmed using the Web of Science. Study designs are reviewed and weaknesses and implications discussed. Results Evidence is lacking to suggest functional occlusal factors cause TMD. Investigation of other aetiological factors has been relatively neglected. Conclusions Neither static nor dynamic occlusal factors (including orthodontics) can be said to ‘cause’ TMD. However, other potential aetiological factors exist which would benefit from more investigation. This, together with improved study designs, would help provide a stronger evidence-base for clinical practice in the future.

Keywords: Adjustment, Association, Bruxism, Citation, Citations, Cochrane, Craniomandibular Disorders, Databases, Epidemiology, Functional, Interferences, Joint, Medline, Methods, Practice, Review, Science, Signs, Skeletal, Symptoms, Systematic, Temporomandibular Disorders, Web of Science

? Miguel, J.C., Kay, E.J. and Lowe, J.C. (2007), Shirley Glasstone Hughes memorial prize for dental research: An evaluation of the output 15 years after the Trust’s inception. *British Dental Journal*, **203**, 535-541.

Full Text: [2007\Bri Den J203, 535.pdf](2007/Bri%20Den%20J203,%20535.pdf)

Abstract: In May 2005, a decision was taken by the Shirley Glasstone Hughes (SGH) Foundation trustees to suspend investments in research for one year, to allow a review of the outcomes of SGH research funding over the past 15 years. Money was instead directed to the BDA Research Unit, to employ a staff member who would conduct the evaluation under the supervision of the BDA Scientific Adviser. The evaluation focused on three aspects of the research produced: 1) relevance to primary dental care, 2) scientific quality and impact on the research community, and 3) grant recipients’ feelings about SGH funding and whether the mechanisms of supporting research could be improved. The methods used included questioning BDA members about the research they found of interest and relevance, checking research outputs against standardised quality criteria, examining impact factors and citation rates (relative to the funding received) and questioning grant recipients about their experience with SGH funding. The results implied that the fund had largely been spent on research themes felt to be relevant to practice by BDA members. In addition, the publication rate, publication quality, impact and citation indices demonstrated the SGH research work to be largely of high quality. Recipients of the fund indicated several factors which might improve the experience of receiving funding and possibly also improve the research output. It can be concluded that the SGH funds have largely been well spent but that it is worth considering implementing changes which would make the research findings of greater relevance to clinical practice.

# Title: British Food Journal

Full Journal Title: British Food Journal

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Batista, S.M.M., Teixeira, E., de Francisco, A. and Assis, M.A.A. (2008), Food glycaemic index, satiety and chronic diseases. *British Food Journal*, **110** (10-11), 965-976.

Abstract: Purpose - This review aims to document the influence of low glycaemic index (LGI) and low glycaemic load (LGL) foods over food satiety, their utilisation in clinical practice, and their importance in the prevention and control of diseases such as obesity, diabetes and cardiopathies. It also aims to discuss the inclusion of glycaemic index (GI) information in food labels as an important tool for the consumer who wishes to make healthier choices. Design/methodology/approach - An extensive literature search was conducted in the Web of Science, Pub Med and Medline databases, as well as in reference lists from the scientific articles retrieved in the search. Findings - Most of the articles presented similar results regarding the substitution of high glycaemic index (HGI) foods for low GI ones. In diabetics there was an improvement in the glycaemic and lipid profiles control, and in the obese, weight reduction and reduced cardiovascular complications risk were observed. Foods with higher satiety potential were identified as those with lower GIs, which reduce appetite, cause less glycaemic oscillations in diabetics, and lower caloric intake in the obese. Originality/value - This revision evidenced the benefits of LGI foods over satiety and palatability, and discussed their effect in the treatment of chronic non-transmissible diseases such as obesity and diabetes.

Keywords: Blood-Glucose, Carbohydrate Intake, Carbohydrates, Cardiovascular, Consumer, Control, Databases, Density, Diabetes, Dietary Fiber, Energy-Intake, Food Products, Information, Lipid, Literature, Load, Men, Metabolic Diseases, Obesity, Obesity, Postmenopausal Women, Practice, Prevention, Prevention and Control, Pub Med, Review, Risk, Science, Treatment, Utilisation, Web of Science

# Title: British Homoeopathic Journal

Full Journal Title: British Homoeopathic Journal

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Renst, E. (1998), The heresy of homoeopathy: A brief history of 200 years of criticism. *British Homoeopathic Journal*, **87**, 28-32.

Eskinazi, D. (1998), Some questions and thoughts on research in homoeopathy. *British Homoeopathic Journal*, **87**, 33-38.

Jütte, R. (1998), Case in homoeopathy in the 19th and 20th centuries. *British Homoeopathic Journal*, **87**, 39-47.

Land, S.T. (1998), 20 years ago: The British Homeoepathic Journa, January 1978. *British Homoeopathic Journal*, **87**, 48-50.

# Title: British Journal of Anaesthesia

Full Journal Title: British Journal of Anaesthesia

ISO Abbreviated Title: Br. J. Anaesth.

JCR Abbreviated Title: Brit J Anaesth

ISSN: 0007-0912

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Oxford Univ Press

Publisher Address: Great Clarendon St, Oxford OX2 6DP, England

Subject Categories:

Anesthesiology: Impact Factor 2.098 / (2002)

? Koch, A. and Vermeulencranch, D.M.E. (1962), The use of hyperbaric oxygen following cardiac arrest. *British Journal of Anaesthesia*, **34** (10), 738-740.

Full Text: [1960-80\Bri J Ana34, 738.pdf](1960-80/Bri%20J%20Ana34,%20738.pdf)

Abstract: A case is described of cardiac arrest with resultant cerebral damage in a severely anaemic patient due to ballooning of the cuff of an endotracheal tube during the course of a 3-hour operation, whereby an insidious occlusion of the left bronchus occurred. The heart was restarted within 3 minutes.

Cerebral complications were treated with urea intravenously and, to supply the brain with sufficient oxygen in spite of anaemia and oedema, oxygen in the high pressure chamber. Subjective and objective improvement during treatment in the chamber was very suggestive of an active contribution of this treatment towards total recovery.

? Cawkell, A.E. (1971), Science Citation Index, Effectiveness in locating articles in anaessthetics field: “Perturbation of ion transport”. *British Journal of Anaesthesia*, **43** (8), 814-815.

Full Text: [1960-80\Bri J Ana43, 814.pdf](1960-80/Bri%20J%20Ana43,%20814.pdf)

Keywords: Citation, Science Citation Index

? Fassoulaki, A., Paraskeva, A., Papilas, K. and Karabinis, G. (2000), Self-citations in six anaesthesia journals and their significance in determining the impact factor. *British Journal of Anaesthesia*, **84** (2), 266-269.

Full Text: [2000\Bri J Ana84, 266.pdf](2000/Bri%20J%20Ana84,%20266.pdf)

Abstract: Self-citation of a journal may affect its impact factor. We investigated self-citations in the 1995 and 1996 issues of six anaesthesia journals by calculating the self-citing and self-cited rates for each journal. Self-citing rate relates a journal’s self-citations to its total number of references. We defined self-cited rate as the ratio of a journal’s self-citations to the number of times it is cited by the six anaesthesia journals. We also correlated self-citing rates with the impact factor of the six journals for 1997. Citations among the six journals differed significantly (P < 0.0001). Anesthesiology had the highest self-citing rate (57%). Anaesthesia, Anesthesia and Analgesia, British Journal of Anaesthesia, Canadian Journal of Anaesthesia and the European Journal of Anaesthesiology had self-citing rates of 28%, 28%, 30%, 11% and 4% respectively. The self-cited rates were 31%, 35%, 34%, 27%, 31% and 17% for Anaesthesia, Anesthesiology, Anesthesia and Analgesia, British Journal of Anaesthesia, Canadian Journal of Anaesthesia and the European Journal of Anaesthesiology, respectively. North America journals cited the North America literature. This also occurred, to a lesser extent, in the European anaesthesia journals. A significant correlation between self-citing rates and impact factors was found (r = 0.899, P = 0.015). A high self-citing rate of a journal may positively affect its impact factor.

Keywords: Anaesthesia, Journals, Anesthesia-Journals, Citations, Impact Factor, Journals, Publications, Anaesthesia, Publications, Impact Factor, References, Self-Citation, Self-Citations

Brambrink, A.M., Ehrler, D. and Dick, W.F. (2000), Publications on paediatric anaesthesia: A quantitative analysis of publication activity and international recognition. *British Journal of Anaesthesia*, **85** (4), 556-562.

Full Text: [2000\Bri J Ana85, 556.pdf](2000/Bri%20J%20Ana85,%20556.pdf)

Abstract: A comprehensive compilation of the current international literatureon paediatric anaesthesia is lacking. The aim of this studywas to identify all articles on clinical practice in paediatricanaesthesia, to name the respective journals, and to assessthe publication activity and international recognition of selectedcountries for a 6-yr period (1993–1998). The search comprisedan article-to-article evaluation (‘hand search’) of 12 peer-reviewed anaesthesia journals, as well as an Internet-based(‘silverPlatter’) MedlineTM-search (3.900 medicaljournals, US National Library of Medicine), both limited tooriginal articles, case reports, reviews and editorials. Selectedphysical characteristics, for example the number of infantsand children aged 0–14 yr old, the number of anaesthetists(specialists) and current impact factors (Science Citation Index)served to assess publication activity and international recognition.During the time period studied, 2259 articles (377/yr) werepublished on paediatric anaesthesia in 295 medical journals.The articles were primarily written in English (85.1%) and themajority originated from the USA (35.4%) and the UK (12.6%).The largest number of publications (77.7%) appeared in 29 anaesthesiajournals, all referenced in MedlineTM, with 46% being publishedby only five journals. Most authors published in journals of their home country/region. Authors from the UK ranked highestin publication activity, followed by those from Canada, Switzerland, Sweden and Denmark. The highest impact factor was achieved byUS and UK authors. We conclude that publications on paediatric anaesthesia are clustered in a small number of journals and are written predominantly by authors from English-speaking countries, who achieved the highest international recognition.

Keywords: Anaesthesia, Paediatric, Publications

? Kamming, D., Gardam, M. and Chung, F. (2003), Editorial I. Anaesthesia and SARS. *British Journal of Anaesthesia*, **90** (6), 715-718.

Full Text: [B\Bri J Ana90, 715.pdf](B/Bri%20J%20Ana90,%20715.pdf)

? Mahajan, R.P. and Hunter, J.M. (2008), Volume 100: Case reports: should they be confined to the dustbin? *British Journal of Anaesthesia*, **100** (6), 744-746.

Full Text: [2008\Bri J Ana100, 744.pdf](2008/Bri%20J%20Ana100,%20744.pdf)

? Landoni, G., Pieri, M., Nicolotti, D., Silvetti, S., Landoni, P., Silvani, P., John, M., Bignami, E. and Zangrillo, A. (2010), Self-citation in anaesthesia and critical care journals: Introducing a flat tax. *British Journal of Anaesthesia*, **105** (3), 386-387

Full Text: [2010\Bri J Ana105, 386.pdf](2010/Bri%20J%20Ana105,%20386.pdf)

Keywords: Classics, Journals, Self-Citation

? Moppett, I.K. (2010), Individual bibliometrics in UK anaesthesia. *British Journal of Anaesthesia*, **105** (5), 721-722.

Full Text: [2010\Bri J Ana105, 721.pdf](2010/Bri%20J%20Ana105,%20721.pdf)

Keywords: Anesthesia, Bibliometrics, Critical Care

? Bould, M.D., Boet, S., Sharma, B., Shin, E., Barrowman, N.J. and Grantcharov, T. (2011), h-indices in a university department of anaesthesia: An evaluation of their feasibility, reliability, and validity as an assessment of academic performance. *British Journal of Anaesthesia*, **106** (3), 325-330.

Full Text: [2011\Bri J Ana106, 325.pdf](2011/Bri%20J%20Ana106,%20325.pdf)

Abstract: Background. The h-index is a tool that is increasingly used to measure individual research productivity. It is unknown whether its use as an evaluation of individual research impact is reliable and valid within the context of anaesthesia. Methods. We calculated the h-indices of 268 faculty members of a university department of anaesthesia using Scopus(TM) and Web of Science(R). Agreement between the databases was investigated with a Bland-Altman plot. The construct validity was examined by comparing the h-indices for faculty grouped by academic rank. Results. The mean bias between the Scopus(TM) and Web of Science(R) h-indices was 0.09 but 1.96 SD limits of agreement were -5.7 to 5.9. The Web of Science(R)-derived h-indices showed a statistically significant difference between the different academic ranks (P < 0.001): median h-indices were 0 for lecturers, 2 for assistant professors, 9 for associate professors, and 16 for full professors. The Scopus(TM)-derived h-indices also showed a statistically significant difference between the different academic ranks (P < 0.001): median h-indices were 0 for lecturers, 1 for assistant professors, 9 for associate professors, and 17 for full professors. Post hoc testing found statistically significant differences in all comparisons between academic ranks (all P < 0.01). Ignoring self-citations did not affect construct validity of the h-index. We found no evidence that the h-index is superior to counting the total number of publications. Conclusions. Agreement between the two databases was problematic. There was evidence of construct validity; however, the overlap between academic ranks limits the discriminative power of a low h-index.

Keywords: Anaesthesia, Assessment, Bias, Bibliometric Analysis, Citation, Context, Databases, Education, Evaluation, Evidence, Faculty, Feasibility, Google-Scholar, h Index, h-Index, Impact, Journals, Mar, Measure, P, Performance, Power, Productivity, Publications, Rank, Reliability, Research, Research Productivity, Science, Scopus, Self-Citations, Testing, University, Validity, Web

? Webster, N.R. (2011), Bibliometrics and assessing performance and worth. *British Journal of Anaesthesia*, **107** (3), 306-307

Full Text: [2011\Bri J Ana107, 306.pdf](2011/Bri%20J%20Ana107,%20306.pdf)

Keywords: Bibliometrics, Citation Counts, Index

? Moppett, I.K. and Hardman, J.G. (2011), Bibliometrics of anaesthesia researchers in the UK. *British Journal of Anaesthesia*, **107** (3), 351-356.

Full Text: [2011\Bri J Ana107, 351.pdf](2011/Bri%20J%20Ana107,%20351.pdf)

Abstract: Background. Bibliometrics provide surrogate measures of the quality and quantity of research undertaken by departments and individuals. Previous reports have suggested that academic anaesthesia research in the UK is in decline. We wished to provide a comprehensive description of current and historical published output of UK anaesthesia researchers. Methods. Bibliometric indices (Web of Science (R)) were calculated for anaesthesia researchers in the UK for the whole period covered by the database, and for 2004-8. A parallel search was made using the Scholarometer (TM) tool, which parses output from Google Scholar (TM). Calculated indices included total number of publications; total number of citations; citations per paper; h-index; g-index; and modified impact index. Results. One hundred and four individuals and 23 academic departments were identified. Median values (inter-quartile range) for the indices were: total papers 57 (24-95) (individuals for the whole period), 11 (6-20) (individuals 2004-8), 50 (30-70) (departments 2004-8); total number of citations 571 (175-1328), 93 (38-207), 383 (239-845); h-index 13 (8-20), 6 (3-8), 11 (9-14). Four departments were ranked in the top 5 for all indices. Conclusions. The general distribution of bibliometric data is similar to that seen in other specialities in Europe and North America. Four departments contribute to more than 50% of published anaesthesia research output in this data set. These data provide useful comparative tools for individuals, departments, and national bodies.

Keywords: Achievement, Anaesthesia, Bibliometric, Bibliometric Indices, Bibliometrics, Citations, Europe, G Index, G-Index, Google Scholar, Google-Scholar, h Index, h-Index, Impact, Institutions, Journals, Methods, Papers, Publications, Research, Research Output, Researchers, Science, Scopus, UK, United-Kingdom, Web, Web of Science

? Pagel, P.S. and Hudetz, J.A. (2011), Bibliometric analysis of anaesthesia journal editorial board members: Correlation between journal impact factor and the median h-index of its board members. *British Journal of Anaesthesia*, **107** (3), 357-361.

Full Text: [2011\Bri J Ana107, 357.pdf](2011/Bri%20J%20Ana107,%20357.pdf)

Abstract: Background. h-index is useful for quantifying scholarly activity in medicine, but this statistic has not been extensively applied as a measure of productivity in anaesthesia. We conducted a bibliometric analysis of h-index in editorial board members and tested the hypothesis that editorial board members of anaesthesia journals with higher impact factors (IFs) have higher h-indices. Methods. Ten of 19 journals with 2009 IF>1 were randomly chosen from Journal Citation Reports (R). Board members were identified using each journal’s website. Publications, citations, citations per publication, and h-index for each member were obtained using Scopus (R). Results. Four hundred and twenty-three individuals filled 481 anaesthesia editorial board positions. The median h-index of all editorial board members was 14. Board members published 75 papers (median) with 1006 citations and 13 citations per publication. Members serving on journals with IF greater than median had significantly (P<0.05; Wilcoxon’s rank-sum test) greater median h-index, citations, and citations per publication than those at journals with IF less than median. A significant correlation between the median h-index of a journal’s editorial board members and its IF (h-index 3.01xIF+6.85; r(2)=0.452; P=0.033) was observed for the 10 journals examined. Board members of subspeciality-specific journals had bibliometric indices that were less than those at general journals. The h-index was greater in individuals serving more than one journal. European editorial board members had higher h-index values than their American colleagues. Conclusions. The results suggest that editorial board members of anaesthesia journals with higher IFs have higher h-indices.

Keywords: Academic Anaesthesia, Anaesthesia, Analysis, Bibliometric, Bibliometric Analysis, Bibliometric Indices, Bibliometrics, Citation, Citations, h Index, h-Index, h-Indices, Impact, Impact Factor, Impact Factors, Journal, Journal Citation Reports, Journal Impact Factor, Journals, Medicine, Methods, Papers, Performance Measures, Power, Productivity, Publication, Publications, Scopus, Self-Citations

? O’Leary, J.D. (2012), Bibliometrics of anaesthesia researchers in the UK. *British Journal of Anaesthesia*, **108** (1), 164-165.

Full Text: [2012\Bri J Ana108, 164.pdf](2012/Bri%20J%20Ana108,%20164.pdf)

Keywords: Anaesthesia, Bibliometrics, Researchers, UK

? Moppett, I.K. and Hardman, J.G. (2012), Bibliometrics of anaesthesia researchers in the UK Reply. *British Journal of Anaesthesia*, **108** (1), 165.

Full Text: [2012\Bri J Ana108, 165.pdf](2012/Bri%20J%20Ana108,%20165.pdf)

Keywords: Anaesthesia, Bibliometrics, Index, Researchers, UK

# Title: British Journal of Audiology

Full Journal Title: British Journal of Audiology

ISO Abbreviated Title: Br. J. Audiol.

JCR Abbreviated Title: Brit J Audiol

ISSN: 0300-5364

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: Whurr Publishers Ltd

Publisher Address: 19B Compton Terrace, London N1 2UN, England

Subject Categories:

Otorhinolaryngology: Impact Factor 0.574 / (2002)

? Lutman, M. (1992), Bibliometric analysis as a measure of scientific output. *British Journal of Audiology*, **26** (6), 323-324.

Keywords: Bibliometric, Bibliometric Analysis

# Title: British Journal of Cancer

Full Journal Title: [British Journal of Cancer](http://www.nature.com/bjc/index.html)

ISO Abbreviated Title: Br. J. Cancer

JCR Abbreviated Title: Brit J Cancer

ISSN: 0007-0920

Issues/Year: 24

Journal Country/Territory: England

Language: English

Publisher: Churchill Livingstone

Publisher Address: Journal Production Dept, Robert Stevenson House, 1-3 Baxters Place, Leith W

Subject Categories:

Oncology: Impact Factor 3.639, 25/114 (2002)

? Chen, C.J., Chen, C.W., Wu, M.M. and Kuo, T.L. (1992), Cancer potential in liver, lung, bladder and kidney due to ingested inorganic arsenic in drinking water. *British Journal of Cancer*, **66** (5), 888-892.

Full Text: Bri J Can66, 888.pdf

Abstract: In order to compare risk of various internal organ cancers induced by ingested inorganic arsenic and to assess the differences in risk between males and females, cancer potency indices were calculated using mortality rates among residents in an endemic area of chronic arsenicism on the southwest coast of Taiwan, and the Armitage-Doll multistage model. Based on a total of 898, 806 person-years as well as 202 liver cancer, 304 lung cancer, 202 bladder cancer and 64 kidney cancer deaths, a significant dose-response relationship was observed between arsenic level in drinking water and mortality of the cancers. The potency index of developing cancer of the liver, lung, bladder and kidney due to an intake of 10 micrograms kg day of arsenic was estimated as 4.3×10-3, 1.2×10-2, 1.2×10-2, and 4.2×10-3, respectively, for males, as well as 3.6×10-3, 1.3×10-2, 1.7×10-2, and 4.8×10-3, respectively, for females in the study area. The multiplicity of inorganic arsenic-induced carcinogenicity without showing any organotropism deserves further investigation.

Keywords: Disease Endemic Area, Artesian Well Water, Malignant Neoplasms, Blackfoot Disease, Carcinogenesis, Mortality, Carcinoma, Taiwan, Models

Hainaut, P., Butcher, S. and Milner, J. (1995), Temperature sensitivity for conformation is an intrinsic property of wild-type p53. *British Journal of Cancer*, **71** (2), 227-231.

Abstract: The tumour-suppressor protein p53 is a metal-binding transcription factor with sequence-specific DNA-binding capacity. In cancer, mutation of p53 disrupts protein conformation with consequent loss of DNA binding and associated tumour-suppressor function. In vitro, the conformation and DNA-binding activity of wild-type p53 are subject to redox modulation and are abrogated by exposure to metal chelators. In the present study, we have used the chelator 1, 10-phenanthroline (OF) to probe the effect of temperature on the conformational stability of p53 translated in vitro. Whereas low temperature (30°C) stabilised wild-type p53 conformation and protected against chelation, high temperature (41°C) promoted destabilisation and enhanced chelation, indicating that temperature influences the folding of wild-type p53. Destabilisation of p53 tertiary structure induced protein aggregation through hydrophobic interactions, consistent with the notion that wild-type p53 contains a hydrophobic core which may become exposed by metal chelation. These results indicate that temperature sensitivity for conformation is an intrinsic property of wild-type p53 and suggests that small changes in temperature may directly affect p53 function.

Keywords: P53 Conformation, Metal-Binding, Temperature Sensitivity, Tumor Suppressor Protein, DNA-Binding, Cell-Cycle, Mutant, Expression, Forms, Oligomerization, Transformation, Heterogeneity, P53-Protein

Elliott, P., Shaddick, G., Kleinschmidt, I., Jolley, D., Walls, P., Beresford, J. and Grundy, C. (1996), Cancer incidence near municipal solid waste incinerators in Great Britain. *British Journal of Cancer*, **73**, 702-710.

Abstract: By use of the postcoded database held by the Small Area Health Statistics Unit, cancer incidence of over 14 million people living near 72 municipal solid waste incinerators in Great Britain was examined from 1974-86 (England), 1974-84 (Wales) and 1975-87 (Scotland). Numbers of observed cases were compared with expected numbers calculated from national rates (regionally adjusted) after stratification by a deprivation index based on 1981 census small-area statistics. Observed-expected ratios were tested for decline in risk with distance up to 7.5 km. The study was conducted in two stages: the first involved a stratified random sample of 20 incinerators, the second the remaining 52 incinerators. Over the two stages of the study there was a statistically significant (P<0.05) decline in risk with distance from incinerators for all cancers combined, stomach, colorectal, liver and lung cancer. Among these cancers in the second stage, the excess from 0 to 1 km ranged from 37% for liver cancer (0.95 excess cases 10-5 year-1) to 5% for colorectal cancer. There was evidence of residual confounding near the incinerators, which seemed to be a likely explanation of the findings for all cancers, stomach and lung and also to explain at least part of the excess of liver cancer. For this reason and because of a substantial level of misdiagnosis (mainly secondary tumours) found among registrations and death certificates for liver cancer, further investigation, including histological review of the cases, is to be done to help determine whether or not there is an increase in primary liver cancer in the vicinity of incinerators.

Morgan, D.A.L., Archer, S.G. and Blamey, R.W. (1996), Nodal sampling with selective irradiation: The nottingham strategy for axillary treatment in breast cancer. *British Journal of Cancer*, **74**, 11.

? Longhurst, T.J., Oneill, G.M., Harvie, R.M. and Davey, R.A. (1996), The anthracycline resistance-associated (ARA) gene, a novel gene associated with multidrug-resistance in a human leukemia-cell line. *British Journal of Cancer*, **74** (9), 1331-1335.

Abstract: Multidrug resistance (MDR) in cancer cells is a major contributor to the failure of chemotherapy treatment. This paper describes a novel protein named the anthracycline resistance associated (ARA) protein. The ara gene is amplified in the MDR leukaemia line CCRF-CEM/E1000 and its mRNA is overexpressed. ARA belongs to the ATP binding cassette (ABC) family of proteins. Another ABC protein, the multidrug resistance-associated protein (MRP), has previously been reported to be overexpressed in the CEM/E1000 subline. The primary amino acid sequence of ARA indicates that it is 49.5 kDa without glycosylation, and that it has one potential glycosylation site. ARA has one ATP binding site and associated transmembrane regions. This is in contrast to MRP (190 kDa, 172 kDa deglycosylated) and most other higher eukaryote ABC proteins, which consist of two similar halves, each having one ATP binding site. In addition to ARA being coexpressed with MRP, comparison of amino acid sequences showed that, among known proteins, ARA is most similar to the C-terminal half of MRP.

Keywords: Multidrug Resistance, Anthracycline Resistance-Associated Protein, Human Tumor-Cells, Mrp Gene, P-Glycoprotein, Schizosaccharomyces-Pombe, Dependent Transport, Metal Resistance, RNA Isolation, Protein Mrp, Overexpression, Expression

Theriault, R.L., Horotbagyi, G.N., Porter, L., Blayney, D., Lipton, A., Gluck, S., Wheeler, H., Allan, S., Simeone, J., Seaman, J., Knight, R., Heffernan, M. and Reitsma, D. (1996), Reduction of skeletal related complications in breast cancer patients with osteolytic bone metastases receiving chemotherapy (CT), by monthly pamidronate sodium (PAM) (AREDIA®) infusion. *British Journal of Cancer*, **74**, 11.

Lipton, A., Hershey, P.A., Theriault, R., Houston, T.X., Leef, R., Atlanta, G.A., Gluck, S., Costello, S., Simeone, J., Seaman, J., Knight, R. and Heffernan, M. (1996), Reduction of skeletal related complications in breast cancer patients with osteolytic bone metastases receiving hormone therapy, by monthly pamidronate sodium (AREDIA®) infusion. *British Journal of Cancer*, **74**, 11.

Gregory, R.K., Powles, T.J., Chang, J. and Ashly, S. (1996), Optimum duration of combination chemotherapy in metastatic carcinoma of the breast. *British Journal of Cancer*, **74**, 11.

Theriault, R.L., Horotbagyi, G.N., Porter, L., Blayney, D., Lipton, A., Gluck, S., Wheeler, H., Allan, S., Simeone, J., Seaman, J., Knight, R., Heffernan, M. and Reitsma, D. (1996), Reduction of skeletal related complications in breast cancer patients with osteolytic bone metastases receiving chemotherapy (CT), by monthly pamidronate sodium (PAM) (AREDIA®) infusion. *British Journal of Cancer*, **74**, 11.

Gupta, S.K. and Shukla, V.K. (1996), Serum and tissue copper and zinc levels in breast cancer patients. *British Journal of Cancer*, **74**, 29.

Inwang, E.R., Puddefoot, J.R., Brown, C.L., Goode, A.W., Marsigliante, S., Ho, M.M., Payne, J.G. and Vinson, G.P. (1997), Angiotensin II type 1 receptor expression in human breast tissues. *British Journal of Cancer*, **75** (9), 1279-1283.

Abstract: We demonstrate the expression of angiotensin II type 1 (AT1) receptors in normal and diseased human breast tissues. Using monoclonal antibody 6313/G2, directed against a specific sequence in the extracellular domain of the AT1 receptor, immunocytochemical analysis revealed positive immunoreactivity in membrane and cytoplasm of specific cell types. Immunoblotting of solubilized proteins separated by sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) from benign and malignant tumours identified a single immunoreactive species with a molecular mass of approximately 60 kDa, consistent with that of the mature glycosylated receptor. In studies of [I-125]angiotensin II binding using breast membrane preparations, concentrations of specific angiotensin II binding sites were found to range from 1.8 to 100 fmol mg-1 protein, with a Kd of approximately 60 nM. Most of the specifically bound [I-125]angiotensin II was displaced by losartan, a specific angiotensin II type 1 receptor antagonist, while less was displaced by the AT2 receptor type antagonist, CGP42112A, thus confirming the prevalence of AT1 receptors in this tissue type, These data suggest that the renin-angiotensin system may be involved in normal and abnormal breast tissue function.

Keywords: Breast Cancer, Renin-Angiotensin System, Losartan, Immunocytochemistry, Monoclonal Antibody G313/G2, Subtypes, System, Brain, Cells

? Chow, N.H., Guo, Y.L., Lin, J.S.N., Su, J.H.J., Tzai, T.S., Guo, H.R. and Su, I.J. (1997), Clinicopathological features of bladder cancer associated with chronic exposure to arsenic. *British Journal of Cancer*, **75** (11), 1708-1710.

Abstract: A high incidence of bladder cancer has been documented in an area of chronic arsenic (As) exposure. This study investigates the characteristics of As-associated (n = 49) and other (n = 64) bladder cancers. A higher histological grading was observed for the As-exposed tumours (P = 0.04), but no other difference in pathobiological features or prognosis was found between the two groups.

Keywords: Arsenic, Bladder Cancer, Carcinogenesis, Pathobiology, Disease Endemic Area, Black Foot Disease, Malignant Neoplasms, Drinking-Water, Taiwan, Lung, Protein, Liver

Hardman, W.E., Barnes, C.J., Knight, C.W. and Cameron, I.L. (1997), Effects of iron supplementation and ET-18-OCH3 on MDA-MB 231 breast carcinomas in nude mice consuming a fish oil diet. *British Journal of Cancer*, **76** (3), 347-354.

Full Text: Bri J Can76, 347.pdf

Abstract: Lipid peroxidation products can be cytotoxic. Our objectives were (1) to use two pro-oxidants (iron and a pro-oxidative drug) to selectively increase lipid peroxidation in the implanted human breast tumours of mice consuming fish oil and (2) to kill the cancer cells without harming normal host tissues. The theoretical basis for selective cytotoxicity is that normal cells are better able to handle oxidative stress than cancer cells. Male athymic nude mice, consuming an AIN-76 diet, were injected s.c. with MDA-ME 231 human breast carcinoma cells. Three weeks later, ail mice had palpable tumours, 3-10 mm in diameter, and diets were changed to modified AIN-76 diets containing 19% menhaden fish oil and 1% corn oil with or without supplemental 0.3% ferric citrate. After 2 weeks, half of the mice on each diet (19% fish oil with or without supplemental ferric citrate) were injected (three times per week for 2 weeks) with the ether-lipid drug edelfosine (ET-18-OCH3). The concentration of lipid peroxidation products in tumours (as measured by thiobarbituric acid-reactive substances, TEARS) was significantly increased by both ferric citrate and ET-18-OCH. The TEARS in livers were not increased, nor was there evidence of other harmful side-effects to the host mice. The addition of iron enhanced tumour cell death whereas ET-18-OCH, suppressed tumour cell mitosis. The use of iron supplementation combined with ET-18-OCH, resulted in the slowest growth rate, lowest mitotic index, highest level of lipid peroxidation products and increased the cytotoxic index in tumours without detectable harm to the host. That iron supplementation increased tumour suppression beyond that expected from the increase in the concentration of TEARS in the tumour merits further investigation.

Keywords: Lipid Peroxidation, Breast Cancer, Fish Oil, Edelfosine (ET-18-OCH3), Human Mammary-Carcinoma, Lipid-Peroxidation, Cyto-Toxicity, Fatty-Acids, Tumor-Cells, Growth, Invitro, Lines, N-3, Hepatoma

? Nagata, C., Takatsuka, N., Kawakami, N. and Shimizu, H. (2002), A prospective cohort study of soy product intake and stomach cancer death. *British Journal of Cancer*, **87** (1), 31-36.

Full Text: [2002\Bri J Can87, 31.pdf](2002/Bri%20J%20Can87,%2031.pdf)

Abstract: The relationship between intake of soy products and death from stomach cancer was examined in a community-based prospective study of Japanese men and women in Talkayama, Japan. Over 7 years of follow-up, 121 deaths from stomach cancer (81 men and 40 women) occurred among 30 304 (13 880 men and 16 424 women) participants who were at least 35 years of age, Diet including the intake of soy products and isoflavones was assessed by a validated semiquantitative food-frequency questionnaire at the beginning of the study. In men, the highest compared to the lowest tertile of total soy product intake was significantly inversely associated with death from stomach cancer after controlling for covariates (hazard ratios=0.50, 95% confidence intervals (CIs) 0.26-0.93, P for trend=0.03). Decreased hazard ratios for the highest compared to the lowest tertiles of total soy product intake (hazard ratios=0.49: 95% CI 0.22-1.13) was observed in women, although this association was of marginal significance. These data suggest that soy intake may reduce the risk of death from stomach cancer. (C) 2002 Cancer Research UK.

Keywords: Soybeans, Isoflavones, Stomach Cancer, Mortality, Diet, Helicobacter-Pylori Infection, Gastric-Cancer, In-Vitro, Japanese, Risk, N-Methyl-N’-Nitro-N-Nitrosoguanidine, Rats, Isoflavones, Cells, Foods

? Yatsuya, H., Toyoshima, H., Tamakoshi, A., Kikuchi, S., Tamakoshi, K., Kondo, T., Mizoue, T., Tokui, N., Hoshiyama, Y., Sakata, K., Hayakawa, N. and Yoshimura, T. (2004), Individual and joint impact of family history and *Helicobacter pylori* infection on the risk of stomach cancer: A nested case-control study. *British Journal of Cancer*, **91** (5), 929-934.

Full Text: [2004\Bri J Can91, 929.pdf](2004/Bri%20J%20Can91,%20929.pdf)

Abstract: We used 202 cases of stomach cancer and 394 controls nested within the Japan Collaborative Cohort Study For Evaluation of Cancer Risk (JACC study) to investigate whether family history has an independent effect on the risk of stomach cancer after controlling for the Helicobacter pylori infection. A positive history of stomach cancer in one or more first-degree relatives was associated with an increased risk of the disease in women, but not in men after controlling for H. pylori infection and other confounding variables. Women with both a family history and H. pylori infection were associated with more than five-fold increased risk of the disease (OR 5.10, 95% CI 1.58-16.5) compared to those without these factors. These results suggest the existence of inherited susceptibility to the disease in women, and that measurements of H. pylori infection together with the family history allow meaningful evaluation of risk beyond that provided by either factor alone.

Keywords: Aggregation, Case-Control, Consumption, Death, Diseases, Evaluation, Family History, Gastric-Cancer, Helicobacter Pylori, Impact, JACC Study, Japan, Nested Case-Control Study, Sex Difference, Smoking, Stomach Cancer, Subsite

? Islami, F., Ren, J.S., Taylor, P.R. and Kamangar, F. (2009), Pickled vegetables and the risk of oesophageal cancer: A meta-analysis. *British Journal of Cancer*, **101** (9), 1641-1647.

Full Text: [2009\Bri J Can101, 1641.pdf](2009/Bri%20J%20Can101,%201641.pdf)

Abstract: BACKGROUND: Ecological and experimental studies have suggested a relationship between Asian pickled vegetable consumption and oesophageal squamous cell carcinoma (OSCC), but the results of epidemiological studies investigating the association have been inconsistent. We conducted a meta-analysis of observational studies of this association to evaluate the existing evidence. METHODS: We searched the PubMed, ISI-Web of Science, J-EAST, IndMed, Vip Chinese Periodical, and China National Knowledge Infrastructure databases for all studies published in English or Chinese languages. Pooled results for all studies combined and for several study subgroups were computed. RESULTS: A total of 34 studies were included in this analysis. The overall random effects odds ratio (OR) and 95% confidence interval (CI) for pickled vegetable consumption was 2.08 (1.66-2.60), but the results were heterogeneous across studies. After excluding the three most influential studies, the respective numbers were 2.32 (1.92-2.81). Similar to the overall association, the majority of subgroup analyses showed a statistically significant association between consuming pickled vegetables and OSCC risk. There were only three prospective studies. CONCLUSIONS: Our results suggest a potential two-fold increased risk of oesophageal cancer associated with the intake of pickled vegetables. However, because the majority of data was from retrospective studies and there was a high heterogeneity in the results, further well-designed prospective studies are warranted. British Journal of Cancer (2009) 101, 1641-1647. doi: 10.1038/sj.bjc.6605372 www.bjcancer.com (C) 2009 Cancer Research UK.

Keywords: Case-Control, Cohort, Cohort, County, High-Epidemic Area, Jiangsu Province, Linxian, Meta-Analysis, Oesophageal Cancer, Pickled Vegetable, Publication, Region, Republic-of-China, Squamous-Cell Carcinoma, Stomach Cancers

? Lerro, C.C., McGlynn, K.A. and Cook, M.B. (2010), A systematic review and meta-analysis of the relationship between body size and testicular cancer. *British Journal of Cancer*, **103** (9), 1467-1474.

Abstract: BACKGROUND: Studies assessing the relationships of anthropometry and testicular germ-cell tumour (TGCT) have reported heterogeneous findings. METHODS: We undertook a systematic review and meta-analysis of the associations between adult height, weight, body mass index (BMI), and testicular cancer. Search strategies were conducted in PUBMED, EMBASE, Scopus, and Web of Science on 26 May 2009. Studies that met our inclusion criteria were included in meta-analytic models using STATA 11. RESULTS: A total of 3255 references were retrieved, of which 14 met the inclusion criteria. Random effects meta-analysis found adult height (odds ratio (OR) per 5-cm increase 1.13, 95% confidence interval (CI) 1.07-1.19, P<0.001) and weight (OR overweight vs normal 0.92, 95% CI 0.86-0.98, P = 0.011) to be associated with TGCT. The meta-analysis of weight and TGCT produced a summary estimate, which indicated no association, although an analysis restricted studies to North American was suggestive of association (OR per 1-kg increase 1.01, 95% CI 1.00-1.01, P<0.001). CONCLUSIONS: This systematic review and meta-analysis has found evidence for a positive association of adult height and TGCT, and tentative evidence for an inverse association of BMI and TGCT. British Journal of Cancer (2010) 103, 1467-1474. doi: 10.1038/sj.bjc.6605934 www.bjcancer.com (C) 2010 Cancer Research UK.

Keywords: Adolescent Milk, Adult, Analysis, Bmi, Body Height, Body Mass Index, Body Weight, Cancer, Dietary Practices, EMBASE, European Countries, Germ-Cell Tumors, Journal, Mass Index, Meta-Analysis, Normal, Overweight, Physical-Activity, PUBMED, Ratio, Research, Review, Science, Scopus, Secular Trends, Systematic, Systematic Review, Testicular Cancer, Testicular Neoplasms, UK, Undescended Testes, United-States, Web of Science, Young Men

? Smith, R.A., Tang, J., Tudur-Smith, C., Neoptolemos, J.P. and Ghaneh, P. (2011), Meta-analysis of immunohistochemical prognostic markers in resected pancreatic cancer. *British Journal of Cancer*, **104** (9), 1440-1451.

Abstract: BACKGROUND: The potential prognostic value of several commonly investigated immunohistochemical markers in resected pancreatic cancer is variably reported. The objective of this study was to conduct a systematic review of literature evaluating p53, p16, smad4, bcl-2, bax, vascular endothelial growth factor (VEGF) and epidermal growth factor receptor (EGFR) expression as prognostic factors in resected pancreatic adenocarcinoma and to conduct a subsequent meta-analysis to quantify the overall prognostic effect. METHODS: Relevant literature was identified using Medline, EMBASE and ISI Web of Science. The primary end point was overall survival assessed on univariate analysis. Only studies analysing resected pancreatic adenocarcinoma were eligible for inclusion and the summary log(e) hazard ratio (logHR) and variance were pooled using an inverse variance approach. Evidence of heterogeneity was evaluated using the chi(2) test for heterogeneity and its impact on the meta-analysis was assessed by the I(2) statisic. Hazard ratios greater than one reflect adverse survival associated with positive immunostaining. RESULTS: Vascular endothelial growth factor emerged as the most potentially informative prognostic marker (11 eligible studies, n = 767, HR = 1.51 (95% confidence interval, CI = 1.18-1.92)) with no evidence of any significant publication bias (Egger’s test, P = 0.269). Bcl-2 (5 eligible studies, n = 314, HR = 0.51 (95% CI = 0.38-0.68)), bax (5 studies, n = 274, HR = 0.63 (95% CI = 0.48-0.83)) and p16 (3 studies, n = 229, HR = 0.63 (95% CI = 0.43-0.92)) also returned significant overall survival differences, but in smaller patient series due to a lack of evaluable literature. Neither p53 (17 studies, n = 925, HR = 1.22 (95% CI = 0.96-1.56)), smad4 (5 studies, n = 540, HR = 0.88 (95% CI = 0.61-1.27)) nor EGFR (4 studies, n = 250, HR = 1.35 (95% CI = 0.80-2.27)) was found to represent significant prognostic factors when analysing the pooled patient data. There was evidence of significant heterogeneity in four of the seven study groups. CONCLUSION: These results support the case for immunohistochemical expression of VEGF representing a significant and reproducible marker of adverse prognosis in resected pancreatic cancer. British Journal of Cancer (2011) 104, 1440-1451. doi:10.1038/bjc.2011.110 www.bjcancer.com Published online 29 March 2011 (C) 2011 Cancer Research UK.

Keywords: Adjuvant Chemotherapy, Analysis, Bcl-2, Bias, Cancer, Clinical-Significance, Clinicopathological Parameters, EMBASE, Endothelial-Growth-Factor, Factor Receptor, Immunohistochemistry, Impact, Invasive Ductal Carcinoma, ISI, Journal, Ki-Ras, Literature, Meta Analysis, Meta-Analysis, Molecular, P53, P53 Protein Expression, Pancreatic Cancer, Poor-Prognosis, Primary, Prognosis, Publication, Publication Bias, Ratio, Research, Review, Science, Survival, Systematic, Systematic Review, Tissue Microarray, UK, Vascular Endothelial Growth Factor, Web of Science

? Glover, J.A., Hughes, C.M., Cantwell, M.M. and Murray, L.J. (2011), A systematic review to establish the frequency of cyclooxygenase-2 expression in normal breast epithelium, ductal carcinoma in situ, microinvasive carcinoma of the breast and invasive breast cancer. *British Journal of Cancer*, **105** (1), 13-17.

Abstract: BACKGROUND: Epidemiological studies have suggested a protective effect of cyclooxygenase (COX)-inhibiting non-steroidal anti-inflammatory drugs in breast cancer risk and disease progression. We performed a systematic review to evaluate the frequency of COX-2 expression in normal breast epithelium, ductal carcinoma in situ of breast (DCIS), DCIS-adjoining invasive breast cancer, microinvasive carcinoma of the breast (MICB) and invasive breast cancer. METHODS: Literature searches were carried out on MEDLINE, EMBASE and Web of Science from their commencement until September 2010. Primary studies examining COX-2 expression by immunohistochemistry methodology were included. Meta-analyses were carried out using random effects models for individual study estimates of COX-2 expression and pooled to give an overall estimate. RESULTS: The pooled prevalences (95% confidence intervals) of COX-2 expressions were 53% (44-61) in DCIS studies and 42% (36-49) in the invasive breast cancer studies. There were too few studies involving normal breast epithelium, DCIS-adjoining invasive breast cancer and MICB to conduct meta-analyses. CONCLUSION: The findings from our meta-analyses have shown similar COX-2 expression in DCIS and invasive breast cancer. This may suggest the involvement of COX-2 in early carcinogenesis. Further studies of COX-2 expression in DCIS are required to investigate the use of COX-2 as a potential drug target for prevention of disease progression in DCIS. British Journal of Cancer (2011) 105, 13-17. doi:10.1038/bjc.2011.204 www.bjcancer.com Published online 7 June 2011 (C) 2011 Cancer Research UK.

Keywords: Aggressive Phenotype, Breast Cancer, Cancer, Carcinogenesis, Carcinoma, Confidence Intervals, Cox-2, Cox-2 Expression, Cyclooxygenase-2, DCIS, Diagnosis, Disease, Drug, EMBASE, Features, Frequency, HER-2, NEU, Immunohistochemistry, Involvement, Journal, Medline, Methodology, MICB, Normal, Overexpression, Prevention, Primary, Prognostic-Significance, Progression, Recurrence, Research, Review, Risk, Science, Survival, Systematic, Systematic Review, UK, Web of Science

# Title: British Journal of Clinical Pharmacology

Full Journal Title: [British Journal of Clinical Pharmacology](http://www.blackwell-synergy.com/servlet/useragent?func=showIssues&code=bcp)

ISO Abbreviated Title: Br. J. Clin. Pharmacol.

JCR Abbreviated Title: Brit J Clin Pharmaco

ISSN: 0306-5251

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Blackwell Science Ltd

Publisher Address: PO Box 88, Osney Mead, Oxford OX2 0NE, Oxon, England

Subject Categories:

Pharmacology & Pharmacy: Impact Factor 2.15, 45/181 (2000)

Ernst, E. (1997), Homoeopathy: Past, present and future. *British Journal of Clinical Pharmacology*, **44** (5), 435-437.

Full Text: [B\Bri J Cli Pha44, 435.pdf](B/Bri%20J%20Cli%20Pha44,%20435.pdf)

? Ferner, R.E. and Aronson, J.K. (2005), National differences in publishing papers on adverse drug reactions. *British Journal of Clinical Pharmacology*, **59** (1), 108-111.

Full Text: [2005\Bri J Cli Pha59, 108.pdf](2005/Bri%20J%20Cli%20Pha59,%20108.pdf)

Abstract: Aims To examine how countries differ in attitudes to adverse drug reactions by examining published scientific papers. Methods: We searched Ovid EMBASE for publications indexed by the category ‘therapeutic agents’, and the subcategory ‘adverse effects’, by country for 43 countries. Results: We counted 1 810 202 papers world-wide regarding therapeutic agents during 14 years, of which 195 154 (10.8%) were included in the adverse effects subcategory. There were substantial differences between countries, not explained by population, economic variation, overall publication rate on therapeutic agents, or the presence of large indigenous pharmaceutical companies. Conclusions: Many local cultural factors influence the ratio of papers on adverse reactions to all drug effects, so it may be difficult to improve their recognition and reporting by international efforts.

Keywords: Adverse Drug Reactions, Epidemiology, International Comparisons, Pharmacoeconomics, Population, Publication, Publications, Scientometrics

? Heerspink, H.J.L., Knol, M.J., Tijssen, R.J.W., van Leeuwen, T.N., Grobbee, D.E. and de Zeeuw, D. (2008), Is the randomized controlled drug trial in Europe lagging behind the USA? *British Journal of Clinical Pharmacology*, **66** (6), 774-780.

Full Text: [2008\Bri J Cli Pha66, 774.pdf](2008/Bri%20J%20Cli%20Pha66,%20774.pdf)

Abstract: What is already known about this subject? Center dot the USA, UK and germany have a strong position in performance of drug and nondrug randomized controlled trials. Center dot europe’s position in the quantitative and qualitative performance in drug randomized controlled trials in particular, and factors that drive the quantitative and qualitative performance of drug randomized controlled trials in europe, are unknown. What this study adds center dot europe’s position in the quantitative and qualitative performance of randomized controlled drug trials lags behind usa. Center dot factors are identified that are associated with the difference in publication output between countries. Center dot the number of headquarters of pharmaceutical companies in a country, the research expenditures by pharmaceutical companies, as well as health-related R&D expenditures of a country appear to contribute to a relatively high scientific performance in randomized controlled drug trials. Performance of randomized controlled drug trials (Drugrcts) Adds to the scientific output, scientific knowledge, scientific training and up-to-date status of healthcare and may drive economy. The purpose of this study was to benchmark europe’s position on drugrcts relative to the rest of the world, and to identify factors that may drive this performance. The number of scientific publications on drugrcts, indexed in pubmed and thomson scientific/web of science database over the period 1995-2004, was used as a proxy measure for the quantitative drugrct output. The international citation impact of these publications was used as a proxy measure for the qualitative drugrct output. Country’s origin of 103 211 publications was determined. After adjustment for population size, the number of drugrct publications from europe, usa and australia/japan was 102, 124 and 44 publications per million inhabitants, respectively. The proportional increase in publication output from 1995 until 2004 was lower in europe compared with the usa and australia/japan (29.1, 40.1 And 63.4%, Respectively). The number of citations per publication was 4.9 In europe, 7.0 In the usa and 3.4 In australia/japan. Within europe, the uk, germany and italy produced most publications. Country-specific factors associated with publication output in europe were the number of pharmaceutical companies with headquarters in a country (R-2 = 0.71, P < 0.001), National r&d expenditures by pharmaceutical companies (R-2 = 0.63, P < 0.001) And health-related r&d expenditures by national governments (R-2 = 0.22, P = 0.052). When adjusted for population size, quantitative and qualitative performance of drugrcts in europe lags behind the usa but is ahead of australia/japan. Several factors appear to explain the differences, among which are the number of headquarters of pharmaceutical companies in a country, the research expenditures by pharmaceutical companies, as well as health-related r&d expenditures of a country. To enhance and strengthen europe’s position, researchers may strengthen their collaborations with local pharmaceutical companies, and national governments could increase their budgets for medical research funding.

Keywords: Bias, Bibliometric Analysis, Citation, Citation Impact, Citations, Clinical-Trials, Countries, Database, Europe, Impact, Knowledge, Medical, Origin, Publications, Randomized Controlled Trial, Randomized Controlled Trials, Research, Science, Scientific Publications

# Title: British Journal of Clinical Practice

Full Journal Title: British Journal of Clinical Practice

ISO Abbreviated Title: Br. J. Clin. Pract.

JCR Abbreviated Title: Brit J Clin Pract

ISSN: 0007-0947

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: Medicom International

Publisher Address: Churston House, Portsmouth Rd, Esher, Surrey KT10 9AD, England

Subject Categories:

Medicine, General & Internal: Impact Factor

? Philipp, R., Pond, K. and Rees, G. (1997), Research and the problems of litter and medical wastes on the UK coastline. *British Journal of Clinical Practice*, **51** (3), 164-168.

Abstract: Recent research has shown that recreational water and bathing beach quality are associated with injury, infection and personal well-being, Continued surveillance is essential to audit the environmental and associated health trends, In the Coastwatch UK project and since 1989, annual surveys each autumn have been undertaken during a two-week study period, into the extent of littering of the UK coastline. The Public Health Laboratory Service also collects data on the use of hepatitis B immunoglobulin. In these studies it is now possible to examine time trends, The findings are not reassuring. They help to justify present concern about the health effects of discarded litter and medical waste and fears that environmental degradation could lead to loss of income from tourism, In response, some health and local authorities have started public education programmes, supplying litter bins on or near bathing beaches, emptying them regularly and undertaking beach cleansing during the summer months, The UK government is also introducing new legislation that will require 6 mm fine mesh wire screens on all shore-based sewage outlets around the UK coastline. Continued monitoring is needed to assess the effectiveness of these interventions, The need for greater personal responsibility is particularly identified.

Keywords: Water Appearance, Human Perception, Health, Environment, Surveillance, Disposal, England, Wales, Color

# Title: British Journal of Criminology

Full Journal Title: British Journal of Criminology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Cohn, E.G. and Farrington, D.P. (1998), Changes in the most-cited scholars in major international journals between 1986-90 and 1991-95. *British Journal of Criminology*, **38** (1), 156-170.

Full Text: [1998\Bri J Cri38, 156.pdf](1998/Bri%20J%20Cri38,%20156.pdf)

Abstract: We determined the most-cited scholars in 1991-95 in the major criminology journals of the major countries of the English-speaking world: British Journal of Criminology (BJC), Criminology (GRIM), Canadian Journal of Criminology (CJC) and Australian and New Zealand Journal of Criminology (ANZ). We also compared the results with those obtained in a similar analysis for 1986-90. The scholars with the most citations in 1991-95 were Patricia M. Mayhew (BJC) Travis Hirschi (CRIM), Murray A. Straus (CJC) and John Braithwaite (ANZ). However, Anthony N. Doob was cited in a larger number of different CJC articles than Murray A. Straus, and we concluded that this measure (termed the prevalence of citations) was a better measure of wide-ranging influence than the total number of citations. On a combined score, the five most-cited scholars in al four journals in 1991-95 were Travis Hirschi, David P. Farrington, Michael R. Gottfredson, Alfred Blumstein and John Braithwaite. Whereas the most-cited works of the most-cited scholars in the earlier period tended to be concerned with criminal career research and measuring crime, the most-cited works of the most-cited scholars in the later period were more concerned with criminological theories.

Keywords: American Criminology, Analysis, Citations, Crime, Criminal-Justice, Journal, Journals, New Zealand, Prevalence, Research, Theories

# Title: British Journal of Dermatology

Full Journal Title: [British Journal of Dermatology](http://www.blackwell-synergy.com/servlet/useragent?func=showIssues&code=bjd)

ISO Abbreviated Title: Br. J. Dermatol.

JCR Abbreviated Title: Brit J Dermatol

ISSN: 0007-0963

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Blackwell Science Ltd

Publisher Address: PO Box 88, Osney Mead, Oxford OX2 0NE, Oxon, England

Subject Categories:

Dermatology & Venereal Diseases: Impact Factor

Badia, X., Mascaro, J.M. and Lozano, R. (1999), Measuring health-related quality of life in patients with mild to moderate eczema and psoriasis: Clinical validity, reliability and sensitivity to change of the DLQI. *British Journal of Dermatology*, **141** (4), 698-702.

Full Text: [B\Bri J Der141, 698.pdf](B/Bri%20J%20Der141,%20698.pdf)

Abstract: The aim of this study was to assess the feasibility, validity, reliability and sensitivity to change of a Spanish version of the Dermatology Life Quality index (DLQI) in patients with mild to moderate eczema and psoriasis who were treated with topical corticosteroids. The final study sample comprised 237 patients (48% eczema). Discriminant validity was tested by comparing patients’ scores with those of a random sample of the general population (n = 100), and convergent validity by analysing correlations between DLQI scores, measures of clinical severity, and domain scores on the Nottingham Health Profile (NHP). internal consistency and test-retest reliability were tested in clinically stable patients (n = 94), and responsiveness in a clinically unstable group (n = 143) initiating treatment with topical corticosteroids. Patient scores were significantly higher than general population scores (4.3 vs. 0.27 P < 0.001). Correlations with NHP domains ranged from 0.12 to 0.32, and there was significant correlation with clinical measures (r = 0.26, P < 0.001). Reliability was good (Cronbach’s alpha = 0.83, intraclass correlation coefficient = 0.88), and the instrument proved responsive to change (effect size for the total group of De Novo patients = 0.70), though the great majority of changes occurred in items 1 and 2. The NHP Emotional Reactions and Mobility domains were more responsive than some DLQI domains. In clinical trials of treatments for mild to moderate eczema and psoriasis, it is likely that only items 1 and 2 of the DLQI will be needed, and it is probably advisable to include generic instruments alongside the DLQI.

Keywords: Of-Life, Skin Diseases, Instrument, Version, Eczema, Psoriasis, Quality of Life, Questionnaires, Topical Corticosteroids, Validation

Lundberg, L., Johannesson, M., Silverdahl, M., Hermansson, C. and Lindberg, M. (1999), Quality of life, health-state utilities and willingness to pay in patients with psoriasis and atopic eczema. *British Journal of Dermatology*, **141** (6), 1067-1075.

Full Text: [B\Bri J Der141, 1067.pdf](B/Bri%20J%20Der141,%201067.pdf)

Abstract: Skin diseases have been shown to have a significant adverse impact on the health-related quality of life of patients that may be underestimated by objective assessments of clinical severity, The main aim of this study was to measure the health-state utilities on a scale between 0 (dead) and 1 (full health) of patients with psoriasis and atopic eczema. and to measure the willingness to pay for a cure for psoriasis and atopic eczema. A second aim was to analyse how these measures are related to different dimensions of health-related quality of life. as measured by general and disease-specific quality of life instruments and a subjective measure of disability activity. This study was based on data from a questionnaire administered to, and interviews conducted with, 366 patients with psoriasis and atopic eczema aged 17-73 years, attending the dermatology outpatient clinic in Uppsala, Sweden from November 1996 to December 1997, The survey included: a rating scale question, a time trade-off question, a standard gamble question. a dichotomous choice willingness to pay question, a bidding-game willingness to pay question, a generic quality of life instrument (SF-36), a disease-specific quality of life instrument (the Dermatology Life Quality Index) and a subjective measure of disease activity (on a visual analogue scale). The mean health-state utility was 0.69 (rating scale), 0.88 (time trade-off) and 0.97 (standard gamble) for patients with psoriasis. The corresponding health-state utilities for patients with atopic eczema were 0.73, 0.93 and 0.98. On average, patients were willing to pay between 1253 and 1956 Swedish crowns (SEK) per month for a psoriasis cure and between SEK 960 and 1083 per month for an atopic eczema cure ($1 = SEK 8.25 and pound 1 = SEK 13.23). The health-state utilities were related to SF-36, the Dermatology Life Quality index and disease activity in the expected direction and the correlations were strongest for rating scale and weakest for standard gamble. The willingness to pay was correlated with the Dermatology Life Quality Index and disease activity but not with SF-36, The study indicates that it is feasible to measure health-state utilities and willingness to pay in this patient population. and the sizeable willingness to pay suggests that skin diseases are associated with substantial reductions in quality of life.

Keywords: Of-Life, To-Pay, Contingent Valuation, Antihypertensive Therapy, Dermatology, Preferences, Disability, Goods, Index, SF-36, Atopic Eczema, Dermatology Life Quality Index, Health-State Utilities, Psoriasis, Quality of Life, Rating Scale, SF-36, Standard Gamble, Time Trade-Off, Willingness to Pay

? Jordan, R., Cummins, C. and Burls, A. (2000), Laser resurfacing of the skin for the improvement of facial acne scarring: A systematic review of the evidence. *British Journal of Dermatology*, **142** (3), 413-423.

Full Text: [2000\Bri J Der142, 413.pdf](2000/Bri%20J%20Der142,%20413.pdf)

Abstract: This review presents and evaluates the evidence of the effectiveness of laser resurfacing for facial acne scars. Primary studies of all types of design in any language were identified from MEDLINE, EMBASE, the Cochrane database, Science Citation Index and various internet sites. Studies were accepted if they included patients treated by any laser for atrophic or ice-pick acne scars. The quality of the studies was assessed and data extracted by two independent researchers. There were no controlled trials but 14 case series were found which reported the effects of either the carbon dioxide or erbium:YAG laser. All of the studies were of poor quality, The types and severity of scarring were poorly described and there was no standard scale used to measure scar improvement, There was no reliable or validated measure of patient satisfaction; most improvement was based on visual clinical judgement, in many cases without blinded assessment, The inaccurate use of ordinal scales meant that any improvement was impossible to quantify with any validity, although the evidence suggested that laser treatment had some efficacy (a range in individual patients of 25-90% for both the carbon dioxide laser and the erbium:YAG laser). Changes in pigmentation as a side-effect were common (in up to 44% of patients), although lasting only a few weeks. Laser resurfacing technology is increasingly used in clinical practice to treat acne scars, Despite the poor quality evidence, it is plausible that there is some improvement of acne scarring: there is insufficient information, however, for patients to make informed decisions on whether to opt for treatment and there is not enough evidence to compare the two types of laser. There is a particular lack of information about the psychological effects of acne scar improvement. Good quality randomized controlled trials are needed with standardized scarring scales and validated patient outcome measures in order to assess the effectiveness of laser resurfacing in this group of patients.

Keywords: Acne, Adolescents, Assessment, Carbon, Carbon Dioxide, Carbon Dioxide Laser, Carbon-Dioxide Laser, Case Series, Citation, Clinical-Evaluation, Computer-Pattern Generator, Database, Effectiveness, ER-Yag Laser, Erbium : Yag Laser, High-Energy, Language, Laser Treatment, Medline, Prevalence, Researchers, Review, Scale, Scarring, Scars, Science, Science Citation Index, Surgery, Systematic Review, Technology, Treatment, Validity, Vulgaris

? Rahman, M., Sakamoto, J. and Fukui, T. (2003), Share of research output in dermatology: A quantitative ranking. *British Journal of Dermatology*, **149** (1), 218-220.

Full Text: [2003\Bri J Der149, 218.pdf](2003/Bri%20J%20Der149,%20218.pdf)

? Morgan, C.J., Cooper, A.J., Dyer, J.P. and Friedmann, P.S. (2005), The publication rate of abstracts presented at the British Association of Dermatologists Annual Meeting. *British Journal of Dermatology*, **153** (4), 855-857.

Full Text: [2005\Bri J Der153, 855.pdf](2005/Bri%20J%20Der153,%20855.pdf)

? Rees, J.L. and Bisset, Y. (2006), Recent record of the UK to publication in top dermatology journals. *British Journal of Dermatology*, **154** (5), 1016.

Full Text: [2006\Bri J Der154, 1016.pdf](2006/Bri%20J%20Der154,%201016.pdf)

? Hamilton, F.L., Car, J., Lyons, C., Car, M., Layton, A. and Majeed, A. (2009), Laser and other light therapies for the treatment of acne vulgaris: Systematic review. *British Journal of Dermatology*, **160** (6), 1273-1285.

Full Text: [2009\Bri J Der160, 1273.pdf](2009/Bri%20J%20Der160,%201273.pdf)

Abstract: Background Acne is common and can lead to scarring of the skin, as well as to psychological distress and reduced self-esteem. Most topical or oral treatments for acne are inconvenient and have side-effects. Laser and other light therapies have been reported to be convenient, safe and effective in treating acne. Objectives To carry out a systematic review of randomized controlled trials of light and laser therapies for acne vulgaris. Methods We searched the Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, CINAHL, PsycInfo, LILACS, ISI Science Citation Index and Dissertation Abstracts International for relevant published trials. Results We identified 25 trials (694 patients), 13 of light therapy and 12 of light therapy plus light-activated topical cream (photodynamic therapy, PDT). Overall, the results from trials of light alone were disappointing, but the trials of blue light, blue-red light and infrared radiation were more successful, particularly those using multiple treatments. Red-blue light was more effective than topical 5% benzoyl peroxide cream in the short term. Most trials of PDT showed some benefit, which was greater with multiple treatments, and better for noninflammatory acne lesions. However, the improvements in inflammatory acne lesions were not better than with topical 1% adapalene gel, and the side-effects of therapy were unacceptable to many participants. Conclusions Some forms of light therapy were of short-term benefit. Patients may find it easier to comply with these treatments, despite the initial discomfort, because of their short duration. However, very few trials compared light therapy with conventional acne treatments, were conducted in patients with severe acne or examined long-term benefits of treatment.

Keywords: 5-Aminolevulinic Acid, Acid-Photodynamic Therapy, Acne Vulgaris, Citation, Clinical-Trial, Diode-Laser, Dye-Laser, Inflammatory Facial Acne, Intense Pulsed-Light, Laser Therapy, Light, Medline, Methyl Aminolevulinate, NM Laser, Randomized Controlled-Trial, Systematic Review

? van Zuuren, E.J., Kramer, S.F., Carter, B.R., Graber, M.A. and Fedorowicz, Z. (2011), Effective and evidence-based management strategies for rosacea: Summary of a Cochrane systematic review. *British Journal of Dermatology*, **165** (4), 760-781.

Full Text: [2011\Bri J Der165, 760.pdf](2011/Bri%20J%20Der165,%20760.pdf)

Abstract: Rosacea is a common chronic skin disease affecting the face. There are numerous treatment options, but it is unclear which are the most effective. The aim of this review was to assess the evidence for the efficacy and safety of treatments for rosacea. Searches included the Cochrane Skin Group Specialised Register, the Cochrane Central Register of Controlled Trials in The Cochrane Library, MEDLINE, EMBASE, Science Citation Index, and Ongoing Trials Registers (updated February 2011). Randomized controlled trials in people with moderate to severe rosacea were included. Fifty-eight trials, including 27 from the original review, comprising 6633 participants were included in this updated review. Interventions included topical metronidazole, oral antibiotics, topical azelaic cream or gel, topical benzoyl peroxide and/or combined with topical antibiotics, sulphacetamide/sulphur, and others. There was some evidence that topical metronidazole and azelaic acid were more effective than placebo. Two trials indicated that doxycycline 40 mg was more effective than placebo. There was no statistically significant difference in effectiveness between doxycycline 40 mg and 100 mg but there were fewer adverse effects. One study reported that ciclosporin ophthalmic emulsion was significantly more effective than artificial tears for treating ocular rosacea. Although the majority of included studies were assessed as being at high or unclear risk of bias, there was some evidence to support the effectiveness of topical metronidazole, azelaic acid and doxycycline (40 mg) in the treatment of moderate to severe rosacea, and ciclosporin 0.05% ophthalmic emulsion for ocular rosacea. Further well-designed, adequately powered randomized controlled trials are required.

Keywords: 0.75-Percent Cream, Acid, Acid 15-Percent Gel, Adverse Effects, Antibiotics, Antiinflammatory Dose Doxycycline, Bias, Blind Clinical-Trial, Citation, Cochrane, Disease, Effectiveness, Efficacy, Embase, Face, Gel, Management, Medline, Metronidazole 1-Percent Cream, Oral, Papulopustular Rosacea, Peroxide, Placebo-Controlled Trial, Randomized Controlled Trials, Randomized Phase-III, Review, Risk, Safety, Science, Science Citation Index, Sodium Sulfacetamide 10-Percent, Systematic, Systematic Review, Topical Metronidazole, Treatment

# Title: British Journal of Engineering

Full Journal Title: British Journal of Engineering

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Bradford, S.C. (1934), Sources of information on specific subjects. *British Journal of Engineering*, **137** (3550), 85-86.

Full Text: [-1959\Bri J Eng137, 85.pdf](-1959/Bri%20J%20Eng137,%2085.pdf)

# Title: British Journal of General Practice

Full Journal Title: British Journal of General Practice

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0960-1643

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Lloyd-Williams, F., Mair, F.S. and Leitner, M. (2002), Exercise training and heart failure: A systematic review of current evidence. *British Journal of General Practice*, **52** (474), 47-55.

Abstract: Chronic heart failure (CHF) is a growing public health problem. Current guidelines provide detailed information regarding pharmacotherapy but little guidance about the value of exercise/cardiac rehabilitation programmes for individuals with this condition. To investigate the effects of exercise training upon CHF patients, a systematic literature review was carried out of trials (from 1966 to December 2000) which used as their main outcome measures the effects of exercise training upon: (a) physical performance; or (b) quality of life; or (c) morbidity/mortality. Databases searched include. MedLine; Science Citation Index; Social Sciences citation index; BIDS, Bandolier; Cochrane Database of Systematic Reviews (CDSR); NHS National Research Register (NRR); and Current Research in Britain (CRIB), Relevant bibliographic references from identified articles were also reviewed. Thirty-one trials were identified, comprising randomised controlled trials (RCT’s) (14131), randomised crossover trials (8/31), non-RCT’s (2/31), and pre-test/post-test (7/31). Sample sizes were: 25 participants or fewer (20/31); 26 to 50 participants (7/31); 51 to 150 participants (4/31). Participants were predominantly yourger with a mean age in 23/31 studies of 65 years or less, and male. Patients with co-morbidities were often excluded. Positive effects were reported on physical performance (27/31) quality of life (11/16), mortality (1/31), and readmission rates (1/31). No cost-effectiveness analyses were identified. We conclude that short-term physical exercise training in selected subgroups of patients with CHF has physiological bene,fits and positive effects on quality of life. This review highlights the continuing problem of clinical trials that include participants who are not representative of the general population of CHF patients seen in primary care. Further investigation of the utility and applicability of exercise training is essential.

Keywords: Age, Analyses, Britain, Care, Citation, Clinical, Clinical Trials, Cost Effectiveness, Cost-Effectiveness, Evidence, Exercise, Failure, General, Guidance, Guidelines, Health, Heart, Heart Failure, Index, Information, Investigation, Life, Literature, Literature Review, Male, Mortality, Outcome, Outcome Measures, Patients, Performance, Pharmacotherapy, Physical, Population, Primary, Primary Care, Programmes, Public, Public Health, Public Health Problem, Quality, Quality of, Quality of Life, Randomised, Randomised Controlled Trials, Rates, Readmission, Rehabilitation, Review, Science Citation Index, Systematic Review, Training, Utility, Value

? Wright, N.M.J. and Tompkins, C.N.E. (2006), How can health services effectively meet the health needs of homeless people? *British Journal of General Practice*, **56** (525), 286-293.

Abstract: Background Homelessness affects many people in contemporary society with consequences for individuals and the wider community. Homeless people experience poorer levels of general physical and mental health than the general population and there is a substantial international evidence base which documents multiple morbidity. Despite this, they often have problems in obtaining suitable health care. Aim To critically examine the international literature pertaining to the health care of homeless people and discuss the effectiveness of treatment interventions. Design of study Review and synthesis of current evidence. Method Medline (1966-2003), EMBASE (1980-2003), PsycINFO (1985-2003), CINAHL (1982-2003), Web of Science (1981-2003) and the Cochrane Library (Evidence Based Health) databases were reviewed using key terms relating to homelessness, intervention studies, drug misuse, alcohol misuse and mental health. The review was not limited to publications in English. It included searching the internet using key terms, and grey literature was also accessed through discussion with experts. Results Internationally, there are differing models and services aimed at providing health care for homeless people. Effective interventions for drug dependence include adequate oral opiate maintenance therapy, hepatitis A, B and tetanus immunisation, safer injecting advice and access to needle exchange programmes. There is emerging evidence for the effectiveness of supervised injecting rooms for homeless injecting drug users and for the peer distribution of take home naloxone in reducing drug-related deaths. There is some evidence that assertive outreach programmes for those with mental ill health, supportive programmes to aid those with motivation to address alcohol dependence and informal programmes to promote sexual health can lead to lasting health gain. Conclusions As multiple morbidity is common among homeless people, accessible and available primary health care is a pre-requisite for effective health interventions. This requires addressing barriers to provision and multi-agency working so that homeless people can access the full range of health and social care services. There are examples of best practice in the treatment and retention of homeless people in health and social care and such models can inform future provision.

Keywords: Alcohol, Alcoholism, Assertive Community Treatment, Barriers, Care, Cochrane, Databases, Drug, Effectiveness, EMBASE, Health, Health And Social Care, Health Care, Health Care Delivery, Health Services, Homeless Persons, Ill Chemical Abusers, Injection-Drug Users, Intervention, Intervention Studies, Interventions, Lead, Literature, Mental Health, Mental-Illness, Morbidity, Practice, Primary, Primary Care, Primary Health Care, Publications, Review, Risk Reduction, Science, Social, Street Youth, Substance Related Disorders, Substance Use Disorders, Therapeutic-Community, Therapy, Treatment, Web of Science, Women

? Cahill, P. and Papageorgiou, A. (2007), Triadic communication in the primary care paediatric consultation: A review of the literature. *British Journal of General Practice*, **57** (544), 904-911.

Abstract: Background Children aged 6-12 years are usually seen in primary care with an adult carer. It is a government and professional priority for doctors to try and involve these children in their medical consultations. Aim To ascertain the evidence available on the amount and type of involvement that children in the 6-12 year age group have in their primary care consultations when the consultation was held with a child, a GP, and an adult. Design of the study Literature review. Method Data sources included MEDLINE, CINAHL, EMBASE, and ERIC, The Cochrane library, PsychINFO, Web of Science and Wilson’s Social Science abstracts, hand searching for references, and contact with authors. Results Twenty-one studies were selected for inclusion in the study. Children were found to have little quantitative involvement in their own consultations. They may take part during information gathering but are unlikely to participate in the treatment planning and discussion parts of the consultation. Conclusion Children in the 6-12 year age group have little meaningful involvement in their consultations.

Keywords: Adult, Aged, Authors, Child, Children, Cochrane, Communication, Consultation, Decision-Making, Doctor-Patient Interaction, EMBASE, Encounters, Gaps, General Practice, Information, Involvement, Literature, Literature Review, Medical, Medline, Paediatric, Parent-Child Communication, Primary, Primary Care, Professional, Quantitative, Review, Science, Skills, Tradic, Treatment, Web of Science

? Ridd, M., Shaw, A., Lewis, G. and Salisbury, C. (2009), The patient-doctor relationship: A synthesis of the qualitative literature on patients’ perspectives. *British Journal of General Practice*, **59** (561), 268-275.

Abstract: Background The patient-doctor relationship is an important but poorly defined topic. In order to comprehensively assess its significance for patient care, a clearer understanding of the concept is required. Aim To derive a conceptual framework of the factors that define patient-doctor relationships from the perspective of patients. Design of study Systematic review and thematic synthesis of qualitative studies. Method Medline, EMBASE, PsychINFO and Web of Science databases were searched. Studies were screened for relevance and appraised for quality. The findings were synthesised using a thematic approach. Results From 1985 abstracts, 11 studies from four countries were included in the final synthesis. They examined the patient-doctor relationship generally (n = 3), or in terms of loyalty (n = 3), personal care (n = 2), trust (n = 2), and continuity (n = 1). Longitudinal care (seeing the same doctor) and consultation experiences (patients’ encounters with the doctor) were found to be the main processes by which patient-doctor relationships are promoted. The resulting depth of patient-doctor relationship comprises four main elements: knowledge, trust, loyalty, and regard. These elements have doctor and patient aspects to them, which may be reciprocally related. Conclusion A framework is proposed that distinguishes between dynamic factors that develop or maintain the relationship, and characteristics that constitute an ongoing depth of relationship. Having identified the different elements involved, future research should examine for associations between longitudinal care, consultation experiences, and depth of patient-doctor relationship, and, in turn, their significance for patient care.

Keywords: Communication, Communication, Consultation, Continuity, Continuity of Patient Care, Databases, EMBASE, General-Practice, Knowledge, Literature, Patients Views, Physician-Patient Relations, Physicians, Primary-Care, Qualitative Research, Research, Review, Science, Systematic, Systematic Review, Trust, Unit, Web of Science

# Title: British Journal of Health Psychology

Full Journal Title: British Journal of Health Psychology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Bish, A. and Michie, S. (2010), Demographic and attitudinal determinants of protective behaviours during a pandemic: A review. *British Journal of Health Psychology*, **15**, 797-824.

Abstract: Purpose. A new strain of H1N1 influenza, also known as swine flu was confirmed in the UK in May 2009 and has spread to over 100 countries around the world causing the World Health Organization to declare a global flu pandemic. The primary objectives of this review are to identify the key demographic and attitudinal determinants of three types of protective behaviour during a pandemic: preventive, avoidant, and management of illness behaviours, in order to describe conceptual frameworks in which to better understand these behaviours and to inform future communications and interventions in the current outbreak of swine flu and subsequent influenza pandemics. Methods. Web of Science and PUBMED databases were searched for references to papers on severe acute respiratory syndrome, avian influenza/flu, H5N1, swine influenza/flu, H1N1, and pandemics. Forward searching of the identified references was also carried out. In addition, references were gleaned from an expert panel of the Behaviour and Communications sub-group of the UK Scientific Pandemic Influenza Advisory Group. Papers were included if they reported associations between demographic factors, attitudes, and a behavioural measure (reported, intended, or actual behaviour). Results. Twenty-six papers were identified that met the study inclusion criteria. The studies were of variable quality and most lacked an explicit theoretical framework. Most were cross-sectional in design and therefore not predictive over time. The research shows that there are demographic differences in behaviour: being older, female and more educated, or non-White, is associated with a higher chance of adopting the behaviours. There is evidence that greater levels of perceived susceptibility to and perceived severity of the diseases and greater belief in the effectiveness of recommended behaviours to protect against the disease are important predictors of behaviour. There is also evidence that greater levels of state anxiety and greater trust in authorities are associated with behaviour. Conclusions. The findings from this review can be broadly explained by theories of health behaviour. However, theoretically driven prospective studies are required to further clarify the relationship between demographic factors, attitudes, and behaviour. The findings suggest that intervention studies and communication strategies should focus on particular demographic groups and on raising levels of perceived threat of the pandemic disease and belief in the effectiveness of measures designed to protect against it.

Keywords: Acute Respiratory Syndrome, Anxiety, Behaviour, Chinese, Communication, Databases, Determinants, Disease, Effectiveness, General-Population, H1N1, H1N1 Influenza, Health, Health Behaviors, Health Behaviour, Hong-Kong, Human Avian Influenza, Influenza, Intervention, Intervention Studies, Interventions, Management, Methods, Outbreak Control, Papers, Primary, Prospective Studies, PUBMED, Research, Responses, Review, Risk Perceptions, SARS Outbreak, Science, State Anxiety, Susceptibility, Theories, UK, Web of Science

# Title: British Journal for the History of Science

Full Journal Title: British Journal for the History of Science

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Cohen, C. (1996), The early history of chemical engineering: A reassessment. *British Journal for the History of Science*, **29** (101), 171-194.

Full Text: [1996\Bri J His Sci29, 171.pdf](1996/Bri%20J%20His%20Sci29,%20171.pdf)

# Title: British Journal of Hospital Medicine

Full Journal Title: British Journal of Hospital Medicine

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Leon, R. and Bayat, A. (2007), Part 3: Medical literature and impact factors. *British Journal of Hospital Medicine*, **68** (2), M24-M25.

# Title: British Journal of Industrial Medicine

Full Journal Title: British Journal of Industrial Medicine

ISO Abbreviated Title: Brit. J. Ind. Med.

JCR Abbreviated Title: Brit J Ind Med

ISSN: 0007-1072

Issues/Year:

Journal Country/Territory:

Language:

Publisher: British Med Journal Publ Group, London

Publisher Address:

Subject Categories:

: Impact Factor

? Kauppinen, T.P., Partanen, T.J., Nurminen, M.M., Nickels, J.I., Hernberg, S.G., Hakulinen, T.R., Pukkala, E.I. and Savonen, E.T. (1986), Respiratory cancers and chemical exposures in the wood industry: A nested case-control study. *British Journal of Industrial Medicine*, **43** (2), 84-90.

? Missenard, C., Hansen, G., Kutter, D. and Kremer, A. (1989), Vanadium induced impairment of heme-synthesis. *British Journal of Industrial Medicine*, **46** (10), 744-747.

? Kauppinen, T.P., Partanen, T.J., Hernberg, S.G., Nickels, J.I., Luukkonen, R.A., Hakulinen, T.R. and Pukkala, E.I. (1993), Chemical exposures and respiratory cancer among finnish woodworkers. *British Journal of Industrial Medicine*, **50** (2), 143-148.

Abstract: A case-control study of respiratory cancer, nested within a cohort of male woodworkers, was updated in Finland. The update extended the initial follow up of 3805 workers from 19 plants to 7307 workers from 35 plants. Each case of respiratory cancer (n = 136) diagnosed between 1957 and 1982 within the cohort was matched by year of birth with three controls (n = 408) from the cohort. Chemical exposures were assessed for the cases and the controls by a plant and period specific job exposure matrix. An excess of respiratory cancer was associated with phenol. Concomitant exposures to several other agents occurred as well, however, and no exposure-response relation for phenol was seen. An excess risk and an increasing exposure-response relation were found for engine exhaust from petrol and diesel driven factory trucks. The excess risk associated with pesticides was lower than in our previous study, an indication of qualitative and quantitative differences in exposure between the initial and augmented cohorts. Slightly increased risks were found for terpenes and mould spores, which may be due to chance although the contribution of occupational exposure cannot be ruled out. Exposure to wood dust, mainly from pine, spruce and birch, at a level of about 1 mg/m3, was not associated with lung cancer, upper respiratory cancer, or adenocarcinoma of the lung.

Keywords: Lung-Cancer, Formaldehyde Exposure, Furniture Workers, Sinonasal Cancer, Occupation, Mortality, Tract

? Chen, R.L., Wei, L. and Huang, H.M. (1993), Mortality from lung-cancer among copper miners. *British Journal of Industrial Medicine*, **50** (6), 505-509.

# Title: British Journal of Industrial Relations

Full Journal Title: British Journal of Industrial Relations

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? McMillan, G.S. and Casey, D.L. (2007), Research note: Identifying the invisible colleges of the British journal of industrial relations: A bibliometric and social network approach. *British Journal of Industrial Relations*, **45** (4), 815-828.

Abstract: The academic field of industrial relations has gone through much change in the last 20 years. On account of the rapid decline in union membership in the USA and the UK, industrial relations, which historically has focused on the employment relationship, has been searching for a new intellectual base. By conducting a bibliometric analysis of the journal British Journal of Industrial Relations (BJIR), we uncover the intellectual bases for that publication outlet for two time periods, 1986-1995 and 1996-2005. From the late 1980s to the mid-1990s, BJIR’s articles relied on the economics literature, while in the later period, it moved to the human resource and management journals, authors and articles. The possible explanations and implications of these findings are discussed.

Keywords: Bibliometric Analysis

# Title: British Journal of Management

Full Journal Title: British Journal of Management

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Taylor, J. (2011), The assessment of research quality in UK universities: Peer review or metrics? *British Journal of Management*, **22** (2), 202-217.

Full Text: [2011\Bri J Man22, 202.pdf](2011/Bri%20J%20Man22,%20202.pdf)

Abstract: This paper investigates the extent to which the outcomes of the 2008 Research Assessment Exercise in the UK, determined by peer review, can be explained by a set of quantitative indicators. Three cognate units of assessment are examined in detail: business and management, economics and econometrics, and accounting and finance. The main finding is that each of the three components of research activity (namely, research output, esteem and research environment) is highly correlated with various quantitative indicators. A further finding is that the judgement of the Research Assessment Exercise panels was biased in favour of Russell Group universities. There is also evidence of bias by the economics and econometrics panel. The results support the use of quantitative indicators in the research assessment process, particularly a journal quality index. Requiring the panels to take bibliometric indicators into account should help not only to reduce the workload of panels but also to mitigate the problem of implicit bias.

Keywords: Assessment, Bias, Bibliometric, Bibliometric Indicators, Business, Citations, Economics, Economics Journals, Efficiency, Environment, Exercise, Journal, Management, Outcomes, Rankings, Relative Impacts, Research, Research Assessment Exercise, Research Output, Review, Statistical-Analysis, System, Universities

# Title: British Journal of Neurosurgery

Full Journal Title: British Journal of Neurosurgery

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Jamjoom, A.A.B. and Jamjoom, A.B. (2010), The most cited neurosurgical publications in the Literature. *British Journal of Neurosurgery*, **24** (3), 334-335.

Full Text: [2010\Bri J Neu24, 334.pdf](2010/Bri%20J%20Neu24,%20334.pdf)

Keywords: Publications

? Hung, K.C., Lan, S.J. and Liu, J.T. (2011), Global trend in articles related to stereotactic published in Science Citation Index-Expanded. *British Journal of Neurosurgery*, **??** (??), ??-??.

Full Text: [2011\Bri J Neu-Hung.pdf](2011/Bri%20J%20Neu-Hung.pdf)

Abstract: Background. This is the first article using bibliometrics to study the field of stereotactic related research. This study aims to evaluate the global scientific production of simulation research in the category of “stereotactic” during 1993 – 2008 and to provide insights on the characteristics of the stereotactic related research patterns, tendencies, and methods that might exist in the papers, as well as in leading countries and institutes. Methods. In this study, “stereotactic\*” was used as the keyword to search titles, abstracts, and keywords in the database of the Science Citation Index Expanded. All the articles referring to stereotactic during the studied years, were assessed by the following aspects: document type of publication, characteristics of publication outputs, distribution of outputs in journals, publication outputs of source country, source institute, and analysis of words cluster in title, author keywords, and KeyWords Plus. Results. Eleven document types were found in the total 10 015 publications during 1993 – 2008. Clinical neurology was the most common category in stereotactic related research. Neurosurgery listed in categories of clinical neurology and surgery, ranked first. The most productive country and institute were USA and University of Pittsburgh respectively. Words cluster analysis was elaborated regarding the issues of movement disorders, radiosurgery, tumor, and vascular/stroke, it revealed the sharp rise of articles from 1995 until the end of the period covered in “movement disorders” category. Conclusions. The results analyzed by this bibliometric method can show the research performance, significant events and major inventors, those attributed to stereotactic neurosurgery, and trend of stereotactic related research.

Keywords: Bibliometric, ISI, Research Trend, Stereotactic, Web of Science

# Title: British Journal of Nutrition

Full Journal Title: [British Journal of Nutrition](http://journals.cambridge.org/action/home)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Trayhurn, P. (2003), Recent highly cited articles in the *British Journal of Nutrition*. *British Journal of Nutrition*, **90** (1), 1-2.

Full Text: [2003\Bri J Nut90, 1.pdf](2003/Bri%20J%20Nut90,%201.pdf)

? Trayhurn, P. (2004), Recent highly cited articles in the *British Journal of Nutrition* (including *Supplements*): An update. *British Journal of Nutrition*, **92** (1), 1-3.

Full Text: [2004\Bri J Nut92, 1.pdf](2004/Bri%20J%20Nut92,%201.pdf)

? Trayhurn, P. (2005), Tempus fugit - evolution and current impact of the *British Journal of Nutrition*. *British Journal of Nutrition*, **94** (3), 299-301.

Full Text: [2005\Bri J Nut94, 299.pdf](2005/Bri%20J%20Nut94,%20299.pdf)

? Petrov, M.S., Pylypchuk, R.D. and Uchugina, A.F. (2009), A systematic review on the timing of artificial nutrition in acute pancreatitis. *British Journal of Nutrition*, **101** (6), 787-793.

Full Text: [2009\Bri J Nut101, 787.pdf](2009/Bri%20J%20Nut101,%20787.pdf)

Abstract: Artificial nutrition is an inherent part of management in acute pancreatitis. However, there is no consensus regarding the optimal time of the commencement of feeding in these patients. Our aim was to compare the effect of enteral v. parenteral nutrition with regard to the time point,, when they were administered in the randomised controlled trials. The search was undertaken in the Cochrane Central Register of Controlled Trials, MEDLINE and Science Citation Index as well as in the proceedings of major gastroenterology meetings. The summary estimate of the effect associated with artificial nutrition was calculated using a random-effects model and presented as a risk ratio (RR) and 95 % Cl. A total of eleven randomised controlled trials were included. When started within 48 h of admission, enteral nutrition, in comparison with parenteral nutrition, resulted in a statistically significant reduction in the risks of multiple organ failure (RR 0.44; 95 % Cl 0.23, 0.84), pancreatic infectious complications (RR 0-46; 95 % Cl 0.27, 0.77) and mortality (RR 0.46; 95 % Cl 0.20, 0.99). After 48 h of admission, enteral nutrition, ill Comparison with parenteral nutrition, did not result in a statistically significant reduction in the risks of multiple organ failure (RR 0.73; 95 % Cl 0.33, 1.63), pancreatic infectious complications (RR 0.31; 95 % Cl 0.07, 1.34) and mortality (RR 0.67: 95 % Cl 0.22, 2.10). Enteral nutrition is more effective than parenteral nutrition in reducing the risk of multiple organ failure, pancreatic infectious complications and mortality in patients with acute pancreatitis. The magnitude of these benefits may depend on the timing of the commencement of nutrition.

Keywords: Acute Pancreatitis, Citation, Complications, Early Enteral Nutrition, Enteral Nutrition, Infection, Management, Medline, Meta-Analysis, Metaanalysis, Mortality, Parenteral Nutrition, Quality, Randomized Controlled-Trial, Support, Systematic Review, Timing, Total Parenteral-Nutrition

? Wanden-Berghe, C., Sanz-Valero, J., Escriba-Aguir, V., Castello-Botia, I. and Guardiola-Wanden-Berghe, R. (2009), Evaluation of quality of life related to nutritional status. *British Journal of Nutrition*, **101** (7), 950-960.

Full Text: 2009\Bri J Nut101, 950.pdf

Abstract: The way in which the quality of life related to health (HRQoL) is affected by the nutritional status of the patient is a subject of constant interest and permanent debate. The purpose of the present paper is to review those studies that relate HRQoL to nutritional status and examine the tools (questionnaires) that they use to investigate this relationship. A critical review of published studies was carried out via an investigation of the following databases: MEDLINE (via PUBMED); EMBASE; The Cochrane Library; Cumulative Index to Nursing and Allied Health Literature (CINAHL); Institute for Scientific Information (ISI) Web of Science; Latin American and Caribbean Health Sciences Literature (LILACS); Spanish Health Sciences Bibliographic Index (IBECS). The search was carried out from the earliest date possible until July 2007. The medical subject heading terms used were ‘quality of life’, ‘nutritional status’ and ‘questionnaires’. The articles had to contain at least one questionnaire that evaluated quality of life. Twenty-eight documents fulfilling the inclusion criteria were accepted, although none of them used a specific questionnaire to evaluate HRQoL related to nutritional status. However, some of them used a combination of generic questionnaires with the intention of evaluating the same. Only three studies selectively addressed the relationship between nutritional status and quality of life, this evaluation being performed not by means of specific questionnaires but by statistical analysis of data obtained via validated questionnaires.

Keywords: Adult Patients, Analysis, Bibliographic, Cancer-Patients, Cochrane, Databases, EMBASE, Enteral-Nutrition, Evaluation, Functional Status, Health, Healthcare Evaluation Mechanisms, Home Parenteral-Nutrition, Interest, ISI, Latin American, Medical, Medline, Megestrol-Acetate, Nursing, Nutritional Sciences, Nutritional Status, Percutaneous Endoscopic Gastrostomy, PUBMED, Quality of Life, Questionnaire, Questionnaires, Randomized Controlled-Trial, Review, Science, Scientific Information, Self-Rated Health, Statistical, Surgical-Patients, Web of Science

# Title: British Journal of Ophthalmology

Full Journal Title: [British Journal of Ophthalmology](http://bjo.bmj.com/contents-by-date.0.dtl)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Ang, A., Tong, L. and Bhan, A. (2001), Analysis of publication trends in two internationally renowned ophthalmology journals. *British Journal of Ophthalmology*, **85** (12), 1497-1498.

Full Text: [2001\Bri J Oph85, 1497.pdf](2001/Bri%20J%20Oph85,%201497.pdf)

Keywords: Journals, Publication, Trends

? Ohba, N. and Ohba, A. (2006), Nyctalopia and hemeralopia: The current usage trend in the literature. *British Journal of Ophthalmology*, **90** (12), 1548-1549.

Full Text: [2006\Bri J Oph90, 1548.pdf](2006/Bri%20J%20Oph90,%201548.pdf)

Keywords: Literature, Trend

# Title: British Journal for the Philosophy of Science

Full Journal Title: [British Journal for the Philosophy of Science](http://bjps.oxfordjournals.org/archive/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Byron, J.M. (2007), Whence philosophy of biology? *British Journal for the Philosophy of Science*, **58** (3), 409-422.

Full Text: [2007\Bri J Phi Sci58, 409.pdf](2007/Bri%20J%20Phi%20Sci58,%20409.pdf)

Abstract: A consensus exists among contemporary philosophers of biology about the history of their field. According to the received view, mainstream philosophy of science in the 1930s, 40s, and 50s focused on physics and general epistemology, neglecting analyses of the ‘special sciences’, including biology. The subdiscipline of philosophy of biology emerged (and could only have emerged) after the decline of logical positivism in the 1960s and 70s. In this article, I present bibliometric data from four major philosophy of science journals (Erkenntnis, Philosophy of Science, Synthese, and the British Journal for the Philosophy of Science), covering 1930-59, which challenge this view.

Keywords: Analyses, Bibliometric, Biology, British, Challenge, Consensus, Data, Epistemology, Field, General, History, Journals, Philosophy, Philosophy of Science, Science, Science Journals, Sciences

# Title: British Journal of Plastic Surgery

Full Journal Title: [British Journal of Plastic Surgery](http://www.sciencedirect.com/science/journal/00071226)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Ismail, Y., McLean, N.R. and Kelly, C.G. (2002), Head and neck oncology: the UK experience. Who is publishing what? *British Journal of Plastic Surgery*, **55** (7), 570-573.

Full Text: [2002\Bri J Pla Sur55, 570.pdf](2002/Bri%20J%20Pla%20Sur55,%20570.pdf)

Abstract: Using the MEDLINE database (OVID), a retrospective review of the UK literature on head and neck oncology was performed for the period 1994-2000, each publication being categorised by department and first author. Tumours almost exclusively managed by general surgeons, cardiothoracic surgeons and neurosurgeons were excluded. In the years 1994 to 2000, there were a total of 120 UK publications, 72% of which came from non-academic NHS units; 23% of the publications were from ENT units, 23% from oral and maxillofacial (OMF) surgery units and 18% from plastic surgery units. The majority of plastic surgery publications described reconstructive techniques, whereas a wider range of topics was observed in the publications by ENT and OMF surgeons. Several irregularities in the MEDLINE database were discovered and are discussed. The findings of this study may be relevant to the future planning of head and neck oncology services. (C) 2002 The British Association of Plastic Surgeons.

? Oliver, D.W., Whitaker, I.S. and Chohan, D.P.K. (2003), Publication rates for abstracts presented at the British Association of Plastic Surgeons meetings: How do we compare with other specialties? *British Journal of Plastic Surgery*, **56** (2), 158-160.

Full Text: [2003\Bri J Pla Sur56, 158.pdf](2003/Bri%20J%20Pla%20Sur56,%20158.pdf)

Abstract: We present a retrospective study of the publication rates of articles presented to five meetings of the British Association of Plastic Surgeons between 1995 and 1999. The PubMed database (http://www.ncbi.nlm.nih. gov/PubMed/) was searched using the presenter’s name and key words from the abstract. Publication rates varied from 23% for the Winter Meeting of 1999 to 54% for the Winter Meeting of 1997. The mean time lag from presentation to publication varied between 13 and 25 months (range: 1-46 months). These results are comparable to those found in some other medical specialties. (C) 2003 The British Association of Plastic Surgeons. Published by Elsevier Science Ltd. All rights reserved.

# Title: British Journal of Psychiatry

Full Journal Title: [British Journal of Psychiatry](http://bjp.rcpsych.org/)

ISO Abbreviated Title: Br. J. Psychiatry

JCR Abbreviated Title: Brit J Psychiat

ISSN: 0007-1250

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Royal College of Psychiatrists

Publisher Address: British Journal of Psychiatry 17 Belgrave Square, London SW1X 8PG, England

Subject Categories:

Psychiatry: Impact Factor

? Done, D.J. (1993), Activity measurement in psychology and medicine: Tryon, WW. *British Journal of Psychiatry*, **162**, 141.

Full Text: Bri J Psy162, 141.pdf

? Howard, L. and Wilkinson, G. (1997), Impact factors of psychiatric journals. *British Journal of Psychiatry*, **170**, 109-112.

Abstract: Background We examined citation data for the British Journal of Psychiatry (BJP) and four other general psychiatry journals to assess their impact on the scientific community. Method Data on three measures of citations (total number of citations, impact factor and ranking by impact factor) were obtained from Journal Citation Reports for 1985-1994. Rank correlations from year to year were calculated. Results The BJP currently ranks sixth of all psychiatry journals when journals are ranked by impact factor. The journal’s impact factor fell between 1985 and 1990 and this was followed by a rise in impact factor after 1991. The BJP did not rank int he top 10 psychiatry journals between 1991 and 1993. Archives of General Psychiatry is cited more frequently than any other psychiatry Psychiatry usually ranking second. Psychopharmacology journals are replacing more general journals in the top rankings. Rankings of most journals have become less stable in recent years. Conclusions The BJP would have to change the nature and number of papers published to improve its impact factor. There are a number of limitations to citation data and such data are only one of several factors useful in evaluating the importance of a journal’s contribution scientific and clinical communities. Conflict of interest The second author is Editor of the British Journal of Psychiatry.

? Howard, L. and Wilkinson, G. (1998), Impact factors of psychiatric journals - The British Journal of Psychiatry now has the highest impact factor of all psychiatric journals outside the USA. *British Journal of Psychiatry*, **172**, 457.

? Patel, V. and Sumathipala, A. (2001), International representation in psychiatric literature - Survey of six leading journals. *British Journal of Psychiatry*, **178**, 406-409.

Abstract: Background Despite the growing recognition of the global burden of psychiatric disease, there are questions about the strength of the evidence base from non-Western societies. Aims To compare the contribution of Euro-American countries and the rest of the world (RoW) to psychiatric literature. Method Survey of the country of origin of papers submitted to and published in six leading psychiatric journals over a 3-year period (1996-1998) Results Only 6% of the literature is published from regions of the world that account for over 90% of global population. The three journals published in Europe had a significantly higher proportion of international articles when compared to the three American journals. Less than 1% of all published articles described mental health interventions in the RoW. Acceptance rates were significantly lower Rr papers submitted from the RoW. Conclusions There is a gross underrepresentation of research from the RoW This has implications for the development of a truly international psychiatry. Declaration of Interest None.

? Leff, J. (2001), Invited commentaries on: International representation in psychiatric literature. Survey of six leading journals. An inequity and its possible remedies. *British Journal of Psychiatry*, **178** (5), 410.

Full Text: Bri J Psy178, 410.pdf

? Cheng, A.T. (2001), Invited commentaries on: International representation in psychiatric literature. Survey of six leading journals. Can we learn from each other? *British Journal of Psychiatry*, **178** (5), 410-411.

Full Text: Bri J Psy178, 410-1.pdf

? Faunce, G.J. (2001), Advice for authors is premature. *British Journal of Psychiatry*, **179**, 466.

? Fava, G.A., Ottolini, F. and Tossani, E. (2001), World psychiatric literature. *British Journal of Psychiatry*, **179**, 561.

Piccinelli, M., Politi, P. and Barale, F. (2002), Focus on psychiatry in Italy. *British Journal of Psychiatry*, **181**, 538-544.

Full Text: [B\Bri J Psy181, 538.pdf](B/Bri%20J%20Psy181,%20538.pdf)

Clement, S., Singh, S.P. and Burns, T. (2003), Status of bipolar disorder research - Bibliometric study. *British Journal of Psychiatry*, **182**, 148-152.

Full Text: [B\Bri J Psy182, 148.pdf](B/Bri%20J%20Psy182,%20148.pdf)

Abstract: Background Bibliometric research has used publication or funding databases to compare the amount of research activity on different illnesses. Only one study has examined bipolar disorder and schizophrenia in this way, and it was restricted to one database.

Aims The primary aim is to compare levels of research activity in bipolar disorder and schizophrenia. Secondary aims are to examine how research activity on the disorders varies over time and across scientific fields.

Method The numbers of publications, projects, journals and funding awards on bipolar disorder and schizophrenia were extracted from nine computer databases to compare research activity on the two conditions.

Results Ratios (bipolar disorder: schizophrenia) ranged from 1: 1.3 for the number of research funding awards to 1: 7.6 for the number of clinical trials.

Conclusions There is a relative dearth of research activity on bipolar disorder compared with schizophrenia.

Keywords: Burden, Disease, Funding, General Psychiatric Journals, Journals, Mortality, Research, Schizophrenia, Trends

Lagnado, M. (2003), Increasing the trust in scientific authorship. *British Journal of Psychiatry*, **183** (1), 3-4.

Full Text: [B\Bri J Psy183, 3.pdf](B/Bri%20J%20Psy183,%203.pdf)

Keywords: Journals, British

? Henderson, C., Howard, L. and Wilkinson, G. (2003), Acknowledgement of psychiatric research funding. *British Journal of Psychiatry*, **183**, 273-275

? Mari, J.J., Bressan, R.A. and Miguel, E.C. (2004), Mental health and psychiatric research in Brazil. *British Journal of Psychiatry*, **184**, 273.

Full Text: [2004\Bri J Psy184, 273.pdf](2004/Bri%20J%20Psy184,%20273.pdf)

? Chaturvedi, S.K. (2005), Reading habits of British psychiatrists. *British Journal of Psychiatry*, **186**, 448

? Saxena, S., Paraje, G., Sharan, P., Karam, G. and Sadana, R. (2006), The 10/90 divide in mental health research: Trends over a 10-year period. *British Journal of Psychiatry*, **188** (1), 81-82.

Full Text: [2006\Bri J Psy188, 81.pdf](2006/Bri%20J%20Psy188,%2081.pdf)

Abstract: A search (precision value 94%, recall value 93%) of the ISI Web of Science database (1992-2001) revealed that mental health publications accounted for 3-4% of the health literature. A 10/90 divide in internationally accessible mental health literature was evident and remained undiminished through 10 years as low- and middle-income countries (n=152) contributed only 6%, high-income countries (n=54) 94%, and 14 leading high-income countries (with more than 1% contribution for majority of years under consideration) contributed 90% of internationally accessible mental health research. Steps should be taken to improve the research infrastructure and capacity to conduct and disseminate mental health research in general, and on a priority basis in low- and middle-income countries. Declaration of interest None.

Keywords: Capacity, Database, General, Health, Health Research, Infrastructure, ISI, ISI Web of Science, Literature, Mental Health, Precision, Publications, Recall, Research, Trends, Value, Web of Science

? Patel, V. and Kim, Y.R. (2007), Contribution of low- and middle-income countries to research published in leading general psychiatry journals, 2002-2004. *British Journal of Psychiatry*, **190**, 77-78.

Abstract: We aimed to describe the contribution of low- and middle-income (LAMI) countries to leading general psychiatric journals. We reviewed original research published over a 3-year period (2002-2004) in the six highest-impact general psychiatry journals and contacted editorial offices to gather data on country of origin of submitted and accepted articles. Only 3.7% of published research emerges from these less affluent countries, which account for over 80% of the global population. Compared with the findings of a similar review of the period 1996-1998, there has been little change. The three European journals had a higher representation than the three American journals.The proportion of psychiatrists in a country was associated with that country’s research output. As much as 50% of the research from LAMI countries is led by authors from high-income countries. The proportion of submissions from LAMI countries was very low, and articles from them were more frequently rejected. Strengthening the research capacity of these countries and reviewing the editorial policies of leading journals can help increase the international representation of LAMI countries in psychiatric research.

? Lewison, G., Thornicroft, G., Szmukler, G. and Tansella, M. (2007), Fair assessment of the merits of psychiatric research. *British Journal of Psychiatry*, **190** (4), 314-318.

Full Text: [2007\Bri J Psy190, 314.pdf](2007/Bri%20J%20Psy190,%20314.pdf)

Abstract: Background Use of bibliometric assessments of research quality is growing worldwide. So far, a narrow range of metrics have been applied across the whole of biomedical research. Without specific sets of metrics, appropriate to each sub-field of research, biased assessments of research excellence are possible. Aims To discuss the measures used to evaluate the merits of psychiatric biomedical research, and to propose a new approach using a multidimensional selection of metrics appropriate to each particular field of medical research. Method Three steps: (a) a definition of scientific ‘domains’, (b) translating these into ‘filters’ to identify publications from bibliometric databases, leading to (c) the creation of standardised measures of merit. Results We propose using: (a) established metrics such as impact factors and citation indices, (b) new derived measures such as the ‘worldscale’ score, and (c) new indicators based on journal peer esteem, impact on clinical practice, medical education and health policy. Conclusions No single index or metric can be used as a fair rating to compare nations, universities, research groups, or individual investigators across biomedical science. Rather, we propose using a multidimensional profile composed of a carefully selected array of such metrics.

Keywords: Assessment, Assessments, Bibliometric, Biomedical Research, Citation, Clinical, Creation, Databases, Education, Groups, Health, Health Policy, Health-Services Research, Impact, Impact Factors, Index, Indicators, Journal, Journals, Medical, Medical Education, MEDLINE, Metrics, Optimal Search Strategies, Policy, Practice, Profile, Psychiatric Research, Publications, Quality, Range, Research, Research Quality, Science, Selection, Universities

# Title: British Journal of Psychology

Full Journal Title: British Journal of Psychology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Richards, G. (2004), The *British Journal of Psychology* centenary: A preliminary content survey and its problems. *British Journal of Psychology*, **95** (4), 523-543.

Full Text: [2004\Bri J Psy95, 523.pdf](2004/Bri%20J%20Psy95,%20523.pdf)

Abstract: The preliminary findings are reported of a review of the contents of the British journal of Psychology 1904-2003 undertaken to mark the journal’s centenary. This identifies (a) the top 11 categories of paper published and their patterns of distribution, (b) an apparent change in the nature of papers published after 1983, (c) the overall pattern of category-introduction, showing a dramatic change in 1965 and (d) a provisional typology of the principal patterns of distribution over time. Major conceptual and practical problems arising in the categorization of papers, and their implications, are discussed. Some reflections are offered on the possible value of research of this kind and on the nature of the journal itself.

? Sugimori, E. and Tanno, Y. (2010), The effects of cognitive activity and perceptual details on speech source monitoring. *British Journal of Psychology*, **101**, 777-790.

Full Text: [2010\Bri J Psy101, 777.pdf](2010/Bri%20J%20Psy101,%20777.pdf)

Abstract: Our purpose in this study was to investigate the effects of cognitive operations and perceptual details on speech source monitoring. In Phase I, correctly spelled words and anagrams were presented in Expt 1. Words were read aloud by participants, by a same-sex voice, or by an opposite-sex voice. Immediately after Phase 1, in Phase 2, participants were asked whether each word had been read aloud by the participants themselves, by a same-sex voice, or by an opposite-sex voice. Source discrimination between own speech and that produced by a same-sex voice was poorer than between own speech and an opposite-sex voice. In addition, misattribution of the speech of another to one’s self increased as the level of cognitive effort required for the task increased. In Expt 2, misattributions to same-sex voice were assigned ‘know’ responses more frequently and misattributions to one’s self were assigned ‘remember’ responses more frequently. These results suggest that qualitative characteristics such as perceptual detail and cognitive operations are differentially influencing misattributions to the self and those to same-sex voices.

Keywords: Consequences, Cryptomnesia, Discrimination, Generation, Inadvertent Plagiarism, Inflation, Information, Memory Strength, Operations, Recognition, Voice

# Title: British Journal of Radiology

Full Journal Title: [British Journal of Radiology](http://bjr.birjournals.org/contents-by-date.0.shtml)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Jackson, A. (2010), The impact factor game: The rising impact factor of the *British Journal of Radiology* - a success story? *British Journal of Radiology*, **83** (986), 93-97

Full Text: [2010\Bri J Rad83, 93.pdf](2010/Bri%20J%20Rad83,%2093.pdf)

Keywords: Impact, Impact Factor, Science-Citation-Index

# Title: British Journal of Rheumatology

Full Journal Title: British Journal of Rheumatology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Ruiz, M.T., Álvarez-Dardet, C., Vela, P. and Pascual, E. (1991), Study designs and statistical methods in rheumatological journals an international comparison. *British Journal of Rheumatology*, **30** (5), 352-355.

Abstract: In order to determine the characteristics of papers published in the rheumatological literature, we have conducted a survey of the seven leading rheumatological journals published in 1987, 1107 original papers have been reviewed and classified according to study design, statistical techniques, and country of origin. Almost half of the published papers were clinical descriptive studies without inferential power, both authors and editors should reflect whether the impact of these studies on the knowledge of readers justifies their frequency. Analytical research was represented mainly by randomized clinical trials (15.6%), and case control studies (14.2%). Cohort studies represented 5.4% and this seems a low figure in a speciality in need of more aetiological research. Almost half of the papers originated from the USA or the UK, journals edited in these countries published papers mainly from the same country. English language journals from other countries published a larger percentage of papers from other countries, including many non-English speaking nations. Bibliometric studies are desirable to evaluate trends in publication.

# Title: British Journal of Social Psychology

Full Journal Title: British Journal of Social Psychology

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Trafimow, D. and Fishbein, M. (1995), Do people really distinguish between behavioral and normative beliefs. *British Journal of Social Psychology*, **34**, 257-266.

Full Text: 1995\Bri J Soc Psy34, 257.pdf

Abstract: Several theories (e.g. Ajzen, 1988; Fishbein BE Ajzen, 1975; Triandis, 1980) imply that people distinguish between beliefs about the consequences of performing a behaviour and beliefs about the opinions of important others toward performing that behaviour. In order to test this, subjects were presented with ‘behavioural’ or ‘normative’ items that were relevant to the performance of a behaviour. Experimental group subjects in two experiments were asked to decide, on the basis of these items, whether or not they would perform the behaviour. Control group subjects were given other processing objectives; these were different in the two experiments. All subjects were asked ro recall the items. According to the distinction between behavioural and normative beliefs, experimental group subjects’ recall protocols should be clustered by belief type, but this should not be true for control group subjects. Findings from two experiments were consistent with predictions. Finally, a third experiment, in which subjects wrote down beliefs chat were nor presented by an experimenter, further supported a distinction between these two types of beliefs.

Keywords: Beliefs, Control, Experimental, Fishbein, Intentions, Model, Reasoned Action, Response Bias, Self, Theories

# Title: British Journal of Social Work

Full Journal Title: British Journal of Social Work

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Manthorpe, J. (2007), Bibliometrics in social work. *British Journal of Social Work*, **37** (5), 951-953.

Keywords: Bibliometrics

# Title: British Journal of Sports Medicine

Full Journal Title: [British Journal of Sports Medicine](http://bjsm.bmj.com/contents-by-date.0.dtl)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0306-3674

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Barnes, A., Wheat, J. and Milner, C. (2008), Association between foot type and tibial stress injuries: A systematic review. *British Journal of Sports Medicine*, **42** (2), 93-98.

Full Text: [2008\Bri J Spo Med42, 93.pdf](2008/Bri%20J%20Spo%20Med42,%2093.pdf)

Abstract: Objectives: To systematically review published articles investigating the association between structural foot characteristics and tibial stress injuries, and to suggest possible future avenues of research in this area. Methods: Literature was identified, selected and appraised in accordance with the methods of a systematic review. Articles potentially relevant to the research question were identified by searching the following electronic databases: Amed, Cinahl, Index to UK theses, Medline, PUBMED, Scopus, Sports discus and Web of science. Duplicates were removed and, based on the title and abstract, the full text of relevant studies were retrieved. Two reviewers independently assessed papers; this formed the basis for the inclusion of the most appropriate trials. Results: From the 479 articles originally identified, nine were deemed appropriate for inclusion in the review. In general, specific data relating to this relationship was limited. Outcomes of the nine investigations were difficult to compare due to differing methods used across studies. Results have proved conflicting, with limited evidence found to implicate any specific foot type as a potential risk factor for tibial stress injuries. Conclusions: No definitive conclusions can be drawn relating foot structure or function to an increased risk of tibial stress injuries. Extremes of foot types are likely to pose an increased risk of tibial stress injuries compared to normal arched feet.

Keywords: Arch Height, Articles, Bone, Databases, Fractures, Gait, Kinematics, Lower-Extremity, Methods, Normal, Outcomes, Overuse Injuries, Papers, Parameters, PUBMED, Research, Review, Risk, Risk-Factors, Runners, Science, Scopus, Stress, Systematic, Systematic Review, UK, Web of Science

Agulló-Calatayud, V., González-Alcaide, G., Valderrama-Zurián, J.C. and Aleixandre-Benavent, R. (2008), Consumption of anabolic steroids in sport, physical activity and as a drug of abuse: An analysis of the scientific literature and areas of research. *British Journal of Sports Medicine*, **42** (2), 103-109.

Full Text: [2008\Bri J Spo Med42, 103.pdf](2008/Bri%20J%20Spo%20Med42,%20103.pdf)

Abstract: Objective: The consumption of anabolic steroids (AS) has been growing continuously in recent years. It has gone beyond the sports world; AS are now widely used as drugs of abuse in connection with bodybuilding. This study sets out to assess the state of scientific research in the area. Design: Bibliometrics were employed to evaluate the literature retrieved from the principal relevant bibliographic databases: MEDLINE, SportDiscus, the Science Citation Index Expanded and the Social Sciences Citation Index. The core journals were identified along with the leading authors and research groups and their institutional affiliations. Techniques based on social network analysis were applied in order to build up a concept map of research. Results: 1325 documents were retrieved. They were produced by 3131 different researchers giving a Collaboration Index of 3.32. The institutions with the most productive authors were Ball State University (Muncie, IN, USA), the Ecole Nationale Veterinaire de Nantes (ENVN), the Institut Municipal dInvestigacio Medica (IMIM) (Barcelona, Spain), the Institute of Biochemistry of the German Sport University Cologne (DSHS), Iowa State University, Maastricht University and the University of Iowa. Conclusions: It was concluded that there has been an upward trend in the number of research projects. The sources used complemented one another, as 78.04% of the documents retrieved were unique to one source. The productivity ranking was headed by sports medicine journals, followed by journals of chemistry, physiology, endocrinology and substance abuse. Besides sporting activities, the most important research clusters were those connected with bodybuilding and with youth groups.

Keywords: Abuse, Analysis, Barcelona, Bibliographic Databases, Bibliometrics, Chemistry, Consumption, Databases, Drug, Drugs, Drugs of Abuse, Institutions, Journals, Literature, Medicine, MEDLINE, Network, Network Analysis, Physical, Physical Activity, Physiology, Productivity, Ranking, Research, Science Citation Index, Scientific Literature, Scientific Research, Social, Social Network Analysis, Source, Sources, Spain, Sport, State, Steroids, Substance Abuse, Trend, USA, World, Youth

? Hamer, M. and Chida, Y. (2008), Walking and primary prevention: A meta-analysis of prospective cohort studies. *British Journal of Sports Medicine*, **42** (4), 238-243.

Full Text: [2008\Bri J Spo Med42, 238.pdf](2008/Bri%20J%20Spo%20Med42,%20238.pdf)

Abstract: Objective: To quantify the association between walking and the risk of cardiovascular disease (CVD) and all-cause mortality in healthy men and women. Data sources: Medline, Cochrane Database of Systematic Reviews, and Web of Science databases were searched to May 2007. Study selection: Prospective epidemiological studies of walking and CVD and all-cause mortality. Results: 18 prospective studies were included in the overall analysis, which incorporated 459 833 participants free from CVD at baseline with 19 249 cases at follow-up. From the meta-analysis the pooled hazard ratio of CVD in the highest walking category compared with the lowest was 0.69, (95% CI 0.61 to 0.77, p, 0.001), and 0.68 (0.59 to 0.78, p, 0.001) for all-cause mortality. These effects were robust among men and women, although there was evidence of publication biases for the associations with CVD risk. Walking pace was a stronger independent predictor of overall risk compared with walking volume (48% versus 26% risk reductions, respectively). There was also evidence of a dose response relationship across the highest, intermediate, and lowest walking categories in relation to the outcome measures. Conclusions: The results suggest walking is inversely associated with clinical disease endpoints and largely support the current guidelines for physical activity. The mechanisms that mediate this relationship remain largely unknown and should be the focus of future research.

Keywords: Analysis, Cardiovascular, Cardiovascular Disease, Cardiovascular-Disease, Cochrane, Cohort Studies, Coronary-Heart-Disease, Databases, Disease, Dose-Response, Endpoints, Follow-Up, Guidelines, Harvard Alumni Health, Leisure-Time, Men, Meta-Analysis, Mortality, Older Women, Outcome, Physical Activity, Prevention, Primary, Primary Prevention, Prospective Studies, Publication, Ratio, Research, Risk, Science, Systematic, Time Physical-Activity, Vigorous Exercise, Walking, Web of Science, Women

? Alla, S., Sullivan, S.J., Hale, L. and McCrory, P. (2009), Self-report scales/checklists for the measurement of concussion symptoms: A systematic review. *British Journal of Sports Medicine*, **43**, I3-I12.

Full Text: [2009\Bri J Spo Med43, I3.pdf](2009/Bri%20J%20Spo%20Med43,%20I3.pdf)

Abstract: Objective: To identify self-reported sport concussion symptom scales and to describe the psychometric properties of these identified scales. Design: Systematic review. Intervention: PUBMED, Medline, CINAHL, Scopus, Web of Science, Sport Discus, PsycINFO and AMED were searched from their establishment until December 2008. The medical subject heading terms “brain concussion’’, “signs or symptoms’’ and “athletic injuries’’. The search was limited to articles published in English. An additional search of the reference lists of the retrieved articles was conducted. Only full-text articles were considered for this study and these were retrieved to determine whether they met the inclusion criteria. Results: The initial search resulted in 421 articles, which were reduced to 290 articles after removing duplicates. The hand search resulted in 17 articles, thus giving a total of 307 articles. Full text was available for 295 articles of which 60 met the criteria for inclusion. The excluded 235 articles were case reports, reviews and guidelines on concussion management or studies that had not used a symptom scale or checklist. Conclusions: Six core scales were identified with a broad range of symptom items but with limited information on their psychometric properties. There were numerous derivative scales reported, most of which have not been methodically developed or subjected to scientific scrutiny. Despite this, they do make a contribution to the detection, assessment and return to play decisions but there is a need for the clinical user to be aware that many of these scales have “evolved’’ rather than being scientifically developed.

Keywords: Assessment, Case Reports, Cerebral Concussion, Collegiate Football Players, Contribution, Guidelines, Head-Injury, High-School, Information, Intervention, Management, Measurement, Medical, Mild Brain-Injury, Neurocognitive Performance, Neuropsychological Test Protocol, Professional Football, PUBMED, Return To Play, Return-To-Play, Review, Science, Scopus, Sport, Sports-Related Concussion, Symptoms, Systematic, Systematic Review, Web of Science

? Thorborg, K., Roos, E.M., Bartels, E.M., Petersen, J. and Holmich, P. (2010), Validity, reliability and responsiveness of patient-reported outcome questionnaires when assessing hip and groin disability: A systematic review. *British Journal of Sports Medicine*, **44** (16), 1186-1196.

Full Text: [2010\Bri J Spo Med44, 1186.pdf](2010/Bri%20J%20Spo%20Med44,%201186.pdf)

Abstract: Background Novel treatment interventions are advancing rapidly in the management of hip and groin disability in the physically active young to middle-aged population. Objective To recommend the most suitable patient-reported outcome (PRO) questionnaires for the assessment of hip and groin disability based on a systematic review of evidence of validity, reliability and responsiveness of these instruments. Methods MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials, PsycINFO, SportsDiscus and Web of Science were all searched up to January 2009. Two reviewers independently rated measurement properties of the PRO questionnaires in the included studies, according to a standardised criteria list. Results The computerised search identified 2737 publications. Forty-one publications investigating measurement properties of PRO questionnaires assessing hip or groin disability were included in the study. Twelve different questionnaires designed for patients with hip disability and one questionnaire for patients with groin disability were identified. Hip dysfunction and Osteoarthritis Outcome Score (HOOS) contains adequate measurement qualities to evaluate patients with hip osteoarthritis (OA) or total hip replacement (THR). Hip Outcome Score (HOS) is the best available questionnaire for evaluating hip arthroscopy, but the Inguinal Pain Questionnaire, the only identified questionnaire evaluating groin disability, does not contain adequate measurement qualities. Conclusions HOOS is recommended for evaluating patients with hip OA undergoing non-surgical treatment and surgical interventions such as THR. HOS is recommended for evaluating patients undergoing hip arthroscopy. Current and new PRO questionnaires should also be evaluated in younger patients (age <50) with hip and/or groin disability, including surgical and non-surgical patients.

Keywords: Arthroplasty, Assessment, Cochrane, EMBASE, Femoroacetabular Impingement, Health-Status, Interventions, Management, Measurement, Medline, Methods, Outcome, Publications, Quality-Of-Life, Questionnaire, Questionnaires, Randomized Controlled-Trials, Reliability, Replacement Surgery, Review, Science, Scoring Systems, Surgical, Systematic, Systematic Review, The-Literature, Treatment, University Osteoarthritis Index, Validity, Web of Science, Western-Ontario-University

? Alla, S., Sullivan, S.J., McCrory, P. and Hale, L. (2011), Spreading the word on sports concussion: Citation analysis of summary and agreement, position and consensus statements on sports concussion. *British Journal of Sports Medicine*, **45** (2), 132-135.

Full Text: [2011\Bri J Spo Med45, 132.pdf](2011/Bri%20J%20Spo%20Med45,%20132.pdf)

Abstract: Background The growing concern over concussion in sports has led to the publication of five major summary and agreement, position and consensus statements since 2000. The dissemination of information from these statements is largely unknown and difficult to quantify, but their impact on the research community can be quantified by analysing the number of citations to these key publications. The purpose of this review is to report the number and pattern of citations to the key published statements on sports concussion. Methods Web of Science, Scopus and PUBMED were searched from 2000 to mid-December 2009 using two different search strategies. The first strategy used the search terms ‘concussion’ and ‘first author’ of the statement article, while the second used the ‘title’ of the target article as the key search term. Results The publications resulting from the three ‘Concussion in Sport’ (CIS) group conferences were cited by 532 journal articles, while the National Athletic Trainers’ Association position statement was cited 123 times. The highest number of citations to each of the five identified statements was seen in 2009. British Journal of Sports Medicine was the most frequently cited journal. Conclusion The citation analysis of the key statements on sports concussion has shown that the target papers have been widely cited in the research literature, with the highest number of citations being from the publications arising from the CIS group conferences. The authors have shown their preference to cite source articles published in the British Journal of Sports Medicine.

Keywords: 2nd International-Conference, Analysis, Author, Authors, Citation, Citation Analysis, Citations, Dissemination, Impact, Information, Journal, Literature, Management, Methods, November 2008, Papers, Publication, Publications, PUBMED, Recommendations, Research, Review, Science, Scopus, Search Strategies, Sports, Strategy, Web of Science, Zurich

? Reurink, G., Goudswaard, G.J., Tol, J.L., Verhaar, J.A.N., Weir, A. and Moen, M.H. (2012), Therapeutic interventions for acute hamstring injuries: A systematic review. *British Journal of Sports Medicine*, **46** (2), 103-109.

Full Text: [2012\Bri J Spo Med46, 103.pdf](2012/Bri%20J%20Spo%20Med46,%20103.pdf)

Abstract: Background Despite the high rate of hamstring injuries, there is no consensus on their management, with a large number of different interventions being used. Recently several new injection therapies have been introduced. Objective To systematically review the literature on the effectiveness of therapeutic interventions for acute hamstring injuries. Data sources The databases of PubMed, EMBASE, Web of Science, Cochrane Library, CINAHL and SPORTDiscus were searched in May 2011. Study eligibility criteria Prospective studies comparing the effect of an intervention with another intervention or a control group without intervention in subjects with acute hamstring injuries were included. Data analysis Two authors independently screened the search results and assessed risk of bias. Quality assessment of the included studies was performed using the Physiotherapy Evidence Database score. A best evidence synthesis was used to identify the level of evidence. Main results Six studies were included in this systematic review. There is limited evidence for a positive effect of stretching, agility and trunk stability exercises, intramuscular actovegin injections or slump stretching in the management of acute hamstring injuries. Limited evidence was found that there is no effect of non-steroidal anti-inflammatory drugs or manipulation of the sacroiliac joint. Conclusions There is a lack of high quality studies on the treatment of acute hamstring injuries. Only limited evidence was found to support the use of stretching, agility and trunk stability exercises, intramuscular actovegin injections or slump stretching. Further research is needed using an appropriate control group, randomisation and blinding.

Keywords: Acute, Acute Muscle Injury, Analysis, Assessment, Author, Authors, Bias, Cochrane, Control, Data Analysis, Database, Databases, Drugs, Effectiveness, Embase, Epidemiology, Exercises, Intervention, Interventions, Joint, Literature, Management, Pedro Scale, Physiotherapy, Players, Prevention, Professional Football, Prospective, Prospective Studies, Pubmed, Quality, Quality Assessment, Rehabilitation, Research, Review, Risk, Science, Stability, Strain Injuries, Synthesis, Systematic, Systematic Review, Treatment, Web of Science, Web-of-Science

# Title: British Journal of Surgery

Full Journal Title: [British Journal of Surgery](http://www3.interscience.wiley.com/cgi-bin/jhome/99019821)

ISO Abbreviated Title: Br. J. Surg.

JCR Abbreviated Title: Brit J Surg

ISSN: 0007-1323

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Blackwell Science Ltd

Publisher Address: PO Box 88, Osney Mead, Oxford OX2 0NE, Oxon, England

Subject Categories:

Surgery: Impact Factor

? Baigrie, R.J., Lamont, P.M., Kwiatkowski, D., Dallman, M.J. and Morris, P.J. (1992), Systemic cytokine response after major surgery. *British Journal of Surgery*, **79** (8), 757-760.

Full Text: [1992\Bri J Sur79, 757.pdf](1992/Bri%20J%20Sur79,%20757.pdf)

Abstract: The systemic cytokine response to major surgical trauma was studied in 20 patients undergoing elective aortic surgery and five patients after inguinal hernia repair. Tumour necrosis factor alpha and interferon gamma were not detected in these patients. An early and short-lived interleukin 1 beta (IL-1-beta) response to major surgery was detected only by intensive sampling in the perioperative period. The IL-1-beta peak preceded a more marked interleukin 6 (IL-6) response that peaked 4-48 h after surgery. IL-6 levels had fallen sharply by 48-72 h in all patients who had an uneventful postoperative course. The IL-6 peaks were significantly lower after hernia surgery than after major aortic operations (P < 0.001); IL-1-beta was not detected in any samples. Three patients undergoing aortic surgery developed unexpected major postoperative complications. IL-6 levels in this group were significantly higher than those of the other patients undergoing aortic surgery within 6-8 h of skin incision, and remained elevated for longer. These rises in plasma IL-6 levels preceded the clinical onset of major complications by 12-48 h. The systemic IL-1-beta and IL-6 response to surgical trauma increased with the severity of the surgical insult. An early, exaggerated IL-6 response was associated with the subsequent clinical development of major complications.

Keywords: Tumor-Necrosis-Factor, Phase Protein Response, Elective Surgery, Serum Interleukin-6, Blood Monocytes, Endotoxin, Inflammation, Expression, Mortality, Cachectin

? Awad, R.W., Elgohary, T.M., Skilton, J.S. and Elder, J.B. (1993), Life quality and psychological morbidity with an ileostomy. *British Journal of Surgery*, **80** (2), 252-253.

Full Text: [1993\Bri J Sur80, 252.pdf](1993/Bri%20J%20Sur80,%20252.pdf)

Abstract: The recent introduction of restorative proctocolectomy for the treatment of ulcerative colitis has reopened the debate about the effects of ileostomy on quality of life. This study analysed life quality and psychological morbidity in 113 patients with an ileostomy using a postal questionnaire which included questions about their opinion of the pouch operation. of the questionnaires, 73 per cent were suitable for analysis. A total of 93 per cent of those responding were happy with the ileostomy and appeared to have adapted to a normal life with it. Some 87 per cent stated that they would keep the ileostomy in preference to an ileoanal pouch. In addition, psychological morbidity as assessed by the General Health Questionnaire occurred in only 5 per cent of patients.

? Organ, Jr., C.H. (2000), What an editor wants or expects from authors. *British Journal of Surgery*, **87** (9), 1123-1124.

Full Text: [2000\Bri J Sur87, 1123.pdf](2000/Bri%20J%20Sur87,%201123.pdf)

? Schein, M., Farndon, J.R. and Fingerhut, A. (2000), Epilogue: Key considerations in surgical publishing. *British Journal of Surgery*, **87** (12), 1610-1614.

Full Text: [2000\Bri J Sur87, 1610.pdf](2000/Bri%20J%20Sur87,%201610.pdf)

? Memon, M.A., Cooper, N.J., Memon, B., Memon, M.I. and Abrams, K.R. (2003), Meta-analysis of randomized clinical trials comparing open and laparoscopic inguinal hernia repair. *British Journal of Surgery*, **90** (12), 1479-1492.

Full Text: [2003\Bri J Sur90, 1479.pdf](2003/Bri%20J%20Sur90,%201479.pdf)

Abstract: Background: The aim was to conduct a meta-analysis of the randomized evidence to determine the relative merits of laparoscopic (LIHR) and open (OIHR) inguinal hernia repair. Methods: A search of the Medline, Embase, Science Citation Index, Current Contents and PubMed databases identified all randomized clinical trials that compared OIHR and LIHR and were published in the English language between January 1990 and the end of October 2000. The meta-analysis was prepared in accordance with the Quality of Reporting of Meta-analyses (QUOROM) statement. The six outcome variables analysed were operating time, time to discharge from hospital, return to normal activity and return to work, postoperative complications and recurrence rate. Random effects meta-analyses were performed using odds ratios and weighted mean differences. Results: Twenty-nine trials were considered suitable for meta-analysis. Some 3017 hernias were repaired laparoscopically and 2972 hernias were repaired using an open method in 5588 patients. For four of the six outcomes the summary point estimates favoured LIHR over OIHR; there was a significant reduction of 38 per cent in the relative odds of postoperative complications (odds ratio 0.62 (95 per cent confidence interval (c.i.) 0.46 to 0.84); P = 0.002), 4.73 (95 per cent c.i. 3.51 to 5.96) days in time to return to normal activity (P < 0.001), 6.96 (95 per cent c.i. 5.34 to 8.58) days in time to return to work (P < 0.001) and 3.43 (95 per cent c.i. 0.35 to 6.50) h in time to discharge from hospital (P = 0.029). There was a significant increase of 15.20 (95 per cent c.i. 7.78 to 22.63) min in the mean operating time for LIHR (P < 0.001). The relative odds of short-term recurrence were increased by 50 per cent for LIHR compared with OIHR, although this result was not statistically significant (odds ratio 1.51 (95 per cent c.i. 0.81 to 2-79); P = 0.194). Conclusion: LIHR was associated with earlier discharge from hospital, quicker return to normal activity and work, and significantly fewer postoperative complications than OIHR. However, the operating time was significantly longer and there was a trend towards an increase in the relative odds of recurrence after laparoscopic repair.

Keywords: Citation, Clinical Trials, Cost, Databases, Day Surgical-Procedure, Discharge, English, Groin Hernia, Hernioplasty, Herniorrhaphy, Language, Medline, Meta-Analysis, Multicenter Trial, Outcomes, Postoperative Pain, Preperitoneal Mesh Repair, Reduction, Science, Science Citation Index, Shouldice Repair, Transabdominal Preperitoneal

? Mazaki, T., Ishii, Y. and Takayama, T. (2006), Meta-analysis of prophylactic antibiotic use in acute necrotizing pancreatitis. *British Journal of Surgery*, **93** (6), 674-684.

Full Text: [2006\Bri J Sur93, 674.pdf](2006/Bri%20J%20Sur93,%20674.pdf)

Abstract: Background: Death from infected necrosis in acute pancreatitis is common and prevention has focused on prophylactic antibiotics. This study assesses whether intravenous prophylactic antibiotic use reduces infected necrosis and death in acute necrotizing pancreatitis. Methods. A meta-analysis of randomized controlled trials was carried out. Medline, Web of Science, the Cochrane controlled trials register and international conference proceedings were searched, with a citation review of relevant primary and review articles. Results: Six of 328 studies assessed were included in data extraction. Primary outcome measures were infected necrosis and death. Secondary outcome measures were non-pancreatic infections, surgical intervention and length of hospital stay. Prophylactic antibiotic use was not associated with a statistically significant reduction in infected necrosis (relative risk (RR) 0.77 (95 per cent confidence interval (c.i.) 0.54 to 1.12); P = 0.173), mortality (RR 0.78 (95 per cent c.i. 0.44 to 1.39); P = 0.404), non-pancreatic infections (RR 0.71 (95 per cent c.i. 0.32 to 1.58); P = 0.402) and surgical intervention (RR 0.78 (95 per cent c.i. 0.55 to 1.11); P = 0.167). It was, however, associated with a statistically significant reduction in hospital stay (P = 0.040). Conclusion: Prophylactic antibiotics do not prevent infected necrosis or death in acute necrotizing pancreatitis.

Keywords: Acute Pancreatitis, Antibiotic, Antibiotics, Citation, Cochrane, Controlled Clinical-Trial, Hospital, Imipenem, Infection, Intervention, Meta Analysis, Meta-Analysis, Methods, Mortality, Multicenter, Necrosis, Nonsurgical Management, Organ Failure, Outcome, Prevention, Primary, Quality, Randomized Controlled Trials, Randomized-Trials, Relative Risk, Review, Risk, Science, Septic Complications, Surgical, Web of Science

? van Rossum, M., Bosker, B.H., Pierik, E.G.J.M. and Verheyen, C.C.P.M. (2007), Geographic origin of publications in surgical journals. *British Journal of Surgery*, **94** (2), 244-247.

Full Text: [2007\Bri J Sur94, 244.pdf](2007/Bri%20J%20Sur94,%20244.pdf)

Abstract: Background: Publications in peer-reviewed journals are the main determinants of research rating and funding. The present study assesses worldwide scientific contributions in the field of surgical research.

Methods: Fifteen major surgical journals were selected for a bibliometric search in Medline/PubMed over a 6-year period (2000-2005). All articles with abstracts were totalled according to country of corresponding author. Publications (total and corrected for population size) and journal impact factor were assessed according to country.

Results: A total of 18 717 articles were identified. Fifteen countries generated 88.8 per cent of these: the USA produced 42.1 per cent, Japan 9.1 per cent and the UK 7.6 per cent. When corrected for population size, the Netherlands, Sweden and Switzerland topped the ranking; the USA was sixth. Ireland and Switzerland scored the highest mean impact factor.

Conclusion: The USA is the most productive country in terms of absolute number of surgical publications in the selected journals. However, when population size is taken into consideration, certain smaller European countries were more prolific.

Keywords: Anesthesia, Bibliometric, Care Journals, Countries Publish, Funding, Impact, Impact Factor, Japan, Japan Contribution, Journal, Journals, Medicine, Output, Population, Publications, Ranking, Research, Size, Sweden, Switzerland, UK, USA

? Gurusamy, K., Junnarkar, S., Farouk, M. and Davidson, B.R. (2008), Meta-analysis of randomized controlled trials on the safety and effectiveness of day-case laparoscopic cholecystectomy. *British Journal of Surgery*, **95** (2), 161-168.

Full Text: [2008\Bri J Sur95, 161.pdf](2008/Bri%20J%20Sur95,%20161.pdf)

Abstract: Background: Although day-case laparoscopic cholecystectomy can save bed costs, its safety has to be established. The aim of this meta-analysis is to assess the advantages and disadvantages of day-case surgery compared with overnight stay in patients undergoing elective laparoscopic cholecystectomy. Methods: Randomized clinical trials addressing the above issue were identified from The Cochrane Library trials register, Medline, Embase, Science Citation Index Expanded and reference lists. Data were extracted from these trials by two independent reviewers. For each outcome the relative risk, weighted mean difference or standardized mean difference was calculated with 95 per cent confidence intervals based on available case analysis. Results: Five trials with 215 patients randomized to the day-case group and 214 to the overnight-stay group were included in the review. Four of the five trials were of low risk of bias. The trials recruited 49.1 per cent of patients presenting for cholecystectomy. There was no significant difference between day case and overnight stay with respect to morbidity, prolongation of hospital stay, readmission rates, pain, quality of life, patient satisfaction, and return to normal activity and work. In the day-case group 80.5 per cent of patients were discharged on the day of surgery. Conclusion: Day-case laparoscopic cholecystectomy is a safe and effective treatment for symptomatic gallstones.

Keywords: Bias, Citation, Clinical Trials, Clinical-Trial, Complications, Costs, Day-Care, Effectiveness, Gallstones, Medline, Meta-Analysis, Outpatient, Overnight-Stay, Pain, Quality, Review, Risk, Science, Science Citation Index, Surgery, Treatment

? Gurusamy, K., Aggarwal, R., Palanivelu, L. and Davidson, B.R. (2008), Systematic review of randomized controlled trials on the effectiveness of virtual reality training for laparoscopic surgery. *British Journal of Surgery*, **95** (9), 1088-1097.

Full Text: [2008\Bri J Sur95, 1088.pdf](2008/Bri%20J%20Sur95,%201088.pdf)

Abstract: Background: Surgical training has traditionally been one of apprenticeship. The aim of this review was to determine whether virtual reality (VR) training can supplement and/or replace conventional laparoscopic training in surgical trainees with limited or no laparoscopic experience. Methods: Randomized clinical trials addressing this issue were identified from The Cochrane Library trials register, Medline, Embase, Science Citation Index Expanded, grey literature and reference lists. Standardized mean difference was calculated with 95 per cent confidence intervals based on available case analysis. Results: Twenty-three trials (mostly with a high risk of bias) involving 622 participants were included in this review. In trainees without surgical experience, VR training decreased the time taken to complete a task, increased accuracy and decreased errors compared with no training. In the same participants, VR training was more accurate than video trainer (VT) training. In participants with limited laparoscopic experience, VR training resulted in a greater reduction in operating time, error and unnecessary movements than standard laparoscopic training. In these participants, the composite performance score was better in the VR group than the VT group. Conclusion: VR training can supplement standard laparoscopic surgical training. It is at least as effective as video training in supplementing standard laparoscopic training.

Keywords: Accuracy, Acquisition, Bias, Citation, Clinical Trials, Clinical-Trials, Composite, Effectiveness, High Risk, High-Risk, Laparoscopic Surgery, Learning-Curve, Literature, Medline, Metaanalysis, Mist-VR, Operating-Room Performance, Porcine, Psychomotor Skill, Reduction, Review, Risk, Science, Science Citation Index, Simulator, Surgery, Surgical Residents, Systematic Review, Task, Training

? Mofidi, R., Patil, P.V., Suttie, S.A. and Parks, R.W. (2009), Risk assessment in acute pancreatitis. *British Journal of Surgery*, **96** (2), 137-150.

Full Text: [2009\Bri J Sur96, 137.pdf](2009/Bri%20J%20Sur96,%20137.pdf)

Abstract: Acute pancreatitis has a variable natural history and in a proportion of patients is associated with severe complications and a significant risk of death. The various tools available for risk assessment in acute pancreatitis are reviewed. Relevant medical literature from PUBMED, Ovid, EMBASE, Web of Science and The Cochrane Library websites to May 2008 was reviewed. Over the past 30 years several scoring systems have been developed to predict the severity of acute pancreatitis in the first 48-72 h. Biochemical and immunological markers, imaging modalities and novel predictive models may help identify patients at high risk of complications or death. Recently, there has been a recognition of the importance of the systemic inflammatory response syndrome and organ dysfunction.

Keywords: Abdominal Computed-Tomography, Acute Biliary Pancreatitis, Acute Pancreatitis, Apache-II Score, Artificial Neural-Network, Assessment, C-Reactive Protein, Cochrane, Critically-Ill Patients, History, Imaging, Literature, Medical, Multiple Organ Dysfunction, PUBMED, Risk, Risk Assessment, Science, Severe Necrotizing Pancreatitis, Trypsinogen Activation Peptide, Tumor-Necrosis-Factor, Web of Science, Websites

? Petrov, M.S. and Savides, T.J. (2009), Systematic review of endoscopic ultrasonography versus endoscopic retrograde cholangiopancreatography for suspected choledocholithiasis. *British Journal of Surgery*, **96** (9), 967-974.

Full Text: [2009\Bri J Sur96, 967.pdf](2009/Bri%20J%20Sur96,%20967.pdf)

Abstract: Background: Endoscopic ultrasonography (EUS) has emerged as an accurate diagnostic alternative to endoscopic retrograde cholangiopancreatography (ERCP). The aim of this study was to perform a systematic review of all randomized controlled trials of EUS-guided ERCP versus ERCP alone in patients with suspected choledocholithiasis. Methods: The search for eligible studies was carried out using the MEDLINE, Cochrane Central Register of Controlled Trials, and Science Citation Index electronic databases. Meta-analysis was conducted using a random-effects model. Results: Four trials containing 213 patients randomized to EUS-guided ERCP and 2 10 to ERCP alone were selected. In the EUS-guided ERCP group, ERCP was avoided in 143 patients (67.1 per cent) when EUS did not detect choledocholithiasis. The use of EUS significantly reduced the risk of overall complications (relative risk 0.35 (95 per cent confidence interval (c.i.) 0.20 to 0.62); P < 0.001) and post-ERCP acute pancreatitis (relative risk 0.21 (95 per cent c.i. 0.06 to 0.83); P = 0.030). Conclusion: By performing EUS first, ERCP may be safely avoided in two-thirds of patients with common bile duct stones. Application of EUS in the selection of patients for therapeutic ERCP significantly reduces the complication rate.

Keywords: Acute Biliary Pancreatitis, Bile-Duct Stones, Citation, Ercp, Eus, Intermediate Probability, Magnetic-Resonance Cholangiopancreatography, Medline, Meta-Analysis, Metaanalysis, Randomized-Trial, Systematic Review, Test-Performance, Ultrasound

? Gurusamy, K., Samraj, K., Gluud, C., Wilson, E. and Davidson, B.R. (2010), Meta-analysis of randomized controlled trials on the safety and effectiveness of early versus delayed laparoscopic cholecystectomy for acute cholecystitis. *British Journal of Surgery*, **97** (2), 141-150.

Full Text: [2010\Bri J Sur97, 141.pdf](2010/Bri%20J%20Sur97,%20141.pdf)

Abstract: Background: In many countries laparoscopic cholecystectomy for acute cholecystitis is mainly performed after the acute episode has settled because of the anticipated increased risk of morbidity and higher conversion rate from laparoscopic to open cholecystectomy. Methods: A systematic review was performed with meta-analysis of randomized clinical trials of early laparoscopic cholecystectomy (ELC; performed within I week of onset of symptoms) versus delayed laparoscopic cholecystectomy (performed at least 6, weeks after symptoms settled) for acute cholecystitis. Trials were identified from The Cochrane Library trials register, Medline, Embase, Science Citation Index Expanded and reference lists. Risk ratio (RR) or mean difference was calculated with 95 per cent confidence intervals (c.i.) based oil intention-to-treat analysis. Results: Five trials with 451 patients were included. There was no significant difference between the two groups in terms of bile duct injury (RR 0.64 (95 per cent c.i. 0.15 to 2.65)) or conversion to open cholecystectomy (RR 0.88 (95 per cent c.i. 0.62 to 1.25)). The total hospital stay was shorter by 4 days for ELC (mean difference -4.12 (95 percent c.i. -5.22 to -3.03) days). Conclusion: ELC during acute cholecystitis appears safe and shortens the total hospital stay.

Keywords: Acute Gallbladder-Disease, Bias, Bile-Duct Injuries, Biliary Leaks, Citation, Clinical-Trials, Empirical-Evidence, Gallstone Disease, Groups, Medline, Meta-Analysis, Quality-of-Life, Review, Risk-Factors, Science, Science Citation Index, Surgical-Management, Systematic Review

? van Hove, P.D., Tuijthof, G.J.M., Verdaasdonk, E.G.G., Stassen, L.P.S. and Dankelman, J. (2010), Objective assessment of technical surgical skills. *British Journal of Surgery*, **97** (7), 972-987.

Full Text: [2010\Bri J Sur97, 972.pdf](2010/Bri%20J%20Sur97,%20972.pdf)

Abstract: Background: Surgeons are increasingly being scrutinized for their performance and there is growing interest in objective assessment of technical skills. The purpose of this study was to review all evidence for these methods, in order to provide a guideline for use in clinical practice. Methods: A systematic search was performed using PUBMED and Web of Science for studies addressing the validity and reliability of methods for objective skills assessment within surgery and gynaecology only. The studies were assessed according to the Oxford Centre for Evidence-based Medicine levels of evidence. Results: In total 104 studies were included, of which 20 (19.2 per cent) had a level of evidence 1b or 2b. In 28 studies (26.9 per cent), the assessment method was used in the operating room. Virtual reality simulators and Objective Structured Assessment of Technical Skills (OSATS) have been studied most. Although OSATS is seen as the standard for skills assessment, only seven studies, with a low level of evidence, addressed its use in the operating room. Conclusion: Based on currently available evidence, most methods of skills assessment are valid fir feedback or measuring progress of training, but few can be used for examination or credentialing. The purpose of the assessment determines the choice of method.

Keywords: Assessment, Computer-Assisted Assessment, Construct-Validity, Endoscopic Psychomotor Tester, Feedback, Gynecology Residents, Interest, Methods, Minimally Invasive Surgery, Motion Analysis, Novice Laparoscopic Surgeons, Operating-Room, Practice, PUBMED, Reliability, Review, Science, Structured Assessment, Surgery, Surgical, Systematic, Training, Validity, Virtual-Reality Simulator, Web of Science

? Hammond, J.S., Guha, I.N., Beckingham, I.J. and Lobo, D.N. (2011), Prediction, prevention and management of postresection liver failure. *British Journal of Surgery*, **98** (9), 1188-1200.

Full Text: [2011\Bri J Sur98, 1188.pdf](2011/Bri%20J%20Sur98,%201188.pdf)

Abstract: Background: Postresection liver failure (PLF) is the major cause of death following liver resection. However, there is no unified definition, the pathophysiology is understood poorly and there are few controlled trials to optimize its management. The aim of this review article is to present strategies to predict, prevent and manage PLF. Methods: The Web of Science, MEDLINE, PubMed, Google Scholar and Cochrane Library databases were searched for studies using the terms ‘liver resection’, ‘partial hepatectomy’, ‘liver dysfunction’ and ‘liver failure’ for relevant studies from the 15 years preceding May 2011. Key papers published more than 15 years ago were included if more recent data were not available. Papers published in languages other than English were excluded. Results: The incidence of PLF ranges from 0 to 13 per cent. The absence of a unified definition prevents direct comparison between studies. The major risk factors are the extent of resection and the presence of underlying parenchymal disease. Small-for-size syndrome, sepsis and ischaemia-reperfusion injury are key mechanisms in the pathophysiology of PLF. Jaundice is the most sensitive predictor of outcome. An evidence-based approach to the prevention and management of PLF is presented. Conclusion: PLF is the major cause of morbidity and mortality after liver resection. There is a need for a unified definition and improved strategies to treat it.

Keywords: Cochrane, Colorectal Metastases, Critically-Ill Patients, Databases, Disease, Fresh-Frozen Plasma, Google Scholar, Hepatectomy, Hepatocellular-Carcinoma, Incidence, Inferior Vena-Cava, Injury, Major Hepatic Resection, Management, Mechanisms, Medline, Methods, Morbidity, Mortality, Obstructive-Jaundice, Outcome, Papers, Partial-Hepatectomy, Portal-Vein Embolization, Prediction, Preoperative Biliary Drainage, Prevention, Pubmed, Review, Risk, Risk Factors, Science, Sepsis, Web Of Science

# Title: British Journal of Urology

Full Journal Title: British Journal of Urology

ISO Abbreviated Title: Br. J. Urol.

JCR Abbreviated Title: Brit J Urol

ISSN: 0007-1331

Issues/Year: 12

Journal Country/Territory: England

Language: English

Publisher: Blackwell Science Ltd

Publisher Address: P O BOX 88, Osney Mead, Oxford OX2 0NE, Oxon, England

Subject Categories:

Urology & Nephrology: Impact Factor 1.690, / (2000)

? Mayne, P.D. and Edwards, L. (1990), What on earth are we drinking. *British Journal of Urology*, **66** (2), 123-126.

# Title: BJU International

Full Journal Title: [BJU International](http://www.blackwell-synergy.com/servlet/useragent?func=showIssues&code=bju)

ISO Abbreviated Title: BJU Int.

JCR Abbreviated Title: BJU Int

ISSN: 1464-4096

Issues/Year: 18

Language: English

Journal Country/Territory: England

Publisher: Blackwell Publishing Ltd

Publisher Address: 9600 Garsington Rd, Oxford OX4 2DG, Oxon, England

Subject Categories:

Urology & Nephrology: Impact Factor 2.089 (2004)

Grange, R.I. (1999), National bias in citations in urology journals: Parochialism or availability? *BJU International*, **84** (6), 601-603.

Full Text: [1999\BJU Int84, 601.pdf](1999/BJU%20Int84,%20601.pdf)

Abstreat: Objective. To determine any bias by authors of different nationalities in their citation rate of selected urological journals in papers published in the *British Journal of Urology* and the *Journal of Urology*. Methods. Using a simple computer program and text files of accepted reports in the *BJU*, or those available on CD-ROM from *J Urol*, 212 recent papers in the *BJU* and 111 from *J Urol* were analysed to determine the number of citations to four major urological journals (*BJU*, *J Urol*, *Eur Urol and Urology*). The frequencies of citations to these journals were then compared with the national origin of the author(s), grouped as UK, Europe, North America and Other. Results. In both the *BJU and J Urol* the citation rates of the selected journals differed significantly among authors from different regions. In *BJU* papers, the citation rate of the *BJU* was highest by UK authors and their citation rate of *J Urol* was amongst the lowest of the rates for *J Urol*. The highest citation rate for *J Urol* was that by European authors. American authors cited the *BJU* least, citing the *J Urol* about five times more often than they cited the *BJU. of* the papers in the *J Urol* sample, over 60% were from American authors, with only four from UK authors; thus the UK group was not analysed separately but included in the European group. The mean citation rate of *J Urol* was highest in papers by American authors, at about 14 times that for citations to the *BJU*. The citation rates for the other two journals were not significantly different with nationality or journal, but were generally much lower in *J Urol* than in the *BJU*. Conclusion. There are significant differences in citation rates both with authors’ nationality and between journals. Citation rates may be influenced by journal accessibility, perceived journal ‘prestige’ (impact factor) or national bias. Authors, editors and reviewers should be aware of this potential bias in citation habits. Authors should strive to conduct exhaustive searches using electronic methods, so that all relevant papers are assessed, regardless of their origin.

? Whitfield, H., Vale, J. and Taylor, S. (2002), The Impact Factor - fact and fantasy. *BJU International*, **89** (1), I-III.

Full Text: [2002\BJU Int89, I.pdf](2002/BJU%20Int89,%20I.pdf)

? Ng, L., Hersey, K. and Fleshner, N. (2004), Publication rate of abstracts presented at the annual meeting of the American Urological Association. *BJU International*, **94** (1), 79-81.

Full Text: [2004\BJU Int94, 79.pdf](2004/BJU%20Int94,%2079.pdf)

Abstract: Objective To determine the rate and time-course of peer-reviewed publication of abstracts presented at the annual meetings of the American Urological Association (AUA). Methods All abstracts presented at the annual meetings of the AUA from 1998 to 2000 were searched in the PubMed database. To assess any significant predictors of ultimate peer-reviewed publication, abstract number, meeting year, presentation type (podium vs poster), type of research (basic vs clinical), date of publication and session name (i.e. prostate cancer: advanced) were entered into a database. Results The overall rate of publication was 37.8%. Survival analysis indicated that most abstracts were published within 2 years of their respective meetings. Univariate and multivariate techniques showed that none of the tested covariates were significant predictors of publication. Conclusion Information presented at the AUA annual meetings should be carefully considered by physicians before implementation into their clinical practice. Researchers are encouraged to publish their data.

? Hanchanale, V.S., Rao, A.R., Philip, J., Baird, A. and Javle, P.M. (2006), *BJU International* is really international. *BJU International*, **98** (5), 1122-1123.

Full Text: [2006\BJU Int98, 1122.pdf](2006/BJU%20Int98,%201122.pdf)

? Castagnetti, M., Novara, G., Beniamin, F., Vezzu, B., Rigamonti, W. and Artibani, W. (2008), Scintigraphic renal function after unilateral pyeloplasty in children: A systematic review. *BJU International*, **102** (7), 862-868.

Full Text: [2008\BJU Int102, 862.pdf](2008/BJU%20Int102,%20862.pdf)

Abstract: OBJECTIVE To systematically review previous reports and thus determine the functional outcome after pyeloplasty in children with unilateral hydronephrosis due to pelvi-ureteric junction obstruction, and the possible variables that could affect it. METHODS We searched Medline/PUBMED, EMBASE, and Web of Science for articles in English published from 1966 to 2007, using both ‘medical subject headings’ and ‘free text’ protocols. Abstracts, full texts. and bibliographies of pertinent papers were reviewed to select studies of scintigraphic renal function before and after pyeloplasty. The postoperative charge in scintigraphic renal function was assessed in relation to presentation (anteanatal vs postnatal), timing of surgery (early vs delayed), age at surgery, and preoperative ultrasonography (US) and scintigraphic findings. RESULTS Thirty-six studies l of the initial search) were eventually selected for review. Studies were generally of poor scientific quality and very heterogeneous in their indications for surgery and follow-up protocols. Postoperative function showed a wide variability. Symptomatic patients diagnosed postnatally seemed to have a greater chance of functional improvement after surgery than asymptomatic patients diagnosed antenatally. The chance of improvement seemed also to be greater in patients with moderately rather than severely impaired preoperative function. Otherwise, the improvement seemed unrelated to the age at surgery, the preoperative US findings, or the excretion pattern on renal scintigraphy. of patients having delayed surgery >97.50% had preserved function afterward. CONCLUSIONS Patients with moderately impaired preoperative function and those diagnosed postnatally because of symptoms are those with the greatest likelihood of having a functional improvement after surgery.

Keywords: Children, Conservative Management, Differential Function, Diuretic Renography, Follow-Up, Function Improvement, Functional, Hydronelphrosis, Medical, Outcome, Outcome Analysis, Papers, Pediatric Pyeloplasty, Pelvi-Ureteric Junction Obstruction, Postnatal, Prenatal-Diagnosis, Pyeloplasty, Radioisotope Renography, Renal Function, Review, Science, Surgery, Symptoms, Systematic, Systematic Review, Term-Follow-Up, Ultrasonography, Ureteropelvic Junction Obstruction, Urinary-Tract Obstruction, US, Variability, Web of Science

? Willis, D.L., Bahler, C.D., Neuberger, M.M. and Dahm, P. (2011), Predictors of citations in the urological literature. *BJU International*, **107** (12), 1876-1880.

Full Text: [2011\BJU Int107, 1876.pdf](2011/BJU%20Int107,%201876.pdf)

Abstract: To assess the factors associated with increased citation rates in the urological literature by reviewing articles published in the four major urological journals to help authors improve the impact of their work. A random sample of 200 original research articles published between January and June 2004 was analysed from The Journal of Urology, Urology, European Urology and BJU International. Study information was abstracted by two independent reviewers and citation counts within 4 years of publication were collected using Web of ScienceTM. Study characteristics and citation rates were analysed using median and interquartile ranges (IQRs), and logistic regression analysis was used to evaluate which factors predicted greater citation rates. The overall median number of citations per published article was 6.0 (IQR 3-12). After univariate analysis, we found that study design, study topic, continent of origin and sample size were associated with greater median citation rates. In a multivariate linear regression model, study design and study topic (oncology) predicted increased citation rates. Randomized controlled trials were cited a median of 13.5 times and were the strongest predictor of citation rates with an odds ratio of 115.5 (95% confidence interval 9.4-1419.6). Citation rates are associated with study design and study topic in the urological literature. Authors may improve the impact of their work by designing clinical studies with greater methodological safeguards against bias.

Keywords: Articles, Authors, Bias, Bibliometrics, Citation, Citation Analysis, Citation Rates, Citations, Impact Factors, Information, Journal Impact Factor, Journals, Literature, Publication, Quality, Rates, Research, Reviewing, Self-Citation, Urology

? Shelley, M.D., Cleves, A., Wilt, T.J. and Mason, M.D. (2011), Gemcitabine chemotherapy for the treatment of metastatic bladder carcinoma. *BJU International*, **108** (2), 168-179.

Full Text: [2011\BJU Int108, 168.pdf](2011/BJU%20Int108,%20168.pdf)

Abstract: OBJECTIVE To systematically review the literature on gemcitabine chemotherapy for advanced or metastatic bladder cancer. MATERIALS AND METHODS The Medical Literature Analysis and Retrieval System Online-database (MEDLINE), the Excerpta Medicadatabase (EMBASE), the Cumulative Index to Nursing and Allied Health Literature database(CIHNAL), the Cochrane database of randomized trials, the Literatura Latino-Americana e do Caribe emCiencias da Saudedatabase (LILACS), and Web of Science were searched to identify trials of gemcitabine for metastatic bladder cancer. Also searched were international guidelines on metastatic prostate cancer, trial registries, and recent systematic reviews. Data on trial design, survival, tumour response and toxicity outcomes were extracted from relevant studies. RESULTS This review identified six randomized trials of combined chemotherapy with gemcitabine for the management of unresectable, locally advanced or metastatic bladder cancer. One trial compared gemcitabine plus cisplatin (GCis) with methotrexate/vinblastine/doxorubicin/cisplatin(MVAC) and found no difference in overall survival (OS; hazard ratio 1.09) but a better safety profile with GCis, which was suggested as the treatment of choice. A second trial evaluated GCis against gemcitabine plus carboplatin (GCarbo) and reported similar median OS (12.8 vs 9.8 months), disease progression (8.3 vs 7.3 months) and tumour response rates (66% vs 56%) for the two patient groups. A third trial compared GCis with GCis plus paclitaxel (GCisPac) and showed no significant difference in median OS (12.3 vs 15.3 months) and response rates (44% vs 43%) but greater toxicity with GCisPac. A fourth trial assessed GCarbo against methotrexate plus carboplatin plus vinblastine in patients unfit for cisplatin-based chemotherapy and found similar tumour response rates for each regime (38% vs 20%) but the triplet regime was more toxic. Two other randomized studies compared a 2-weekly maintenance regime of gemcitabine plus paclitaxel with a 3-weelky regime given for a maximum of six cycles and found that the maintenance schedule did not confer any additional survival benefit. In all, 53observational studies of gemcitabine chemotherapy were identified that varied considerably in the drug combinations used and schedules. Overall response rates (17-78%) and median OS (6.4-24.0 months) were variable with no combination being clearly superior. CONCLUSIONS Gemcitabine combined chemotherapy is active in the management of metastatic bladder cancer. GCis may be considered an alternative regime to MVAC. GCarbo should be considered for patients unfit for cisplatin-based therapy.

Keywords: 1st-Line Treatment, Advanced Urothelial Carcinoma, Cancer, Carcinoma, Chemotherapy, Cisplatin-Based Chemotherapy, Cochrane, Cooperative-Oncology-Group, Disease, Doxorubicin Plus Gemcitabine, Drug, EMBASE, Evidence-Based Medicine, Guidelines, Health, Impaired Renal-Function, Literature, Management, Medline, Methotrexate, National-Cancer-Institute, Nursing, Outcomes, Phase-II Trial, Profile, Prostate Cancer, Ratio, Review, Safety, Science, Single-Agent Gemcitabine, Survival, Systematic, Systematic Review, Systematic Reviews, Therapy, Toxicity, Transitional-Cell Carcinoma, Treatment, Urological Cancers, Web of Science

? Froghi, S., Ahmed, K., Finch, A., Fitzpatrick, J.M., Khan, M.S. and Dasgupta, P. (2012), Indicators for research performance evaluation: An overview. *BJU International*, **109** (3), 321-323.

Full Text: [2012\BJU Int109, 321.pdf](2012/BJU%20Int109,%20321.pdf)

Keywords: Bibliometrics, Evaluation, h-Index, Indicators, Performance, Publication, Publish, Research, Research Performance, Scientific-Research Output, Score

# Title: British Medical Bulletin

Full Journal Title: British Medical Bulletin

ISO Abbreviated Title: Br. Med. Bull.

JCR Abbreviated Title: Brit Med Bull

ISSN: 0007-1420

Issues/Year: 4

Journal Country/Territory: England

Language: English

Publisher: Royal Soc Medicine Press Ltd

Publisher Address: 1 Wimpole Street, London W1M 8AE, England

Subject Categories:

Medicine, General & Internal: Impact Factor

? Cartwright, R.Y. (1993), Travellers’ diarrhoea. *British Medical Bulletin*, **49** (2), 348-362.

Full Text: Bri Med Bul49, 348

Abstract: Travellers’ diarrhoea is the commonest health affliction for visitors to developing countries and to resorts with an inadequate water supply and sewage disposal systems. Attack rates may exceed 50% and although rarely a severe health hazard may be the cause of an economic deprivation to a community if it discourages tourism. Enterotoxigenic *Escherichia coli* (ETEC) is the predominant causative organism. It is spread from man to man through water and food. The fundamental preventative strategy must be an improvement in drinking water supplies, safe sewage collection and disposal, and the achievement of high levels of hygiene at all stages of the food chain. Travellers visiting under-developed areas can take simple dietary and beverage precautions. Prophylactic antimicrobial agents will reduce the risk to an individual but may be detrimental to the community by encouraging the emergence of resistant bacterial strains. Vaccines are being developed against ETEC. The corner stone of treatment is fluid replacement. Symptomatic relief can be provided by antimotility drugs and the disease shortened by antibiotics. There is a need for a greater understanding of the faecal-oral pathways, for ongoing epidemiological studies and for cost benefit analysis studies of prophylactic and treatment schedules.

? McMichael, A.J., Patz, J. and Kovats, R.S. (1998), Impacts of global environmental change on future health and health care in tropical countries. *British Medical Bulletin*, **54** (2), 475-488.

Full Text: Bri Med Bul54, 475

Abstract: The aggregate human impact on the environment now exceeds the limits of absorption or regeneration of various major biophysical systems, at, Global and regional levels. The resultant, Global environmental changes include altered atmospheric composition, widespread land degradation, depletion of fisheries, freshwater shortages, and biodiversity losses. The drive for further social and economic development, plus an unavoidable substantial increase in population size by 2050-especially in less developed countries-will tend to augment these large-scale environmental problems. Disturbances of the Earth’s life-support systems (the source of climatic stability, food, freshwater, and robust ecosystems) will affect disproportionately the resource-poor and geographically vulnerable populations in many tropical countries. Ecological disturbances will alter the pattern of various pests and pathogens in plants, livestock and humans. Overall, these large-scale environmental changes are likely to increase the range and seasonality of various (especially vector-borne) infectious diseases, food insecurity, of water stress, and of population displacement with its various adverse health consequences.

Keywords: Nino Southern Oscillation, Climate-Change, Infectious-Diseases, Malaria, Dengue, Vulnerability, Emergence, Fever, Risk

Nicholl, J.P. (1999), Optimal use of resources for the treatment and prevention of injuries. *British Medical Bulletin*, **55** (4), 713-725.

Full Text: Bri Med Bul55, 713

Abstract: Injuries are an important cause of mortality and morbidity. Although accidental injury rates have been declining throughout the twentieth century in the UK, this pattern has been variable. For example, in young adults aged 15-24 years there has been no improvement and, when deliberate injuries are included, the picture is worsening. Although there is little evidence that road traffic accident case fatality rates have been improving, there is some evidence that improvements in trauma care have been responsible for reducing injury death rates in children. Thus, although there have been considerable successes in the primary prevention of accidents, and the secondary prevention of injuries in accidents, there is an important role for tertiary prevention, that is in the prevention of avoidable outcomes through good trauma care.

Keywords: Gun Ownership, Hospital-Care, Trauma, Deaths, Home, Epidemiology, Suicide, Region, Impact, Time

? Järup, L. (2003), Hazards of heavy metal contamination. *British Medical Bulletin*, **82** (43), 167-182.

Full Text: [2003\Bri Med Bul55, 167.pdf](2003/Bri%20Med%20Bul55,%20167.pdf)

Abstract: The main threats to human health from heavy metals are associated with exposure to lead, cadmium, mercury and arsenic. These metals have been extensively studied and their effects on human health regularly reviewed by international bodies such as the WHO. Heavy metals have been used by humans for thousands of years. Although several adverse health effects of heavy metals have been known for a long time, exposure to heavy metals continues, and is even increasing in some parts of the world, in particular in less developed countries, though emissions have declined in most developed countries over the last 100 years. Cadmium compounds are currently mainly used in re-chargeable nickel-cadmium batteries. Cadmium emissions have increased dramatically during the 20th century, one reason being that cadmium-containing products are rarely re-cycled, but often dumped together with household waste. Cigarette smoking is a major source of cadmium exposure. In non-smokers, food is the most important source of cadmium exposure. Recent data indicate that adverse health effects of cadmium exposure may occur at lower exposure levels than previously anticipated, primarily in the form of kidney damage but possibly also bone effects and fractures. Many individuals in Europe already exceed these exposure levels and the margin is very narrow for large groups. Therefore, measures should be taken to reduce cadmium exposure in the general population in order to minimize the risk of adverse health effects. The general population is primarily exposed to mercury via food, fish being a major source of methyl mercury exposure, and dental amalgam. The general population does not face a significant health risk from methyl mercury, although certain groups with high fish consumption may attain blood levels associated with a low risk of neurological damage to adults. Since there is a risk to the fetus in particular, pregnant women should avoid a high intake of certain fish, such as shark, swordfish and tuna; fish (such as pike, walleye and bass) taken from polluted fresh waters should especially be avoided. There has been a debate on the safety of dental amalgams and claims have been made that mercury from amalgam may cause a variety of diseases. However, there are no studies so far that have been able to show any associations between amalgam fillings and ill health. The general population is exposed to lead from air and food in roughly equal proportions. During the last century, lead emissions to ambient air have caused considerable pollution, mainly due to lead emissions from petrol. Children are particularly susceptible to lead exposure due to high gastrointestinal uptake and the permeable blood-brain barrier. Blood levels in children should be reduced below the levels so far considered acceptable, recent data indicating that there may be neurotoxic effects of lead at lower levels of exposure than previously anticipated. Although lead in petrol has dramatically decreased over the last decades, thereby reducing environmental exposure, phasing out any remaining uses of lead additives in motor fuels should be encouraged. The use of lead-based paints should be abandoned, and lead should not be used in food containers. in particular, the public should be aware of glazed food containers, which may leach lead into food. exposure to arsenic is mainly via intake of food and drinking water, food being the most important source in most populations.

Long-term exposure to arsenic in drinking-water is mainly related to increased risks of skin cancer, but also some other cancers, as well as other skin lesions such as hyperkeratosis and pigmentation changes. Occupational exposure to arsenic, primarily by inhalation, is causally associated with lung cancer. Clear exposure-response relationships and high risks have been observed.

Keywords: Cadmium Exposure, Environmental Exposure, Myocardial-Infarction, Dental Amalgam, Follow-Up, Risk, Mercury, Lead, Cancer, Population

? Pollock, E., Klotsas, A.E., Compston, J. and Gkrania-Klotsas, E. (2009), Bone health in HIV infection. *British Medical Bulletin*, **92** (1), 123-133.

Full Text: 2009\Bri Med Bul92, 123.pdf

Abstract: Osteoporosis is among the chronic problems emerging as the human immunodeficiency virus (HIV)-positive population ages. We reviewed the English language bibliography using PUBMED 2.0, Web of Science and EMBASE for relevant abstracts and articles. The prevalence of low bone mineral density (BMD) and fracture is increased in the HIV-positive population. The pathogenesis is multifactorial; there is some evidence that HIV infection is an independent risk factor and that highly active antiretroviral therapy has adverse skeletal effects. Physicians should routinely review the bone health of all HIV patients. More studies of the mechanisms of bone loss, the skeletal effects of antiretroviral therapy and the therapeutic outcome of bone-protective therapy in HIV-positive individuals are needed.

Keywords: Active Antiretroviral Therapy, Aids, Antiretroviral, Antiretroviral Therapy, Bibliography, Bisphosphonates, Bone, Bone Loss, Bone Mineral Density, Fracture, Hiv, Hiv-1-Infected Patients, Human, Infection, Men, Mineral Density, Osteopenia, Osteoporosis, Osteoporosis, Outcome, Pathogenesis, Prevalence, Protease Inhibitors, Randomized Controlled-Trial, Review, Risk, Science, Tenofovir Df, Therapy, Vitamin D, Vitamin-D Deficiency, Web of Science

? McNamara, E., Hudson, Z. and Taylor, S.J.C. (2010), Measuring activity levels of young people: The validity of pedometers. *British Medical Bulletin*, **95** (1), 121-137.

Full Text: 2010\Bri Med Bul95, 121.pdf

Abstract: The valid measurement of physical activity has the potential to be a very useful tool in countering the obesity epidemic. Previously, reviews have been carried out to investigate the validity of pedometers among adults. This paper aimed to carry out a similar review among children. A literature search was performed in PUBMED, Web of Science, PsycINFO, CINAHL and SportDISCUS. Here, 25 papers investigating the validity, reliability and feasibility of pedometers for children were included in the study. Pedometers correlated highly in terms of both criterion (direct observation) and convergent validity (heart-rate monitor, accelerometer). Intra- and inter-unit reliability was also consistently high. Few studies report on feasibility issues of pedometer use in children, particularly compliance, reactivity and dealing with missing data. Given that they are both cheap and easy to use, pedometers can be effectively utilized as a valid determinant of physical activity levels among children and adolescents, particularly in large-scale epidemiological studies. There remains a need for accepted outliers and proper protocol regarding missing data.

Keywords: Accuracy, Adolescents, Adolescents, Adults, Body-Composition, Children, Children, Compliance, Energy-Expenditure, Feasibility, Heart Rate, Literature, Measurement, Obesity, Observation, Papers, Pedometer, Physical Activity, Prevalence, Protocol, PUBMED, Quantifying Physical-Activity, Reliability, Reliability, Review, Science, Validity, Web of Science, Youth

# Title: British Medical Journal

Full Journal Title: [British Medical Journal](http://bmj.com/); [British Medical Journal](http://www.bmj.com/archive/)

ISO Abbreviated Title: Br. Med. J.

JCR Abbreviated Title: Brit Med J

ISSN: 0959-8138

Issues/Year: 52

Journal Country/Territory: England

Language: English

Publisher: British Med Journal Publ Group

Publisher Address: British Med Assoc House, Tavistock Square, London WC1H 9JR, England

Subject Categories:

Medicine, General & Internal: Impact Factor 6.629 (2001), Impact Factor 7.585, 6/107 (2002)

? Newman, D. (1900), Calculi impacted in the ureters: Pathology, symptoms, and surgical treatment. *British Medical Journal*, **1** (2051), 949-955.

Full Text: [-1959\Bri Med J1, 949.pdf](-1959/Bri%20Med%20J1,%20949.pdf)

? Evatt, G. (1902), The drinking water supply of troops in the field. *British Medical Journal*, **1** (2153), 867-868.

Full Text: [-1959\Bri Med J1, 867.pdf](-1959/Bri%20Med%20J1,%20867.pdf)

? Goulden, E.A. (1921), The treatment of sciatica by galvanic acupuncture. *British Medical Journal*, **1** (3145), 523-524.

Full Text: [-1959\Bri Med J1, 523.pdf](-1959/Bri%20Med%20J1,%20523.pdf)

? Pembrey, M.S. (1900), Observations on the temperature of man after so called “heat stroke”. *British Medical Journal*, **2** (2073), 831-832.

Full Text: [-1959\Bri Med J2, 831.pdf](-1959/Bri%20Med%20J2,%20831.pdf)

Notes: highly cited

? Barry, M., Flynn, D.M., Letsky, E.A. and Risdon, R.A. (1974), Long-term chelation therapy in thalassemia major: Effect on liver iron concentration, liver histology, and clinical progress. *British Medical Journal*, **2** (5909), 16-20.

Full Text: [1960-80\Bri Med J2, 16.pdf](1960-80/Bri%20Med%20J2,%2016.pdf)

? International Steering Committee of Medical Editors (1979), Uniform requirements for manuscripts submitted to biomedical journals. *British Medical Journal*, **1** (6162), 532-535.

Full Text: [1960-80\Bri Med J1, 532.pdf](1960-80/Bri%20Med%20J1,%20532.pdf)

Gloag, D. (1981), Sources of lead pollution. *British Medical Journal*, **282** (6257), 41-44.

Full Text: [1981\Bri Med J282, 41.pdf](1981/Bri%20Med%20J282,%2041.pdf)

Jones, R.R. (1981), Is low-level lead pollution dangerous? *British Medical Journal*, **282** (6258), 147.

Full Text: [1981\Bri Med J282, 147.pdf](1981/Bri%20Med%20J282,%20147.pdf)

Notes: highly cited

? Hirayama, T. (1981), Non-smoking wives of heavy smokers have a higher risk of lung cancer: A study from Japan. *British Medical Journal*, **282** (6259), 183-185.

Full Text: [1981\Bri Med J282, 183.pdf](1981/Bri%20Med%20J282,%20183.pdf)

Abstract: In a study in 29 health centre districts in Japan 91 540 non-smoking wives aged 40 and above were followed up for 14 years (1966-79), and standardised mortality rates for lung cancer were assessed according to the smoking habits of their husbands. Wives of heavy smokers were found to have a higher risk of developing lung cancer and a dose-response relation was observed. The relation between the husband’s smoking and the wife’s risk of developing lung cancer showed a similar pattern when analysed by age and occupation of the husband. The risk was particularly great in agricultural families when the husbands were aged 40-59 at enrolment. The husbands’ smoking habit did not affect their wives’ risk of dying from other disease such as stomach cancer, cervical cancer, and ischaemic heart disease. The risk of developing emphysema and asthma seemed to be higher in nonsmoking wives of heavy smokers but the effect was not statistically significant. The husband’s drinking habit seemed to have no effect on any causes of death in their wives, including lung cancer. These results indicate the possible importance of passive or indirect smoking as one of the causal factors of lung cancer. They also appear to explain the longstanding riddle of why many women develop lung cancer although they themselves are non-smokers. These results also cast doubt on the practice of assessing the relative risk of developing lung cancer in smokers by comparing them with non-smokers.

Jones, R.R. (1981), Sources of lead pollution. *British Medical Journal*, **282** (6262), 477.

Full Text: [1981\Bri Med J282, 477.pdf](1981/Bri%20Med%20J282,%20477.pdf)

? Gloag, D. (1981), Asbestos fibres and the environment. *British Medical Journal*, **282** (6264), 623-626.

Full Text: [1981\Bri Med J282, 623.pdf](1981/Bri%20Med%20J282,%20623.pdf)

Stephens, R. (1981), Sources of lead pollution. *British Medical Journal*, **282** (6264), 651-652.

Full Text: [1981\Bri Med J282, 651.pdf](1981/Bri%20Med%20J282,%20651.pdf)

? Humphrey, S.M. (1983), “Index Medicus” and the “Science Citation Index”. *British Medical Journal*, **286** (6368), 892-893.

Full Text: [1983\Bri Med J286, 892.pdf](1983/Bri%20Med%20J286,%20892.pdf)

? Jarvis, S.N., Straube, R.C., Williams, A.L.J. and Bartlett, C.L.R. (1985), Epidemiology: Illness associated with contamination of drinking-water supplies with phenol. *British Medical Journal*, **290** (6484), 1800-1802.

Full Text: [1985\Bri Med J290, 1800.pdf](1985/Bri%20Med%20J290,%201800.pdf)

? Delacey, G., Record, C. and Wade, J. (1985), Style matters - How accurate are quotations and references in medical journals? *British Medical Journal*, **291** (6499), 884-886.

Full Text: [1985\Bri Med J291, 884.pdf](1985/Bri%20Med%20J291,%20884.pdf)

? Evered, D.C., Anderson, J., Griggs, P. and Wakeford, R. (1987), The correlates of research success. *British Medical Journal*, **295** (6592), 241-246.

Full Text: [1987\Bri Med J295, 241.pdf](1987/Bri%20Med%20J295,%20241.pdf)

Dixon, B. (1990), The “top 50”: A perspective on the *BMJ* drawn from the *Science Citation Index*. *British Medical Journal*, **301** (6754), 747-751.

Full Text: [1990\Bri Med J301, 747.pdf](1990/Bri%20Med%20J301,%20747.pdf)

? Tsafrir, J.S. and Reis, T. (1990), Using the citation index to assess performance. *British Medical Journal*, **301** (6764), 1333-1334.

Full Text: [1990\Bri Med J301, 1333.pdf](1990/Bri%20Med%20J301,%201333.pdf)

Kleijnen, J., Knipschild, P. and Terriet, G. (1991), Clinical-trials of homeopathy. *British Medical Journal*, **302** (6772), 316-323.

Full Text: [B\Bri Med J302, 316.pdf](B/Bri%20Med%20J302,%20316.pdf)

Abstract: Objective -To establish whether there is evidence of the efficacy of homoeopathy from controlled trials in humans.

Design -Criteria based meta-analysis. Assessment of the methodological quality of 107 controlled trials in 96 published reports found after an extensive search. Trials were scored using a list of predefined criteria of good methodology, and the outcome of the trials was interpreted in relation to their quality.

Setting -Controlled trials published world wide.

Main outcome measures-Results of the trials with the best methodological quality. Trials of classical homoeopathy and several modern varieties were considered separately.

Results -In 14 trials some form of classical homoeopathy was tested and in 58 trials the same single homoeopathic treatment was given to patients with comparable conventional diagnoses. Combinations of several homoeopathic treatments were tested in 26 trials, isopathy was tested in nine trials. Most trials seemed to be of very low quality, but there were many exceptions. The results showed a positive trend regardless of the quality of the trial or the variety of homoeopathy used. Overall, of the 105 trials with interpretable results, 81 trials indicated positive results whereas in 24 trials no positive effects of homoeopathy were found. The results of the review may be complicated by publication bias, especially in such a controversial subject as homoeopathy.

Conclusions -At the moment the evidence of clinical trials is positive but not sufficient to draw definitive conclusions because most trials are of low methodological quality and because of the unknown role of publication bias. This indicates that there is a legitimate case for further evaluation of homoeopathy, but only by means of well performed trials.

Keywords: Rheumatoid-Arthritis, Homeopathy

Walker, A. (1992), Health and the environment-drinking-water-doubts about quality. *British Medical Journal*, **304** (6820), 175-178.

Full Text: [1992\Bri Med J304, 175.pdf](1992/Bri%20Med%20J304,%20175.pdf)

Ravnskov, U. (1992), Cholesterol lowering trials in coronary heart-disease - frequency of citation and outcome. *British Medical Journal*, **305** (6844), 15-19.

Full Text: [1992\Bri Med J305, 15.pdf](1992/Bri%20Med%20J305,%2015.pdf)

Abstract: Objective-To see if the claim that lowering cholesterol values prevents coronary heart disease is true or if it is based on citation of supportive trials only.

Design-Comparison of frequency of citation with outcome of all controlled cholesterol lowering trials using coronary heart disease or death, or both, as end point.

Subjects-22 controlled cholesterol lowering trials.

Results-Trials considered by their directors as supportive of the contention were cited almost six times more often than others, according to Science Citation Index. Apart from trials discontinued because of alleged side effects of treatment, unsupportive trials were not cited after 1970, although their number almost equalled the number considered supportive. In three supportive reviews the outcome of the selected trials was more favourable than the outcome of the excluded and ignored trials. In the 22 controlled cholesterol lowering trials studied total and coronary heart disease mortality was not changed significantly either overall or in any subgroup. A statistically significant 0-32% reduction in non-fatal coronary heart disease seemed to be due to bias as event frequencies were unrelated to trial length and to mean net reduction in cholesterol value, individual changes in cholesterol values were unsystematically or not related to outcome, and after correction for a small but significant increase in non-medical deaths in the intervention groups total mortality remained unchanged (odds ratio 1.02).

Conclusion-Lowering serum cholesterol concentrations does not reduce mortality and is unlikely to prevent coronary heart disease. Claims of the opposite are based on preferential citation of supportive trials.

Keywords: Middle-Aged Men, Myocardial-Infarction, Primary-Prevention, Randomized Trials, Mortality, Diet, Risk, Reduction

Durrington, P.N., Laker, M.F. and Keech, A. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 420-421.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Goodwin, J.F. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 421.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Game, F.L. and Neary, R.H. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 421.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Anderson, J. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 421-422.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Burr, M.L., Fehily, A.M., Sweetnam, P.M. and Elwood, P.C. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 422.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Thompson, G.R. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 422.

Full Text: [1992\Bri Med J305, 422.pdf](1992/Bri%20Med%20J305,%20422.pdf)

Ravnskov, U. (1992), Frequency of citation and outcome of cholesterol lowering trials. *British Medical Journal*, **305** (6850), 420-422.

Full Text: [1992\Bri Med J305, 420.pdf](1992/Bri%20Med%20J305,%20420.pdf)

Notes: highly cited

? Garratt, A.M., Ruta, D.A., Abdalla, M.I. Buckingham, J.K. and Russell, I.T. (1993), The SF-36 health survey questionnaire - An outcome measure suitable for routine use within the NHS. *British Medical Journal*, **306** (6890), 1440-1444.

Full Text: [1993\Bri Med J306, 1440.pdf](1993/Bri%20Med%20J306,%201440.pdf)

Abstract: Objective-To assess the validity, reliability, and acceptability of the short form 36 (SF36) health survey questionnaire (a shortened version of a battery of 149 health status questions) as a measure of patient outcome in a broad sample of patients suffering from four common clinical conditions. Design-Postal questionnaire, followed up by two reminders at two week intervals. Setting-Clinics and four training practices in north east Scotland. Subjects-Over 1700 patients aged 16-86 with one of four conditions-low back pain, menorrhagia, suspected peptic ulcer, or varicose veins-and a comparison sample of 900 members of the general population. Main outcome measures-The eight scales within the SF36 health profile. Results-The response rate exceeded 75% in the patient population (1310 respondents). The SF36 satisfied rigorous psychometric criteria for validity and internal consistency. Clinical validity was shown by the distinctive profiles generated for each condition, each of which differed from that in the general population in a predictable manner. Furthermore, SF36 scores were lower in referred patients than in patients not referred and were closely related to general practitioners’ perceptions of severity. Conclusions-These results provide support for the SF36 as a potential measure of patient outcome within the NHS. The SF36 seems acceptable to patients, internally consistent, and a valid measure of the health status of a wide range of patients. Before it can be used in the new health service, however, its sensitivity to changes in health status over time must also be tested.

Keywords: Medical Outcomes

Epstein, R.J. (1993), Six authors in search of a citation: Villains or victims of the Vancouver convention? *British Medical Journal*, **306** (6880), 765-767.

Full Text: [1993\Bri Med J306, 765.pdf](1993/Bri%20Med%20J306,%20765.pdf)

Abstract: Objectives-To analyse trends in the number of authors per article over the past 10 years.

Design-Analysis of articles from random volumes of eight biomedical journals.

Subjects-Cell, Nature, Proceedings of the National Academy of Sciences USA (PNAS), Journal of Clinical Investigation (JCI), Biochemical and Biophysical Research Communications (BBRC), Journal of Clinical Oncology (JCO), New England Journal of Medicine (NEJM), Lancet.

Main outcome measures-Median and modal numbers of authors.

Results-All journals except Cell and Nature showed a trend towards increasing authorship numbers over the study period. The trend was most noticeable in journals such as JCO which feature clinical research. General medical journals (Lancet, NEJM) with a median of six to seven authors per article published far fewer seven author than six author studies, which suggests that author number may be influenced by the Vancouver convention which precludes citation of more than six authors.

Conclusions-The phenomenon of expanding authorship in biomedical journal articles is not explained by the hypothesis that newer research technologies have necessitated more extensive collaboration. Rather, the data suggest that conferral of authorship may sometimes have a volitional component which contributes to rising author numbers. It is proposed that replacement of the Vancouver convention with a “first author, last author” citation system may help stem this rise in author numbers.

Breen, D.A., Chalmers, J.W.T. and Maclean, I.H. (1993), Fluoridation of drinking water. *British Medical Journal*, **306** (6885), 1127.

Full Text: [1993\Bri Med J306, 1127.pdf](1993/Bri%20Med%20J306,%201127.pdf)

Álvarez-Dardet, C. and Ruiz, M.T. (1993), McKeown, Thomas and Cochrane, Archibald: A journey through the diffusion of their ideas. *British Medical Journal*, **306** (6887), 1252-1255.

Full Text: [1993\Bri Med J306, 1252.pdf](1993/Bri%20Med%20J306,%201252.pdf)

Abstract: In the 1970s Thomas McKeown and Archibald L Cochrane were two of the most influential voices in criticising the dominance of medical thinking. A bibliometric study of the citations to McKeown’s The Role of Medicine: Dream, Mirage or Nemesis and Cochrane’s Effectiveness and Efficiency: Random Reflections on Health Services was performed from the publication of each book until 1988 to study how their ideas have been disseminated. During the study period 430 papers in the Science Citation Index or the Social Sciences Citation Index cited Cochrane’s book, 133 cited McKeown’s, and 166 cited both. The citations came mainly from original papers published in journals of internal medicine or public health and epidemiology (35%) and written by authors from the United States or the United Kingdom. Cochrane’s book was cited most frequently in medical journals, suggesting a higher degree of penetration of his ideas among medical scientists. Although the dominance of original papers among the citations suggests that these books have been important in stimulating new knowledge, the main problems that McKeown and Cochrane identified-namely, the relatively small impact of clinical medicine on health outcomes and the poor use of scientific methods in clinical practice-are still with us.

Onwude, J.L., Staines, A. and Lilford, R.J. (1993), Multiple author trend worst in medicine. *British Medical Journal*, **306** (6888), 1345.

Full Text: [1993\Bri Med J306, 1345.pdf](1993/Bri%20Med%20J306,%201345.pdf)

Keywords: Most-Cited Papers, Sci 1945-1988, Citation-Classics, Time

? Wakeford, R. and Roberts, W. (1993), Using MEDLINE for comprehensive searches. *British Medical Journal*, **306** (6889), 1415.

Full Text: [1993\Bri Med J306, 1415.pdf.pdf](1993/Bri%20Med%20J306,%201415.pdf.pdf)

? Downer, S.M., Cody, M.M., Mccluskey, P., Wilson, P.D., Arnott, S.J., Lister, T.A. and Slevin, M.L. (1994), Pursuit and practice of complementary therapies by cancer-patients receiving conventional treatment. *British Medical Journal*, **309** (6947), 86-89.

Full Text: [1994\Bri Med J309, 86.pdf](1994/Bri%20Med%20J309,%2086.pdf)

Abstract: Objectives-To determine what proportion of oncology patients receiving conventional medical treatment also use complementary treatments, to assess which complementary treatments are the most popular and to assess patients’ motivation for using them, to evaluate associated advantages and risks.

Design-Postal screening questionnaire followed by semistructured interview.

Setting-Two hospitals in inner London.

Subjects-600 unselected oncology patients aged 18 or over who had known their diagnosis of cancer for at least three months.

Main outcome measures-Prevalence and demography of use of complementary therapies, patients’ motivation and expectations of complementary therapies, areas of satisfaction and dissatisfaction associated with conventional and complementary therapies.

Results-415 (69%) patients returned the questionnaire. 16% had used complementary therapies. The most popular were healing, relaxation, visualisation, diets, homoeopathy, vitamins, herbalism, and the Bristol approach. Patients using complementary therapies tended to be younger, of higher social class, and female. Three quarters used two or more therapies. Therapies were mostly used for anticipated antitumour effect. Ill effects of diets and herb treatments were described. Satisfaction with both conventional and complementary therapies was high, although diets often caused difficulties. Patients using complementary therapies were less satisfied with conventional treatments, largely because of side effects and lack of hope of cure. Benefits of complementary therapies were mainly psychological.

Conclusions-A sizeable percentage of patients receiving conventional treatments for cancer also use complementary therapies. Patient satisfaction with complementary therapies, other than dietary therapies, was high even without the hoped for anticancer effect. Patients reported psychological benefits such as hope and optimism.

? Fisher, P. and Ward, A. (1994), Medicine in Europe. 8. Complementary medicine in Europe. *British Medical Journal*, **309** (6947), 107-111.

Full Text: [1994\Bri Med J309, 107.pdf](1994/Bri%20Med%20J309,%20107.pdf)

Abstract: Complementary or unconventional treatments are used by many doctors and other therapists throughout Europe, The major forms are acupuncture, homoeopathy, manual therapy or manipulation, and phytotherapy or herbal medicine. The relative popularity of therapies differs between countries, but public demand is strong and growing. Regulation of practitioners varies widely: in most countries only registered health professionals may practice, but in the United Kingdom practice is virtually unregulated. Germany and some Scandinavian countries have intermediate systems. Legal reforms are in progress in the Netherlands and the United Kingdom. European institutions are starting to influence the development of complementary medicine. Harmonisation of training and regulation of practitioners is the challenge for the future.

Keywords: Alternative Medicine, Practitioners

Notes: highly cited

? Pocock, S.J., Smith, M. and Baghurst, P. (1994), Environmental lead and children’s intelligence - A systematic review of the epidemiologic evidence. *British Medical Journal*, **309** (6963), 1189-1197.

Full Text: [1994\Bri Med J309, 1189.pdf](1994/Bri%20Med%20J309,%201189.pdf)

Abstract: Objective-To quantify the magnitude of the relation between full scale IQ in children aged 5 or more and their body burden of lead.

Design-A systematic review of 26 epidemiological studies since 1979: prospective studies of birth cohorts, cross sectional studies of blood lead, and cross sectional studies of tooth lead.

Setting-General populations of children greater than or equal to 5 years.

Main outcome measures-For each study, the regression coefficient of IQ on lead, after adjustment for confounders when possible, was used to derive the estimated change in IQ for a specific doubling of either blood or tooth lead.

Results-The five prospective studies with over 1100 children showed no association of cord blood lead or antenatal maternal blood lead with subsequent IQ. Blood lead at around age 2 had a small and significant inverse association with IQ, somewhat greater than that for mean blood lead over the preschool years. The 14 cross sectional studies of blood lead with 3499 children showed a significant inverse association overall, but showed more variation in their results and their ability to allow for confounders. The seven cross sectional studies of tooth lead with 2095 children were more consistent in finding an inverse association, although the estimated:magnitude was somewhat smaller. Overall synthesis of this evidence, including a meta-analysis, indicates that a typical doubling of body lead burden (from 10 to 20 mu g/dl (0.48 to 0.97 mu mol/l) blood lead or from 5 to 10 mu g/g tooth lead) is associated with a mean deficit in full scale IQ of around 1-2 IQ points.

Conclusion-While low level lead exposure may cause a small IQ deficit, other explanations need considering: are the published studies representative; is there inadequate allowance for confounders; are there selection biases in recruiting and following children; and do children of lower IQ adopt behaviour which makes them more prone to lead uptake (reverse causality)? Even if moderate increases in body lead burden adversely affect IQ, a threshold below which there is negligible influence cannot currently be determined. Because of these uncertainties, the degree of public health priority that should be devoted to detecting and reducing moderate increases in children’s blood lead, compared with other important social detriments that impede children’s development, needs careful consideration.

Keywords: Blood-Lead, School Population, Dentin Lead, Exposure, Performance, Attainment, Behavior, IQ, Ability, Cohort

Smith, J. (1994), Gift authorship: A poisoned chalice. *British Medical Journal*, **309** (6967), 1456-1457.

Full Text: [1994\Bri Med J309, 1456.pdf](1994/Bri%20Med%20J309,%201456.pdf)

Goodman, N.W. (1994), Survey of fulfillment of criteria for authorship in published medical-research. *British Medical Journal*, **309** (6967), 1482.

Full Text: [1994\Bri Med J309, 1482.pdf](1994/Bri%20Med%20J309,%201482.pdf)

Halloran, S.P. (1995), Continuing medical education and gift authorship. *British Medical Journal*, **310** (6983), 869.

Full Text: [1995\Bri Med J310, 869.pdf](1995/Bri%20Med%20J310,%20869.pdf)

? Flynn, F.V. (1995), Continuing medical-education and gift authorship - Royal-College of pathologists reply. *British Medical Journal*, **310** (6983), 869-870.

Full Text: [1995\Bri Med J310, 869-1.pdf](1995/Bri%20Med%20J310,%20869-1.pdf)

? Hutchison, G.L. (1995), ABC of multiple authorship. *British Medical Journal*, **310** (6989), 1236.

Full Text: [1995\Bri Med J310, 1236.pdf](1995/Bri%20Med%20J310,%201236.pdf)

Vander Stichele, R.H., Dezeure, E.M. and Bogaert, M.G. (1995), Systematic review of clinical efficacy of topical treatments for head lice. *British Medical Journal*, **311** (7005), 604-608.

Full Text: [1995\Bri Med J311, 604.pdf](1995/Bri%20Med%20J311,%20604.pdf)

Abstract: Objectives-To collect and evaluate all trials on clinical efficacy of topical treatments for head lice.

Design-Systematic review of randomised trials identified from following data sources: Medline, International Pharmaceutical Abstracts, Science Citation Index, letters to key authors and companies, and hand search of journals.

Setting-Trials in schools or communities.

Subjects-Patients infested with lice.

Main outcome measure-Cure rate (absence of Live lice and viable nits) on day 14 after treatment.

Results-Total of 28 trials were identified and evaluated according to eight general and 18 lice specific criteria. of the 14 trials rated as having low to moderate risk of bias, seven were selected as they used the main outcome measure. These seven trials described 21 evaluations of eight different compounds and placebo (all but two evaluations were of single applications). Only permethrin 1% creme rinse showed efficacy in more than two studies with the lower 95% confidence limit of cure rate above 90%.

Conclusions-Only for permethrin has sufficient evidence been published to show efficacy. Less expensive treatments such as malathion and carbaryl need more evidence of efficacy. Lindane and the natural pyrethrines are not sufficiently effective to justify their use.

Keywords: Pediculosis Capitis, Louse Infestation, Comparative Trial, Malathion Lotion, Lindane Shampoo, Creme Rinse, Insecticides, Pyrethrins, Resistance, Infection

Notes: highly cited

? Alberti, W., Anderson, G., Bartolucci, A., Bell, D., Villalba, J.B., Brodin, O., Cardiello, C., Cartei, F., Cartei, G., Cellerino, R., Chastang, C., Cormier, Y., Cox, J.D., Crino, L., Crowley, J., Dautzenberg, B., Depierre, A., Dietemann, A., Dillman, R.O., Doi, O,, Feld, R., Figlin, R., Ganz, P.A., Green, M.R., Gregor, A., Helle, P.A., Herndon, J.E., Hitomi, S., Host, H., Imaizumi, M., Jett, J.R., Johnson, D., Kaasa, S., Kimura, H., Klastersky, J., Kondo, H., Kreisman, H., Kris, M.G., Kunishima, K., Kuwahara, O., Lad, T.E., Laing, A.H., Macbeth, F., Masaoka, A., Mattson, K., Minatel, E., Mira, J.G., Mori, T., Mountain, C.F., Niederle, N., Niiranen, A., Nou, E., Page, W., Pater, J., Piantadosi, S., Pisters, K.M.W., Pyrhonen, S., Quoix, E., Rapp, E., Rowell, N.P., Sahmoud, T., Sawamura, K., Schallier, D.C.C., Scott, C., Simpson, J., Stagg, M., Teramatsu, T., Trovo, M.G., Tsuchiya, R., Tummarello, D., Vanhoutte, P., Vanzandwijk, N., Vincent, R.G., Wada, H., White, J.E., Williams, C.J., Woods, R.L., Yamaguchi, Y., Arriagada, R., Cartmelldavies, J., Girling, D.J., Lechevalier, T., Marsoni, S., Parmar, M.K.B., Pignon, J.P., Rekacewicz, C., Souhami, R.L., Stewart, L.A., Tarayre, M., Tinazzi, A. and Toni, V. (1995), Chemotherapy in non-small-cell lung-cancer: A metaanalysis using updated data on individual patients from 52 randomized clinical-trials. *British Medical Journal*, **311** (7010), 899-909.

Full Text: [1995\Bri Med J311, 899.pdf](1995/Bri%20Med%20J311,%20899.pdf)

Abstract: Objective-To evaluate the effect of cytotoxic chemotherapy on survival in patients with non-small cell lung cancer. Design-Meta-analysis using updated data on individual patients from all available randomised trials, both published and unpublished. Subjects-9387 patients (7151 deaths) from 52 randomised clinical trials. Main outcome measure-Survival. Results-The results for modern regimens containing cisplatin favoured chemotherapy in all comparisons and reached conventional levels of significance when used with radical radiotherapy and with supportive care. Trials comparing surgery with surgery plus chemotherapy gave a hazard ratio of 0.87 (13% reduction in the risk of death, equivalent to an absolute benefit of 5% at five years). Trials comparing radical radiotherapy with radical radiotherapy plus chemotherapy gave a hazard ratio of 0.87 (13% reduction in the risk of death; absolute benefit of 4% at two years), and trials comparing supportive care with supportive care plus chemotherapy 0.73 (27% reduction in the risk of death; 10% improvement in survival at one year). The essential drugs needed to achieve these effects were not identified. No difference in the size of effect was seen in any subgroup of patients. In all but the radical radiotherapy setting, older trials using long term alkylating agents tended to show a detrimental effect of chemotherapy. This effect reached conventional significance in the adjuvant surgical comparison. Conclusion-At the outset of this meta-analysis there was considerable pessimism about the role of chemotherapy in non-small cell lung cancer. These results offer hope of progress and suggest that chemotherapy may have a role in treating this disease.

Keywords: Adjuvant Chemotherapy, Supportive Care, Combination Chemotherapy, Bronchogenic-Carcinoma, Prolong Survival, Final Report, Radiotherapy, Radiation, Cyclophosphamide, Cisplatin

Notes: highly cited

? Sackett, D.L., Rosenberg, W.M.C., Gray, J.A.M., Haynes, R.B. and Richardson, W.S. (1996), Evidence based medicine: What it is and what it isn’t – It’s about integrating individual clinical expertise and the best external evidence. *British Medical Journal*, **312** (7023), 71-72.

Full Text: [1996\Bri Med J312, 71.pdf](1996/Bri%20Med%20J312,%2071.pdf)

Taylor, B.L., Pilkington, S.N., Smith, G.B. and McQuillan, J. (1996), Attitude of consultant physicians to Calman proposals: Who is responsible for quality of acute medical care? *British Medical Journal*, **312** (7028), 443-444.

Full Text: [1996\Bri Med J312, 443.pdf](1996/Bri%20Med%20J312,%20443.pdf)

Notes: highly cited

Garfield, E. (1996), How can impact factors be improved? *British Medical Journal*, **313** (7054), 411-413.

Full Text: [1996\Bri Med J313, 411.pdf](1996/Bri%20Med%20J313,%20411.pdf)

Abstract: Impact factors are widely used to rank and evaluate journals. They are also often used inappropriately as surrogates in evaluation exercises. The inventor of the Science Citation Index warns against the indiscriminate use of these data. Fourteen year cumulative impact data for 10 leading medical journals provide a quantitative indicator of their long term influence. In the final analysis, impact simply reflects the ability of journals and editors to attract the best papers available.

Ross, D., Whitehead, M. and Stevenson, J. (1996), Use of hormone replacement therapy - Authors gave distorted view through selective citation. *British Medical Journal*, **313** (7058), 686-687.

Full Text: [1996\Bri Med J313, 686.pdf](1996/Bri%20Med%20J313,%20686.pdf)

Keywords: Postmenopausal Women, Breast-Cancer, Risk

Watt, G.C.M., Britton, A., Gilmour, W.H., Moore, M.R., Murray, G.D., Robertson, S.J. and Womersley, J. (1996), Is lead in tap water still a public health problem? An observational study in Glasgow. *British Medical Journal*, **313** (7063), 979-981.

Full Text: [1996\Bri Med J313, 979.pdf](1996/Bri%20Med%20J313,%20979.pdf)

Abstract: Objective-To assess the relation between tap water lead and maternal blood lead concentrations and assess the exposure of infants to lead in tap water in a water supply area subjected to maximal water treatment to reduce plumbosolvency.

Design-Postal questionnaire survey and collection of kettle water from a representative sample of mothers, blood and further water samples were collected in a random sample of households and households with raised water lead concentrations.

Setting-Loch Katrine water supply area, Glasgow.

Subjects-1812 mothers with a live infant born between October 1991 and September 1992. Blood lead concentrations were measured in 342 mothers.

Main outcome measures-Mean geometric blood lead concentrations and the prevalence of raised tap water lead concentrations.

Results-17% of households had water lead concentrations of 10 μg /l (48.3 nmol/l) or more in 1993 compared with 49% of households in 1981. Tap water lead remained the main correlate of raised maternal blood lead concentrations and accounted for 62% and 76% of cases of maternal blood lead concentrations above 5 and 10 μg /dl (0.24 and 0.48 μmol/l) respectively. The geometric mean maternal blood lead concentration was 3.65 μg /dl (0.18 μmol/l) in a random sample of mothers and 3.16 μg /dl (0.15 μmol/l) in mothers whose tap water lead concentrations were consistently below 2 μg/l (9.7 nmol/l). No mother in the study had a blood lead concentration above 25 μg/dl (1.21 μmol/l). An estimated 13% of infants were exposed via bottle feeds to tap water lead concentrations exceeding the World Health Organisation’s guideline of 10 μg/l (48.3 nmol/l).

Conclusions-Tap water lead and maternal blood lead concentrations in the Loch Katrine water supply area have fallen substantially since the early 1980s. Maternal blood lead concentrations are well within limits currently considered safe for human health. Tap water lead is still a public health problem in relation to the lead exposure of bottle fed infants.

Keywords: Blood Lead, Children, Edinburgh, Exposure, Ability

Smith, R. (1996), What clinical information do doctors need? *British Medical Journal*, **313** (7064), 1062-1068.

Full Text: [1996\Bri Med J313, 1062.pdf](1996/Bri%20Med%20J313,%201062.pdf)

Abstract: Doctors use some two million pieces of information to manage patients, but little research has been done on the information needs that arise while treating patients

Textbooks, journals, and other existing information tools are not adequate for answering the questions that arise: textbooks are out of date, and “the signal to noise” ratio of journals is too low for them to be useful in daily practice

Computer systems that have been developed to help doctors are not widely used--perhaps because they have not been developed to meet doctors’ information needs

When doctors see patients they usually generate at least one question, more questions arise than the doctors seem to recognise

Most of the questions concern treatment

Many of the questions are highly complex, simultaneously asking about individual patients and particular areas of medical knowledge

Often doctors are asking not simply for information but for support, guidance, affirmation, and feedback

Many of the questions go unanswered, but most could be answered, it is, however, time consuming and expensive to answer them

Doctors are most likely to seek answers to these questions from other doctors

The best information sources provide relevant, valid material that can be accessed quickly and with minimal effort

New information tools are needed: they are likely to be electronic, portable, fast, easy to use, connected to both a large valid database of medical knowledge and the patient record, and a servant of patients as well as doctors

Olde Rikkert, M.G.M., ten Have, H.A.M.J. and Hoefnagels, W.H.L. (1996), Informed consent in biomedical studies on aging: Survey of four journals. *British Medical Journal*, **313** (7065), 1117.

Full Text: [1996\Bri Med J313, 1117.pdf](1996/Bri%20Med%20J313,%201117.pdf)

Walker, A. (1996), Environment: A new key area for Health of the Nation? *British Medical Journal*, **313** (7066), 1197-1199.

Full Text: [1996\Bri Med J313, 1197.pdf](1996/Bri%20Med%20J313,%201197.pdf)

Abstract: Later this month the government will be consulting on whether the environment should be adopted as a new key area for their Health of the Nation strategy. It is proposing to have five topic areas and to adopt 10-15 environmental targets. This would reaffirm its commitment to linking environmental policy and health policy following publication earlier this year of its environmental health action plan. Critics may respond to the consultation document with suggestions for more far reaching targets-based, for example, on the “Health for All” targets from the World Health Organisation, or those arising out of Agenda 21 from the earth summit in Rio De Janeiro. Whatever the criticism, this move will be a chance to link environmental and health agendas at both national and local level.

Notes: highly cited

Seglen, P.O. (1997), Why the impact factor of journals should not be used for evaluating research. *British Medical Journal*, **314** (7079), 498-502.

Full Text: [1997\Bri Med J314, 498.pdf](1997/Bri%20Med%20J314,%20498.pdf)

Keywords: Citation Analysis, Science, Field

Morrison, P.J. (1997), Making the most of self citation. *British Medical Journal*, **314** (7083), 832.

Full Text: [1997\Bri Med J314, 832.pdf](1997/Bri%20Med%20J314,%20832.pdf)

Bhopal, R., Rankin, J., McColl, E., Thomas, L., Kaner, E., Stacy, R., Pearson, P., Vernon, B. and Rodgers, H. (1997), The vexed question of authorship: Views of researchers in a British medical faculty. *British Medical Journal*, **314** (7086), 1009-1012.

Full Text: [1997\Bri Med J314, 1009.pdf](1997/Bri%20Med%20J314,%201009.pdf)

Abstract: Objective: To assess knowledge, views, and behaviour of researchers on criteria for authorship and causes and control of gift authorship.

Design: Interview survey of stratified sample of researchers.

Setting: University medical faculty.

Subjects: 66 staff (94% response rate) comprising several levels of university academic and research appointments.

Main outcome measures: Awareness and use of criteria for authorship, views on which contributions to research merit authorship, perceptions about gift authorship and strategies for reducing it, and experiences of authorship problems.

Results: 50 (76%) respondents supported criteria for authorship, but few knew about or used available criteria. of the five people who could specify all three criteria of the International Committee of Medical Journal Editors, only one knew that all criteria had to be met Forty one respondents (62%) disagreed with this stipulation. A range of practical and academic contributions were seen as sufficient for authorship, Gift authorship was perceived as common, promoted by pressure to publish, to motivate research teams, and to maintain working relationships. A signed statement justifying authorship and a published statement of the contribution of each author were perceived as practical ways of tacking gift authorship. Most researchers had experienced problems with authorship, most commonly the perception that authorship had been deserved but not awarded (49%).

Conclusion: There seems to be a gap between editors’ criteria for authorship and researchers’ practice. Lack of awareness of criteria is only a partial explanation. Researchers give more weight than editors to practical research contributions. Future criteria should be agreed by researchers and not be imposed by editors.

? Bhopal, R.S., Rankin, J.M., McColl, E., Stacy, R., Pearson, P.H., Kaner, E.F.S., Thomas, L.H., Vernon, B.G. and Rodgers, H. (1997), Authorship - Team approach to assigning authorship order is recommended. *British Medical Journal*, **314** (7086), 1046-1047

Full Text: [1997\Bri Med J314, 1046.pdf](1997/Bri%20Med%20J314,%201046.pdf)

Keywords: Authorship

van der Heijden, G.J.M.G., van der Windt, D.A.W.M. and de Winter, A.F. (1997), Physiotherapy for patients with soft tissue shoulder disorders: A systematic review of randomised clinical trials. *British Medical Journal*, **315** (7099), 25-30.

Full Text: [1997\Bri Med J315, 25.pdf](1997/Bri%20Med%20J315,%2025.pdf)

Abstract: Objective: To assess the effectiveness of physiotherapy for patients with soft tissue shoulder disorders.

Design: A systematic computerised literature search of Medline and Embase, supplemented with citation tracking, for relevant trials with random allocation published before 1996.

Subjects: Patients treated with physiotherapy for disorders of soft tissue of the shoulder. Main outcome measures: Success rates, mobility, pain, functional status.

Results: Six of the 20 assessed trials satisfied at least five of eight validity criteria. Assessment of methods was often hampered by insufficient information on various validity criteria, and trials were often flawed by lack of blinding, high proportions of withdrawals from treatment and high proportions of missing values. Trial sizes were small: only six trials included intervention groups of more than 25 patients. Ultrasound therapy, evaluated in six trials, was not shown to be effective. Four other trials favoured physiotherapy (laser therapy or manipulation), but the validity of their methods was unsatisfactory.

Conclusions: There is evidence that ultrasound therapy is ineffective in the treatment of soft tissue shoulder disorders. Due to small trial sizes and unsatisfactory methods, evidence for the effectiveness of other methods of physiotherapy is inconclusive. For all methods of treatment, trials were too heterogeneous with respect to included patients, index and reference treatments, and follow up to merit valid statistical pooling. Future studies should show whether physiotherapy is superior to treatment with drugs, steroid injections, or a wait and see policy.

Keywords: Rotator Cuff Tendinitis, Double-Blind, General-Practice, Quality, Therapy

Croft, A. and Garner, P. (1997), Mefloquine to prevent malaria: A systematic review of trials. *British Medical Journal*, **315** (7120), 1412-1416.

Full Text: [1997\Bri Med J315, 1412.pdf](1997/Bri%20Med%20J315,%201412.pdf)

Abstract: Objective: To evaluate the research evidence on the efficacy and tolerability of mefloquine chemoprophylaxis.

Search strategy: Any potentially relevant trial from the Cochrane Infectious Disease Group’s register of controlled trials, systematic searches of Medline, Embase, Lilacs and Science Citation Index, scanning citations, and consulting drug companies and key investigators. We considered studies in all languages.

Inclusion criteria: Trials carried out in non-immune adult travellers, and in non-travelling volunteers, where an attempt had been made to conduct a randomised comparison of mefloquine against placebo or against alternative standard prophylaxis.

Results: 37 potentially eligible trials of mefloquine prophylaxis were identified, and 10 met the inclusion criteria These 10 trials comprised a total of 2750 non-immune adult participants randomised to mefloquine or to a control. One placebo controlled trial examined malaria incidence directly and showed mefloquine to be highly effective in preventing malaria in an area of drug resistance. However, four placebo controlled trials showed that mefloquine was not well tolerated, and withdrawals were consistently higher in mefloquine treatment arms than in placebo arms (odds ratio 3.49 (95% confidence interval 1.42 to 8.56)). Five field trials compared mefloquine with other chemoprophylaxis. Mefloquine was no worse tolerated than other chemoprophylaxis, although there was possibly a trend towards higher withdrawals in mefloquine arms (odds ratio 1.33 (0.75 to 2.36)).

Conclusion: One trial showed mefloquine to be effective in preventing malaria, but withdrawal rates, presumably from side effects, were high across most studies. This is likely to impair mefloquine’s effectiveness in general travellers, and it may therefore not be useful for routine prophylaxis. Mefloquine may be useful in specific situations such as for groups travelling to regions with a high risk of chloroquine resistant malaria and only limited access to effective medical care.

Keywords: Randomized Controlled Trials, Practice Guidelines, Consort Statement, Prophylaxis, Chemoprophylaxis, Tolerability, Travelers, Regimens, Authors

van Rooyen, S., Godlee, F., Evans, S., Black, N. and Smith, R. (1999), Effect of open peer review on quality of reviews and on reviewers’ recommendations: A randomised trial. *British Medical Journal*, **318** (7175), 23-27.

Full Text: [1999\Bri Med J319, 23.pdf](1999/Bri%20Med%20J319,%2023.pdf)

Abstract: Objectives To examine the effect on peer review of asking reviewers to have their identity revealed to the authors of the paper.

Design Randomised trial. Consecutive eligible papers were sent to two reviewers who were randomised to have their identity revealed to the authors or to remain anonymous. Editors and authors were blind to the intervention.

Main outcome measures The quality of the reviews was independently rated by two editors and the corresponding author using a validated instrument Additional outcomes were the time taken to complete the review and the recommendation regarding publication. A questionnaire survey was undertaken of the authors of a cohort of manuscripts submitted for publication to find out their views on open peer review.

Results Two editors’ assessments were obtained for 113 out of 125 manuscripts, and the corresponding author’s assessment was obtained for 105. Reviewers randomised to be asked to be identified were 12% (95% confidence interval 0.2% to 24%) more likely to decline to review than reviewers randomised to remain anonymous (35% v 23%). There was no significant difference in quality (scored on a scale of 1 to 5) between anonymous reviewers (3.06 (SD 0.72)) and identified reviewers (3.09 (0.68)) (P = 0.68, 95% confidence interval for difference -0.19 to 0.12), and no significant difference in the recommendation regarding publication or time taken to review the paper. The editors’ quality score for reviews (3.05 (SD 0.70)) was significantly higher than that of authors (2.90 (0.87)) (P < 0.005, 95% confidence interval for difference -0.26 to -0.03). Most authors were in favour of open peer review.

Conclusions Asking reviewers to consent to being identified to the author had no important effect on the quality of the review, the recommendation regarding publication, or the time taken to review, but it significantly increased the likelihood of reviewers declining to review.

Keywords: Anonymity

Chariot, P. and Pautot, V. (1999), Usefulness of contacting other experts when conducting literature searches - Secondary citation of work that was not published did not set good example. *British Medical Journal*, **319** (7204), 259-260.

Full Text: [1999\Bri Med J319, 259.pdf](1999/Bri%20Med%20J319,%20259.pdf)

Grant, J., Cottrell, R., Cluzeau, F. and Fawcett, G. (2000), Evaluating “payback” on biomedical research from papers cited in clinical guidelines: Applied bibliometric study. *British Medical Journal*, **320** (7242), 1107-1111.

Full Text: [2000\Bri Med J320, 1107.pdf](2000/Bri%20Med%20J320,%201107.pdf)

Abstract: Objectives To develop a methodology for evaluating the impact of research on health care, and to characterise the papers cited on clinical guidelines.

Design The bibliographic details of the papers cited in 15 clinical guidelines, developed in and for the United Kingdom, were collated and analysed with applied bibliometric techniques.

Results The median age of papers cited in clinical guidelines was eight years, most papers were published by authors living in either the United States (36%) or the United Kingdom (25%)-this is two and a half times more than expected as about 10% of all biomedical outputs are published in the United Kingdom, and clinical guidelines do not cite basic research papers.

Conclusion Analysis of the evidence base of clinical guidelines may be one way of tracking the flow of knowledge from the laboratory to the clinic.

Moreover, such analysis provides a useful, clinically relevant method for evaluating research outcomes and different strategies in research and development.

Keywords: Impact, Research, Science, United Kingdom

Mair, F. and Whitten, P. (2000), Systematic review of studies of patient satisfaction with telemedicine. *British Medical Journal*, **320** (7248), 1517-1520.

Full Text: [2000\Bri Med J320, 1517.pdf](2000/Bri%20Med%20J320,%201517.pdf)

Abstract: Objective To review research into patient satisfaction with teleconsultation, specifically clinical consultations between healthcare providers and patients involving real time inter active video.

Design Systematic review of telemedicine satisfaction studies. Electronic databases searched include Medline, Embase, Science Citation Index, Social Sciences Citation Index, Arts and Humanities Citation Index, and the TIE (Telemedicine Information Exchange) database.

Subjects Studies conducted worldwide and published between 1966 and 1998.

Main outcome measures Quality of evidence about patient satisfaction.

Results 32 studies were identified. Study methods used were simple survey instruments (26 studies), exact methods not specified (5), and qualitative methods (1). Study designs were randomised controlled trial (1 trial), random patient selection (2), case-control (1), and selection criteria not specified or participants represented consecutive referrals, convenience samples, or volunteers (28). Sample sizes were less than or equal to 20 (10 trials), less than or equal to 100 (14), > 100 (7), and not specified (1). All studies reported good levels of patient satisfaction. Qualitative analysis revealed methodological problems with all the published work. Even so, important issues were highlighted that merit further investigation. There is a paucity of data examining patients’ perceptions or the effects of this mode of healthcare delivery on the interaction between providers and clients.

Conclusions Methodological deficiencies (low sample sizes, context, and study designs) of the published research limit the generalisability of the findings. The studies suggest that teleconsultation is acceptable to patients in a variety of circumstances, but issues relating to patient satisfaction require further exploration from the perspective of both clients and providers.

Keywords: Health-Care, Teledermatology, Feasibility

Weissberg, P.L., Jones, R., Moxham, J., Taylor, I., Jones, R. and Hilton, S. (2000), Clinical academic medicine. *British Medical Journal*, **321**, 300.

Full Text: [2000\Bri Med J321, 300.pdf](2000/Bri%20Med%20J321,%20300.pdf)

Chalmers, I., Grant, J., Cottrell, R., Fawcett, G. and Cluzeau, F. (2000), Evaluating “payback” on biomedical research. *British Medical Journal*, **321**, 566.

Full Text: [2000\Bri Med J321, 566.pdf](2000/Bri%20Med%20J321,%20566.pdf)

Vickers, A. (2000), Recent advances: Complementary medicine. *British Medical Journal*, **321**, 683-686.

Full Text: [2000\Bri Med J321, 683.pdf](2000/Bri%20Med%20J321,%20683.pdf)

? Taylor, M.A., Reilly, D., Llewellyn-Jones, R.H., McSharry, C. and Aitchison, T.C. (2000), Randomised controlled trial of homoeopathy versus placebo in perennial allergic rhinitis with overview of four trial series. *British Medical Journal*, **321** (7259), 471-476.

Full Text: [B\Bri Med J321, 471.pdf](B/Bri%20Med%20J321,%20471.pdf)

Abstract: Objective To test the hypothesis that homoeopathy is a placebo by examining its effect in patients with allergic rhinitis and so contest the evidence from three previous trials in this series.

Design Randomised, double blind, placebo controlled, parallel group, multicentre study.

Setting Four general practices and a hospital ear, nose, and throat outpatient department.

Participants 51 patients with perennial allergic rhinitis.

Intervention Random assignment to an oral 30c homoeopathic preparation of principal inhalant allergen or to placebo.

Main outcome measures Changes from baseline in nasal inspiratory peak now and symptom visual analogue scale score over third and fourth weeks after randomisation.

Results Fifty patients completed the study. The homoeopathy group had a significant objective improvement in nasal airflow compared with the placebo group (mean difference 19.8 1/min, 95% confidence interval 10.4 to 29.1, P = 0.0001). Both groups reported improvement in symptoms, with patients taking homoeopathy reporting more improvement in all but one of the centres, which had more patients with aggravations. On average no significant difference between the groups was seen on visual analogue scale scores. Initial aggravations of rhinitis symptoms were more common with homoeopathy than placebo (7 (30%) v 2 (7%), P = 0.04). Addition of these results to those of three previous trials (n = 253) showed a mean symptom reduction on visual analogue scores of 28% (10.9 mm) for homoeopathy compared with 3% (1.1 mm) for placebo (95% confidence interval 4.2 to 15.4, P = 0.0007).

Conclusion The objective results reinforce earlier evidence that homoeopathic dilutions differ from placebo.

Keywords: Clinical-Trials, Flow-Rate, Metaanalysis, Homeopatht, Patency

Straus, S.E. (2001), Recent advances: Geriatric medicine. *British Medical Journal*, **322** (7278), 86-89.

Full Text: [B\Bri Med J322, 86.pdf](B/Bri%20Med%20J322,%2086.pdf)

Keywords: Stroke Unit Treatment, Alzheimers-Disease, Heart-Failure, Cardiovascular Health, Postmenopausal Women, Randomized Trials, Clinical-Trials, Older Adults, Double-Blind, Risk

Mitchell, E. and Sullivan, F. (2001), A descriptive feast but an evaluative famine: systematic review of published articles on primary care computing during 1980-97. *British Medical Journal*, **322** (7281), 279-282.

Full Text: [2001\Bri Med J322, 279.pdf](2001/Bri%20Med%20J322,%20279.pdf)

Abstract: Objectives To appraise findings from studies examining the impact of computers on primary care consultations.

Design Systematic review of world literature from 1980 to 1997.

Data sources 5475 references were identified from electronic databases (Medline, Science Citation Index, Social Sciences Citation Index, Index of Scientific and Technical Proceedings, Embase, OCLC FirstSearch Proceedings), bibliographies, books, identified articles, and by authors active in the field. 1892 eligible abstracts were independently rated, and 89 studies met the inclusion criteria.

Main outcome measures Effect on doctors’ performance and patient outcomes, attitudes towards computerisation.

Results 61 studies examined effects of computers on practitioners’ performance, 17 evaluated their impact on patient outcome, and 20 studied practitioners’ or patients’ attitudes. Computer use during consultations lengthened the consultation. Reminder systems for preventive tasks and disease management improved process rates, although some returned to pre-intervention levels when reminders were stopped. Use of computers for issuing prescriptions increased prescribing of generic drugs, and use of computers for test ordering led to cost savings and fewer unnecessary tests. There were no negative effects on those patient outcomes evaluated. Doctors and patients were generally positive about use of computers, but issues of concern included their impact on privacy, the doctor-patient relationship, cost, time, and training needs.

Conclusions Primary care computing systems can improve practitioner performance, particularly for health promotion interventions. This may be at the expense of patient initiated activities, making many practitioners suspicious of the negative impact on relationships with patients. There remains a dearth of evidence evaluating effects on patient outcomes.

Keywords: Randomized Controlled Trial, Computerized Decision-Support, Primary Health-Care, General-Practice, Medical-Record, Influenza Vaccination, Preventive Care, Screening Mammography, Patients Attitudes, Clinical-Practice

Silagy, C.A., Stead, L.F. and Lancaster, T. (2001), Use of systematic reviews in clinical practice guidelines: Case study of smoking cessation. *British Medical Journal*, **323**, 833-836.

Full Text: [2001\Bri Med J323, 833.pdf](2001/Bri%20Med%20J323,%20833.pdf)

Abstract: Objective: To examine the extent to which recommendationsin the national guidelines for the cessation of smoking are basedon evidence from systematic reviews of controlledtrials.

Design: Retrospective analysis of recommendationsfor the national guidelines for the cessation of smoking.

Materials: National guidelines in clinical practice onsmoking cessation published inEnglish.

Main outcome measures: The type of evidence (systematic review of controlled trials, individual trials, other studies, expert opinion)used to support each recommendation. We also assessed whethera Cochrane systematic review was available and could have beenused in formulating therecommendation.

Results: Four national smoking cessation guidelines(from Canada, New Zealand, the United Kingdom, and the UnitedStates) covering 105 recommendations were identified. An explicitevidence base for 100%, 89%, 68%, and 98% of recommendations, respectively, was detected, of which 60%, 56%, 59%, and 47% werebased on systematic reviews of controlled studies. Cochrane systematicreviews could have been used to develop between 39% and 73% of recommendations but were actually used in 0% to 36% of recommendations.The UK guidelines had the highest proportion of recommendationsbased on Cochrane systematicreviews.

Conclusions: Use of systematic reviews in guidelines isa measure of the “payback” on investment in research synthesis.Systematic reviews commonly underpinned recommendations in guidelineson smoking cessation. The extent to which they were used variedby country and there was evidence of duplication of effort insome areas. Greater international collaboration in developingand maintaining an evidence base of systematic reviews can improvethe efficiency of use of researchresources.

? Chambers, R., Boath, E. and Chambers, S. (2001), The A to Z of authorship: analysis of influence of initial letter of surname on order of authorship. *British Medical Journal*, **323** (7327), 1460-1461.

Full Text: [2001\Bri Med J323, 1460.pdf](2001/Bri%20Med%20J323,%201460.pdf)

Al-Shahi, R., Will, R.G. and Warlow, C.P. (2001), Amount of research interest in rare and common neurological conditions: Bibliometric study. *British Medical Journal*, **323** (7327), 1461-1462.

Full Text: [2001\Bri Med J323, 1461.pdf](2001/Bri%20Med%20J323,%201461.pdf)

Horrocks, S., Anderson, E. and Salisbury, C. (2002), Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *British Medical Journal*, **324** (7341), 819-823.

Full Text: [2002\Bri Med J324, 819.pdf](2002/Bri%20Med%20J324,%20819.pdf)

Abstract: Objective To determine whether nurse practitioners can provide care at first point of contact equivalent to doctors in a primary care setting.

Design Systematic review of randomised controlled trials and prospective observational studies.

Data sources Cochrane controlled trials register, specialist register of trials maintained by Cochrane Effective Practice and Organisation of Care Group, Medline, Embase, CINAHL, science citation index, database of abstracts of reviews of effectiveness, national research register, hand searches, and published bibliographies.

Included studies Randomised controlled trials and prospective observational studies comparing nurse practitioners and doctors providing care at first point of contact for patients with undifferentiated health problems in a primary care setting and providing data on one or more of the following outcomes: patient satisfaction, health status, costs, and process of care.

Results 11 trials and 23 observational studies met all the inclusion criteria. Patients were more satisfied with care by a nurse practitioner (standardised mean difference 0.27, 95% confidence interval 0.07 to 0.47). No differences in health status were found. Nurse practitioners had longer consultations (weighted mean difference 3.67 minutes, 2.05 to 5.29) and made more investigations (odds ratio 1.22, 1.02 to 1.46) than did doctors. No differences were found in prescriptions, return consultations, or referrals. Quality of care was in some ways better for nurse practitioner consultations.

Conclusion Increasing availability of nurse practitioners in primary care is likely to lead to high levels of patient satisfaction and high quality care.

Keywords: Randomized Controlled Trial, Health Outcomes, Physicians

Whitten, P.S., Mair, F.S., Haycox, A., May, C.R., Williams, T.L. and Hellmich, S. (2002), Systematic review of cost effectiveness studies of telemedicine interventions. *British Medical Journal*, **324** (7351), 1434-1437.

Full Text: [2002\Bri Med J324, 1434.pdf](2002/Bri%20Med%20J324,%201434.pdf)

Abstract: Objectives To systematically review cost benefit studies of telemedicine.

Design Systematic review of English language, peer reviewed journal articles.

Data sources Searches of Medline, Embase, ISI citation indexes, and database of Telemedicine Information Exchange.

Studies selected 55 of 612 identified articles that presented actual cost benefit data.

Main outcome measures Scientific quality of reports assessed by use of an established instrument for adjudicating on the quality of economic analyses.

Results 557 articles without cost data categorised by topic. 55 articles with data initially categorised by cost variables employed in the study and conclusions. Only 24/55 (44%) studies met quality criteria justifying inclusion in a quality review. 20/24 (83%) restricted to simple cost comparisons. No study used cost utility analysis, the conventional means of establishing the “value for money” that a therapeutic intervention represents. Only 7/24 (29%) studies attempted to explore the level of utilisation that would be needed for telemedicine services to compare favourably with traditionally organised health care. None addressed this question in sufficient detail to adequately answer it. 15/24 (62.5%) of articles reviewed here provided no details of sensitivity analysis, a method all economic analyses should incorporate.

Conclusion T here is no good evidence that telemedicine is a cost effective means of delivering health care.

? Bartlett, C., Sterne, J. and Egger, M. (2002), What is newsworthy? Longitudinal study of the reporting of medical research in two British newspapers. *British Medical Journal*, **325** (7355), 81-84.

Full Text: [2002\Bri Med J325, 81.pdf](2002/Bri%20Med%20J325,%2081.pdf)

Abstract: Objective To assess the Characteristics of medical research that is press released by general medical journals and reported in newspapers.

Design Longitudinal study.

Data sources All original research articles published in Lancet and BAY during 1999 and 2000.

Main outcome measures Inclusion of articles in Lancet or BAY press releases, and reporting of articles in Times or Sun newspapers.

Results of 1193 original research articles, 517 (43%) were highlighted in a press release and 81 (7%) were reported in one or both newspapers. All articles covered in newspapers had been press released. The probability of inclusion in press releases was similar for observational studies and randomised controlled trials, but trials were less likely to be covered in the newspapers (odds ratio 0.15 (95% confidence interval 0.06 to 0.37)). Good news and bad news were equally likely to be press released, but bad news was snore likely to be reported in newspapers (1.74 (1.07 to 2.83)). Studies of women’s health, reproduction, and cancer were more likely to be press released acid covered in newspapers. Studies from industrialised countries other than Britain were less likely to be reported in newspapers (0.51 (0.31 to 0.82)), and no studies from developing countries were covered.

Conclusions Characteristics of articles were more strongly associated with selection for reporting in newspapers than with selection for inclusion in press releases, although each stage influenced the reporting process. Newspapers underreported randomised trials, emphasised bad news from observational studies, and ignored research from developing countries.

Keywords: Random Allocation, Clinical-Trial, Articles, Leukemia, Health, Participation, Journals, Coverage, Parents, Babies

? Joseph, K.S. (2003), Quality of impact factors of general medical journals. *British Medical Journal*, **326** (7383), 283.

Full Text: [2003\Bri Med J326, 283.pdf](2003/Bri%20Med%20J326,%20283.pdf)

Parry, J. (2003), WHO issues global alert on respiratory syndrome. *British Medical Journal*, **326** (7390), 615.

Full Text: [B\Bri Med J326, 615.pdf](B/Bri%20Med%20J326,%20615.pdf)

Ellis, A. (2003), UK travellers warned after first suspected case of new syndrome. *British Medical Journal*, **326** (7390), 615.

Full Text: [B\Bri Med J326, 615.pdf](B/Bri%20Med%20J326,%20615.pdf)

Zambon, M. and Nicholson, K.G. (2003), Sudden acute respiratory syndrome - May be a rehearsal for the next influenza pandemic. *British Medical Journal*, **326** (7391), 669-670.

Full Text: [B\Bri Med J326, 669.pdf](B/Bri%20Med%20J326,%20669.pdf)

Parry, J. (2003), Hong Kong virus spreads worldwide. *British Medical Journal*, **326** (7391), 677.

Full Text: [B\Bri Med J326, 677.pdf](B/Bri%20Med%20J326,%20677.pdf)

Parry, J. (2003), Hong Kong and US scientists believe illness is a coronavirus. *British Medical Journal*, **326** (7392), 727.

Full Text: [B\Bri Med J326, 727.pdf](B/Bri%20Med%20J326,%20727.pdf)

Parry, J. (2003), China joins global effort over pneumonia virus. *British Medical Journal*, **326** (7393), 781.

Full Text: [B\Bri Med J326, 781.pdf](B/Bri%20Med%20J326,%20781.pdf)

? Roberts, I.G. (2003), How political should a general medical journal be? Medical journals may have had role in justifying war. *British Medical Journal*, **326** (7393), 820.

Full Text: [2003\Bri Med J326, 820.pdf](2003/Bri%20Med%20J326,%20820.pdf)

Fleck, F. (2003), Carlo Urbani - World Health Organization official who raised the alarm over severe acute respiratory syndrome - Obituary. *British Medical Journal*, **326** (7393), 825.

Full Text: [B\Bri Med J326, 825.pdf](B/Bri%20Med%20J326,%20825.pdf)

Smith, R. (2003), After war, plague. *British Medical Journal*, **326** (7394), 830.

Full Text: [B\Bri Med J326, 830.pdf](B/Bri%20Med%20J326,%20830.pdf)

Zambon, M. (2003), Severe acute respiratory syndrome revisited - Coronavirus may be responsible, but new information arrives every day. *British Medical Journal*, **326** (7394), 831-832.

Full Text: [B\Bri Med J326, 831.pdf](B/Bri%20Med%20J326,%20831.pdf)

Jackson, T. (2003), Website of the week: Severe acute respiratory syndrome. *British Medical Journal*, **326** (7394), 837.

Full Text: [B\Bri Med J326, 837.pdf](B/Bri%20Med%20J326,%20837.pdf)

Parry, J. (2003), SARS shows no sign of coming under control. *British Medical Journal*, **326** (7394), 839.

Full Text: [B\Bri Med J326, 839.pdf](B/Bri%20Med%20J326,%20839.pdf)

Chan-Yeung, M. and Yu, W.C. (2003), Outbreak of severe acute respiratory syndrome in Hong Kong special administrative region: Case report. *British Medical Journal*, **326** (7394), 850-852.

Full Text: [B\Bri Med J326, 850.pdf](B/Bri%20Med%20J326,%20850.pdf)

Abstract: Objective To describe the outbreak of severe acute respiratory syndrome in Hong Kong.

Design Descriptive case series.

Setting Hong Kong, Special Administrative Region, China

Results The outbreak started with a visitor from southern China on 21 February At the hospitals where the first cases were treated the disease spread quickly among healthcare workers, and then out into the community as family members became infected. By 1 April, 685 cases had been reported with 16 deaths. Symptoms include high fever and one or more respiratory symptoms (including cough, shortness of breath, and difficulty breathing,). Changes in lung tissue suggest that part of the lung damage is due to cytokines induced by the microbial agent, which has led to empirical treatment with corticosteroids, broad spectrum antiviral agent, and antibacterial cover. There is strong evidence that a novel coronavirus is the pathogen. Precautions for droplet infection should be instituted, including the wearing of masks and rigorous disinfection and hygiene procedures. On 27 March the Department of Health announced drastic measures, including vigorous contact tracing and examination, quarantine of contacts in their homes, and closure of all schools and universities.

Conclusion The rapidity of the spread of the disease and the morbidity indicate that the agent responsible is highly infectious and virulent. Strict infection control measures for droplet and contact transmission by healthcare workers, a vigilant healthcare profession, and public education are essential for disease prevention.

Parry, J. (2003), SARS virus identified, but the disease is still spreading. *British Medical Journal*, **326** (7395), 897.

Full Text: [B\Bri Med J326, 897.pdf](B/Bri%20Med%20J326,%20897.pdf)

Spurgeon, D. (2003), Canada reports more than 300 suspected cases of SARS. *British Medical Journal*, **326** (7395), 897.

Full Text: [B\Bri Med J326, 897.pdf](B/Bri%20Med%20J326,%20897.pdf)

Wong, I. (2003), Policies on SARS in UK boarding schools are confused. *British Medical Journal*, **326** (7395), 929.

Full Text: [B\Bri Med J326, 929.pdf](B/Bri%20Med%20J326,%20929.pdf)

Wong, I., Molloy, M.S., Berry, A.R., Torgerson, D., Porthouse, J., Kannus, P.A., Kurrle, S.E., Cameron, I.D., Warnke, A., Mühlhauser, I., Porta, M., Liu, J.L.Y., Sims, P.A., Barber, S.G., McLennan, J.L., Strachan, J., Guest, D.G., Griffiths, P. and Forbes, A. (2003), Letters. *British Medical Journal*, **326** (7395), 929-933.

Full Text: [B\Bri Med J326, 929.pdf](B/Bri%20Med%20J326,%20929.pdf)

? Porta, M. (2003), Quality of impact factors of general medical journals - Quality matters - and the choice of indicator matters too. *British Medical Journal*, **326** (7395), 931.

Full Text: [2003\Bri Med J326, 931.pdf](2003/Bri%20Med%20J326,%20931.pdf)

? Liu, J.L.Y. (2003), Quality of impact factors of general medical journals - Research quality can be assessed by using combination of approaches. *British Medical Journal*, **326** (7395), 931-932.

Full Text: [2003\Bri Med J326, 931.pdf](2003/Bri%20Med%20J326,%20931.pdf)

Kirk, R. (2003), The other war. *British Medical Journal*, **326** (7395), 937.

Full Text: [B\Bri Med J326, 937.pdf](B/Bri%20Med%20J326,%20937.pdf)

Jackson, T. (2003), Website of the week: Severe acute respiratory syndrome. *British Medical Journal*, **326** (7395), 937.

Full Text: [B\Bri Med J326, 937.pdf](B/Bri%20Med%20J326,%20937.pdf)

Chao, D. (2003), Time to show unity against SARS. *British Medical Journal*, **326** (7395), 938.

Full Text: [B\Bri Med J326, 938.pdf](B/Bri%20Med%20J326,%20938.pdf)

Schram, J. (2003), How popular perceptions of risk from SARS are fermenting discrimination. *British Medical Journal*, **326** (7395), 939.

Full Text: [B\Bri Med J326, 939.pdf](B/Bri%20Med%20J326,%20939.pdf)

Parry, J. (2003), SARS may have peaked in Canada, Hong Kong, and Vietnam. *British Medical Journal*, **326** (7396), 947.

Full Text: [B\Bri Med J326, 947.pdf](B/Bri%20Med%20J326,%20947.pdf)

Spurgeon, D. (2003), Canada insists that it is a safe place to visit. *British Medical Journal*, **326** (7396), 948.

Full Text: [B\Bri Med J326, 948.pdf](B/Bri%20Med%20J326,%20948.pdf)

Eaton, L. (2003), SARS could still affect the United Kingdom, health secretary warns. *British Medical Journal*, **326** (7396), 948.

Full Text: [B\Bri Med J326, 948.pdf](B/Bri%20Med%20J326,%20948.pdf)

Dyer, O. (2003), Two strains of the SARS virus sequenced. *British Medical Journal*, **326** (7397), 999.

Full Text: [B\Bri Med J326, 999.pdf](B/Bri%20Med%20J326,%20999.pdf)

Parry, J. (2003), WHO warns that death rate from SARS could reach 10%. *British Medical Journal*, **326** (7397), 999.

Full Text: [B\Bri Med J326, 999.pdf](B/Bri%20Med%20J326,%20999.pdf)

Parry, J. (2003), China is still not open enough about SARS, says WHO. *British Medical Journal*, **326** (7398), 1055.

Full Text: [B\Bri Med J326, 1055.pdf](B/Bri%20Med%20J326,%201055.pdf)

Hesketh, T. (2003), China in the grip of SARS. *British Medical Journal*, **326** (7398), 1095.

Full Text: [B\Bri Med J326, 1095.pdf](B/Bri%20Med%20J326,%201095.pdf)

Parry, J. (2003), United Kingdom has its first confirmed case of SARS. *British Medical Journal*, **326** (7399), 1103.

Full Text: [B\Bri Med J326, 1103.pdf](B/Bri%20Med%20J326,%201103.pdf)

Gottlieb, S. (2003), Chinese scientists must test wild animals to find the host of SARS. *British Medical Journal*, **326** (7399), 1109.

Full Text: [B\Bri Med J326, 1109.pdf](B/Bri%20Med%20J326,%201109.pdf)

Spurgeon, D. (2003), Toronto succumbs to SARS a second time. *British Medical Journal*, **326** (7400), 1162.

Full Text: [B\Bri Med J326, 1162.pdf](B/Bri%20Med%20J326,%201162.pdf)

Rainer, T.H., Cameron, P.A., Smit, D., Ong, K.L., Hung, A.N.W., Nin, D.C.P., Ahuja, A.T., Si, L.C.Y. and Sung, J.J.Y. (2003), Evaluation of WHO criteria for identifying patients with severe acute respiratory syndrome out of hospital: Prospective observational study. *British Medical Journal*, **326** (7403), 1354-1358.

Full Text: [B\Bri Med J326, 1354.pdf](B/Bri%20Med%20J326,%201354.pdf)

? Rose, D., Wykes, T., Leese, M., Bindman, J. and Fleischmann, P. (2003), Patients’ perspectives on electroconvulsive therapy: Systematic review. *British Medical Journal*, **326** (7403), 1363-1365.

Full Text: [2003\Bri Med J326, 1363.pdf](2003/Bri%20Med%20J326,%201363.pdf)

Abstract: Objective To ascertain patients’ views on the benefits of and possible memory loss from electroconvulsive therapy. Design Descriptive systematic review. Data sources Psychinfo, Medline, Web of Science, and Social Science Citation Index databases, and bibliographies. Study selection Articles with patients’ views after treatment with electroconvulsive therapy. Data extraction 26 studies carried out by clinicians and nine reports of work undertaken by patients or with the collaboration of patients were, identified; 16 studies investigated the perceived benefit of electroconvulsive therapy and seven met criteria for investigating memory loss. Data synthesis The studies showed heterogeneity. The methods used were associated with levels of perceived benefit. At least one third of patients reported persistent memory loss. Conclusions The current statement for patients from the Royal College of Psychiatrists that over 80% of patients are satisfied with electroconvulsive therapy and that memory loss is not clinically important is unfounded.

Keywords: Articles, Attitudes, Citation, Collaboration, Databases, ECT, Electroconvulsive Therapy, Memory, Review, Satisfaction, Science, Science Citation Index, Systematic, Systematic Review, Therapy, Treatment, Web of Science

? Owen, C.G., Whincup, P.H., Gilg, J.A. and Cook, D.G. (2003), Effect of breast feeding in infancy on blood pressure in later life: Systematic review and meta-analysis. *British Medical Journal*, **327** (7425), 1189-1192.

Full Text: [2003\Bri Med J327, 1189.pdf](2003/Bri%20Med%20J327,%201189.pdf)

Abstract: Objective To determine whether breast feeding in infancy compared with bottle feeding formula milk is associated with lower mean blood pressure at different ages. Design Systematic review. Data sources EMBASE, Medline, and Web of Science databases. Study selection Studies showing the effects of feeding in infancy on blood pressure at different ages. Data extraction Pooled mean differences in blood pressure between breast fed infants and those bottle fed formula milk, based on random effects models. synthesis The pooled mean difference in systolic blood pressure was -1.10 mm Hg (95% confidence interval -1.79 to -0.42 turn Hg) but with significant heterogeneity between estimates (P < 0.001). The difference was largest in studies of <300 participants (-2.05 mm Hg, -3.30 to -0.80 min Hg), intermediate in studies of 300-1000 participants (1.13 mm Hg, -2.53 to 0.27 mm Hg), and smallest in studies of >1000 participants (-0.16 nun Hg, -0.60 to 0.28 min Hg). An Egger test but not Begg test was statistically significant for publication bias. The difference was unaltered by adjustment for current size and was independent of age at measurement of blood pressure and year of birth. Diastolic blood pressure was not significantly related to type of feeding in infancy. Conclusions Selective publication of small studies with positive findings may have exaggerated claims that breast feeding in infancy reduces systolic blood pressure in later life. The results of larger studies suggest that feeding in infancy has at most a modest effect on blood pressure, which is of limited clinical or public health importance.

Keywords: Bias, Birth-Weight, Blood, Blood Pressure, Cardiovascular Risk-Factors, Children, Cholesterol, Databases, Docosahexaenoic Acid, Early Nutrition, Follow-Up, Heart-Rate, Infants, Measurement, Meta-Analysis, Pressure, Preterm Infants, Public Health, Publication, Publication Bias, Review, Science, Sodium, Systematic, Systematic Review, Web of Science

? Smith, G.C.S. and Pell, J.P. (2003), Parachute use to prevent death and major trauma related to gravitational challenge: Systematic review of randomised controlled trials. *British Medical Journal*, **327** (7429), 1459-1461.

Full Text: [2003\Bri Med J327, 1459.pdf](2003/Bri%20Med%20J327,%201459.pdf)

Abstract: Objectives To determine whether parachutes are effective in preventing major trauma related to gravitational challenge. Design Systematic review of randomised controlled trials. Data sources: Medline, Web of Science, EMBASE, and the Cochrane Library databases; appropriate internet sites and citation lists. Study selection: Studies showing the effects of using a parachute during free fall. Main outcome measure Death or major trauma, defined as an injury severity score > 15. Results We were unable to identify any randomiscd controlled trials of parachute intervention. Conclusions As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials. Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

Keywords: Citation, Cochrane, Databases, Effectiveness, Evaluation, Injuries, Injury, Intervention, Interventions, Medicine, Outcome, Quality, Review, Science, Systematic, Systematic Review, Trauma, Web of Science

? Eysenbach, G., Powell, J., Englesakis, M., Rizo, C. and Stern, A. (2004), Health related virtual communities and electronic support groups: Systematic review of the effects of online peer to peer interactions. *British Medical Journal*, **328** (7449), 1166-1170.

Full Text: [2004\Bri Med J328, 1166.pdf](2004/Bri%20Med%20J328,%201166.pdf)

Abstract: Objective To compile and evaluate the evidence on the effects on health and social outcomes of computer based peer to peer communities and electronic self support groups, used by people to discuss health related issues remotely. Design and data sources Analysis of studies identified from Medline, EMBASE, CINAHL, PsycINFO, Evidence Based Medicine Reviews, Electronics and Communications Abstracts, Computer and Information Systems Abstracts, ERIC, LISA, ProQuest Digital Dissertations, Web of Science. Selection of studies We searched for before and after studies, interrupted time series, cohort studies, or studies with control groups; evaluating health or social outcomes of virtual peer to peer communities, either as stand alone interventions or in the context of more complex systems with peer to peer components. Main outcome measures Peer to peer interventions and co-interventions studied, general characteristics of studies, outcome measures used, and study results. Results 45 publications describing 38 distinct studies met our inclusion criteria: 20 randomised trials, three meta-analyses of n of 1 trials, three non-randomised controlled trials, one cohort study, and 11 before and after studies. Only six of these evaluated “pure” peer to peer communities, and one had a factorial design with a “peer to peer only” arm, whereas 31 studies evaluated complex interventions, which often included psychoeducational programmes or one to one communication with healthcare professionals, making it impossible to attribute intervention effects to the peer to peer community component. The outcomes measured most often were depression and social support; most studies did not show an effect. We found no evidence to support concerns over virtual communities harming people. Conclusions No robust evidence exists on the effects of consumer led peer to peer communities, partly because most peer to peer communities have been evaluated only in conjunction with more complex interventions or involvement with health professionals. Given the abundance of unmoderated peer to peer groups on the internet, research is required to evaluate under which conditions and for whom electronic support groups are effective and how effectiveness in delivering social support electronically can be maximised.

Keywords: Cohort Studies, Cohort Study, Communication, Consumer, Control, Control Groups, Depression, Dissertations, Effectiveness, Health, Healthcare Professionals, Impact, Information, Information Systems, Internet, Intervention, Interventions, Involvement, Network, Outcome, Outcomes, Publications, Quality, Research, Review, Science, Social, Systematic, Systematic Review, Trial, Web of Science

? Perneger, T.V. (2004), Relation between online “hit counts” and subsequent citations: prospective study of research papers in the BMJ. *British Medical Journal*, **329** (7465), 546-547.

Full Text: [2005\Bri Med J329, 546.pdf](2005/Bri%20Med%20J329,%20546.pdf)

Keywords: Quality

Altman, D.G. and CONSORT Group (2005), Endorsement of the CONSORT statement by high impact medical journals: Survey of instructions for authors. *British Medical Journal*, **330** (7499), 1056-1057.

Full Text: [2005\Bri Med J330, 1056.pdf](2005/Bri%20Med%20J330,%201056.pdf)

Keywords: Randomized Controlled Trials, Quality

? Wren, J.D. (2005), Open access and openly accessible: A study of scientific publications shared via the internet. *British Medical Journal*, **330** (7500), 1128-1131.

Full Text: [2008\Bri Med J330, 1128.pdf](2008/Bri%20Med%20J330,%201128.pdf)

Abstract: Objectives To determine how often reprints of scientific publications are shared online, whether journal readership level is a predictor, how the amount of file sharing changes with the age of the article, and to what degree open access publications are shared on non-journal websites. Design The internet was searched using an application programming interface to Google, a popular and freely available search engine. Main outcome measures. The proportion of reprints of journal articles published between 1994 and 2004 from within 13 subscription based and four open access journals that could be located online at non-journal websites. Results The probability that an article could be found online at a non-journal website correlated with the journal impact factor and the time since initial publication. Papers from higher impact journals and more recent articles were more likely to be located. On average, for the high impact journal articles published in 2003, over a third could be located at non-journal websites. Similar trends were observed for the delayed or full open access publications. Conclusions Decentralised sharing of scientific reprints through the internet creates a degree of de facto open access that, although highly incomplete in its coverage, is none the less biased towards publications of higher popular demand.

Keywords: Access, Age, Application, Changes, Coverage, Demand, Engine, Impact, Impact Factor, Journal, Journal Articles, Journal Impact, Journal Impact Factor, Journals, Open, Open Access, Outcome, Outcome Measures, Programming, Publication, Publications, Scientific Publications, Trends

? Soteriades, E.S. and Falagas, M.E. (2005), Comparison of amount of biomedical research originating from the European Union and the United States. *British Medical Journal*, **331** (7510), 192-194.

Full Text: [2005\Bri Med J331, 192.pdf](2005/Bri%20Med%20J331,%20192.pdf)

Abstract: Objective To examine and compare the research productivity of the European Union, the four “candidate” countries (those currently waiting to join the EU), and the United States in several fields of biomedical sciences. Design A retrospective observational study-bibliometric analysis. Data sources Manuscripts published by authors from each country separately and from each group of countries for the period 1994 to 2004 and included in the Essential Science Indicators database of the Institute of Scientific Information. Main outcome measures Number of published articles and number of citations, adjusted for gross domestic product and population size. Results 1485 749 articles were published by authors from the EU compared with 1 56 805 from the US. The research productivity of the first 15 countries to join the EU, adjusted for population, was lower (76%) than that of the US-and even lower (66%) when the 10 newest EU countries were included in the analysis. Conclusion The newest EU members and die EU candidate countries need further help and resources to increase their productivity, thereby improving the productivity of the EU as a whole.

Keywords: Biomedical Research, EU, European Union, Journals, Research, Research Productivity, Sciences, Size, US

? Siegfried, N., Clarke, M. and Volmink, J. (2005), Randomised controlled trials in Africa of HIV and AIDS: Descriptive study and spatial distribution. *British Medical Journal*, **331** (7519), 742-746.

Full Text: [2005\Bri Med J331, 742.pdf](2005/Bri%20Med%20J331,%20742.pdf)

Abstract: Objectives To identify and describe randomised controlled trials on HIV and AIDS conducted in Africa and to map their spatial distribution using exact geographic coordinates.

Design Construction and analysis of a database of trials conducted wholly or partly in Africa and reported before 2004.

Data sources CENTRAL, Medline, Embase, and LILACS.

Results Our comprehensive search yielded 284 distinct records that were potentially eligible for inclusion in the database. Of these, 150 articles reported on 77 eligible trials published or reported from 1987 to 2003. Seven trials were identified exclusively from the CENTRAL database. Trials were conducted in 18 of 48 countries in sub-Saharan Africa. None were conducted in north Africa. Only 19 had a principal investigator located in an African country. Forty two trials assessed prevention and 35 assessed treatment. Most studies were funded by government agencies outside Africa (n = 43), with the pharmaceutical industry providing partial support to 16 of these. The pharmaceutical industry provided full or partial support to a further 18 trials. Only 43 trials reported conducting a power calculation for determining sample size. There was no mention of ethical approval or informed consent in 19 and 17 trials, respectively.

Conclusion The relatively small number of HIV/AIDS trials conducted in Africa is not commensurate with the burden of disease. Geographical mapping as an adjunct to prospective trial registration is a useful tool for researchers and decision makers to track existing and future trials.

Keywords: Sexually-Transmitted-Diseases, Developing-Countries, Health Research, Rural Uganda, Infection, Interventions, Transmission, Registration, Management, Statement

? Biau, D.J., Tournoux, C., Katsahian, S., Schranz, P.J. and Nizard, R.S. (2006), Bone-patellar tendon-bone autografts versus hamstring autografts for reconstruction of anterior cruciate ligament: Meta-analysis. *British Medical Journal*, **332** (7548), 995-998.

Full Text: [2006\Bri Med J332, 995.pdf](2006/Bri%20Med%20J332,%20995.pdf)

Abstract: Objectives To compare bone-patellar tendon-bone autografts with hamstring autografts for reconstruction of the anterior cruciate ligament. Data sources Medline, WebSPIRS, Science Citation Index. Current Contents databases, and Cochrane Central Register of Controlled Trials. Review methods All randomised controlled trials reporting one or more outcome related to stability (instrumented measurement of knee laxity, Lachman test, or pivot shift test) and Morbidity (anterior knee pain, kneeling test, loss of extension, or graft. failure). Study quality was assessed by using a 5 point scale. Random effect models were used to pool the data. Heterogeneity in the effect of treatment was tested on the basis of study quality, randomisation status, and number of tendon strands used. Results 24 trials of 18 cohorts (1512 patients) met the inclusion criteria. study quality was poor for nine studies and Fair for nine studies. The weighted mean difference of die instrumented measurement of knee laxity was 0.36 (95% confidence interval 0.01 to 0.71 P=0.04). Relative risk of a positive Lachman test was 1.22 (1.01 to 1.47; P= 0.04), of anterior knee pain 0.57 (0.44 to 0.74; P < 0.0001), of a positive kneeling test 0.26 (0.14 to 0.48; P < 0.0001), and of loss of extension 0.52 (0.34 to 0.80; P = 0.003). Other results were not significant. Conclusion Morbidity was lower for hamstring autografts than for patellar tendon autografts. Evidence that patellar tendon autografts offer better stability was weak. The poor quality of the studies calls into question the robustness of the analyses.

Keywords: 2-Year Follow-up, ACL Reconstruction, Arthrofibrosis, Citation, Criteria, Databases, Evidence, Gracilis Tendons, Graft Tension, Knee Pain, Measurement, Medline, Meta-Analysis, Methods, Models, Pain, Positive, Review, Risk, Scale, Science, Science Citation Index, Semitendinosus, Site Morbidity, Surgery, Treatment, Trial

? Patsopoulos, N.A., Analatos, A.A. and Ioannidis, J.P.A. (2006), Origin and funding of the most frequently cited papers in medicine: Database analysis. *British Medical Journal*, **332** (7549), 1061-1063.

Full Text: [2006\Bri Med J332, 1061.pdf](2006/Bri%20Med%20J332,%201061.pdf)

Abstract: Objective To evaluate changes in the role of academics and the sources of funding for the medical research cited most frequently over the past decade.

Design Database analysis.

Data sources Web of Knowledge database.

Methods For each year from 1994 to 2003, articles in the domain of clinical medicine that had been cited most often by the end of 2004 were identified. Changes in author’s affiliations and funding sources were evaluated.

Results of the 289 frequently cited articles, most had at least one author with a university (76%) or hospital (57%) affiliation, and the proportion of articles with each type of affiliation was constant over time. Government or public funding was most common (60% of articles), followed by industry (36%). The proportion of most frequently cited articles funded by industry increased over time (odds ratio 1.17 per year, P = 0.001) and was equal to the proportion funded by government or public sources by 2001. 65 of the 77 most cited randomised controlled trials received funding from industry, and the proportion increased significantly over time (odds ratio 1.59 per year, P = 0.003). 18 of the 32 most cited trials published after 1999 were funded by industry alone.

Conclusion Academic affiliations remain prominent among the authors of the most frequently cited medical research. Such research is increasingly funded by industry, often exclusively so. Academics may be losing control of the clinical research agenda.

Keywords: Conflicts-of-Interest, Academic Medicine, Clinical-Research, Industry, Impact, Citation, Budget, Trust, ERA

? Delaney, B. (2006), Commentary: Is society losing control of the medical research agenda? *British Medical Journal*, **332** (7549), 1063-1064.

Full Text: [2006\Bri Med J332, 1063.pdf](2006/Bri%20Med%20J332,%201063.pdf)

? Holden, G. (2006), Detecting plagiarism - Meaning of citations is important. *British Medical Journal*, **333** (7570), 706.

Full Text: [2006\Bri Med J333, 706.pdf](2006/Bri%20Med%20J333,%20706.pdf)

Keywords: Bibliometrics

? Brown, H. (2008), How impact factors changed medical publishing - and science. *British Medical Journal*, **334** (7593), 561-564.

Full Text: [2008\Bri Med J334, 561.pdf](2008/Bri%20Med%20J334,%20561.pdf)

Keywords: Impact, Impact Factors, Medical, Publishing, Science

? Afshari, A., Wetterslev, J., Brok, J. and Moller, A. (2007), Antithrombin III in critically ill patients: Systematic review with meta-analysis and trial sequential analysis. *British Medical Journal*, **335** (7632), 1248-1251.

Full Text: [2007\Bri Med J335, 1248.pdf](2007/Bri%20Med%20J335,%201248.pdf)

Abstract: Objective To evaluate the benefits and harms of antithrombin III in critically ill patients. Design Systematic review and meta-analysis of randomised trials. Data sources CENTRAL, Medline, EMBASE, International Web of Science, LILACS, the Chinese Biomedical Literature Database, and CINHAL (to November 2006); hand search of reference lists, contact with authors and experts, and search of registers of ongoing trials. Review methods Two reviewers independently selected parallel group randomised clinical trials comparing antithrombin with placebo or no intervention and extracted data related to study methods, interventions, outcomes, bias risk, and adverse events. Disagreements were resolved by discussion. Trials in any type of critically ill patients in intensive care were eligible. All trials, irrespective of blinding or language status, that compared any antithrombin III regimen with no intervention or placebo were included. Trials were considered to be at low risk of bias if they had adequate randomisation procedure, blinding, and used intention to treat analysis. Risk ratios with 95% confidence intervals were estimated with fixed and random effects models according to heterogeneity. Main outcome measures Mortality, length of stay in intensive care or hospital, quality of life, severity of sepsis, respiratory failure, duration of mechanical ventilation, incidence of surgical intervention, intervention effect among various populations and adverse events (such as bleeding). Results 20 trials randomly assigning 3458 patients met inclusion criteria. Eight trials had low risk of bias. Compared with placebo or no intervention, antithrombin III did not reduce overall mortality (relative risk 0.96, 95% confidence interval 0.89 to 1.03). No subgroup analyses on risk of bias, populations of patients, or with and without adjuvant heparin yielded significant results. Antithrombin III increased the risk of bleeding events (1.52, 1.30 to 1.78). Heterogeneity was observed in only a few analyses. Conclusion Antithrombin III cannot be recommended for critically ill patients based on the available evidence.

Keywords: Analysis, Authors, Bias, Clinical Trials, Cognitive Impairment, Confidence Intervals, Critically Ill Patients, Displaced Fractures, Elderly-Patients, Femoral-Neck Fractures, Heparin, Hospital, Intensive Care, Internal-Fixation, Intervention, Interventions, Length of Stay, Mechanical Ventilation, Meta-Analysis, Mortality, Outcome, Outcomes, Quality of Life, Quality-of-Life, Randomized-Trial, Relative Risk, Review, Risk, Science, Severe Sepsis, Surgical, Systematic, Systematic Review, Total Hip-Arthroplasty, Web of Science, Worldwide Prevalence

? Lokker, C., McKibbon, K.A., McKinlay, R.J., Wilczynski, N.L. and Haynes, R.B. (2008), Prediction of citation counts for clinical articles at two years using data available within three weeks of publication: Retrospective cohort study. *British Medical Journal*, **336** (7645), 655-657.

Full Text: [2008\Bri Med J336, 655.pdf](2008/Bri%20Med%20J336,%20655.pdf)

Abstract: Objective To determine if citation counts at two years could be predicted for clinical articles that pass basic criteria for critical appraisal using data within three weeks of publication from external sources and an online article rating service.

Design Retrospective cohort study.

Setting Online rating service, Canada.

Participants 1274 articles from 105 journals published from January to June 2005, randomly divided into a 60:40 split to provide derivation and validation datasets.

Main outcome measures 20 article and journal features, including ratings of clinical relevance and newsworthiness, routinely collected by the McMaster online rating of evidence system, compared with citation counts at two years.

Results The derivation regression equation accounted for 60% of the variation (R-2=0.60, 95% confidence interval 0.538 to 0.629). This model applied to the validation dataset gave a similar prediction (R-2=0. 56, 0.476 to 0.596, shrinkage 0.04; shrinkage measures how welt the derived equation matches data from the validation dataset). Cited articles in the top half and top third were predicted with 83% and 61% sensitivity and 72% and 82% specificity. Higher citations were predicted by indexing in numerous databases; number of authors; abstraction in synoptic journals; clinical relevance scores; number of cited references; and original, multicentred, and therapy articles from journals with a greater proportion of articles abstracted.

Conclusion Citation counts can be reliably predicted at two years using data within three weeks of publication.

Keywords: Quality, Journals, Impact, Information, Indicators, Rates, Bias

? Castelnuovo, G. (2008), Ditching impact factors - Time for the single researcher impact factor. *British Medical Journal*, **336** (7648), 789.

Full Text: [2008\Bri Med J336, 789.pdf](2008/Bri%20Med%20J336,%20789.pdf)

? Sofi, F., Cesari, F., Abbate, R., Gensini, G.F. and Casini, A. (2008), Adherence to Mediterranean diet and health status: Meta-analysis. *British Medical Journal*, **337** (7671), Article Number: a1344.

Full Text: [2008\Bri Med J337, a1344.pdf](2008/Bri%20Med%20J337,%20a1344.pdf)

Abstract: Objective To systematically review all the prospective cohort studies that have analysed the relation between adherence to a Mediterranean diet, mortality, and incidence of chronic diseases in a primary prevention setting. Design Meta- analysis of prospective cohort studies. Data sources English and non- English publications in PUBMED, EMBASE, Web of Science, and the Cochrane Central Register of Controlled Trials from 1966 to 30 June 2008. Studies reviewed Studies that analysed prospectively the association between adherence to a Mediterranean diet, mortality, and incidence of diseases; 12 studies, with a total of 1 574 299 subjects followed for a time ranging from three to 18 years were included. Results The cumulative analysis among eight cohorts (514 816 subjects and 33 576 deaths) evaluating overall mortality in relation to adherence to a Mediterranean diet showed that a two point increase in the adherence score was significantly associated with a reduced risk of mortality (pooled relative risk 0.91, 95% confidence interval 0.89 to 0.94). Likewise, the analyses showed a beneficial role for greater adherence to a Mediterranean diet on cardiovascular mortality (pooled relative risk 0.91, 0.87 to 0.95), incidence of or mortality from cancer (0.94, 0.92 to 0.96), and incidence of Parkinson’s disease and Alzheimer’s disease (0.87, 0.80 to 0.96). Conclusions Greater adherence to a Mediterranean diet is associated with a significant improvement in health status, as seen by a significant reduction in overall mortality (9%), mortality from cardiovascular diseases (9%), incidence of or mortality from cancer (6%), and incidence of Parkinson’s disease and Alzheimer’s disease (13%). These results seem to be clinically relevant for public health, in particular for encouraging a Mediterranean- like dietary pattern for primary prevention of major chronic diseases.

Keywords: Adherence, Alzheimer’s Disease, Analysis, Cancer, Cardiovascular, Cardiovascular Diseases, Cochrane, Cohort Studies, Disease, Health Status, Meta Analysis, Meta-Analysis, Mortality, Parkinson’s Disease, Prevention, Primary, Primary Prevention, Public Health, Publications, PUBMED, Relative Risk, Review, Risk, Science, Web of Science

? Dyer, C. (2008), Lancet warns authors about rules of “gift” authorship. *British Medical Journal*, **337** (7671), Article Number: a1711.

Full Text: [2008\Bri Med J337, a1711.pdf](2008/Bri%20Med%20J337,%20a1711.pdf)

Keywords: Autologous Myoblasts, Fibroblasts, Randomized Controlled-Trial, Stress Urinary-Incontinence

? Kemp, A.M., Dunstan, F., Harrison, S., Morris, S., Mann, M., Rolfe, K., Datta, S., Thomas, D.P., Sibert, J.R. and Maguire, S. (2008), Patterns of skeletal fractures in child abuse: Systematic review. *British Medical Journal*, **337** (7674), Article Number: a1518.

Full Text: [2008\Bri Med J337, a1518.pdf](2008/Bri%20Med%20J337,%20a1518.pdf)

Abstract: Objectives To systematically review published studies to identify the characteristics that distinguish fractures in children resulting from abuse and those not resulting from abuse, and to calculate a probability of abuse for individual fracture types. Design Systematic review. Data sources All language literature search of Medline, Medline in Process, Embase, Assia, Caredata, Child Data, CINAHL, ISI Proceedings, Sciences Citation, Social Science Citation Index, SIGLE, Scopus, TRIP, and Social Care Online for original study articles, references, textbooks, and conference abstracts until May 2007. Study selection Comparative studies of fracture at different bony sites, sustained in physical abuse and from other causes in children < 18 years old were included. Review articles, expert opinion, postmortem studies, and studies in adults were excluded. Data extraction and synthesis Each study had two independent reviews (three if disputed) by specialist reviewers including paediatricians, paediatric radiologists, orthopaedic surgeons, and named nurses in child protection. Each study was critically appraised by using data extraction sheets, critical appraisal forms, and evidence sheets based on NHS Centre for Reviews and Dissemination guidance. Meta- analysis was done where possible. A random effects model was fitted to account for the heterogeneity between studies. Results In total, 32 studies were included. Fractures resulting from abuse were recorded throughout the skeletal system, most commonly in infants (< 1 year) and toddlers (between 1 and 3 years old). Multiple fractures were more common in cases of abuse. Once major trauma was excluded, rib fractures had the highest probability for abuse (0.71, 95% confidence interval 0.42 to 0.91). The probability of abuse given a humeral fracture lay between 0.48 (0.06 to 0.94) and 0.54 (0.20 to 0.88), depending on the definition of abuse used. Analysis of fracture type showed that supracondylar humeral fractures were less likely to be inflicted. For femoral fractures, the probability was between 0.28 (0.15 to 0.44) and 0.43 (0.32 to 0.54), depending on the definition of abuse used, and the developmental stage of the child was an important discriminator. The probability for skull fractures was 0.30 (0.19 to 0.46); the most common fractures in abuse and non- abuse were linear fractures. Insufficient comparative studies were available to allow calculation of a probability of abuse for other fracture types. Conclusion When infants and toddlers present with a fracture in the absence of a confirmed cause, physical abuse should be considered as a potential cause. No fracture, on its own, can distinguish an abusive from a non- abusive cause. During the assessment of individual fractures, the site, fracture type, and developmental stage of the child can help to determine the likelihood of abuse. The number of high quality comparative research studies in this field is limited, and further prospective epidemiology is indicated.

Keywords: Articles, Assessment, Characteristics, Children, Citation, Classic Metaphyseal Lesion, Design, Dissemination, Epidemiology, Heterogeneity, Infants, ISI, Language, Literature, Maltreatment, Medline, Model, Physical Abuse, Regional Approach, Research, Review, Review Articles, Science, Science Citation Index, Scopus, Selection, Social Science Citation Index, System, Systematic Review, Tibia, Trauma

? Fan, T., Wang, G., Mao, B., Xiong, Z.Y., Zhang, Y., Liu, X.M., Wang, L. and Yang, S. (2008), Prophylactic administration of parenteral steroids for preventing airway complications after extubation in adults: Meta-analysis of randomised placebo controlled trials. *British Medical Journal*, **337**, Article Number: a1841.

Full Text: [2008\Bri Med J337, a1841.pdf](2008/Bri%20Med%20J337,%20a1841.pdf)

Abstract: Objective To determine whether steroids are effective in preventing laryngeal oedema after extubation and reducing the need for subsequent reintubation in critically ill adults. Design Meta- analysis. Data sources PUBMED, Cochrane Controlled Trials Register, Web of Science, and EMBASE with no limitation on language, study year, or publication status. Selection criteria Randomised placebo controlled trials in which parenteral steroids were compared with placebo for preventing complications after extubation in adults. Review methods Search, application of inclusion and exclusion criteria, data extraction, and assessment of methodological quality, independently performed in duplicate. Odds ratios with 95% confidence intervals, risk difference, and number needed to treat were calculated and pooled. Main outcome measures Primary outcome: laryngeal oedema after extubation. Secondary outcome: subsequent reintubation because of laryngeal oedema. Results Six trials (n= 1923) were identified. Comparedwith placebo, steroids given before planned extubation decreased the odds ratio for laryngeal oedema (0.38, 95% confidence interval 0.17 to 0.85) and subsequent reintubation (0.29, 0.15 to 0.58), corresponding with a risk difference of - 0.10 (- 0.12 to - 0.07; number needed to treat 10) and - 0.02 (- 0.04 to - 0.01; 50), respectively. Subgroup analyses indicated that a multidose regimen of steroids had marked positive effects on the occurrence of laryngeal oedema (0.14; 0.08 to 0.23) and on the rate of subsequent reintubation (0.19; 0.07 to 0.50), with a risk difference of - 0.19 (- 0.24 to - 0.15; 5) and- 0.04 (- 0.07 to - 0.02; 25). In single doses there was only a trend towards benefit, with the confidence interval including 1. Side effects related to steroids were not found. Conclusion Prophylactic administration of steroids in multidose regimens before planned extubation reduces the incidence of laryngeal oedema after extubation and the consequent reintubation rate in adults, with few adverse events.

Keywords: Adults, Airway, Analysis, Assessment, Cochrane, Confidence Intervals, Corticosteroids, Cuff-Leak, Endotracheal Intubation, Failure, Laryngeal Edema, Long-Term, Mechanical Ventilation, Meta Analysis, Meta-Analysis, Outcome, Postextubation Stridor, Primary, Publication, PUBMED, Ratio, Review, Risk, Science, Trend, Volume, Web of Science

? Leon, H., Shibata, M.C., Sivakumaran, S., Dorgan, M., Chatterley, T. and Tsuyuki, R.T. (2008), Effect of fish oil on arrhythmias and mortality: Systematic review. *British Medical Journal*, **337**, Article Number: a2931.

Full Text: [2008\Bri Med J337, a2931.pdf](2008/Bri%20Med%20J337,%20a2931.pdf)

Abstract: Objective To synthesise the literature on the effects of fish oil - docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) - on mortality and arrhythmias and to explore dose response and formulation effects. Design Systematic review and meta- analysis. Data sources Medline, EMBASE, the Cochrane Library, PUBMED, CINAHL, IPA, Web of Science, Scopus, Pascal, Allied and Complementary Medicine, Academic OneFile, ProQuest Dissertations and Theses, Evidence- Based Complementary Medicine, and LILACS. Studies reviewed Randomised controlled trials of fish oil as dietary supplements in humans. Data extraction The primary outcomes of interest were the arrhythmic end points of appropriate implantable cardiac defibrillator intervention and sudden cardiac death. The secondary outcomes were all cause mortality and death from cardiac causes. Subgroup analyses included the effect of formulations of EPA and DHA on death from cardiac causes and effects of fish oil in patients with coronary artery disease or myocardial infarction. Data synthesis 12 studies totalling 32 779 patientsmet the inclusion criteria. A neutral effect was reported in three studies (n= 1148) for appropriate implantable cardiac defibrillator intervention (odds ratio 0.90, 95% confidence interval 0.55 to 1.46) and in six studies (n= 31 111) for sudden cardiac death (0.81, 0.52 to 1.25). 11 studies (n= 32 439 and n= 32 519) provided data on the effects of fish oil on all cause mortality (0.92, 0.82 to 1.03) and a reduction in deaths from cardiac causes (0.80, 0.69 to 0.92). The dose- response relation for DHA and EPA on reduction indeaths from cardiac causes was not significant. Conclusions Fish oil supplementation was associated with a significant reduction in deaths from cardiac causes but had no effect on arrhythmias or all cause mortality. Evidence to recommend an optimal formulation of EPA or DHA to reduce these outcomes is insufficient. Fish oils are a heterogeneous product, and the optimal formulations for DHA and EPA remain unclear.

Keywords: Acute Myocardial-Infarction, Analysis, Cardiovascular-Disease, Cochrane, Coronary-Heart-Disease, Disease, Dissertations, Dose-Response, Double-Blind, Humans, Interest, Intervention, Literature, Metaanalysis, Mortality, Myocardial Infarction, Omega-3-Fatty-Acids, Outcomes, Points, Polyunsaturated Fatty-Acids, Premature Ventricular Complexes, Primary, PUBMED, Randomized Controlled-Trials, Ratio, Review, Science, Scopus, Sudden Cardiac Death, Systematic, Systematic Review, Web of Science

? Quant, E.C., Jeste, S.S., Muni, R.H., Cape, A.V., Bhussar, M.K. and Peleg, A.Y. (2009), The benefits of steroids versus steroids plus antivirals for treatment of Bell’s palsy: A meta-analysis. *British Medical Journal*, **339**, Article Number: b3354.

Full Text: [2009\Bri Med J339, b3354.pdf](2009/Bri%20Med%20J339,%20b3354.pdf)

Abstract: Objective To determine whether steroids plus antivirals provide a better degree of facial muscle recovery in patients with Bell’s palsy than steroids alone. Design Meta-analysis. Data sources PUBMED, EMBASE, Web of Science, and the Cochrane Central Register of Controlled Trials were searched for studies published in all languages from 1984 to January 2009. Additional studies were identified from cited references. Selection criteria Randomised controlled trials that compared steroids with the combination of steroids and antivirals for the treatment of Bell’s palsy were included in this study. At least one month of follow-up and a primary end point of at least partial facial muscle recovery, as defined by a House-Brackmann grade of at least 2 (complete palsy is designated a grade of 6) or an equivalent score on an alternative recognised scoring system, were required. Review methods Two authors independently reviewed studies for methodological quality, treatment regimens, duration of symptoms before treatment, length of follow-up, and outcomes. Odds ratios with 95% confidence intervals were calculated and pooled using a random effects model. Results Six trials were included, a total of 1145 patients; 574 patients received steroids alone and 571 patients received steroids and antivirals. The pooled odds ratio for facial muscle recovery showed no benefit of steroids plus antivirals compared with steroids alone (odds ratio 1.50, 95% confidence interval 0.83 to 2.69; P=0.18). A one study removed analysis showed that the highest quality studies had the greatest effect on the lack of difference between study arms shown by the odds ratio. Subgroup analyses assessing causes of heterogeneity defined a priori (time from symptom onset to treatment, length of follow-up, and type of antiviral studied) showed no benefit of antivirals in addition to that provided by steroids. Conclusions Antivirals did not provide an added benefit in achieving at least partial facial muscle recovery compared with steroids alone in patients with Bell’s palsy. This study does not, therefore, support the routine use of antivirals in Bell’s palsy. Future studies should use improved herpes virus diagnostics and newer antivirals to assess whether combination therapy benefits patients with more severe facial paralysis at study entry.

Keywords: Acyclovir, Analysis, Authors, Cochrane, Combination Therapy, Confidence Intervals, Double-Blind, Efficacy, Follow-Up, Meta Analysis, Meta-Analysis, Model, Multicenter, Outcomes, Prednisolone, Primary, PUBMED, Quality, Ratio, Reactivation, Review, Science, Simplex-Virus Type-1, Symptoms, Therapy, Treatment, Valacyclovir, Web of Science

? Kondo, N., Sembajwe, G., Kawachi, I., van Dam, R.M., Subramanian, S.V. and Yamagata, Z. (2009), Income inequality, mortality, and self rated health: Metaanalysis of multilevel studies. *British Medical Journal*, **339**, Article Number: b4471.

Full Text: [2009\Bri Med J339, b4471.pdf](2009/Bri%20Med%20J339,%20b4471.pdf)

Abstract: Objective To provide quantitative evaluations on the association between income inequality and health. Design Random effects meta-analyses, calculating the overall relative risk for subsequent mortality among prospective cohort studies and the overall odds ratio for poor self rated health among cross sectional studies. Data sources PUBMED, the ISI Web of Science, and the National Bureau for Economic Research database. Review methods Peer reviewed papers with multilevel data. Results The meta-analysis included 59 509 857 subjects in nine cohort studies and 1 280 211 subjects in 19 cross sectional studies. The overall cohort relative risk and cross sectional odds ratio (95% confidence intervals) per 0.05 unit increase in Gini coefficient, a measure of income inequality, was 1.08 (1.06 to 1.10) and 1.04 (1.02 to 1.06), respectively. Meta-regressions showed stronger associations between income inequality and the health outcomes among studies with higher Gini (>= 0.3), conducted with data after 1990, with longer duration of follow-up (>7 years), and incorporating time lags between income inequality and outcomes. By contrast, analyses accounting for unmeasured regional characteristics showed a weaker association between income inequality and health. Conclusions The results suggest a modest adverse effect of income inequality on health, although the population impact might be larger if the association is truly causal. The results also support the threshold effect hypothesis, which posits the existence of a threshold of income inequality beyond which adverse impacts on health begin to emerge. The findings need to be interpreted with caution given the heterogeneity between studies, as well as the attenuation of the risk estimates in analyses that attempted to control for the unmeasured characteristics of areas with high levels of income inequality.

Keywords: Affluence, Association, Cohort Studies, Confidence Intervals, Control, Difference, Explain, Exposure, Follow-Up, Health Outcomes, Impact, Income, ISI, Level Analysis, Meta-Analysis, Mortality, Outcomes, Papers, Population Health, PUBMED, Quantitative, Ratio, Relative Deprivation, Relative Risk, Research, Review, Risk, Science, United-States, US, Web of Science

? Parsons, A., Daley, A., Begh, R. and Aveyard, P. (2010), Influence of smoking cessation after diagnosis of early stage lung cancer on prognosis: Systematic review of observational studies with meta-analysis. *British Medical Journal*, **340**, Article Number: b5569.

Full Text: [2010\Bri Med J340, b5569.pdf](2010/Bri%20Med%20J340,%20b5569.pdf)

Abstract: Objective To systematically review the evidence that smoking cessation after diagnosis of a primary lung tumour affects prognosis. Design Systematic review with meta-analysis. Data sources CINAHL (from 1981), EMBASE (from 1980), Medline (from 1966), Web of Science (from 1966), CENTRAL (from 1977) to December 2008, and reference lists of included studies. Study selection Randomised controlled trials or observational longitudinal studies that measured the effect of quitting smoking after diagnosis of lung cancer on prognostic outcomes, regardless of stage at presentation or tumour histology, were included. Data extraction Two researchers independently identified studies for inclusion and extracted data. Estimates were combined by using a random effects model, and the I(2) statistic was used to examine heterogeneity. Life tables were used to model five year survival for early stage non-small cell lung cancer and limited stage small cell lung cancer, using death rates for continuing smokers and quitters obtained from this review. Results In 9/10 included studies, most patients studied were diagnosed as having an early stage lung tumour. Continued smoking was associated with a significantly increased risk of all cause mortality (hazard ratio 2.94, 95% confidence interval 1.15 to 7.54) and recurrence (1.86, 1.01 to 3.41) in early stage non-small cell lung cancer and of all cause mortality (1.86, 1.33 to 2.59), development of a second primary tumour (4.31, 1.09 to 16.98), and recurrence (1.26, 1.06 to 1.50) in limited stage small cell lung cancer. No study contained data on the effect of quitting smoking on cancer specific mortality or on development of a second primary tumour in non-small cell lung cancer. Life table modelling on the basis of these data estimated 33% five year survival in 65 year old patients with early stage non-small cell lung cancer who continued to smoke compared with 70% in those who quit smoking. In limited stage small cell lung cancer, an estimated 29% of continuing smokers would survive for five years compared with 63% of quitters on the basis of the data from this review. Conclusions This review provides preliminary evidence that smoking cessation after diagnosis of early stage lung cancer improves prognostic outcomes. From life table modelling, the estimated number of deaths prevented is larger than would be expected from reduction of cardiorespiratory deaths after smoking cessation, so most of the mortality gain is likely to be due to reduced cancer progression. These findings indicate that offering smoking cessation treatment to patients presenting with early stage lung cancer may be beneficial.

Keywords: 2nd Primary Cancers, Abstinence, Angiogenesis, Behavior, Cancer, Chemoradiotherapy, Cigarette-Smoking, Coronary-Heart-Disease, Development, Diagnosis, Longitudinal Studies, Lung Cancer, Meta-Analysis, Model, Mortality, Neck-Cancer, Non-Small Cell Lung, Observational Studies, Outcomes, Primary, Prognosis, Ratio, Recurrence, Researchers, Review, Risk, Science, Smoking, Survival, Systematic, Systematic Review, Treatment, Web of Science

? Meier, P., Knapp, G., Tamhane, U., Chaturvedi, S. and Gurm, H.S. (2010), Short term and intermediate term comparison of endarterectomy versus stenting for carotid artery stenosis: Systematic review and meta-analysis of randomised controlled clinical trials. *British Medical Journal*, **340**, Article Number: c467.

Full Text: [2010\Bri Med J340, c467.pdf](2010/Bri%20Med%20J340,%20c467.pdf)

Abstract: Objective To evaluate the relative short term safety and intermediate term efficacy of carotid endarterectomy versus carotid artery stenting. Design Systematic review and meta-analysis. Data sources BIOSIS, EMBASE, Medline, the Cochrane central register of controlled trials, International Pharmaceutical Abstracts database, ISI Web of Science, and Google scholar and bibliographies, from 1 January 1990 to 25 July 2009. Study selection Randomised controlled trials comparing carotid endarterectomy with carotid artery stenting in patients with carotid artery stenosis with or without symptoms. Data extraction Primary end point was a composite of mortality or stroke. Secondary end points were death, stroke, myocardial infarction, or facial neuropathy (as individual end points), and mortality or disabling stroke (as a composite end point). Data synthesis 11 trials were included (4796 patients); 10 reported on short term outcomes (n=4709) and nine on intermediate term outcomes (1-4 years). The periprocedural risk of mortality or stroke was lower for carotid endarterectomy (odds ratio 0.67, 95% confidence interval 0.47 to 0.95; P=0.025) than for carotid stenting, mainly because of a decreased risk of stroke (0.65, 0.43 to 1.00; P=0.049), whereas the risk of death (1.14, 0.56 to 2.31; P=0.727) and the composite end point mortality or disabling stroke (0.74, 0.53 to 1.05; P=0.088) did not differ significantly. The odds of periprocedural myocardial infarction (2.69, 1.06 to 6.79; P=0.036) or cranial nerve injury (10.2, 4.0 to 26.1; P<0.001) was higher in the carotid endarterectomy group than in the carotid stenting group. In the intermediate term, the two treatments did not differ significantly for stroke or death (hazard ratio 0.90, 95% confidence interval 0.74 to 1.1; P=0.314). Conclusions Carotid endarterectomy was found to be superior to carotid artery stenting for short term outcomes but the difference was not significant for intermediate term outcomes; this difference was mainly driven by non-disabling stroke. Significantly fewer cranial nerve injuries and myocardial infarctions occurred with carotid artery stenting.

Keywords: Angioplasty, Benefit, Clinical Trials, Cochrane, Controlled Clinical Trials, Efficacy, Google Scholar, High-Risk Patients, Injury, ISI, Meta-Analysis, Mortality, Myocardial Infarction, Outcomes, Points, Primary, Publication Bias, Ratio, Registry, Review, Risk, Safety, Science, Stroke, Symptoms, Systematic, Systematic Review, Web of Science

? Wang, A.T., Mccoy, C.P., Murad, M.H. and Montori, V.M. (2010), Association between industry affiliation and position on cardiovascular risk with rosiglitazone: Cross sectional systematic review. *British Medical Journal*, **340**, Article Number: c1344.

Full Text: [2010\Bri Med J340, c1344.pdf](2010/Bri%20Med%20J340,%20c1344.pdf)

Abstract: Objective To explore a possible link between authors’ financial conflicts of interest and their position on the association of rosiglitazone with increased risk of myocardial infarction in patients with diabetes. Data sources On 10 April 2009, we searched Web of Science and Scopus for articles citing and commenting on either of two index publications that contributed key data to the controversy (a meta-analysis of small trials and a subsequent large trial). Data selection Articles had to comment on rosiglitazone and the risk of myocardial infarction. Guidelines, meta-analyses, reviews, clinical trials, letters, commentaries, and editorials were included. Data extraction For each article, we sought information about the authors’ financial conflicts of interest in the report itself and elsewhere (that is, in all publications within two years of the original publication and online). Two reviewers blinded to the authors’ financial relationships independently classified each article as presenting a favourable (that is, rosiglitazone does not increase the risk of myocardial infarction), neutral, or unfavourable view on the risk of myocardial infarction with rosiglitazone and on recommendations on the use of the drug. Results of the 202 included articles, 108 (53%) had a conflict of interest statement. Ninety authors (45%) had financial conflicts of interest. Authors who had a favourable view of the risk of myocardial infarction with rosiglitazone were more likely to have financial conflicts of interest with manufacturers of antihyperglycaemic agents in general, and with rosiglitazone manufacturers in particular, than authors who had an unfavourable view (rate ratio 3.38, 95% CI 2.26 to 5.06 and 4.29, 2.63 to 7.02, respectively). There was likewise a strong association between favourable recommendations on the use of rosiglitazone and financial conflicts of interest (3.36, 1.94 to 5.83). These links persisted when articles rather than authors were used as the unit of analysis (4.69, 2.84 to 7.72), when the analysis was restricted to opinion articles (6.29, 2.15 to 18.38) or to articles in which the rosiglitazone controversy was the main focus (6.50, 2.56 to 16.53), and both in articles published before and after the Food and Drug Administration issued a safety warning for rosiglitazone (3.43, 0.99 to 11.82 and 4.95, 2.87 to 8.53, respectively). Conclusions Disclosure rates for financial conflicts of interest were unexpectedly low, and there was a clear and strong link between the orientation of authors’ expressed views on the rosiglitazone controversy and their financial conflicts of interest with pharmaceutical companies. Although these findings do not necessarily indicate a causal link between the position taken on the cardiac risk of rosiglitazone in patients with diabetes and the authors’ financial conflicts of interest, they underscore the need for further changes in disclosure procedures in order for the scientific record to be trusted.

Keywords: Administration, Analysis, Articles, Authors, Cardiovascular, Cardiovascular Risk, Clinical Trials, Conflict of Interest, Conflicts-of-Interest, Could Disclosure, Diabetes, Disclosure, Drug, Epidemiology, Events, Industry, Information, Interest, Interests Work, Laws, Medicine, Meta-Analysis, Myocardial Infarction, Pharmaceutical Companies, Pharmaceutical-Industry, Public-Health, Publication, Publications, Ratio, Review, Risk, Safety, Science, Scopus, Systematic, Systematic Review, Web of Science

? Jentink, J., Dolk, H., Loane, M.A., Morris, J.K., Wellesley, D., Garne, E. and de Jong-van den Berg. (2010), Intrauterine exposure to carbamazepine and specific congenital malformations: Systematic review and case-control study. *British Medical Journal*, **341**, Article Number: c6581.

Full Text: [2010\Bri Med J341, c6581.pdf](2010/Bri%20Med%20J341,%20c6581.pdf)

Abstract: Objective To identify specific major congenital malformations associated with use of carbamazepine in the first trimester of pregnancy. Design A review of all published cohort studies to identify key indications and a population based case-control study to test these indications. Setting Review of PUBMED, Web of Science, and EMBASE for papers about carbamazepine exposure in the first trimester of pregnancy and specific malformations, and the EUROCAT Antiepileptic Study Database, including data from 19 European population based congenital anomaly registries, 1995-2005. Participants The literature review covered eight cohort studies of 2680 pregnancies with carbamazepine monotherapy exposure, and the EUROCAT dataset included 98 075 registrations of malformations covering over 3.8 million births. Main outcome measures Overall prevalence for a major congenital malformation after exposure to carbamazepine monotherapy in the first trimester. Odds ratios for malformations with exposure to carbamazepine among cases (five types of malformation identified in the literature review) compared with two groups of controls: other non-chromosomal registrations of malformations and chromosomal syndromes. Results The literature review yielded an overall prevalence for a major congenital malformation of 3.3% (95% confidence interval 2.7 to 4.2) after exposure to carbamazepine monotherapy in the first trimester. In 131 registrations of malformations, the fetus had been exposed to carbamazepine monotherapy. Spina bifida was the only specific major congenital malformation significantly associated with exposure to carbamazepine monotherapy (odds ratio 2.6 (95% confidence interval 1.2 to 5.3) compared with no antiepileptic drug), but the risk was smaller for carbamazepine than for valproic acid (0.2, 0.1 to 0.6). There was no evidence for an association with total anomalous pulmonary venous return (no cases with carbamazepine exposure), cleft lip (with or without palate) (0.2, 0.0 to 1.3), diaphragmatic hernia (0.9, 0.1 to 6.6), or hypospadias (0.7, 0.3 to 1.6) compared with no exposure to antiepileptic drugs. Further exploratory analysis suggested a higher risk of single ventricle and atrioventricular septal defect. Conclusion Carbamazepine teratogenicity is relatively specific to spina bifida, though the risk is less than with valproic acid. Despite the large dataset, there was not enough power to detect moderate risks for some rare major congenital malformations.

Keywords: Analysis, Antiepileptic Drugs, Case-Control Study, Cleft Lip, Cohort Studies, Drug, Epilepsy, Fetal, In-Utero, Lamotrigine, Literature, Literature Review, Major Malformations, Monotherapy, Outcome, Papers, Pregnancy, Prevalence, PUBMED, Ratio, Review, Risk, Science, Systematic, Systematic Review, Teratogenesis, Valproic Acid, Web of Science

? Polyzos, N.P., Polyzos, I.P., Zavos, A., Valachis, A., Mauri, D., Papanikolaou, E.G., Tzioras, S., Weber, D. and Messinis, I.E. (2010), Obstetric outcomes after treatment of periodontal disease during pregnancy: Systematic review and meta-analysis. *British Medical Journal*, **341**, Article Number: c7017.

Full Text: [2010\Bri Med J341, c7017.pdf](2010/Bri%20Med%20J341,%20c7017.pdf)

Abstract: Objective To examine whether treatment of periodontal disease with scaling and root planing during pregnancy is associated with a reduction in the preterm birth rate. Design Systematic review and meta-analysis of randomised controlled trials. Data sources Cochrane Central Trials Registry, ISI Web of Science, Medline, and reference lists of relevant studies to July 2010; hand searches in key journals. Study selection Randomised controlled trials including pregnant women with documented periodontal disease randomised to either treatment with scaling and root planing or no treatment. Data extraction Data were extracted by two independent investigators, and a consensus was reached with the involvement a third. Methodological quality of the studies was assessed with the Cochrane’s risk of bias tool, and trials were considered either high or low quality. The primary outcome was preterm birth (<37 weeks). Secondary outcomes were low birthweight infants (<2500 g), spontaneous abortions/stillbirths, and overall adverse pregnancy outcome (preterm birth <37 weeks and spontaneous abortions/stillbirths). Results 11 trials (with 6558 women) were included. Five trials were considered to be of high methodological quality (low risk of bias), whereas the rest were low quality (high or unclear risk of bias). Results among low and high quality trials were consistently diverse; low quality trials supported a beneficial effect of treatment, and high quality trials provided clear evidence that no such effect exists. Among high quality studies, treatment had no significant effect on the overall rate of preterm birth (odds ratio 1.15, 95% confidence interval 0.95 to 1.40; P=0.15). Furthermore, treatment did not reduce the rate of low birthweight infants (odds ratio 1.07, 0.85 to 1.36; P=0.55), spontaneous abortions/stillbirths (0.79, 0.51 to 1.22; P=0.28), or overall adverse pregnancy outcome (preterm births <37 weeks and spontaneous abortions/stillbirths) (1.09, 0.91 to 1.30; P=0.34). Conclusion Treatment of periodontal disease with scaling and root planing cannot be considered to be an efficient way of reducing the incidence of preterm birth. Women may be advised to have periodical dental examinations during pregnancy to test their dental status and may have treatment for periodontal disease. However, they should be told that such treatment during pregnancy is unlikely to reduce the risk of preterm birth or low birthweight infants.

Keywords: Bias, Birthweight, Cochrane, Disease, Empirical-Evidence, Infants, Intervention, Involvement, ISI, Journals, Low-Birth-Weight, Meta-Analysis, Outcome, Outcomes, Periodical, Periodontal Disease, Pregnancy, Preterm Birth, Primary, Publication Bias, Quality, Randomized-Controlled-Trial, Ratio, Review, Risk, Science, Systematic, Systematic Review, Therapy, Treatment, Web of Science, Women

? Trelle, S., Reichenbach, S., Wandel, S., Hildebrand, P., Tschannen, B., Villiger, P.M., Egger, M. and Juni, P. (2011), Cardiovascular safety of non-steroidal anti-inflammatory drugs: Network meta-analysis. *British Medical Journal*, **342**, Article Number: c7086.

Full Text: [2011\Bri Med J342, c7086.pdf](2011/Bri%20Med%20J342,%20c7086.pdf)

Abstract: Objective To analyse the available evidence on cardiovascular safety of non-steroidal anti-inflammatory drugs. Design Network meta-analysis. Data sources Bibliographic databases, conference proceedings, study registers, the Food and Drug Administration website, reference lists of relevant articles, and reports citing relevant articles through the Science Citation Index (last update July 2009). Manufacturers of celecoxib and lumiracoxib provided additional data. Study selection All large scale randomised controlled trials comparing any non-steroidal anti-inflammatory drug with other non-steroidal anti-inflammatory drugs or placebo. Two investigators independently assessed eligibility. Data extraction The primary outcome was myocardial infarction. Secondary outcomes included stroke, death from cardiovascular disease, and death from any cause. Two investigators independently extracted data. Data synthesis 31 trials in 116 429 patients with more than 115 000 patient years of follow-up were included. Patients were allocated to naproxen, ibuprofen, diclofenac, celecoxib, etoricoxib, rofecoxib, lumiracoxib, or placebo. Compared with placebo, rofecoxib was associated with the highest risk of myocardial infarction (rate ratio 2.12, 95% credibility interval 1.26 to 3.56), followed by lumiracoxib (2.00, 0.71 to 6.21). Ibuprofen was associated with the highest risk of stroke (3.36, 1.00 to 11.6), followed by diclofenac (2.86, 1.09 to 8.36). Etoricoxib (4.07, 1.23 to 15.7) and diclofenac (3.98, 1.48 to 12.7) were associated with the highest risk of cardiovascular death. Conclusions Although uncertainty remains, little evidence exists to suggest that any of the investigated drugs are safe in cardiovascular terms. Naproxen seemed least harmful. Cardiovascular risk needs to be taken into account when prescribing any non-steroidal antiinflammatory drug.

Keywords: Alzheimer-Disease, Cardiovascular, Cardiovascular Disease, Credibility, Cyclo-Oxygenase-2 Inhibitors, Cyclooxygenase-2 Inhibitors, Data, Databases, Death, Diclofenac, Disease, Drug, Drugs, Events, Evidence, Extraction, Follow-up, Ibuprofen, Infarction, Interval, Meta-Analysis, Metaanalysis, Mixed Treatment Comparisons, Myocardial Infarction, Myocardial-Infarction, Naproxen, Needs, Network, Outcome, Outcomes, Patients, Placebo, Prescribing, Primary, Randomised, Randomised Controlled Trials, Randomized-Trials, Reference, Reference Lists, Rheumatoid-Arthritis, Risk, Rofecoxib, Safety, Scale, Science Citation Index, Sources, Stroke, Synthesis, Uncertainty

? Blackwood, B., Alderdice, F., Burns, K., Cardwell, C., Lavery, G. and O’Halloran, P. (2011), Use of weaning protocols for reducing duration of mechanical ventilation in critically ill adult patients: Cochrane systematic review and meta-analysis. *British Medical Journal*, **342**, Article Number: c7237.

Full Text: [2011\Bri Med J342, c7237.pdf](2011/Bri%20Med%20J342,%20c7237.pdf)

Abstract: Objective To investigate the effects of weaning protocols on the total duration of mechanical ventilation, mortality, adverse events, quality of life, weaning duration, and length of stay in the intensive care unit and hospital. Design Systematic review. Data sources Cochrane Central Register of Controlled Trials, Medline, EMBASE, CINAHL, LILACS, ISI Web of Science, ISI Conference Proceedings, Cambridge Scientific Abstracts, and reference lists of articles. We did not apply language restrictions. Review methods We included randomised and quasi-randomised controlled trials of weaning from mechanical ventilation with and without protocols in critically ill adults. Data selection Three authors independently assessed trial quality and extracted data. A priori subgroup and sensitivity analyses were performed. We contacted study authors for additional information. Results Eleven trials that included 1971 patients met the inclusion criteria. Compared with usual care, the geometric mean duration of mechanical ventilation in the weaning protocol group was reduced by 25% (95% confidence interval 9% to 39%, P=0.006; 10 trials); the duration of weaning was reduced by 78% (31% to 93%, P=0.009; six trials); and stay in the intensive care unit length by 10% (2% to 19%, P=0.02; eight trials). There was significant heterogeneity among studies for total duration of mechanical ventilation (I(2)=76%, P<0.01) and duration of weaning (I(2)=97%, P<0.01), which could not be explained by subgroup analyses based on type of unit or type of approach. Conclusion There is evidence of a reduction in the duration of mechanical ventilation, weaning, and stay in the intensive care unit when standardised weaning protocols are used, but there is significant heterogeneity among studies and an insufficient number of studies to investigate the source of this heterogeneity. Some studies suggest that organisational context could influence outcomes, but this could not be evaluated as it was outside the scope of this review.

Keywords: Adult, Adults, Authors, Clinical-Outcomes, Cochrane, Computerized Decision-Support, Conference, Efficacy, Extubation, Hospital, Information, Intensive Care, Intensive Care Unit, Intensive-Care Units, Interventions, ISI, Length of Stay, Mechanical Ventilation, Meta-Analysis, Mortality, Outcomes, Pneumonia, Protocol, Quality of Life, Randomized Controlled-Trial, Review, Science, Sedation, Surgery, Systematic, Systematic Review, Web of Science

? Winzenberg, T., Powell, S., Shaw, K.A. and Jones, G. (2011), Effects of vitamin D supplementation on bone density in healthy children: Systematic review and meta-analysis. *British Medical Journal*, **342**, Article Number: c7254.

Full Text: [2011\Bri Med J342, c7254.pdf](2011/Bri%20Med%20J342,%20c7254.pdf)

Abstract: Objective To determine the effectiveness of vitamin D supplementation for improving bone mineral density in children and adolescents and if effects vary with factors such as vitamin D dose and vitamin D status. Design Systematic review and meta-analysis. Data sources Cochrane Central Register of Controlled Trials, Medline (1966 to present), EMBASE (1980 to present), CINAHL (1982 to present), AMED (1985 to present), and ISI Web of Science (1945 to present), last updated on 9 August 2009, and hand searching of conference abstracts from key journals. Study selection Placebo controlled randomised controlled trials of vitamin D supplementation for at least three months in healthy children and adolescents (aged 1 month to <20 years) with bone density outcomes. Two authors independently assessed references for inclusion and study quality and extracted data. Data synthesis Standardised mean differences of the percentage change from baseline in bone mineral density of the forearm, hip, and lumbar spine and total body bone mineral content in treatment and control groups. Subgroup analyses were carried out by sex, pubertal stage, dose of vitamin D, and baseline serum vitamin D concentration. Compliance and allocation concealment were also considered as possible sources of heterogeneity. Results From 1653 potential references, six studies, totalling 343 participants receiving placebo and 541 receiving vitamin D, contributed data to meta-analyses. Vitamin D supplementation had no statistically significant effects on total body bone mineral content or on bone mineral density of the hip or forearm. There was a trend to a small effect on lumbar spine bone mineral density (standardised mean difference 0.15, 95% confidence interval -0.01 to 0.31; P=0.07). Effects were similar in studies of participants with high compared with low serum vitamin D levels, although there was a trend towards a larger effect with low vitamin D for total body bone mineral content (P=0.09 for difference). In studies with low serum vitamin D, significant effects on total body bone mineral content and lumbar spine bone mineral density were roughly equivalent to a 2.6% and 1.7% percentage point greater change from baseline in the supplemented group. Conclusions It is unlikely that vitamin D supplements are beneficial in children and adolescents with normal vitamin D levels. The planned subgroup analyses by baseline serum vitamin D level suggest that vitamin D supplementation of deficient children and adolescents could result in clinically useful improvements, particularly in lumbar spine bone mineral density and total body bone mineral content, but this requires confirmation.

Keywords: Adolescent Girls, Adolescents, Aged, Aged 10-12 Years, Authors, Bone, Bone Mineral Density, Children, Cochrane, Compliance, Control, Control Groups, D Deficiency, Effectiveness, Finnish Girls, ISI, Journals, Meta-Analysis, Mineral Density, Normal, Osteoporotic Fractures, Outcomes, Parathyroid-Hormone Concentrations, Prepubertal Children, Review, School-Milk Intervention, Science, Serum 25-Hydroxyvitamin-D Concentrations, Spine, Systematic, Systematic Review, Treatment, Trend, Vitamin D, Web of Science

? Boivin, J., Griffiths, E. and Venetis, C.A. (2011), Emotional distress in infertile women and failure of assisted reproductive technologies: Meta-analysis of prospective psychosocial studies. *British Medical Journal*, **342**, Article Number: d223.

Full Text: [2011\Bri Med J342, d223.pdf](2011/Bri%20Med%20J342,%20d223.pdf)

Abstract: Objective To examine whether pretreatment emotional distress in women is associated with achievement of pregnancy after a cycle of assisted reproductive technology. Design Meta-analysis of prospective psychosocial studies. Data sources PUBMED, Medline, EMBASE, PsycINFO, PsychNET, ISI Web of Knowledge, and ISI Web of Science were searched for articles published from 1985 to March 2010 (inclusive). We also undertook a hand search of reference lists and contacted 29 authors. Eligible studies were prospective studies reporting a test of the association between pretreatment emotional distress (anxiety or depression) and pregnancy in women undergoing a single cycle of assisted reproductive technology. Review methods Two authors independently assessed the studies for eligibility and quality (using criteria adapted from the Newcastle-Ottawa quality scale) and extracted data. Authors contributed additional data not included in original publication. Results Fourteen studies with 3583 infertile women undergoing a cycle of fertility treatment were included in the meta-analysis. The effect size used was the standardised mean difference (adjusted for small sample size) in pretreatment anxiety or depression (priority on anxiety where both measured) between women who achieved a pregnancy (defined as a positive pregnancy test, positive fetal heart scan, or live birth) and those who did not. Pretreatment emotional distress was not associated with treatment outcome after a cycle of assisted reproductive technology (standardised mean difference -0.04, 95% confidence interval -0.11 to 0.03 (fixed effects model); heterogeneity I(2) = 14%, P = 0.30). Subgroup analyses according to previous experience of assisted reproductive technology, composition of the not pregnant group, and timing of the emotional assessment were not significant. The effect size did not vary according to study quality, but a significant subgroup analysis on timing of the pregnancy test, a contour enhanced funnel plot, and Egger’s test indicated the presence of moderate publication bias. Conclusions The findings of this meta-analysis should reassure women and doctors that emotional distress caused by fertility problems or other life events co-occurring with treatment will not compromise the chance of becoming pregnant.

Keywords: Analysis, Anxiety, Appraisal, Assessment, Authors, Bias, Depression, Distress, Fertility Treatment, In-Vitro Fertilization, ISI, Ivf, Knowledge, Mammals, Meta Analysis, Meta-Analysis, Model, Outcome, Pregnancy, Prospective Studies, Psychosocial, Publication, Publication Bias, PUBMED, Review, Science, Stress, Treatment, Treatment Outcome, Web of Knowledge, Web of Science, Women

? Glanville, J., Kendrick, T., McNally, R., Campbell, J. and Hobbs, F.D.R. (2011), Research output on primary care in Australia, Canada, Germany, the Netherlands, the United Kingdom, and the United States: Bibliometric analysis. *British Medical Journal*, **342**, Article Number: d1028.

Full Text: [2011\Bri Med J342, d1028.pdf](2011/Bri%20Med%20J342,%20d1028.pdf)

Abstract: Objective To compare the volume and quality of original research in primary care published by researchers from primary care in the United Kingdom against five countries with well established academic primary care. Design Bibliometric analysis. Setting United Kingdom, United States, Australia, Canada, Germany, and the Netherlands. Studies reviewed Research publications relevant to comprehensive primary care and authored by researchers from primary care, recorded in Medline and Embase, with publication dates 2001-7 inclusive. Main outcome measures Volume of published activity of generalist primary care researchers and the quality of the research output by those publishing the most using citation metrics: numbers of cited papers, proportion of cited papers, and mean citation scores. Results 82 169 papers published between 2001 and 2007 in the six countries were classified as research on primary care. In a 15% pragmatic random sample of these records, 40% of research on primary care from the United Kingdom and 46% from the Netherlands was authored by researchers employed in a primary care setting or employed in academic departments of primary care. The 141 researchers with the highest volume of publications reporting research findings published between 2001 and 2007 (inclusive) authored or part authored 8.3% of the total sample of papers. For authors with the highest proportion of publications cited at least five times, the best performers came from the United States (n=5), United Kingdom (n=4), and the Netherlands (n=2). In the top 10 of authors with the highest proportions of publications achieving 20 or more citations, six were from the United Kingdom and four from the United States. The mean Hirsch index (measure of a researcher’s productivity and impact of the published work) was 14 for the Netherlands, 13 for the United Kingdom, 12 for the United States, 7 for Canada, 4 for Australia, and 3 for Germany. Conclusion This international comparison of the volume and citation rates of papers by researchers from primary care consistently placed UK researchers among the best performers internationally.

Keywords: Analysis, Australia, Authors, Bibliometric, Bibliometric Analysis, Canada, Care, Citation, Citations, Comparison, Germany, Hirsch, Hirsch Index, Impact, Index, International, International Comparison, Mar, Measure, Metrics, Outcome, Outcome Measures, Papers, Primary, Primary Care, Productivity, Publication, Publications, Publishing, Quality, Quality of, Random Sample, Rates, Records, Reporting, Research, The Netherlands, UK, United Kingdom, United States, Volume, Work

? Weightman, A.L. and Butler, C.C. (2011), Using bibliometrics to define the quality of primary care research. *British Medical Journal*, **342**, Article Number: d1083.

Full Text: [2011\Bri Med J342, d1083.pdf](2011/Bri%20Med%20J342,%20d1083.pdf)

Keywords: Bibliometrics, Care, Mar, Primary, Primary Care, Quality, Quality Of, Research

? Moonesinghe, S.R., Lowery, J., Shahi, N., Millen, A. and Beard, J.D. (2011), Impact of reduction in working hours for doctors in training on postgraduate medical education and patients’ outcomes: Systematic review. *British Medical Journal*, **342**, Article Number: d1580.

Full Text: [2011\Bri Med J342, d1580.pdf](2011/Bri%20Med%20J342,%20d1580.pdf)

Abstract: Objectives To determine whether a reduction in working hours of doctors in postgraduate medical training has had an effect on objective measures of medical education and clinical outcome. Design Systematic review. Data sources Medline, EMBASE, ISI Web of Science, Google Scholar, ERIC, and SIGLE were searched without language restriction for articles published between 1990 and December 2010. Reference lists and citations of selected articles. Study selection Studies that assessed the impact of a change in duty hours using any objective measure of outcome related to postgraduate medical training, patient safety, or clinical outcome. Any study design was eligible for inclusion. Results 72 studies were eligible for inclusion: 38 reporting training outcomes, 31 reporting outcomes in patients, and three reporting both. A reduction in working hours from greater than 80 hours a week (in accordance with US recommendations) does not seem to have adversely affected patient safety and has had limited effect on postgraduate training. Reports on the impact of European legislation limiting working hours to less than 56 or 48 a week are of poor quality and have conflicting results, meaning that firm conclusions cannot be made. Conclusions Reducing working hours to less than 80 a week has not adversely affected outcomes in patient or postgraduate training in the US. The impact of reducing hours to less than 56 or 48 a week in the UK has not yet been sufficiently evaluated in high quality studies. Further work is required, particularly in the European Union, using large multicentre evaluations of the impact of duty hours’ legislation on objective educational and clinical outcomes.

Keywords: 80-Hour Workweek, Accreditation Council, Care, Citations, Education, General-Surgery Residency, Google Scholar, Impact, Inpatient Surgery, ISI, Laparoscopic Cholecystectomy, Medical, Outcome, Outcomes, Resident Operative Experience, Restrictions, Review, Safety, Science, Surgical Service, Systematic, Systematic Review, Training, Trauma Center, UK, US, Web of Science

? Tuffs, A. (2011), Inquiry into doping case by Freiburg sports medicine institute reveals possible plagiarism. *British Medical Journal*, **342**, Article Number: d1650.

Full Text: 2011\Bri Med J342, d1650.pdf

Keywords: Plagiarism

? Wilson, A., Lissauer, D., Thangaratinam, S., Khan, K.S., MacArthur, C. and Coomarasamy, A. (2011), A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: Meta-analysis of controlled studies. *British Medical Journal*, **342**, Article Number: d2600.

Full Text: [2011\Bri Med J342, d2600.pdf](2011/Bri%20Med%20J342,%20d2600.pdf)

Abstract: Objective To review the effectiveness and safety of clinical officers (healthcare providers trained to perform tasks usually undertaken by doctors) carrying out caesarean section in developing countries compared with doctors. Design Systematic review with meta-analysis. Data sources Medline, Embase, Cochrane Central Register of Controlled Trials, CINAHL, BioMed Central, the Reproductive Health Library, and the Science Citation Index (inception-2010) without language restriction. Study selection Controlled studies. Data extraction Information was extracted from each selected article on study characteristics, quality, and outcome data. Two independent reviewers extracted data. Results Six non-randomised controlled studies (16 018 women) evaluated the effectiveness of clinical officers carrying out caesarean section. Meta-analysis found no significant differences between the clinical officers and doctors for maternal death (odds ratio 1.46, 95% confidence interval 0.78 to 2.75; P=0.24) or for perinatal death (1.31, 0.87 to 1.95; P=0.19). The results were heterogeneous, with some studies reporting a higher incidence of both outcomes with clinical officers. Clinical officers were associated with a higher incidence of wound infection (1.58, 1.01 to 2.47; P=0.05) and wound dehiscence (1.89, 1.21 to 2.95; P=0.005). Two studies accounted for confounding factors. Conclusion Clinical officers and doctors did not differ significantly in key outcomes for caesarean section, but the conclusions are tentative owing to the non-randomised nature of the studies. The increase in wound infection and dehiscence may highlight a particular training need for clinical officers.

Keywords: Care, Citation, Confounding, Deliveries, Developing Countries, Meta-Analysis, Mortality, Obstetricians, Outcomes, Review, Science Citation Index, Surgery, Training

? Usher-Smith, J.A., Thompson, M.J., Sharp, S.J. and Walter, F.M. (2011), Factors associated with the presence of diabetic ketoacidosis at diagnosis of diabetes in children and young adults: A systematic review. *British Medical Journal*, **343**, Article Number: d4092.

Full Text: [2011\Bri Med J342, d4092.pdf](2011/Bri%20Med%20J342,%20d4092.pdf)

Abstract: Objective To identify the factors associated with diabetic ketoacidosis at diagnosis of type 1 diabetes in children and young adults. Design Systematic review. Data sources PUBMED, EMBASE, Web of Science, Scopus, and Cinahl and article reference lists. Study selection Cohort studies including unselected groups of children and young adults presenting with new onset type 1 diabetes that distinguished between those who presented in diabetic ketoacidosis and those who did not and included a measurement of either pH or bicarbonate in the definition of diabetic ketoacidosis. There were no restrictions on language of publication. Results 46 studies involving more than 24 000 children in 31 countries were included. Together they compared 23 different factors. Factors associated with increased risk were younger age (for <2 years old v older, odds ratio 3.41 (95% confidence interval 2.54 to 4.59), for <5 years v older, odds ratio 1.59 (1.38 to 1.84)), diagnostic error (odds ratio 3.35 (2.35 to 4.79)), ethnic minority, lack of health insurance in the US (odds ratio 3.20 (2.03 to 5.04)), lower body mass index, preceding infection (odds ratio 3.14 (0.94 to 10.47)), and delayed treatment (odds ratio 1.74 (1.10 to 2.77)). Protective factors were having a first degree relative with type 1 diabetes at the time of diagnosis (odds ratio 0.33 (0.08 to 1.26)), higher parental education (odds ratios 0.4 (0.20 to 0.79) and 0.64 (0.43 to 0.94) in two studies), and higher background incidence of type 1 diabetes (correlation coefficient -0.715). The mean duration of symptoms was similar between children presenting with or without diabetic ketoacidosis (16.5 days (standard error 6.2) and 17.1 days (6.0) respectively), and up to 38.8% (285/735) of children who presented with diabetic ketoacidosis had been seen at least once by a doctor before diagnosis. Conclusions Multiple factors affect the risk of developing diabetic ketoacidosis at the onset of type 1 diabetes in children and young adults, and there is potential time, scope, and opportunity to intervene between symptom onset and development of diabetic ketoacidosis for both parents and clinicians.

Keywords: Adolescents, Adults, Beta-Cell Function, Body Mass Index, Children, Clinical Characteristics, Consensus Statement, Delayed Diagnosis, Development, Diabetes, Diagnosis, Education, EMBASE, Ethnic Minority, Infection, Laboratory Characteristics, Measurement, Mellitus, Metabolic Control, Onset, Parents, Partial Remission, pH, Publication, PUBMED, Ratio, Review, Risk, Science, Scopus, Symptoms, Systematic, Systematic Review, Treatment, Type 1, Type 1 Diabetes, US, Web of Science, Young Adults

? Buitrago-Lopez, A., Sanderson, J., Johnson, L., Warnakula, S., Wood, A., Di Angelantonio, E. and Franco, O.H. (2011), Chocolate consumption and cardiometabolic disorders: Systematic review and meta-analysis. *British Medical Journal*, **343**, Article Number: d4488.

Full Text: [2011\Bri Med J343, d4488.pdf](2011/Bri%20Med%20J343,%20d4488.pdf)

Abstract: Objective To evaluate the association of chocolate consumption with the risk of developing cardiometabolic disorders. Design Systematic review and meta-analysis of randomised controlled trials and observational studies. Data sources Medline, Embase, Cochrane Library, PubMed, CINAHL, IPA, Web of Science, Scopus, Pascal, reference lists of relevant studies to October 2010, and email contact with authors. Study selection Randomised trials and cohort, case-control, and cross sectional studies carried out in human adults, in which the association between chocolate consumption and the risk of outcomes related to cardiometabolic disorders were reported. Data extraction Data were extracted by two independent investigators, and a consensus was reached with the involvement of a third. The primary outcome was cardiometabolic disorders, including cardiovascular disease (coronary heart disease and stroke), diabetes, and metabolic syndrome. A meta-analysis assessed the risk of developing cardiometabolic disorders by comparing the highest and lowest level of chocolate consumption. Results From 4576 references seven studies met the inclusion criteria (including 114 009 participants). None of the studies was a randomised trial, six were cohort studies, and one a cross sectional study. Large variation was observed between these seven studies for measurement of chocolate consumption, methods, and outcomes evaluated. Five of the seven studies reported a beneficial association between higher levels of chocolate consumption and the risk of cardiometabolic disorders. The highest levels of chocolate consumption were associated with a 37% reduction in cardiovascular disease (relative risk 0.63 (95% confidence interval 0.44 to 0.90)) and a 29% reduction in stroke compared with the lowest levels. Conclusions Based on observational evidence, levels of chocolate consumption seem to be associated with a substantial reduction in the risk of cardiometabolic disorders. Further experimental studies are required to confirm a potentially beneficial effect of chocolate consumption.

Keywords: Adults, Authors, Blood-Pressure, Cardiovascular, Cardiovascular Disease, Cardiovascular-Disease, Case-Control, Cochrane, Cohort Studies, Coronary Heart Disease, Coronary-Artery-Disease, Dark Chocolate, Diabetes, Disease, Elevated Cholesterol, Endothelial Function, Experimental, Heart-Disease, Human, Insulin Sensitivity, Involvement, Measurement, Meta Analysis, Meta-Analysis, Observational, Observational Studies, Outcome, Outcomes, Primary, Pubmed, Randomized Controlled-Trials, Reduction, Relative Risk, Review, Risk, Science, Scopus, Stroke, Systematic, Systematic Review, Vascular Function, Web of Science

? Banzi, R., Cinquini, M., Liberati, A., Moschetti, I., Pecoraro, V., Tagliabue, L. and Moja, L. (2011), Speed of updating online evidence based point of care summaries: Prospective cohort analysis. *British Medical Journal*, **343**, Article Number: d5856.

Full Text: [2011\Bri Med J343, d5856.pdf](2011/Bri%20Med%20J343,%20d5856.pdf)

Abstract: Objective To evaluate the ability of international point of care information summaries to update evidence relevant to medical practice. Design Prospective cohort bibliometric analysis. Setting Top five point of care information summaries (Clinical Evidence, EBMGuidelines, eMedicine, Dynamed, UpToDate) ranked for coverage of medical conditions, editorial quality, and evidence based methodology. Main outcome measures From June 2009 to May 2010 we measured the incidence of research findings relating to potentially eligible newsworthy evidence. As samples, we chose systematic reviews rated as relevant by international research networks (such as, Evidence-Based Medicine, ACP Journal Club, and the Cochrane Collaboration). Every month we assessed whether each sampled review was cited in at least one chapter of the five summaries. The cumulative updating rate was analysed with Kaplan-Meier curves. Results From April to December 2009, 128 reviews were retrieved; 53% (68) from the literature surveillance journals and 47% (60) from the Cochrane Library. At nine months, Dynamed had cited 87% of the sampled reviews, while the other summaries had cited less than 50%. The updating speed of Dynamed clearly led the others. For instance, the hazard ratios for citations in EBM Guidelines and Clinical Evidence versus the top performer were 0.22 (95% confidence interval 0.17 to 0.29) and 0.03 (0.01 to 0.05). Conclusions Point of care information summaries include evidence relevant to practice at different speeds. A qualitative analysis of updating mechanisms is needed to determine whether greater speed corresponds to more appropriate incorporation of new information.

Keywords: Analysis, Bibliometric, Bibliometric Analysis, Care, Citation, Citations, Clinical-Practice Guidelines, Cochrane, Collaboration, Context, Coverage, Evidence-Based Medicine, Grade, Health-Care, Incidence, Information, Journal, Journals, Literature, Mechanisms, Medical, Methodology, Outcome, Practice, Quality, Recommendations, Relevance, Research, Review, Surveillance, Systematic, Systematic Reviews, Trials

? Hemmingsen, B., Lund, S.S., Gluud, C., Vaag, A., Almdal, T., Hemmingsen, C. and Wetterslev, J. (2011), Intensive glycaemic control for patients with type 2 diabetes: Systematic review with meta-analysis and trial sequential analysis of randomised clinical trials. *British Medical Journal*, **343**, Article Number: d6898.

Full Text: 2011\Bri Med J343, d6898.pdf

Abstract: Objective To assess the effect of targeting intensive glycaemic control versus conventional glycaemic control on all cause mortality and cardiovascular mortality, non-fatal myocardial infarction, microvascular complications, and severe hypoglycaemia in patients with type 2 diabetes. Design Systematic review with meta-analyses and trial sequential analyses of randomised trials. Data sources Cochrane Library, Medline, Embase, Science Citation Index Expanded, LILACS, and CINAHL to December 2010; hand search of reference lists and conference proceedings; contacts with authors, relevant pharmaceutical companies, and the US Food and Drug Administration. Study selection Randomised clinical trials comparing targeted intensive glycaemic control with conventional glycaemic control in patients with type 2 diabetes. Published and unpublished trials in all languages were included, irrespective of predefined outcomes. Data extraction Two reviewers independently assessed studies for inclusion and extracted data related to study methods, interventions, outcomes, risk of bias, and adverse events. Risk ratios with 95% confidence intervals were estimated with fixed and random effects models. Results Fourteen clinical trials that randomised 28 614 participants with type 2 diabetes (15 269 to intensive control and 13 345 to conventional control) were included. Intensive glycaemic control did not significantly affect the relative risks of all cause (1.02, 95% confidence interval 0.91 to 1.13; 28 359 participants, 12 trials) or cardiovascular mortality (1.11, 0.92 to 1.35; 28 359 participants, 12 trials). Trial sequential analyses rejected a relative risk reduction above 10% for all cause mortality and showed insufficient data on cardiovascular mortality. The risk of non-fatal myocardial infarction may be reduced (relative risk 0.85, 0.76 to 0.95; P=0.004; 28 111 participants, 8 trials), but this finding was not confirmed in trial sequential analysis. Intensive glycaemic control showed a reduction of the relative risks for the composite microvascular outcome (0.88, 0.79 to 0.97; P=0.01; 25 600 participants, 3 trials) and retinopathy (0.80, 0.67 to 0.94; P=0.009; 10 793 participants, 7 trials), but trial sequential analyses showed that sufficient evidence had not yet been reached. The estimate of an effect on the risk of nephropathy (relative risk 0.83, 0.64 to 1.06; 27 769 participants, 8 trials) was not statistically significant. The risk of severe hypoglycaemia was significantly increased when intensive glycaemic control was targeted (relative risk 2.39, 1.71 to 3.34; 27 844 participants, 9 trials); trial sequential analysis supported a 30% increased relative risk of severe hypoglycaemia. Conclusion Intensive glycaemic control does not seem to reduce all cause mortality in patients with type 2 diabetes. Data available from randomised clinical trials remain insufficient to prove or refute a relative risk reduction for cardiovascular mortality, non-fatal myocardial infarction, composite microvascular complications, or retinopathy at a magnitude of 10%. Intensive glycaemic control increases the relative risk of severe hypoglycaemia by 30%.

Keywords: 10-Year Follow-Up, Acute Coronary Events, Acute Myocardial-Infarction, Administration, Adverse Events, Analysis, Authors, Bias, Blood-Glucose Control, Cardiovascular, Citation, Clinical Trials, Cochrane, Complications, Confidence Intervals, Control, Cost-Effectiveness, Diabetes, Extraction, Feasibility Trial, Glycated Hemoglobin, Hand, Hypoglycaemia, Insulin Therapy, Intensive, Interventions, Medline, Meta Analysis, Meta-Analysis, Metabolic-Control, Mortality, Multifactorial Intervention, Myocardial Infarction, Outcome, Outcomes, Patients, Pharmaceutical Companies, Reduction, Relative Risk, Review, Risk, Risk Reduction, Science, Science Citation Index, Systematic, Systematic Review, Type 2, Type 2 Diabetes, US

? Wilson, A., Gallos, I.D., Plana, N., Lissauer, D., Khan, K.S., Zamora, J., MacArthur, C. and Coomarasamy, A. (2011), Effectiveness of strategies incorporating training and support of traditional birth attendants on perinatal and maternal mortality: Meta-analysis. *British Medical Journal*, **343**, Article Number: d7102.

Full Text: [2011\Bri Med J343, d7102.pdf](file:///H:\Bibliometric%20References\2011\Bri%20Med%20J343,%20d7102.pdf)

Abstract: Objective To assess the effectiveness of strategies incorporating training and support of traditional birth attendants on the outcomes of perinatal, neonatal, and maternal death in developing countries. Design Systematic review with meta-analysis. Data sources Medline, Embase, the Allied and Complementary Medicine database, British Nursing Index, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature, BioMed Central, PsycINFO, Latin American and Caribbean Health Sciences Literature database, African Index Medicus, Web of Science, Reproductive Health Library, and Science Citation Index (from inception to April 2011), without language restrictions. Search terms were “birth attend\*”, “traditional midwife”, “lay birth attendant”, “dais”, and “comadronas”. Review methods We selected randomised and non-randomised controlled studies with outcomes of perinatal, neonatal, and maternal mortality. Two independent reviewers undertook data extraction. We pooled relative risks separately for the randomised and non-randomised controlled studies, using a random effects model. Results We identified six cluster randomised controlled trials (n=138 549) and seven non-randomised controlled studies (n=72 225) that investigated strategies incorporating training and support of traditional birth attendants. All six randomised controlled trials found a reduction in adverse perinatal outcomes; our meta-analysis showed significant reductions in perinatal death (relative risk 0.76, 95% confidence interval 0.64 to 0.88, P<0.001; number needed to treat 35, 24 to 70) and neonatal death (0.79, 0.69 to 0.88, P<0.001; 98, 66 to 170). Meta-analysis of the non-randomised studies also showed a significant reduction in perinatal mortality (0.70, 0.57 to 0.84, p<0.001; 48, 32 to 96) and neonatal mortality (0.61, 0.48 to 0.75, P<0.001; 96, 65 to 168). Six studies reported on maternal mortality and our meta-analysis showed a non-significant reduction (three randomised trials, relative risk 0.79, 0.53 to 1.05, P=0.12; three non-randomised studies, 0.80, 0.44 to 1.15, P=0.26). Conclusion Perinatal and neonatal deaths are significantly reduced with strategies incorporating training and support of traditional birth attendants.

Keywords: Bangladesh, Care, Citation, Cochrane, Controlled Studies, Developing Countries, Effectiveness, Extraction, Health, Impact, Latin American, Literature, Maternal Mortality, Medline, Meta Analysis, Meta-Analysis, Model, Mortality, Neonatal-Mortality, Nursing, Outcomes, Pakistan, Perinatal, Reduction, Relative Risk, Review, Risk, Science, Science Citation Index, Sciences, Service, Systematic, Systematic Review, Traditional, Training, Trial, Web of Science

? Vilsboll, T., Christensen, M., Junker, A.E., Knop, F.K. and Gluud, L.L. (2012), Effects of glucagon-like peptide-1 receptor agonists on weight loss: Systematic review and meta-analyses of randomised controlled trials. *British Medical Journal*, **344**, Article Number: d7771.

Full Text: [2012\Bri Med J343, d7771.pdf](2012/Bri%20Med%20J343,%20d7771.pdf)

Abstract: Objective To determine whether treatment with agonists of glucagon-like peptide-1 receptor (GLP-1R) result in weight loss in overweight or obese patients with or without type 2 diabetes mellitus. Design Systematic review with meta-analyses. Data sources Electronic searches (Cochrane Library, Medline, Embase, and Web of Science) and manual searches (up to May 2011). Review methods Randomised controlled trials of adult participants with a body mass index of 25 or higher; with or without type 2 diabetes mellitus; and who received exenatide twice daily, exenatide once weekly, or liraglutide once daily at clinically relevant doses for at least 20 weeks. Control interventions assessed were placebo, oral antidiabetic drugs, or insulin. Data extraction Three authors independently extracted data. We used random effects models for the primary meta-analyses. We also did subgroup, sensitivity, regression, and sequential analyses to evaluate sources of intertrial heterogeneity, bias, and the robustness of results after adjusting for multiple testing and random errors. Results 25 trials were included in the analysis. GLP-1R agonist groups achieved a greater weight loss than control groups (weighted mean difference -2.9 kg, 95% confidence interval -3.6 to -2.2; 21 trials, 6411 participants). We found evidence of intertrial heterogeneity, but no evidence of bias or small study effects in regression analyses. The results were confirmed in sequential analyses. We recorded weight loss in the GLP-1R agonist groups for patients without diabetes (-3.2 kg, -4.3 to -2.1; three trials) as well as patients with diabetes (-2.8 kg, -3.4 to -2.3; 18 trials). In the overall analysis, GLP-1R agonists had beneficial effects on systolic and diastolic blood pressure, plasma concentrations of cholesterol, and glycaemic control, but did not have a significant effect on plasma concentrations of liver enzymes. GLP-1R agonists were associated with nausea, diarrhoea, and vomiting, but not with hypoglycaemia. Conclusions The present review provides evidence that treatment with GLP-1R agonists leads to weight loss in overweight or obese patients with or without type 2 diabetes mellitus.

Keywords: Adult, Analysis, Authors, Beta-Cell Function, Bias, Biphasic Insulin Aspart, Blood, Blood Pressure, Body Mass Index, Cholesterol, Clinical-Trials, Cochrane, Control, Control Groups, Diabetes, Diabetes Mellitus, Drugs, Exenatide, Exenatide Exendin-4, Extraction, Glucagon-Like Peptide-1, Glycemic Control, Hypoglycaemia, Insulin, Interventions, Medline, Metformin, Multiple Testing, Non-Inferiority, Open-Label Trial, Oral, Overweight, Parallel-Group, Patients, Plasma, Pressure, Primary, Review, Robustness, Science, Sensitivity, Systematic, Systematic Review, Treatment, Type 2, Type 2 Diabetes, Type 2 Diabetes Mellitus, Type-2 Diabetes-Mellitus, Web of Science, Web-of-Science, Weight Loss

# Title: Brittonia

Full Journal Title: Brittonia

ISO Abbreviated Title: Brittonia

JCR Abbreviated Title: Brittonia

ISSN: 0007-196X

Issues/Year: 4

Journal Country/Territory: United States

Language: English

Publisher: New York Botanical Garden

Publisher Address: Publications Dept, Bronx, NY 10458

Subject Categories:

Plant Sciences: Impact Factor 0.156, / (2000)

? Leon, B. and Moran, R.C. (1996), Cyathea concordia (Cyatheaceae), a new pinnate-pinnatifid tree fern from the Peruvian/Ecuadorian border. *Brittonia*, **48** (4), 511-513.

Abstract: Cyathea concordia, described herein, resembles C. palaciosii but can be distinguished by its indusiate sori, pinnae with hairs restricted to the veins, and nearly concolorous stem scales.

Keywords: Cyathea Concordia, Cyatheaceae, Ferns, Peru

# Title: Bronte Studies

Full Journal Title: Bronte Studies

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Heywood, C. (2010), Vigny’s Kitty Bell, Eugène Sue’s *Mathilde* and ‘Kitty Bell’. *Bronte Studies*, **35**, 40-56.

Full Text: [2010\Bro Stu35, 40.pdf](2010/Bro%20Stu35,%2040.pdf)

Abstract: The tales ‘Kitty Bell’ and ‘Giulio and Eleanor’ appeared as interpolations in the serial ‘Mary Lawson by M. Eugene Sue’, published in The London Journal, a penny weekly, during 1850/51. Handwriting and other clues identify G. W. M. Reynolds as the compiler of this novel from three manuscript sources, and as the pseudonymous correspondent ‘K.T.’ whose letter to Charlotte, claiming ‘Kitty Bell’ as a ‘paraphrase’ of Jane Eyre, has prompted the theory that ‘Kitty Bell’ was a plagiarism of the novel. The name Kitty Bell and associated topics appear among the works by Alfred de Vigny and Eugene Sue that contributed to Charlotte’s literary formation. In that context, this article develops the view, first advanced by Mrs Ellis H. Chadwick, that Charlotte wrote ‘Kitty Bell’ as a first attempt at the subject of Jane Eyre. ‘Giulio and Eleanor’ emerges as her matching sketch for The Professor.(1).

Keywords: ‘Kitty Bell’, Alfred De Vigny, Brussels Publishing, Charlotte Bronte, E.D. Forgues, Eugene Sue, G.W.M. Reynolds, Pensionnat Heger, Plagiarism, Romantic Realism

# Title: Bryologist

Full Journal Title: Bryologist

ISO Abbreviated Title: Bryologist

JCR Abbreviated Title: Bryologist

ISSN: 0007-2745

Issues/Year: 4

Journal Country/Territory: United States

Language: English

Publisher: Amer Bryological Lichenological Society Inc

Publisher Address: C/O James D Lawrey, George Mason Univ, Dept Biology Msn 3E1, Fairfax, VA 22030

Subject Categories:

Plant Sciences: Impact Factor 0.921, /

? Vitt, D.H. (1995), The genus calomnion (Bryopsida)-Taxonomy, phylogeny, and biogeography. *Bryologist*, **98** (3), 338-358.

Abstract: The genus Calomnion (Calomniaceae) contains nine species, four of these taxa are here described as new. Seven species have geographic ranges restricted to individual Austral, South Pacific, or Southeast Asian island groups. Two species are more widely distributed in Australasia and the South Pacific. The genus is divided into two subgenera based on derived morphological features. Patristically, the subgenus Calomnion is less derived than subgenus Nesocalomnion. Dispersal and diversification of the subgenus Nesocalomnion appears to have largely occurred within the past 30 million years, with dispersal from New Zealand northward to Fiji and then Vanuatu. Subsequent dispersal from either New Zealand or Fiji occurred to Lord Howe Island and then Norfolk Island and finally to Samoa and subsequently Tahiti. The subgenus Calomnion may have dispersed to New Caledonia, Australia, and Ceram within the past 20 million years, or the present day distributions may represent more relict distributions. The high level of endemism on relatively young South Pacific islands and highly specialized epiphytic habitat of tree fern trunks suggest strong dispersal abilities followed by rapid evolutionary change on individual island areas, all occurring relatively recently.

Keywords: Pacific

? Frahm, J.P. (1996), Campylopus extinctus n sp (Musci, Dicranaceae), an apparently extinct species from Brazil. *Bryologist*, **99** (2), 218-220.

Abstract: Campylopus extinctus J.-P. Frahm spec. nov. is described from Brazil on the basis of a collection kept in the herbarium of the University of Gottingen, taken from the stem of a tree fern cultivated in the greenhouse of the Botanical Garden of Gottingen. The tree fern was introduced from Santa Catarina, Brazil in 1904. The species of Campylopus is known only from this collection and to date has not been collected in the wild. For this reason the species is thought to be extinct in the wild.

# Title: Buffalo Law Review

Full Journal Title: Buffalo Law Review

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Malloy, T.F. (2010), The social construction of regulation: Lessons from the war against command and control. *Buffalo Law Review*, **58** (2), 267-355.

Full Text: [2010\Buf Law Rev58, 267.pdf](2010/Buf%20Law%20Rev58,%20267.pdf)

Keywords: Bibliometrics, Citation Analysis, Decision-Making, Efficiency, Environmental-Regulation, Imperial Scholar, Law, Local Legal Culture, Protection, Technology

# Title: Building and Environment

Full Journal Title: [Building and Environment](http://sdos.ejournal.ascc.net/cgi-bin/sciserv.pl?collection=journals&journal=03601323)

ISO Abbreviated Title: Build. Environ.

JCR Abbreviated Title: Build Environ

ISSN: 0360-1323

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: Pergamon-Elsevier Science Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, England

Subject Categories:

Construction & Building Technology Engineering, Environmental Engineering, Civil: Impact Factor

# Title: Building an Information Society for All. Proceedings of the International Conference on Libraries, Information and Society, ICoLIS 2007

Full Journal Title: Building an Information Society for All. Proceedings of the International Conference on Libraries, Information and Society, ICoLIS 2007

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Goon, F.M. and Singh, D. (2007), Trends in Malaysian LIS research 1996-2006: A content analysis of the MJLIS articles. *Building an Information Society for All. Proceedings of the International Conference on Libraries, Information and Society, ICoLIS 2007*, 397-406.

Abstract: This paper is a content analysis of library and information science (LIS) research by Malaysian authors, which were published in the Malaysian Journal of Library & Information Science (MJLIS) from 1996 to 2006. The aim is to find out how Malaysian LIS research is distributed over topics, which research methods are favoured, and the pattern of authorship. An author is regarded as Malaysian by virtue of affiliation to a Malaysian institution as stated in the published article. The ratio of male to female authors changed from 5:2 to 1:2 over the eleven years. Research focused consistently on 3 main classes; information storage & retrieval (IS&R), information seeking, and scientific and professional communication. They totaled up to at least 50% and as high as 100% of the research articles every year. There was strong emphasis on empirical research strategies, which were utilized for at least 50% of the research carried out per year. The survey and bibliometric method were the most engaged methods.

Keywords: Affiliation, Analysis, Authorship, Bibliometric, Communication, Content Analysis, Distributed, Female, Information, Information Science, Library and Information Science, LIS, Male, Methods, Pattern, Professional Communication, Research, Science, Storage, Survey

? Chu, K.L. and Jee, F.W. (2007), A scientometric and social network analysis of two business schools. *Building an Information Society for All. Proceedings of the International Conference on Libraries, Information and Society, ICoLIS 2007*, 435-445.

Abstract: In this paper, the ecologies of collaboration among the academics at two business schools, namely, the Nanyang Business School (NBS) and INSEAD are analysed by analysing the ten-year publication output of the two schools using techniques from both scientometrics and social network analysis. These two lenses provide two views that complement each other. When the two views are taken together, they make it possible for the ecology of collaboration at the two schools to be understood more holistically. The publications, retrieved from the Institute of Scientific Information’s Web of Science database, were analysed on a sliding window basis over single-year time spans beginning with 1995 and ending with 2004. UCINET was then used to compute the social network parameters and to plot the sociograms. From the scientometric perspective, INSEAD had the larger publication output of 565 papers, compared with NBS’s 234 papers. The levels of coauthorship at both schools were comparable, at 2.11 authors per paper in NBS and 2.21 papers per author at INSEAD. The low levels of coauthorship, the lack of an inflationary trend in coauthorship over the ten years, and the large percentage of papers that are coauthored by six or less authors (99.6%) indicate that the phenomenon of hyperauthorship was not at play in either school. However, major differences were found in the author productivity, citation profile, and the popular publication outlets. INSEAD’s research papers received more citations compared with NBS’s (29.1 % of NBS’s papers were uncited compared with 16.8% of INSEAD’s), and 15 out of the 16 most heavily cited papers (those that received fifty citations or more) were from INSEAD. From the social network perspective, the author-to-author sociograms of both NBS and INSEAD were fragmentary, and comprised numerous small components averaging 2.3 to 4.2 nodes per component. The sociograms were symptomatic of the typical business school culture, which is low in both sociability and solidarity. The low density values also confirm the low level social capital in the networks of both schools.

Keywords: Analysis, Author Productivity, Business, Citation, Citations, Coauthorship, Collaboration, Culture, Database, Ecology, Network, Network Analysis, Networks, Papers, Productivity, Publication, Publications, Research, Scientometric, Scientometrics, Small, Social, Social Network Analysis, Solidarity, Techniques, Trend, Web of Science

? Yazit, N. and Zainab, A. (2007), Malaysian publication contributions to the field of library and information science. *Building an Information Society for All. Proceedings of the International Conference on Libraries, Information and Society, ICoLIS 2007*, 407-420.

Abstract: The paper (a) described the total number and spread of publications produced by Malaysian contributors in the field of LIS for the period 1965 and 2005; (b) identified the active authors and authorship pattern, (c) identified the affiliation status of Malaysian researchers; (d) the preferred channel of research publications; and (e) the subject areas covered by the published works in LIS. The sample of the study comprised all located publications in the field of LIS by Malaysian authors published in Malaysia and abroad. Data was collected from LIS related online databases; online public library catalogues of selected libraries in Malaysia and Malaysian LIS journals. The data used in this study comprised 1045 publications which were based on accessible literature only. The results indicated (a) Malaysian LIS authors preferred publishing in journals (511, 48.9%), followed by conference papers (474, 45.4%), books (31, 2.9%) and book chapters (29, 2.8%); (b) even though the publication distribution fluctuated the moving average depicted a steady incremental trend over the 41-year period, (c) a total of 506 Malaysian authors contributed to the 1045 publications and 309 authors are one-time publishers, while the rest published between 2 and to as high as 52 publications; (d) the active Malaysian authors in LIS were affiliated to 131 institutions and the three dominant productive institutions were the National Library of Malaysia, University of Malaya Library and MLIS programme at the University of Malaya; (e) the subject areas written about in order of productivity were Management of library and information centres (30%), Information services (23%); Collection development and management (16%), ICT applications in LIS (14%), Information sources (10%), Organization of information (5%) and Legal issues in LIS (2%). The results revealed the areas actively written about, the productive authors and institutions. It highlights the areas which needed improvements and expansion in the field.

Keywords: Affiliation, Authorship, Authorship Pattern, Data, Databases, Development, Distribution, Field, Information, Information Science, Institutions, Journals, Library And Information Science, LIS, Literature, Malaysia, Management, Papers, Pattern, Productivity, Public, Publication, Publications, Published Works, Publishing, Research, Science, Services, Sources, Trend

# Title: Building Research & Information

Full Journal Title: [Building Research & Information](http://www.informaworld.com/smpp/title~content=t713694730)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Winch, G. (1998), Zephyrs of creative destruction: understanding the management of innovation in construction. *Building Research & Information*, **26** (5), 268-279.

Full Text: [1998\Bui Res Inf26, 268.pdf](1998/Bui%20Res%20Inf26,%20268.pdf)

Abstract: The aim of this paper is to propose a comprehensive framework for the management of innovation in construction, addressing the construction innovation problem in two distinctive ways at the institutional and firm levels. First, an institutional perspective derived from research on complex systems industries is developed which provides an alternative to the volume production model for construction innovation research. The roles of the innovation infrastructure, innovation superstructure and systems integrator are all identified and applied to construction. The paper then moves on to the firm level where the two key innovation dynamics - the top-down adoption/implementation dynamic and the bottom up problem solving/learning dynamic are identified. The paper ends by calling for more case studies of the trajectories of construction innovations.

L’objet de cet article est de proposer un cadre global ou gerer l’innovation dans le secteur de la construction, l’auteur aborde la question de l’innovation sous deux angles differents, au niveau des institutions et celui des industriels. En un premier temps, on developpe une perspective institutionelle derivee de la recherche sur les systemes complexes, on debouche alors sur une alternative au modele de volume de production applique a la recherche en matiere d’innovation dans la construction. Les roles de l’infrastructure et de la superstructure de l’innovation et celcui de l’integrateur de systemes sont tous definis et appliques a la construction. L’auteur passe ensuite au niveau de l’industriel et definit les deux axes principaux de l’innovation, la dynamique descendante d’adoption/mise en u uvre, d’une part et, d’autre part, la dynamique ascendante de resolution des problemes et d’enseignment a en tirer, L’auteur demande, pour conclure, que soient presentes davantage de cas d’etude portant sur les itineraires suivis par des innovations dans le secteur de la construction.

Keywords: Construction Innovation, Systems Integrator, Complex Product System, Adoptionimplementation, Problem Solvinglearning

# Title: Bulgarian Chemical Communications

Full Journal Title: Bulgarian Chemical Communications

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Lihareva, N., Dimova, L., Petrov, O. and Tzvetanova, Y. (2010), Kinetics and equilibrium of ion exchange of Ag+ on Na-clinoptilolite. *Bulgarian Chemical Communications*, **42** (4), 305-311.

Full Text: 2011\Bul Che Com42, 305.pdf

Abstract: This study investigates silver sorption by Na-clinoptilolite. Bath sorption procedure is applied in order to study the kinetics and equilibrium of Ag+ uptake. Kinetic sorption data are analyzed using a pseudo-first- and pseudo-second-order model. It is found that pseudo-second-order model provides the most appropriate description of data for both studied 50 and 517 mg/L initial concentrations. The respective apparent pseudo-second-order rate constants k(2) are calculated to be 5.12 and 1.07 g/(meq min). The equilibrium data fit well to the Langmuir isotherms model from which the maximum uptake of Ag+ is estimated to be q(m,calc) = 234.28 meq/g. The Freundlich model is found to be less appropriate. The total exchange capacity (TEC) is calculated from the chemical composition of the sample and the maximum exchange level (MEL) is obtained experimentally. The obtained results are compared with data on kinetics and equilibrium of Ag+ sorption by clinoptilolite and other zeolites found in the literature, and discussed appropriately.

Keywords: Ag+ Sorption, Aqueous-Solutions, Cu2+, Equilibrium Isotherms, Ion Exchange Capacity, Kinetics, Mordenite, Na-Clinoptilolite, Natural Clinoptilolite, Pb2+, Removal, Silver, Sorption, Water, Zeolites

# Title: Bulgarian Historical Review-Revue Bulgare d Histoire

Full Journal Title: Bulgarian Historical Review-Revue Bulgare d Histoire

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0204-8906

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Miloseva, M. (1999), ‘*Bulgarian Historical Review*’ marks its 25th anniversary - With an accompanying bibliography (1474 references) and scientometric analysis. *Bulgarian Historical Review-Revue Bulgare d Histoire*, (3-4), 222-295.

Keywords: Analysis, Bibliography, References, Scientometric, Scientometric Analysis

? Miloseva, M. (2000), “*Bulgarian Historical Review*” marks its 25th anniversary. Bibliography and scientometric analysis. *Bulgarian Historical Review-Revue Bulgare d Histoire*, (3-4), 216-253.

Keywords: Analysis, Scientometric, Scientometric Analysis

# Title: Bulletin de l Academie Nationale de Medecine

Full Journal Title: Bulletin de L Academie Nationale de Medecine

ISO Abbreviated Title: Bull. Acad. Natl. Med.

JCR Abbreviated Title: B Acad Nat Med Paris

ISSN: 0001-4079

Issues/Year: 9

Journal Country/Territory: France

Language: English

Publisher: Academie Natl De Medecine

Publisher Address: 16 Rue Bonaparte, 75272 Paris 06, France

Subject Categories:

Medicine, General & Internal: Impact Factor

? Robert, M. (1997), Degradation of soil qualify: Risks for human health and environment. *Bulletin de l Academie Nationale de Medecine*, **181** (1), 21-42.

Abstract: This is a general survey of soil quality degradation and its consequences on human health and environment quality. The first part deals with the large complexity and reactivity of soil and its specific position as an environmental interface. The origin and behaviour of the main pollutant accumulated in soils are treated in the second and third parts. A special attention is paid to the main pollutants i.e anions, cations (trace elements), pesticides persistant organic pollutants (POP), bacteria, DNA. As they are closely linked to the soil constituants (clays, humus.), their real toxicity or effectiveness is examined. In the last part, the risks of soil pollutants for the environment and human health are shortly considered. Direct risks for health are few and mainly concern the ingestion of polluted soil by children, as regards the ecotoxicological and toxicological risk the Critical pollutant loads have to be defined. The main risks are indirect and involve pollution of either the food chain or of the water and sediments by vertical or lateral (erosion) transfers.

# Title: Bulletin de l Academie Polonaise des Sciences-Serie des Sciences Chimiques

Full Journal Title: Bulletin de l Academie Polonaise des Sciences-Serie des Sciences Chimiques

ISO Abbreviated Title:

JCR Abbreviated Title: Bull Acad Pol Sci Chim

ISSN: 0568-5230

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Baranski, A., Diakovit.V. and Galuszka, J. (1973), Elovich adsorption kinetics of hydrogen surface forms on ZnO. *Bulletin de l Academie Polonaise des Sciences-Serie des Sciences Chimiques*, **21** (7-8), 611-616.

? Galuszka, J. (1976), New kinetic-equation of adsorption and discontinuities in Elovich plot. *Bulletin de l Academie Polonaise des Sciences-Serie des Sciences Chimiques*, **24** (1), 51-60.

# Title: Bulletin of the Academy of Military Medical Sciences

Full Journal Title: [Bulletin of the Academy of Military Medical Sciences](http://e48.cnki.net/KNS50/Navi/item.aspx?NaviID=1&BaseID=JSYX&NaviLink=%e5%86%9b%e4%ba%8b%e5%8c%bb%e5%ad%a6%e7%a7%91%e5%ad%a6%e9%99%a2%e9%99%a2%e5%88%8a)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 1000-5501

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Liu, C., Zhang, Y.X., Li, Z. and Wang, Y.M. (2006), Analysis of American R&D status of special required medicines for national security. *Bulletin of the Academy of Military Medical Sciences*, **6** (??), ??-??.

Abstract: Objective: To analyze the American R&D status of special required medicines for national security. Methods: Bibliometric analysis was used. Results: Among the 484 articles of literature about special required medicines, for (national) security, the largest portion was for environmental medicines, with heat-related casualty protection and combat stress control accounting for the considerable proportion; the second portion was for the prevention and treatment of injuries induced by weapons of mass destruction, ...

Keywords: National Security, Special Required Medicine, Bibliometrics, Drugs, Essential

# Title: Bulletin of the Academy of Sciences of the USSR Division of Chemical Science

Full Journal Title: [Bulletin of the Academy of Sciences of the USSR Division of Chemical Science](http://www.springerlink.com/content/106494/?p=98e024ee422449e29bd4cb6378e0d871&pi=0)

ISO Abbreviated Title:

JCR Abbreviated Title: Bull Acad Sci Ussr D Chem Sci

ISSN: 0568-5230

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Dubinin, M.M. (1974), Surface and porosity of adsorbents. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (5), 958-971.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 958.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%20958.pdf)

? Dubinin, M.M., Isirikyan, A.A. and Regent, N.I. (1974), Isotherms of equilibrium exchange of Mg2+, Ca2+, Zn2+, and Cd2+ ions on NaA zeolite. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (6), 1172-1177.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1172.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201172.pdf)

? Dubinin, M.M., Nikolaev, K.M., Polyakov, N.S., Seregina, N.I. and Tokarev, Y.A. (1974), Investigation of adsorption of vapors of various organic-substances. 3. Characteristics of microporous structure of adsorbents in case of manifestation of activated adsorption. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (7), 1402-1406.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1402.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201402.pdf)

? Sarakhov, A.I., Dubinin, M.M., Kalashnikov, S.M. and Bitman, Y.S. (1974), Investigation of dynamics of adsorption of water vapors by synthetic zeolites. 1. Method of investigation of dynamics of adsorption for a fixed layer of adsorbent. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (9), 1855-1861.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1855.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201855.pdf)

? Dubinin, M.M., Isirikyan, A.A. and Mirzan, D.I. (1974), Investigation of adsorption complexes in zeolites by method of IR spectroscopy communication. 1. Adsorption system NaA-H2O. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (8), 1624-1629.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1624.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201624.pdf)

? Erashko, I.T., Kadlets, O., Voloshchuk, A.M. and Dubinin, M.M. (1974), Structure of microporous adsorbents and kinetics of physical adsorption. 1. Experimental study of kinetics of adsorption of benzene and n-pentane vapors by microporous carbon adsorbents. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (9), 1862-1866.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1862.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201862.pdf)

? Voloshchuk, A.M., Dubinin, M.M., Erashko, I.T., Zolotarev, P.P., Kadlets, O. and Ulin, V.I. (1974), Structure of microporous adsorbents and kinetics of physical adsorption. 2. Calculation of diffusion coefficients of benzene and n-pentane in micropores and transport pores of microporous carbon adsorbents. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (9), 1867-1872.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 1867.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%201867.pdf)

? Dubinin, M.M., Isirikyan, A.A. and Regent, N.I. (1974), Reaction energy of H2O with Ca2+ in zeolite CaA. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (11), 2568-2569.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 2568.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%202568.pdf)

? Zolotarev, P.P. and Starov, V.M. (1974), Kinetics of adsorption of a mixture of two substances from a flux. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (12), 2577-2581.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 2577.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%202577.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1974), Determination of internal diffusion coefficients from experimental kinetic curves for spherical and cylindrical granules of an adsorbent with a bidisperse porous structure during adsorption from a restricted volume. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **23** (12), 2731-2733.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci23, 2731.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci23,%202731.pdf)

? Zolotarev, P.P. (1975), Consideration of diffusion resistance of entrance into microporous formations in adsorption kinetics equations for adsorbents with a bidisperse structure. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (1), 185-186.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 185.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%20185.pdf)

? Khabalov, V.V. and Glushchenko, V.Y. (1975), Not limited external diffusion rate of m-dinitrobenzene adsorption from an aqueous salt solution on carbon black. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (1), 187.

Keywords: Adsorption, Diffusion

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 187.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%20187.pdf)

? Fedorov, V.M., Kharyanova, T.N., Zhilenkov, I.V. and Dubinin, M.M. (1974), Electrical relaxation of adsorbed water molecules in NaA and NaCaA zeolites in region of low degrees of filling. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (2), 208-211.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 208.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%20208.pdf)

? Dubinin, M.M., Isirikyan, A.A. and Mirzau, D.I. (1974), Conformation of adsorption complex H2O...Na+ in zeolite NaX. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (2), 419.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 419.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%20419.pdf)

? Voloshchuk, A.M., Dubinin, M.M. and Erashko, I.T. (1975), Structure of microporous adsorbents and kinetics of physical adsorption. 3. Study of kinetics of adsorbtion of bromobenzene vapors by microporous carbon adsorbents by method of X-ray deexcitation. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (3), 445-447.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 445.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%20445.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1975), Radial equilibrium adsorption dynamics for rectangular isotherm. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (6), 1350-1352.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 1350.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%201350.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1975), Initial stage of internal diffusion adsorption kinetics in adsorbents with a biporous structure. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **24** (10), 2259-2261.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci24, 2259.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci24,%202259.pdf)

? Ostrovskii, D.I., Dmitrenko, L.V., Samsonov, G.V. and Lebedev, G.A. (1976), Features of kinetics of adsorption of proteins by macroporous polyelectrolytes. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **25** (3), 529-531.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci25, 529.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci25,%20529.pdf)

? Zolotarev, P.P. and Kalinichev, A.I. (1976), Approximate calculation of kinetic curves in case of inner diffusion kinetics and convex adsorption isotherms. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **25** (7), 1566-1569.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci25, 1566.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci25,%201566.pdf)

? Yakubov, T.S., Bering, B.P., Dubinin, M.M. and Serpinskii, V.V. (1977), Relationships between parameters of adsorption isotherm equations of theory of bulk filling of micropores and osmotic adsorption theory. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (2), 419-422.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 419.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20419.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1977), Internal diffusion in a biporous adsorbent having a rectangular adsorption isotherm. 1. Formulation of problem and basic equations. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (3), 450-454.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 450.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20450.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1977), Internal diffusion in a biporous adsorbent having a rectangular adsorption isotherm. 2. Solution of problem using approximation kinetic functions for microporous formations. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (3), 454-459.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 454.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20454.pdf)

? Bering, B.P., Serpinskii, V.V. and Yakubov, T.S. (1977), Osmotic theory of adsorption of gas mixtures. 1. Integral Gibbs equation and adsorption isotherm. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (4), 659-666.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 659.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20659.pdf)

? Kataeva, L.I. and Ulin, V.I. (1977), Numerical calculation and analysis of kinetic curves for biporous adsorbents with linear adsorption isotherms. 1. Method of calculating kinetic curves. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (5), 895-898.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 895.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20895.pdf)

? Zolotarev, P.P., Starov, V.M. and Ulin, V.I. (1977), Internal diffusion in a biporous adsorbent with a rectangular adsorption isotherm. 3. Exact integral equation for boundary of adsorption wave front. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (5), 899-904.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 899.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20899.pdf)

? Yakubov, T.S., Bering, B.P. and Serpinskii, V.V. (1977), The osmotic theory of adsorption of gas mixtures. 2. General equation of adsorption isotherm of a gas mixture. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (5), 909-914.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 909.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%20909.pdf)

? Dubinin, M.M., Alekseeva, N.I., Nikolaev, K.M., Polyakov, N.S. and Polyakov, V.N. (1977), The adsorption of vapors of various organic compounds. 4. Kinetics of adsorption of vapors of organic compounds by sorbents with various types of micropore structures. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (6), 1139-1142.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 1139.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%201139.pdf)

? El’kin, G.E., Melenevskii, A.T. and Samsonov, G.V. (1977), Dynamics of ion exchange by pellicular ionites with internal diffusion kinetics and a rectangular adsorption isotherm. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (6), 1143-1148.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 1143.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%201143.pdf)

? Venitsianov, E.V. (1977), Effect of adding a fine fraction of sorbent in case of dynamics of sorption with an outer diffusion rate and a linear isotherm. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (9), 1946-1949.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 1964.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%201964.pdf)

? Venitsianov, E.V. (1977), Solution of problem of sorption dynamics for a mixture of sorbents taking into account mass exchange between sorbent fractions (outer diffusion, linear isotherm). *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (9), 1950-1953.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 1950.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%201950.pdf)

? Bakaev, V.A., Dubinin, M.M. and Korchagin, E.Y. (1977), Determination of effective depth of liquid-vapor transition layer from polymolecular adsorption isotherm. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (10), 2035-2039.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 2035.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%202035.pdf)

? Zolotarev, P.P., Kataeva, L.I. and Ulin, V.I. (1977), Calculation and analysis of kinetic curves for biporous adsorbents with linear adsorption isotherms. 2. Analysis of results. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (12), 2456-2459.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 2456.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%202456.pdf)

? Kärger, J., Caro, J. and Bülow, M. (1977), Effect of crystal size on kinetics of alkane adsorption on NaCaA zeolites. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **26** (12), 2464-2468.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci26, 2464.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci26,%202464.pdf)

? Avramenko, V.A., Bylin, G.A., Glushchenko, V.Y. and Radaev, E.F. (1978), Kinetics of adsorption of aliphatic alcohols from aqueous solution by activated charcoal. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **27** (1), 13-15.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci27, 13.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci27,%2013.pdf)

? Bazin, V.M. and Khurgin, Y.I. (1978), Hysteresis of the microwave dielectric isotherm of the hydration of α-chymotrypsin. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **27** (5), 1066.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci27, 1066.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci27,%201066.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1978), Internal diffusion in a biporous adsorbent with rectangular adsorption isotherm. 4. Integral equations for adsorption wave front movement in spherical and cylindrical grains. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **27** (11), 2189-2193.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci27, 2189.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci27,%202189.pdf)

? Zolotarev, P.P. and Ulin, V.I. (1979), An approximation solution for the problem of internal diffusion in a biporous sorbent with langmuir isotherm. 1. The initial stage of the diffusion process in laminar or cylindrical grains with impermeable side surfaces. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **28** (8), 1565-1568.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci28, 1565.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci28,%201565.pdf)

? Zolotarev, P.P. and Pilipenko, A.I. (1980), The kinetics of broken-line-isotherm adsorption and desorption. 1. The case in which mass transfer in the transport pore system is the limiting stage in the sorption process. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **29** (1), 19-25.

Full Text: [1960-80\Bul Aca Sci USS Div Che Sci29, 19.pdf](1960-80/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci29,%2019.pdf)

? Avramenko, V.A., Glushchenko, V.Y. and Golikov, A.P. (1987), Selection of a model of the adsorption layer in adsorption of solutions by solids. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **36** (6), 1118-1122.

Full Text: [1987\Bul Aca Sci USS Div Che Sci36, 1118.pdf](1987/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci36,%201118.pdf)

? Voloshchuk, A.M., Dubinin, M.M., Moskovskaya, T.A., Ivakhnyuk, G.K. and Fedorov, N.F. (1988), Pore structure and chemical state of the surface of carbon adsorbents. 1. selection of the comparative isotherm of adsorption of nitrogen vapors on the surface of carbon adsorbents. *Bulletin of the Academy of Sciences of the USSR Division of Chemical Science*, **37** (2), 204-209.

Full Text: [1988\Bul Aca Sci USS Div Che Sci37, 204.pdf](1988/Bul%20Aca%20Sci%20USS%20Div%20Che%20Sci37,%20204.pdf)

# Title: Bulletin of the American Meteorological Society

Full Journal Title: Bulletin of the American Meteorological Society

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Mishchenko, M.I. and Travis, L.D. (2008), Gustav Mie and the evolving discipline of electromagnetic scattering by particles. *Bulletin of the American Meteorological Society*, **89** (12), 1853-??.

Abstract: The year 2008 marks the centenary of the seminal paper by Gustav Mie on electromagnetic scattering by homogeneous spherical particles. Having been cited in almost 4,000 journal articles since 1955 (according to the Science Citation Index Expanded database), Mie’s paper has been among the more influential scientific publications of the twentieth century. It has affected profoundly the development of a great variety of natural science disciplines including atmospheric radiation, meteorological optics, remote sensing, aerosol physics, astrophysics, and biomedical optics. Mie’s paper represented a fundamental advancement over the earlier publications by Ludvig Lorenz in that it was explicitly based on the Maxwell equations, gave the final solution in a convenient form suitable for practical computations, and imparted physical reality to the abstract concept of electromagnetic scattering. The Mie solution anticipated such general concepts as far-field scattering and the Sommerfeld-Silver-Muller boundary conditions at infinity as well as paved the way to such important extensions as the separation of variables method for spheroids and the T-matrix method. Key ingredients of the Mie theory are quite prominent in the superposition T-matrix method for clusters of particles and even in the recent microphysical derivation of the radiative transfer equation. Among the most illustrative uses of the Mie solution have been the explanation of the spectacular optical displays caused by cloud and rain droplets, the identification of sulfuric acid particles in the atmosphere of Venus from Earth-based polarimetry, and optical particle characterization based on measurements of morphology-dependent resonances. Yet it is clear that the full practical potential of the Mic theory is still to be revealed. (Page 1853).

Keywords: Citation, Matter, Photon, Polarization, Publications

# Title: Bulletin of the American Physical Society

Full Journal Title: Bulletin of the American Physical Society

ISO Abbreviated Title:

JCR Abbreviated Title: Bull Amer Phys Soc

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Hayes, C.F. (1971), Application of Gibbs adsorption isotherm to a charged liquid- vapor interface. *Bulletin of the American Physical Society*, **16** (8), 828-??.

? Mcmahan, A.K. (1976), Isotherm and hugoniot for compressed aluminum. *Bulletin of the American Physical Society*, **21** (11), 1303.

? Mcmahan, A.K. (1978), Cesium isotherm and electronic phase-transition. *Bulletin of the American Physical Society*, **23** (1), 50-51.

? Beni, G. and Shay, J.L. (1979), New electrochromism isotherm in anodic iridium oxide-films. *Bulletin of the American Physical Society*, **24** (3), 399.

# Title: Bulletin of the Belgian Mathematical Society-Simon Stevin

Full Journal Title: Bulletin of the Belgian Mathematical Society-Simon Stevin

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Del Corso, G.M. and Romani, F. (2009), Versatile weighting strategies for a citation-based research evaluation model. *Bulletin of the Belgian Mathematical Society-Simon Stevin*, **16** (4), 723-743.

Abstract: After a quick review of the most used numerical indicators for evaluating research, we present an integrated model for ranking scientific publications together with authors and journals. Our model relies on certain adjacentcy matrices obtained from the relationship between papers, authors, and journals. These matrices are first normalized to obtain stochastic matrices and then are combined together using appropriate weights to form a suitable irreducible stochastic matrix whose dominant eigenvector provides the desired ranking. Our main contribution is a in-depth analysis of various strategies for choosing the weights, showing their probabilistic interpretation and showing how they affect the outcome of the ranking process. We also prove that, by solving an inverse eigenvector problem, we can determine a weighting strategy in which the relative importance of papers, authors, and journals is chosen by the final user of the ranking algorithm. The impact of the different weighting strategies is analyzed also by means of extensive experiments on large synthetic datasets.

Keywords: Analysis, Author Self-Citations, Contribution, Evaluation, Impact, Impact Factor, Journals, Macro, Pagerank, Perron Vector, Perturbation Results, Publications, Research, Tool

# Title: Bulletin du Cancer

Full Journal Title: Bulletin du Cancer

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0007-4551

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Lavelle, F., Guerittevoegelein, F. and Guenard, D. (1993), Taxotere - from yews needles to patients. *Bulletin du Cancer*, **80** (4), 326-338.

Full Text: 1993\Bul Can80, 326.pdf

Abstract: Taxotere [N-debenzoyl-N-tert-butoxycarbonYl-10-deacetyl taxol] is a new chemical entity obtained by semisynthesis from 10-deacetylbaccatin III, a non cytotoxic precursor extracted from the needles of the European yew Taxus baccata. Taxotere retains the unique mechanism of action of taxol and inhibits the depolymerisation of microtubules into tubulin. In vitro, Taxotere is cytotoxic against murine and human tumor cells with IC50 values ranging from 4 to 35 ng/ml. Taxotere inhibits the clonogenic properties of fresh human tumor cells at clinically relevant concentrations. Taxotere is highly active in vivo against several experimental models: it is 2.7-fold more active than taxol on a log cell kill basis against B16 melanoma; ten out of the twelve models of grafted murine tumors tested respond to Taxotere; it is active with 80% complete regressions against advanced C38 colon adenocarcinoma and PO3 pancreatic ductal adenocarcinoma. Finally, Taxotere is active against several human xenografts implanted in nude mice. Safety studies were performed in dogs and mice according to NCI guidelines. Toxicological effects are observed mostly is tissues with high cell turnover (bone marrow in mice and dogs, gastrointestinal tract in dogs only) or in those where microtubules play an important role (peripheral nerves in mice only). Because of its availability, due to an efficient process using a renewable source of natural precursor, its preclinical profile (higher antitumoral activity than taxol with a comparable toxicological profile) and its unique mechanism of action, Taxotere has entered Phase I clinical trials in Europe, United States and Japan. The dose limiting toxicity is a neutropenia. Evidence of clinical activity has been noted (breast, ovarian, lung). Taxotere is now in Phase II clinical trials.

Keywords: Taxotere, Taxol, Taxoids, New Drugs, Vicinal Oxyamination, Taxol Derivatives, Taxus-Baccata, Breast-Cancer, Cell-Line, Analogs, Agent, Hemisynthesis, Resistance, Efficient

? Bonastre, J. and Pouvourville, G. (2006), How to measure research emerging from hospitals? The case of French comprehensive cancer centres. *Bulletin du Cancer*, **93** (11), 1144-1151.

Full Text: [2006\Bul Can93, 1144.pdf](2006/Bul%20Can93,%201144.pdf)

Abstract: Our objective was to assess and to compare research performance of French comprehensive cancer centres using bibliometric indicators. Papers recorded in Science Citation Index and published between 1997 and 2002 were identified through the address of the authors. Four indicators were used: the number of papers, the number of papers weighted by the impact factors of the journals in which they were published, the total number of citations received by the Papers of a centre and the number of papers in a selection of the most cited papers in the last ten years. 5 979 papers were identified. Median number of papers per centre was 187 (range: 48-1 490) and 595 (range: 133-12 935) when impact factors of the journals were considered. Median number of citations was 1746, For each indicator. three groups of performance were determined using distribution terciles and each centre was assigned to a tercile on the basis of its scientific production. Taking into account the impact factor of the papers modified the performance rank order as compared to the ranking based on the number of papers. But both impact measures (journals impact factors and number of citations) lead to the same rank order.

Keywords: Bibliometric, Bibliometric Indicators, Bibliometry, Cancer, Citations, Distribution, French, Groups, Hospital, Hospitals, Impact, Impact Factor, Impact Factors, Indicator, Indicators, Journal-Citation-Reports, Journals, Lead, Modified, Order, Performance, Production, Publications, Range, Rank, Ranking, Research, Research Performance, Research Performance Ranking, Science Citation Index, Scientific Production, Selection

# Title: Bulletin of the Chemical Society of Ethiopia

Full Journal Title: [Bulletin of the Chemical Society of Ethiopia](http://www.ajol.info/journal_index.php?ab=cse&jid=120)

ISO Abbreviated Title: Bull. Chem. Soc. Ethiop.

JCR Abbreviated Title: B Chem Soc Ethiopia

ISSN: 1011-3924

Issues/Year: 2

Journal Country/Territory: Ethiopia

Language: English

Publisher: Chem Soc Ethiopia

Publisher Address: PO Box 32934, Addis Ababa, Ethiopia

Subject Categories:

Chemistry, Multidisciplinary: Impact Factor 0.179, 117/125 (2005); Impact Factor 0.390, 117/140 (2009)

? Mdoe, J.E.G. and Mkayula, L.L. (1996), Adsorption of gold on activated carbons prepared from some Tanzanian carbonaceous agrowastes and bituminous coal. *Bulletin of the Chemical Society of Ethiopia*, **10** (1), 21-32.

Full Text: 1996\Bul Che Soc Eth10, 21.pdf

Abstract: A study on the adsorption capacity and kinetics of gold from aqueous solutions onto activated carbons prepared from some agrowastes and bituminous coal has been made. The carbons were characterised by nitrogen physisorption and their mineral impurities evaluated. The carbons obtained were mostly microporous with BET surface area ranging from 200 to 1000 m(2)g(-1). They also contained some inorganic materials. The gold adsorption capacity on the carbons was affected by the type of carbon, percentage carbon burn-off (%CBO), pretreatment, temperature and ionic composition of the adsorption medium. All source materials, except rice husks, produced carbons with good adsorption capacity. The adsorption was fast in the first hour and deceased gradually as equilibrium was approached The adsorption data was best described by an equation proposed by Laidera et al.

Keywords: Adsorbents, Adsorption, Adsorption Capacity, Aqueous Solutions, Cyanide, Equilibrium, Kinetics, Pretreatment

? Salami, N. and Adekola, F.A. (2002), A study of sorption of cadmium by goethite in aqueous solution. *Bulletin of the Chemical Society of Ethiopia*, **16** (1), 1-7.

Full Text: 2002\Bul Che Soc Eth16, 1.pdf

Abstract: Investigation has been carried out on the potential of a locally sourced goethite for the removal of: cadmium ion from aqueous solutions using batch. equilibration technique. The maximum uptake of cadmium is 6.4×10-2 mg/g-goethite. The sorption kinetics appears to be rapid as equilibrium was attained within a period of 1 hour. The highest sorption capacity was obtained for particle size with diameter (phi) 0.09 mm. Both infrared spectrophotometric and X-ray diffraction (XRD) techniques have also provided evidence for cadmium fixation on to the surface of the goethite. The sorption mechanism appears to follow Langmuir adsorption isotherm model. The Langmuir constants K and X-m (mass of Cd2+ required, to form monolayer on the entire surface of the goethite) were 0.096 mg/g-goethite and 0.075 mg/g-goethite, respectively.

Keywords: Sorption of Cadmium, Goethite, Sorption Kinetics, Sorption Mechanism, Langmuir Adsorption Isotherm

? Horsfall, Jr., M. and Spiff, A.I. (2005), Kinetic studies on the sorption of lead and cadmium ions from aqueous solutions by *Caladium bicolor* (wild cocoyam) biomass. *Bulletin of the Chemical Society of Ethiopia*, **19** (1), 89-102.

Full Text: [2005\Bul Che Soc Eth19, 89.pdf](2005/Bul%20Che%20Soc%20Eth19,%2089.pdf)

Abstract: Kinetic investigations are necessary for determining the rate of reaction and mechanism. The kinetics of the sorption of Pb2+ and Cd2+ from aqueous solution on to the biomass of C. bicolor was studied by batch,equilibrium technique. The removal of the two metal ions was found to be > 60% depending on the initial metal ion concentration during the contact time. The maximum sorption was found to be 75.11 mg/g and 25.30 mg/g for Pb2+ and Cd2+ at an equilibrium contact time of 150 min. The process of uptake is governed by film-diffusion controlled pseudo-second order reversible rate kinetics. The sorption capacity at any contact time has been evaluated and a Langmuir-type model equation has been developed to predict the optimized minimum operating time to determine a specific amount of metal ion sorption.

Keywords: Sorption Kinetics, Contact Time Optimization, Water Treatment, Heavy Metals Removal, Removal, Waste, Pith, Dye

? Singanan, M., Abebaw, A. and Vinodhini, S. (2005), Removal of lead ions from industrial waste water by using biomaterials: A novel method. *Bulletin of the Chemical Society of Ethiopia*, **19** (2), 289-294.

Full Text: 2005\Bul Che Soc Eth19, 289.pdf

Abstract: A simple cost effective and eco-friendly method for the remediation of lead from industrial wastewater has been investigated. A novel biomaterial, Tridax procumbens (Asteraceae) a medicinal plant, was used for the removal of lead ions from synthetic wastewater and the method was also applied for real sample analysis. The operational pH of the experimental solution was fixed as 4.5. The optimum amount of bioadsorbent was 3.5 g. The Pb(II) ions removal efficiency of the raw bioadsorbent was also determined. The removal efficiency of the activated carbon of the bioadsorbent was excellent. 98 % removal of Pb(II) ions was achieved at the dose rate of 3.5 g. The optimum contact time was estimated to be 160 minutes.

Keywords: Removal of Lead Ions, Industrial Wastewater, Biomaterial, Tridax Procumbens (Asteraceae), Ions, Adsorption

? Shimelis, B., Zewge, F. and Chandravanshi, B.S. (2006), Removal of excess fluoride from water by aluminum hydroxide. *Bulletin of the Chemical Society of Ethiopia*, **20** (1), 17-34.

Full Text: 2000\Bul Che Soc Eth20, 17.pdf

Abstract: The efficiency ofuntreated hydrated alumina (UHA) and thermally treated hydrated alumina (THA) obtained. from. hydrolysis of locally manufactured aluminum sulfate to remove fluoride from aqueous solution has been investigated in batch and continuous operation. The parameters considered were contact time and adsorbent dose, thermal pre-treatment of adsorbent, initial fluoride concentration and pH. The adsorption was rapid during the initial 20 min, but significant amount (> 90 %) was removed within one hour at an optimum adsorbent dose of 1.6 g/L for initial F concentration of 20 mg/L The removal efficiency of F was increased with adsorbent dosage. Fluoride adsorption efficiencies increase with increase in the thermal treatment temperature up to 200°C, but further increase in temperature resulted in decreased removal efficiency. For application in continuous packed bed column, treatment at 300°C was taken as an optimum value. Fluoride adsorption capacity increases linearly with increase in F’ concentration. High defluoridation efficiency was achieved using both UHA and THA within a pH range of 4.0 to 9.0. The adsorption data at ambient pH were well fitted to the Freundlich isotherm model with a minimum capacity of 23.7 mg F/g and 7.0 mg F/g for THA and UHA, respectively. The kinetic studies showed that the adsorption reaction of fluoride removal by hydrated alumina can be well described by a pseudo-second-order rate equation. Continuous packed bed column experiment using THA indicated that 4.5 g of THA could treat 6 L of water containing 20 mg/L fluoride before breakthrough. Hence, both UHA and THA can be applied for the treatment of water with high fluoride content.

Keywords: Fluoride, Defluoridation, Hydrated Alumina, Fluoride Removal Efficiency, Adsorption Capacity, Adsorption Kinetics, Breakthrough, Drinking-Water, Defluoridation, Adsorption

? Sari, A. and Ipyldak, O. (2006), Adsorption properties of stearic acid onto untreated kaolinite. *Bulletin of the Chemical Society of Ethiopia*, **20** (2), 259-267.

Full Text: 2006\Bul Che Soc Eth20, 259.pdf

Abstract: The focus of the study is to investigate adsorption property and determine thermodynamic parameters for. the adsorption of stearic acid onto untreated kaolinite at the temperatures of 25, 35 and 45 degrees C. The equilibrium adsorption isotherms were analyzed by linear Langmuir and Freundlich models. Adsorption experiments indicated that the sorption capacity of kaolinite decreased with increasing temperature. The calculated Langmuir equlibrium parameter, R-L indicated that the kaolinite was a good material for the sorption process of the stearic acid. The free energy change of adsorption, Delta G degrees(ads), was found between - 19.98 and -20.50 kJ/mol at examined temperatures and enthalpy of adsorption, Delta H degrees(ads), and entropy of adsorption, Delta S degrees(ads) were found as -12.30 kJ/mol and 0.0259 kJ/(mol.K), respectively. The calculated thermodynamic parameters (Delta H degrees(ads) and Delta G degrees(ads)) showed that the adsorption process of stearic acid onto kaolinite was spontaneous and exothermic in nature. Furthermore, Fourier Transform infrared (FT-IR) spectroscopy was used to indicate the possible interaction between the stearic acid molecules and the surface groups of adsorbent.

Keywords: Adsorption, Adsorption Isotherms, Bentonite, Equilibrium, Fatty-Acids, Freundlich, Freundlich Isotherm, Isotherms, Kaolinite, Langmuir, Langmuir Isotherm, Molecules, Rice Hull Ash, Sorption, Stearic Acid, Thermodynamic, Thermodynamic Parameters

? Ikhuoria, E.U. and Onojie, O.C. (2007), Binding of nickel and zinc ions with activated carbon prepared from sugar cane fibre (Saccharum officinarum L.). *Bulletin of the Chemical Society of Ethiopia*, **21** (1), 151-156.

Full Text: 2007\Bul Che Soc Eth21, 151.pdf

Abstract: Activated carbon was prepared from sugar cane fibre by carbonizing at 500°C for 30 minutes. This was followed by activation with ammonium chloride. The activated carbon was characterised in terms of pH, bulk density, ash content, surface area and surface charge. Equilibrium sorption of nickel and zinc ions by the activated carbon was studied using a range of metal ion concentrations. The sorption data was observed to have an adequate fit for the Langmuir isotherm equation. The level of metal ion uptake was found to be of the order: Ni2+ > Zn2+. The difference in the removal efficiency could be explained-in terms of the hydration energy of the metal ions. The distribution coefficient for a range of concentration of the metal ions at the sorbent water interface is found to be higher than the concentration in the continuous phase.

Keywords: Activated Carbon, Adsorption, Aqueous-Solutions, Cadmium, Equilibrium, Heavy-Metals, Husks, Isotherm, Langmuir, Langmuir Isotherm, Metal Ions, Ni2+, Nickel, pH, Removal, Sorbent, Sorption, Sugar Cane Fibre, Water, Zinc

? Adekola, F.A., Nwaogu, N.G. and Abdus-Salam, N. (2007), Removal of cadmium from aqueous solution using manganese hexacyanoferrates(II)/(III). *Bulletin of the Chemical Society of Ethiopia*, **21** (2), 221-228.

Full Text: 2007\Bul Che Soc Eth21, 221.pdf

Abstract: A series of solid insoluble mixed potassium manganese hexacynoferrates(II) and (III) of the general formula KyMnxFeII/III(CN)(6.z)H2O were prepared by classical precipitation and local growth methods. All synthesized products were thermally stable up to 300°C and were highly insoluble in most mineral acids except hot perchloric acid. The sorption of cadmium ion from 0.1 M HNO3 solutions on manganese hexacyanoferrates(II) and (III) was investigated. Both sorption kinetics and isotherms were studied. The sorption kinetics for cadmium uptake was observed to follow two steps with fast kinetics in the first step within 5 min. The manganese hexacyanoferrate(III) was found to exhibit higher sorption capacities than manganese hexacynoferrates(II). The highest sorption capacity was achieved with manganese hexacyanoferrate(III) prepared by local growth method. The uptake of cadmium from aqueous solution appeared to follow adsorption mechanism and not ion exchange as characteristic of many other divalent hexacyanoferrates. The sorption data were fitted with Langmuir adsorption isotherm.

Keywords: Adsorption, Adsorption Isotherm, Adsorption Mechanism, Cadmium, Cadmium Removal, Ion Exchange, Isotherm, Isotherms, Kinetics, Langmuir, Potassium Manganese Hexacynoferrates(II), (III), Removal, Silver, Sorption

? Horsfall, Jr., M. and Vicente, J.L. (2007), Kinetic study of liquid-phase adsorptive removal of heavy metal ions by almond tree (Terminalia catappa L.) leaves waste. *Bulletin of the Chemical Society of Ethiopia*, **21** (3), 349-362.

Full Text: 2007\Bul Che Soc Eth21, 349.pdf

Abstract: The kinetic sorption of five metal ions - Al-3, Cr6+, Zn2+, Ag+ and Mn2+ - from aqueous solution onto almond tree leaves (ATL) waste in single component system has been studied, The experimental data was analyzed in terms of intraparticle diffusion and rate of adsorption, thus comparing transport mechanism and chemical sorption processes. The sorption rates based on the pseudo-second order rate constants for the five metal ions are 0.018 (Al3+), 0.016 (Cr6+), 0.023 (Zn2+), 0.021 (Ag+) and 0.022 (Mn2+) g/mg.min. The adsorption rates are rapid and within 180 min of agitation more than 85 percent of these metal ions has been removed from solution by the ATL waste biomass. The kinetic data suggest that the overall adsorption process is endothermic, and that the rate-limiting step is a surface diffusion controlled process. The results from this study have revealed that the ATL waste, which is hitherto an environmental nuisance, has the ability to adsorb metal ions from solution and the data are relevant for optimal design of wastewater treatment plants. The low cost and easy availability of ATL waste make potential industrial application a strong possibility.

Keywords: Adsorbents, Adsorption, Almond Tree Leaves Waste, Aqueous Solution, Aqueous-Solution, Biomass, Cadmium, Copper, Diffusion, Heavy Metal, Heavy Metal Ions, Kinetic, Kinetic Sorption, Lead Ions, Manihot-Sculenta Cranz, Mechanism, Metal, Metal Ions, Moss, Peat, Pseudo-Second Order, Removal, Sorption, Transport, Wastewater, Wastewater Treatment, Wastewater Treatment Plants, Zn2+

? Guang, L.D. and Li, Z.Y. (2007), Hypercrosslinked sorbents and their adsorption properties. *Bulletin of the Chemical Society of Ethiopia*, **21** (3), 397-403.

Full Text: 2007\Bul Che Soc Eth21, 397.pdf

Abstract: Hypercrosslinked sorbents which have excellent adsorption capacities for organic compounds were prepared by cross-linking the polypropylene grafted styrene-divinyl benzene fiber according to the Friedel-Crafts reaction. As crosslinking agents, we have used monochloromethylether and bis-chloromethylated derivatives of benzene or biphenyl. We have performed detailed investigations of the preparation and the optimal synthesis conditions of hypercrosslinked sorbents were obtained, Compared with the initial fiber, hypercrosslinked fibers were remarkable materials exhibiting high specific surface area and exceptional adsorption properties for organic compounds. The adsorption capacities on the hypercrosslinked sorbents were related with the size of cross-linking agents, which increased by about 8 to 10 fold.

Keywords: Adsorption, Benzene, Compounds, Fiber, Fibers, Hypercrosslinked Sorbents, Organic Compounds, Surfaces, Synthesis

? Sun, K., Jiang, J.C. and Xu, J.M. (2009), Decolorization and Chemical Regeneration of Granular Activated Carbon Used in Citric Acid Refining. *Bulletin of the Chemical Society of Ethiopia*, **23** (1), 29-36.

Full Text: 2009\Bul Che Soc Eth23, 29

Abstract: Citric acid fermentation (CAF) liquor decolorization by granular activated carbon (GAC) was studied and an improved chemical regeneration method of the exhausted GAC by the color of CAF liquor was investigated. The effects of the GAC dosage, time and temperature on the decoloring efficiency (DE %) were studied. The DE % of the original GAC was 91 %. The regeneration efficiency (RE %) using chemical regents was 104 % of the original GAC. Hot water as cheap reagent was found to be much helpful to the regeneration efficiency. Using oxidant and surfactant in addition to just using NaOH solution can recover 10 % more adsorption capacity of renewed GAC. The adding dosage of oxidant is good at 3 % of exhausted GAC weights that of surfactant is good at 0.1%. Comparing with steam regeneration method, high regeneration yield (> 95 %) of chemical method was an attractive economic factor. The results of this investigation can be as helpful reference for citric acid manufacturer expanding profits.

Keywords: Activated Carbon, Adsorption, Adsorption Capacity, Carbon, Chemical Regeneration, Citric Acid, Citric Acid Fermentation Liquor, Color, Decoloration, Decolorization, Granular Activated Carbon, Regeneration, Removal, Water

? Li, Q., Zhai, J.P., Zhang, W.Y., Wang, M.M. and Zhou, J. (2008), A study on adsorption of Pb(II), Cr(III) and Cu(II) from aqueous solution by peanut husk. *Bulletin of the Chemical Society of Ethiopia*, **22** (1), 19-26.

Full Text: 2008\Bul Che Soc Eth22, 19.pdf

Abstract: Peanut husk has been used in this work for removing Pb(II), Cr(III) and Cu(II) from aqueous solution. Batch adsorption studies were carried out under different pH, initial concentration of metal ions, interfering metal ions, time and temperature. Adsorption was poor in strongly acidic solution but was improved in alkaline medium and continuously increased with rise in pH. The presence of one metal decreased the removal of the other metal ions. The adsorption processes were more akin towards second-order equation. The suitability of the adsorbent was tested by fitting the adsorption data with Langmuir and Freundlich isotherms, which gave good fits with both isotherms. For an adsorbent amount of 2 g/L. and initial metal ions 10 mg/L, the maximum monolayer values of Pb(II), Cr(III) and Cu(II) was 4.59 mg/g, 3.34 mg/g and 2.96 mg/g. The adsorption was in the order Pb(II) > Cu(II) > Cr(III). The values of the thermodynamic parameters, ΔH, ΔS and ΔG, indicated the interactions to be thermodynamically favorable.

Keywords: Adsorption, Carbon, Equilibrium, Fly-Ash, Freundlich, Heavy Metals, Heavy-Metals, Ions, Isotherms, Kinetics, Kinetics, Langmuir, Langmuir And Freundlich Isotherms, Metal Ions, Pb(II), Peanut Husk, pH, Removal, Sorption, Sorption Isotherm, Thermodynamic, Trace-Metal Uptake, Zeolite

Full Text: 2008\Bul Che Soc Eth22, 19.pdf

? Kannan, A. and Thambidurai, S. (2008), Removal of hexavalent chromium from aqueous solution using activated carbon derived from palmyra palm fruit seed. *Bulletin of the Chemical Society of Ethiopia*, **22** (2), 183-196.

Full Text: 2008\Bul Che Soc Eth22, 183.pdf

Abstract: In this study, removal of chromium(VI) from aqueous solutions by Palmyra palm fruit seed carbon (PPFSC) and commercial activated carbon (CAC) was investigated. The metal adsorption capacity has been studied as a function of contact time, pH and carbon dosage. The adsorption yields increased with the increasing of adsorbent dosage and contact time, and subsequently reached the equilibrium. The suitability of the Freundlich and Langmuir models were also investigated for each chromium so bent system. In order to understand the reaction mechanism, kinetic data has been studied using pseudo first order rate equation. The Lagergren’s constants were calculated for different initial concentrations of metal ions. The chromium(VI) ions could be rapidly removed from the sorbents by treatment with HCl acid and at the same time the regenerated sorbent could be used again to adsorb heavy metal ions. The suitability of this material for treatment of tannery wastewater was also examined.

Keywords: Activated Carbon, Adsorption, Adsorption Capacity, Adsorption Chromium(VI) Removal, Agricultural Waste, Aqueous Solutions, Biosorption, Carbon, Charcoal, Chromium, Contact Time, Cr(VI) Removal, Equilibrium, Freundlich, Heavy Metal, Kinetic, Langmuir, Langmuir And Freundlich Isotherm, Metal Adsorption, Metal Ions, Nickel(II), Palmyra Palm Fruit Seed Carbon, pH, Pseudo First Order Kinetics, Regeneration, Remediation, Removal, Soil, Sorbent, Tannery Wastewater, Treatment, Waste-Water, Wastewater

? Mengistie, A.A., Rao, T.S., Rao, A.V.P. and Singanan, M. (2008), Removal of lead(II) ions from aqueous solutions using activated carbon from militia ferruginea plant leaves. *Bulletin of the Chemical Society of Ethiopia*, **22** (3), 349-360.

Full Text: 2008\Bul Che Soc Eth22, 349.pdf

Abstract: The adsorption of lead(II) on to activated carbon developed from an indigenous Ethiopian medicinal plant leaves namely Birbira (Militia ferruginea) was investigated to assess the possible use of this adsorbent. The influences of contact time, adsorbent dose, Pb(II) concentration, pH and temperature on adsorption were investigated. The maximum adsorption took place at 3 h. at a dose of 4.0 g of adsorbent, and 97.3% of W adsorption at pH of 4.0. The amount of lead ion adsorbed per gram of the adsorbent increased with decreasing concentration of Pb2+. The percentage of adsorption had increased with the increasing temperature. The positive value of Delta H indicated that the adsorption of lead ions on the adsorbent was an endothermic process. The values of free energy (Delta G) were negative as expected for a spontaneous process. The decrease in Delta G value with increasing temperature revealed that adsorption of the ion on the adsorbent became favorable at a higher temperature. The calculated value of Delta H was 25.05 kJ mol(-1), Delta S was 135.48 JK(-1) mol(-1) and Delta G was also calculated for each temperature. The two theoretical adsorption isotherms, namely, Langmuir and Freundlich were used to describe the experimental results. The Freundlich adsorption isotherm best fits and adsorption capacity was calculated to be 3.3 mg of Pb(II) per g of adsorbent. The adsorption followed the first order kinetics and was found to be pH dependent being maximum at pH 4.0. The pH effect and desorption studies showed that ion exchange mechanism might be involved in the adsorption process. Reuse of the desorbed bio-adsorbent is possible. The effect of foreign ions on the removal of Pb(II) has been investigated. The removal of Pb(II) from industrial wastewater sample was also tested and showed that more than 97% removal was possible. The results showed that activated carbon prepared from Birbira (Militia ferruginea) leaves could be used for the removal of Pb(II) from wastewater.

Keywords: Activated Carbon, Adsorbent, Adsorption, Adsorption Capacity, Adsorption Isotherm, Adsorption Isotherms, Biomass, Cadmium, Carbon, Contact Time, Desorption, Dye, Freundlich, Industrial Wastewater, Ion Exchange, Isotherm, Isotherms, Kinetics, Langmuir, Lead, Lead Removal, Metals, Methylene-Blue, Militia Ferruginea, Pb(II), pH, Removal, Sorption, Wastewater, Water, Zinc

? Reddy, S.S., Kotaiah, B. and Reddy, N.S.P. (2008), Color pollution control in textile dyeing industry effluents using tannery sludge derived activated carbon. *Bulletin of the Chemical Society of Ethiopia*, **22** (3), 369-378.

Full Text: 2008\Bul Che Soc Eth22, 369.pdf

Abstract: Effective treatment of dyestuff containing textile dyeing industry effluents require advanced treatment technologies such as adsorption for the removal of dyestuffs. Powdered commercial coal based activated carbon has been the most widely used adsorbent for the removal ofdyestuffs from dyeing industry effluents. As an alternative to commercial coal based activated carbon, activated carbon prepared from dried tannery sludge was used as an adsorbent for dyestuff removal from simulated textile dying industry effluent in this study. The color removal performance of tannery sludge derived activated carbon and commercial coal based activated carbon has been investigated using parameters such as adsorbent dosage, initial dye concentration, pH and temperature. It was found that tannery sludge derived activated carbon exhibits dye removal efficiency that is about 80-90 % of that observed with commercial coal based activated carbon. The amount of dye adsorbed on to tannery sludge derived activated carbon is lower compared with commercial activated carbon at equilibrium and dye adsorption capacity increased with increase of initial dye concentration and temperature, and deceasing pH. It was found that the Langmuir isotherm appears to fit the isotherm data better than the Freundlich isotherm. The leachate of heavy metals from tannery sludge derived activated carbon to the environment is very low, which are within the standard limit of industrial effluent and leachable substances.

Keywords: Acid Dyes, Activated Carbon, Adsorption, Adsorption, Adsorption Capacity, Adsorption Isotherms, Agricultural Solid-Waste, Aqueous-Solutions, Carbon, Coir Pith, Color, Commercial Coal Based Activated Carbon, Dye, Dyestuff, Equilibrium, Fly-Ash, Freundlich, Freundlich Isotherm, Heavy Metals, Industry, Isotherm, Langmuir, Langmuir Isotherm, Methylene-Blue, pH, Removal, Sawdust, Sludge, Tannery Sludge Derived Activated Carbon, TCLP, Treatment, Water

# Title: Bulletin of the Chemical Society of Japan

Full Journal Title: [Bulletin of the Chemical Society of Japan](http://www.jstage.jst.go.jp/browse/bcsj/-char/en); [Bulletin of the Chemical Society of Japan](http://www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=bcsj1926)

ISO Abbreviated Title: Bull. Chem. Soc. Jpn.

JCR Abbreviated Title: B Chem Soc Jpn

ISSN: 0009-2673

Issues/Year: 12

Journal Country/Territory: Japan

Language: English

Publisher: Chemical Soc Japan

Publisher Address: 1-5 Kanda-Surugadai Chiyoda-Ku, Tokyo 101, Japan

Subject Categories:

Chemistry: Impact Factor 1.522, 26/121

? Matuura, R., Kimizuka, H., Miyamoto, S. and Shimozawa, R. (1958), The study of the adsorption of detergents at a solution-air interface by radiotracer method. I. Adsorption isotherm for the solution of sodium alkyl sulfates. *Bulletin Chemical Society of Japan*, **31** (5), 532-538.

Full Text: [-1959\Bul Che Soc Jap31, 532.pdf](-1959/Bul%20Che%20Soc%20Jap31,%20532.pdf)

Abstract: The adsorption of the three alkyl sulfates, SDS, STS and SHS, at the solution-air interface has been measured directly by means of the radiotracer method. It has been proved that the surface adsorption increases with increase in the concentration and has a tendency to be saturated at concentrations near cmc for each detergent solution. The results have shown that the adsorption increases with increasing chain length. The Gibbs adsorption equation has been cheked and discussed.

? Kodera, K. and Onishi, Y. (1959), The molecular cross-sectional areas for the determination of specific surface area of solids: I. Carbon black. *Bulletin of the Chemical Society of Japan*, **32** (4), 356-361.

Full Text: [-1959\Bul Che Soc Jap32, 356.pdf](-1959/Bul%20Che%20Soc%20Jap32,%20356.pdf)

? Matuura, R., Kimizuka, H., Miyamoto, S., Shimozawa, R. and Yatsunami, K. (1959), The study of adsorption of detergents at a solution-air interface by radiotracer method. II. The kinetics of adsorption of sodium alkyl sulfates. *Bulletin Chemical Society of Japan*, **32** (4), 404-407.

Full Text: [-1959\Bul Che Soc Jap32, 404.pdf](-1959/Bul%20Che%20Soc%20Jap32,%20404.pdf)

Abstract: The rate of adsorption of sodium dodecyl sulfate, sodium tetradecyl sulfate and sodium hexadecyl sulfate at the solution-air interface has been measured by radiotracer method. It has been found that the surface excess of a detergent is proportional to the concentration of the solution and the square root of time of aging at the initial stage of adsorption. The simple diffusion theory has been checked and it has been found that the results of the present experiment can not be explained by the simple diffusion theory. The idea of energy barrier has tentatively been applied and the values of energy barrier have been calculated.

? Kubokawa, Y. (1960), Chemisorption of hydrogen on zinc oxide. I. Rate of desorption and adsorption isotherm. *Bulletin Chemical Society of Japan*, **33** (4), 546-550.

Full Text: [1960-80\Bul Che Soc Jap33, 546.pdf](1960-80/Bul%20Che%20Soc%20Jap33,%20546.pdf)

Abstract: The rate of desorption of hydrogen chemisorbed on zinc oxide was measured over a wide range of temperatures. The rate at a constant temperature was found to obey approximately the kinetics of the Elovich type. The activation energy of desorption was determined at various coverages, with the result that it increased with decreasing amount from at least about 10∼31 kcal./mol. and then remained constant. The heat of adsorption obtained from adsorption isotherms in the temperature range 300∼370°C was found to be 18 kcal./mol., being roughly constant. Meanwhile, from the isotherms at about 100°C, a heat of adsorption of 6∼8 kcal./mol. was obtained. Comparison between the activation energy of desorption and the heat of adsorption suggests that most part of hydrogen chemisorption on zinc oxide involves an activation energy, its highest value being estimated as 13 kcal./mol.

? Koga, R., Shinozaki, Y., Meshitsuka, G. and Titani, T. (1964), A study of the sorption of metal ions by cotton cloth. *Bulletin Chemical Society of Japan*, **37** (7), 931-934.

Full Text: [1960-80\Bul Che Soc Jap37, 931.pdf](1960-80/Bul%20Che%20Soc%20Jap37,%20931.pdf)

Abstract: The uptakes of the metal ions, Co2+, Ca2+ and Cs+, by cotton cloth have been determined by using the tracer technique. In the acidic and the neutral media, the isotherms were the Langmuir type, and the cation exchange mechanism of the special groups (probably the carboxyl group) has been confirmed. The heat and the activation energy for the sorption of Co2+ were −2 kcal./mol. and 7.6 kcal./mol. respectively (at pH ca. 4.7). In the alkaline media, the cotton cloth showed marked uptakes. The order of the affinity of various metal ions to cotton cloth was also determined as follows: Cu2+>Zn2+>Co2+>Ca2+>Sr2+>Cs+, K+>Na+. The order is useful for the purpose of decontamination.

? Furuichi, R., Sato, N. and Okamoto, G. (1973), Kinetics of adsorption of water and electrical conduction in amorphous ferric oxide. *Bulletin Chemical Society of Japan*, **42** (9), 2475-2479.

Full Text: [1960-80\Bul Che Soc Jap42, 2475.pdf](1960-80/Bul%20Che%20Soc%20Jap42,%202475.pdf)

Abstract: Amorphous ferric oxide was prepared by precipitation in a mixture of ammonium hydroxide and ferric nitrate at 90°C, after which it was calcinated in air at a constant rate of 10°C/min up to 200°C. The rate of the adsorption on the amorphous oxide was measured by a gravimetric method. An equation of the Elovich type was obtained: dq⁄dt=k’p0.63exp(−α’q⁄RTp0.5), where k’ and α’ are constants; q, the amount of adsorbed water, and p, the pressure. This kinetics can be interpreted by a model of a two-stage adsorption process, the van der Waals adsorption and the charge-transfer adsorption, the latter stage being assumed to be rate-determining. The effect of adsorbed water on the direct-current conductivity of the oxide, i, is formulated as i=i0exp(aq). Assuming that the adsorbed water is acting as a donor-type impurity and that the ionization energy decreases with the concentration of impurity, the relation between i and q can be derived from the theory of the semiconduction of an n-type conductor.

Sekine, T., Yumikura, J. and Komatsu, Y. (1973), Kinetic studies of the solvent extraction of metal complexes. II. The rate of the extraction of iron(III) with thenoyltrifluoroacetone into carbon tetrachloride. *Bulletin Chemical Society of Japan*, **46** (8), 2356-2360.

Full Text: [1960-80\Bul Che Soc Jap46, 2356.pdf](1960-80/Bul%20Che%20Soc%20Jap46,%202356.pdf)

Abstract: The rate of the solvent extraction of iron(III) in 4.0 M perchlorate ionic media with 2-thenoyltrifluoroacetone (TTA) into carbon tetrachloride has been measured under various conditions. The rate was found to be first order with respect to the concentration of iron(III) in the aqueous phase, first-order with respect to TTA in the organic phase, but independent and inversely first-order with respect to the hydrogen-ion concentration. From these results, it was concluded that the rate-determining step in this extraction is the formation of the first complex between the undissociated form, TTA(HA), and Fe3+ in the higher acid concentration range, but that the reaction between the anionic form, TTA(A−), and Fe3+ also becomes a rate-determining step as the acid concentration decreases. It was also found that chloride ions accelerate the extraction; this was interpreted by more rapid reactions between TTA (in the both forms, HA and A−) and an iron(III) chloride complex. From these results, the rate constants for the rate-determining reactions were calculated to be KHA=100.57 M−1 min−1 and KA=106.84 M−1 min−1 in 4.0 M(H, Na)ClO4 at 25 °C by means of these equations: −d[Fe3+]⁄dt=KHA[Fe3+][HA] (where [HA] is the total concentration of both enol and keto forms of uncharged TTA in the aqueous phase) and −d[Fe3+]⁄dt=KA[Fe3+]·[A−]. The FeCl2+ species reacts with both HA and A− more rapidly than does the Fe3+ species, and the rate constants of the reactions of the former are in both cases higher than those of the latter by a factor of 28.

? Kiyomiya, M., Momma, N. and Yasumori, I. (1974), Kinetics and mechanism of hydrogen adsorption and hydrogen- deuterium equilibration on copper surface. *Bulletin Chemical Society of Japan*, **47** (8), 1852-1857.

Full Text: [1960-80\Bul Che Soc Jap47, 1852.pdf](1960-80/Bul%20Che%20Soc%20Jap47,%201852.pdf)

Abstract: The mechanism of H2–D2 equilibration reaction over the copper surface was studied in the 40–90 °C range of temperature and in the pressure range of 4–45 Torr. From the studies of the hydrogen adsorption and the reaction between gaseous deuterium and preadsorbed hydrogen, the reaction was confirmed to proceed via combination between hydrogen and deuterium atoms on the surface. The rate constants for the adsorption and the desorption were optimized by a computer simulation of the reaction-time course and were found to be in satisfactory agreement with the observed results. A marked isotope effect was found in these rates; its influence on the partial pressure dependence of the reaction was discussed.

? Hiramatsu, K., Ueda, C., Iwata, K., Arikawa, K. and Aoki, K. (1977), Interaction of bovine plasma albumin with cationic detergent. Studies by binding isotherm, optical-rotation and difference spectrum. *Bulletin of the Chemical Society of Japan*, **50** (2), 368-372.

Full Text: [1960-80\Bul Che Soc Jap50, 368.pdf](1960-80/Bul%20Che%20Soc%20Jap50,%20368.pdf)

Abstract: Binding isotherms were determined at pH 6.9 for systems of bovine plasma albumin (BPA) and cationic detergents at 25°C and 5 °C. Detergents used were: hexadecyltrimethylammonium bromide (HTAB), tetradecyltrimethylammonium bromide (TTAB), dodecyltrimethylammonium bromide (DTAB) and decyltrimethylammonium bromide (DeTAB). Binding affinity of the cationic detergent to BPA increased with the increase in the carbon number of the detergent, and with the increase in temperature. The first five detergent ions were bound to BPA statistically at 25 °C, and succeeding detergent ions were bound cooperatively. Thermodynamic parameters indicated that the statistical binding was caused mainly by the hydrophobic bonding. Measurements of −[α]233 and −[α]313 at pH 5.2 revealed that the conformation of BPA changed when it complexed with the cationic detergent. The conformation of BPA changed slightly when 5–8 HTAB or TTAB’s were bound, and a second large conformational change occurred when 15–20 of these detergent ions were bound. DTAB and DeTAB caused only the first conformational change. Thus HTAB and TTAB are stronger unfolders of BPA than DTAB and DeTAB. The UV difference spectrum of the complex BPA–TTAB showed a red shift of the peak of Try residue (e.g. 292 nm), being in contrast to the blue shift of the same peak in the complex BPA–sodium dodecyl sulfate. It is suggested that BPA is unfolded, at least, in the NH2 terminal half by binding with cationic detergent.

? Sugisawa, J., Yonezawa, T., Takaguchi, K. and Tomita, I. (1978), Potassium-sodium ion-exchange isotherm of crystalline zirconium arsenate. *Bulletin of the Chemical Society of Japan*, **51** (2), 637-638.

Full Text: [1960-80\Bul Che Soc Jap51, 637.pdf](1960-80/Bul%20Che%20Soc%20Jap51,%20637.pdf)

Abstract: When the forward and reverse Na+–K+ exchange isotherm was investigated for the α-zirconium arsenate ion exchanger, a large hysteresis loop was observed. The interlayer distance of the exchanger decreased with an increase in the ionic fraction of Na+ in the exchanger. The result may be interpreted in terms of the formation of different types of solid solutions during the processes in both directions.

? Fuyuhiro, A., Yamanari, K. and Shimura, Y. (1979), Temperature-dependence of the optical resolution and solubility isotherm of bis(ethylenediamine)oxalatocobalt(III) (1R,3S,4S,7R)-3-bromocamphor-9-sulfonate. *Bulletin of the Chemical Society of Japan*, **52** (5), 1420-1422.

Full Text: [1960-80\Bul Che Soc Jap52, 1420.pdf](1960-80/Bul%20Che%20Soc%20Jap52,%201420.pdf)

Abstract: The determination of solubility isotherm of a ternary system, Λ-[Co(ox)(en)2](d-C10H14OBrSO3)–Δ-[Co(ox)(en)2](d-C10H14OBrSO3)–H2O, between 5 and 25 °C, revealed that the resolving agent (1R,3S,4S,7R)-3-bromocamphor-9-sulfonate ion is applicable to the optical resolution of the [Co(ox)(en)2]+ ion below 19 °C from the viewpoint of solubility in water, in spite of the formation of a pseudo racemic compound, Λ-[Co(ox)(en)2]·Δ-[Co(ox)(en)2] (d-C10H14OBrSO3)2·2H2O.

? Fuyuhiro, A., Yamanari, K. and Shimura, Y. (1979), Solubility isotherm of reciprocal salt-pairs containing bis(ethylene-diamine)oxalatocobalt(III) (1R,3S,4S,7R)-3-bromocamphor-9-sulfonate. *Bulletin of the Chemical Society of Japan*, **52** (8), 2261-2263.

Full Text: [1960-80\Bul Che Soc Jap52, 2261.pdf](1960-80/Bul%20Che%20Soc%20Jap52,%202261.pdf)

Abstract: Four-component solubility isotherm of reciprocal salt-pairs consisting of (Λ-[Co(ox)(en)2]+, Δ-[Co(ox)(en)2]+)–(Cl−, d-C10H14OBrSO3−)–H2O has been determined experimentally at 25 °C. It was found that a pseudoracemate, Λ-[Co(ox)(en)2]·Δ-[Co(ox)(en)2](d-C10H14OBrSO3)2·2H2O, is present as the only double salt, optical resolution of the bis(ethylenediamine)oxalatocobalt(III) ion in this system at 25 °C being impossible as in the case of the ternary system, Λ-[Co(ox)(en)2](d-C10H14OBrSO3)–Δ-[Co(ox)(en)2](d-C10H14OBrSO3)–H2O, at 25 °C.

? Osaka, T. and Delevie, R. (1980), Adsorption of alkaline-earth cations on mercury as studied with the perbromate kinetic probe. *Bulletin Chemical Society of Japan*, **53** (2), 344-346.

Full Text: Bul Che Soc Jap53, 344.pdf

? Niki, K. and Takizawa, Y. (1980), Adsorption of *n*-aliphatic alcohols on mercury electrode and their effect on electrode kinetics. *Bulletin Chemical Society of Japan*, **53** (3), 574-576.

Full Text: [1960-80\Bul Che Soc Jap53, 574.pdf](1960-80/Bul%20Che%20Soc%20Jap53,%20574.pdf)

Abstract: The adsorption parameters of butyl alcohol, amyl alcohol, and hexyl alcohol at mercury electrode were evaluated by means of the electrocapillary measurements and compared with those obtained by differential capacity measurements. A marked difference is observed both in the interaction parameters between adsorbed molecules and in the maximum surface excess, Γmax. The inhibition effect by these alcohols on the electrode kinetics of the vanadium(III)/vanadium(II) couple in 0.5 M H2SO4 and of the europium(III)/europium(II) couple in 1.0 M HCl depends only on the surface coverage, θ=Γ⁄Γmax, of the electrode and is independent of the chain length of the adsorbed alcohol. The blocking effect is predominant in the inhibition of the electrode process by these alcohols.

Ohga, K., Kurauchi, Y. and Yanase, H. (1987), Adsorption of Cu2+ or Hg2+ ion on resins prepared by crosslinking metal-complexed chitosans. *Bulletin Chemical Society of Japan*, **60** (1), 444-446.

Full Text: [1987\Bul Che Soc Jap60, 444.pdf](1987/Bul%20Che%20Soc%20Jap60,%20444.pdf)

Abstract: Crosslinking metal-complexed chitosans (metal ions=Cu(II), Cd(II), Zn(II), Ni(II), and Fe(III)) with (chloromethyl)oxirane yields resins having higher abilities to adsorb Cu2+ than a resin obtained from chitosan in the absence of metal ion. Resins from Cd(II)–chitosan complex can act as effective adsorbents for Hg2+; their Langmuir’s adsorption parameters depend on the quantity of (chloromethyl)oxirane used.

Matsui, M., Tsubota, K., Shibata, K. and Muramatsu, H. (1991), Ozone fading of 2,2’-dihydro azo copper complex dyes. *Bulletin of the Chemical Society of Japan*, **64** (10), 2961-2964.

Full Text: [1991\Bul Che Soc Jap64, 2961.pdf](1991/Bul%20Che%20Soc%20Jap64,%202961.pdf)

Abstract: The reactivities of dyes with ozone were in the following order, Acid Blue 74 > disodium 1-(2-hydroxy-phenylazo)-2-naphthol-3, 6-disulfonate > Direct Yellow 12 > Acid Orange 7 > disodium 1-phenylazonaphthalene-3, 6-disulfonate-2,2’-diolatocopper(II) > Mordant Red 3 > Basic Green 4. The reaction of disodium 1-phenylazonaphthalene-3, 6-disulfonate-2,2’-diolatocopper(II) with ozone was retarded by the introduction of electro-withdrawing groups and 8-sulfonato group. The potassium sulfonate dye was less reactive than the sodium one. Ozonization of 1-phenylazonaphthalene-2,2’-diolatocopper(II) gave phenol, 2-naphthol, and phthalic anhydride.

Keywords: Ozonation, Water

? Fujii, T., Hisakawa, Y., Winder, E.J. and Ellis, A.B. (1995), Effect of heat and gases on the photoluminescence of CdS quantum dots confined in silicate-glasses prepared by the sol-gel method. *Bulletin Chemical Society of Japan*, **68** (6), 1559-1564.

Full Text: [1995\Bul Che Soc Jap68, 1559.pdf](1995/Bul%20Che%20Soc%20Jap68,%201559.pdf)

Abstract: The effects of heat (130, 200, and 600°C) and added gases (NH3 and SO2) on the photoluminescence of CdS particles prepared by the sol-gel method were examined in order to elucidate the influence of the chemical environment on photoluminescence. Green and red photoluminescence (PL) were observed in nonheated samples. Exposure of the added gasses to the samples caused characteristic decreases of the green and red PLs. The intensity ratio of the green PL to that of the red PL for a 600-R sample (heated at 600°C in H2S) showed a reversible behavior against exposure to SO2. These results indicate that there is adduct formation between CdS and SO2. The PL changes were fitted to the Langmuir adsorption isotherm model, and yielded the adduct formation constants. There are three emitting and three final states in the specimen.

Keywords: Ultrasmall Semiconductor Particles, Beta-Diketonate Complexes, Colloidal-Cadmium-Sulfide, Aniline Derivatives, Electron-Transfer, Adduct Formation, Selenide, Surface, Size, Luminescence

Koide, Y., Senba, H., Shosenji, H., Maeda, M. and Takagi, M. (1996), Selective adsorption of metal ions to surface-template resins prepared by emulsion polymerization using 10-(*p*-vinylphenyl)decanoic acid. *Bulletin of the Chemical Society of Japan*, **69** (1), 125-130.

Full Text: [1996\Bul Che Soc Jap69, 125.pdf](1996/Bul%20Che%20Soc%20Jap69,%20125.pdf)

Abstract: A monomer-type surfactant, 10-(p-vinylphenyl)decanoic acid (1), has been prepared and applied to an emulsifier for the preparation of surface-template resins. The hydrophobicity of 1 corresponded to that of C15H31COONa on the basis of the cmc values, while that of 1 on the enulsification corresponded to that of C12H25COONa. The monomers (DVB + St + 1) were copolymerized in a metal ion solution and the resulting polymers were evaluated for their surface-template effects. The suspension polymerization gave resins 0.08 mm in diameter and the adsorption of metal ions on Cu2+-imprinted resins attained equilibrium in 2 h. The surface-template effects based on the oriented 1 exceeded the inner-template resins in selective adsorption. On the other hand, the emulsion polymerization gave fine particles 200-300 nm in diameter. The resins showed excellent surface-template effects. The adsorption of metal ions was 50-100 times as much as that on the resins prepared by suspension polymerization (see Fig. 2 and Table 3). The metal-imprinted resins was 1.88 times more effective than the unimprinted results, and the Zn2+-imprinted resins showed more effective adsorption for Zn2+ than for Cu2+ and for Ni2+. Such surface-template effects were also seen for Cu2+-and Ni2+-imprinted resins. The selectivity (Cu2+/Zn2+) from the mixture of both metal ions was 3.7 for the Cu2+-imprinted resins prepared at 0.25 mol% 1. Furthermore, the metal-imprinted resins could be used repeatedly.

Murata, M., Hijiya, S., Maeda, M. and Takagi, M. (1996), Template-dependent selectivity in metal adsorption on phosphoric diester-carrying resins prepared by surface template polymerization technique. *Bulletin of the Chemical Society of Japan*, **69** (3), 637-642.

Full Text: [1996\Bul Che Soc Jap69, 637.pdf](1996/Bul%20Che%20Soc%20Jap69,%20637.pdf)

Abstract: The surface templated resins for three different metal ions such as Cu2+, Zn2+ or Cd2+ as the template guest were prepared by emulsion polymerization using oleyl phenyl hydrogenphosphate as a host surfactant, sodium dodecyl sulfate (SDS) as a co-surfactant and divinylbenzene as a resin matrix-forming monomer. The Cu2+- imprinted resin adsorbed Cu2+ much more effectively than did the nonimprinted, the Zn2+- and Cd2+- imprinted ones. On the other hand, the Cd2+- imprinted resin showed a more highly effective binding to Cd2+ than those of the Cu2+- imprinted, Zn2+-imprinted, and nonimprinted resins. In fact, the Cu2+-imprinted resin did not adsorb any significant amount of Cd2+. The selective feature of the surface templated resins to the target ion was thus successfully demonstrated. The template-dependent selectivity should be ascribed to a favorable placement of the surface-anchored metal lophilic groups for multidentate coordination to the specific metal ion.

Tamaru, K. (1996), A new-type adsorption isotherm of CO on transition metalsurfaces with adsorption-assisted processes. *Bulletin of the Chemical Society of Japan*, **69** (4), 961-962.

Full Text: [1996\Bul Che Soc Jap69, 961.pdf](1996/Bul%20Che%20Soc%20Jap69,%20961.pdf)

Abstract: A new adsorption isotherm is proposed, taking the adsorption-assisted desorption into consideration for the first time. The new adsorption isotherm is in reasonable agreement with the experimental data.

Koide, Y., Tsujimoto, K., Shosenji, H., Maeda, M. and Takagi, M. (1998), Adsorption of metal ions to surface-template resins prepared with amphiphilic styrene monomers bearing amino carboxylic acid. *Bulletin of the Chemical Society of Japan*, **71** (4), 789-796.

Full Text: [1998\Bul Che Soc Jap71, 789.pdf](1998/Bul%20Che%20Soc%20Jap71,%20789.pdf)

Abstract: Monomer-type functional surfactants, 2-(p-vinylbenzylamino)alkanoic acid (RnNAc) and N, N-dialkyl derivatives (RRnNAc), have been used as both a ligand and an emulsifier for the preparation of surface-template resins. The surfactants adsorbed at the toluene-water interface and emulsified divinylbenzene-styrene in a Cu2+ or Zn2+ solution. Emulsion polymerization using a K2S2O8 initiator (80°C) or by irradiation with gamma-rays gave fine particles of 200-800 nm in diameter. Metal-imprinted resins prepared with RnNAc and RRnNAc showed a high adsorptive capacity for the metal ion (surface-template effect). Cu-imprinted resins prepared with R8NAc were 2.69-times as effective for Cu2+ in competitive sorption from a Cu2+-Zn2+ mixture and Zn-imprinted resins were 1.84-times as effective for Zn2+, compared with unimprinted resins. Because of the great emulsifying power, metal-imprinted resins prepared with R8NAc showed the most metal-selective adsorption and the largest capacity among resins prepared with RnNAc and RRnNAc.

Fujii, T., Tanaka, N., Tai, H., Obara, S. and Ellis, A.B. (2000), Influence of the naphthalene derivative on the luminescence properties of CdS particles prepared by the sol-gel method. *Bulletin Chemical Society of Japan*, **73** (4), 809-813.

Full Text: [B\Bul Che Soc Jap73, 809.pdf](B/Bul%20Che%20Soc%20Jap73,%20809.pdf)

Abstract: Adsorption from an ethanol solution of naphthalene (N) derivatives onto the surface of CdS particles encapsulated into silica glasses prepared by the sol-gel method quenches or enhances the yellow-green and red photoluminescence (PL) intensity of the semiconductor particle relative to its value in pure ethanol solvent. The enhancement is in the order 1,4-dimethyl-N > 1-chloro-N greater than or equal to N greater than or equal to 1-fluoro-N greater than or equal to 1-methyl-N greater than or equal to 1-bromo-N and quenching is in the order 1-nitro-N > 2-carboxy-N. This order is understandable based on the electron-donating or electron-accepting abilities of the individual naphthalene derivatives. The changes in the PL intensity depend on the concentration and give good fits to the Langmuir adsorption isotherm model, yielding equilibrium constants for adduct formation on the order of ca. 103 M-1.

Keywords: Cadmium-Sulfide Clusters, Semiconductor Particles, Optical-Properties, Silicate-Glasses, Photoluminescence, Selenide, Photophysics, Adsorption, Chemistry, Molecules

Hayakawa, K., Miyamoto, Y., Kurawaki, J., Kusumoto, Y., Satake, I. and Sakai, M. (2000), Thermodynamics of the adsolubilization equilibrium of Rhodamine B by surfactant-modified zeolites. *Bulletin Chemical Society of Japan*, **73** (8), 1777-1782.

Full Text: [B\Bul Che Soc Jap73, 1777.pdf](B/Bul%20Che%20Soc%20Jap73,%201777.pdf)

Abstract: The adsolubilization of the cationic dye Rhodamine B (RB) into the adsorbed layers of dodecyl- (DTAB) and tetradecyltrimethylammonium bromide (TTAB) on high silica mordenites (HSZ-1, HSZ-3) and P-type zeolite (PZ) was examined quantitatively. The adsolubilization constant for the HSZ-1/TTAB system was determined at temperatures from 10 to 40°C. As the surfactant adsorption increased, the adsolubilization of RE by the zeolite/surfactant complexes was enhanced. Adsolubilization of RE by HSZ-3/surfactant complexes required a critical quantity of adsorbed surfactant, whereas the PZ/TTAB complex needed only a very small quantity of adsorbed TTAB to adsolubilize RE. Both the adsolubilization constant and the maximum capacity were calculated using a Langmuir-type equation, and the enthalpy and entropy changes were determined for the HSZ-1/TTAB mixed system. The difference in the adsolubilization mode of the three zeolite/surfactant complexes is discussed in relation to the aggregation mode of the cationic surfactant.

Keywords: Sodium Dodecyl-Sulfate, Silica Water Interface, Hemimicelle Admicelle Transition, Cationic Surfactants, Titanium-Dioxide, Cetylpyridinium Chloride, Adsorbed Surfactants, Charge Density, Adsorption, Coadsorption

Kawamura, K, and Umehara, M. (2001), Kinetic analysis of the temperature dependence of the template-directed formation of oligoguanylate from the 5’-phosphorimidazolide of guanosine on a poly(C) template with Zn2+. *Bulletin of the Chemical Society of Japan*, **74** (5), 927-935.

Full Text: [B\Bul Che Soc Jap74, 927.pdf](B/Bul%20Che%20Soc%20Jap74,%20927.pdf)

Abstract: A kinetic study of the temperature dependence of the template-directed formation of oligoguanylate (oligo(G)) on polycytidylic acid (poly(C)) from the 5’-phosphorimidazolide of guanosine (ImpG) has been carried out in the presence of Zn2+ at 40-80°C. It is surprising that a large amount of oligo(G) was formed at 40-60°C and a small amount of oligo(G) was detected even at 80°C. The rate constants of the template-directed formation of oligo(a) were determined at 40-60°C, and the same trend, the rate constants increase with the chain length, was observed as that at lower temperatures. Besides, second-order rate plots of the hydrolyses of ImpG and oligo(G) were consistent with pseudo-second-order processes in the presence of 0.04 M Zn2+. The apparent activation energy determined from the Arrhenius plots decreases in the order hydrolysis of oligo(G) > formation of 4-mer approximate to formation of 3-mer approximate to hydrolysis of ImpG > formation of 2-mer. The kinetic analysis and computer simulations demonstrate the importance of the rate of 2-mer formation to determine the efficiency of the oligo(a) formation.

Keywords: Submarine Hydrothermal System, Rna-Polymerase Model, Amino-Acids, Metal-Ions, Activated Nucleotides, Self-Replication, Uranyl-Ion, Life, Origin, Hydrolysis

# Title: Bulletin of the Chemists and Technologists of Macedonia

Full Journal Title: Bulletin of the Chemists and Technologists of Macedonia

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Meško, V., Markovska, L., Minčeva, M. and Burevski, D. (2001), Equilibrium isotherms for adsorption of basic dyes from aqueous solutions on different adsorbents. *Bulletin of the Chemists and Technologists of Macedonia*, **20** (2), 143-150.

Full Text: [2001\Bul Che Tec Mac20, 143.pdf](2001/Bul%20Che%20Tec%20Mac20,%20143.pdf)

Investigations have been undertaken to determine whether cheap, commercially available materials (natural zeolite and bentonite) hold promise in the treatment of wastewaters from the textile industry. The initial findings indicate that natural zeolite and bentonite have high adsorptive capacities for dyes and they are relatively cheap. The adsorption of two basic dyes (MS-300 and MG-400) onto granular activated carbon, natural zeolite and bentonite has been studied as single equilibrium isotherms. The effectiveness of each adsorbent was measured in terms of its adsorption capacity towards individual constituents of the effluent. All the adsorption isotherms display a non-linear dependence on the equilibrium concentration. The effect of the temperature on the adsorption isotherms was studied by carrying out a series of isotherms at 20, 40 and 60 QC. The activation energy for the adsorption of basic dyes on the adsorbent used was determined. The adsorption data for all the systems were fitted by the Langmuir, Freundlich, Langmuir-Freundlich and Redlich-Peterson models. The parameters in the adsorption isotherms were estimated from the experimental equilibrium data using non-linear regression software. Using these data the selection of the best adsorbent can be done for design purposes.

Keywords: Equilibrium, Adsorption, Bentonite, Natural Zeolite, Activated Carbon, Basic Dye

# Title: Bulletin of Electrochemistry

Full Journal Title: Bulletin of Electrochemistry

ISO Abbreviated Title: Bull. Electrochem.

JCR Abbreviated Title: B Electrochem

ISSN: 0256-1654

Issues/Year: 8

Journal Country/Territory: India

Language: English

Publisher: Central Electrochem Res Inst

Publisher Address: Attn: Director, Karaikkudi 623 006, India

Subject Categories:

Electrochemistry: Impact Factor 0.230, / (2001)

? Badawy, W.A. and Al-Kharafi, F.M. (2000), Inhibition of corrosion of cadmium in alkaline solutions. *Bulletin of Electrochemistry*, **16** (4), 155-160.

Abstract: The corrosion and corrosion inhibition of cadmium were investigated in alkaline solutions, The effect of methanol, ethanol and propanol on the corrosion rate of the metal was studied. Propan-1-ol was found to be the most efficient inhibitor of cadmium corrosion in alkaline solutions. The corrosion inhibition process was based on the adsorption of the alcohol molecules on the metal surface. The corrosion inhibition efficiency increases as the chain length of the alkyl radical increased. The adsorption of alcohol molecules was found to obey the Freundlich isotherm, theta = K C-n. The presence of greater than or equal to 0.075 mote fraction of n-propanol in the aqueous solution leads to a corrosion inhibition efficiency of more than 97%. The mechanism of corrosion inhibition process was discussed.

Keywords: Corrosion Inhibition, Paopan-1-ol and Freundlich Isotherm, Chloride

? Diao, G.W. and Zhou, W. (2004), Electrochemical behaviour of tetrachlorobenzoquinone. *Bulletin of Electrochemistry*, **20** (5), 199-201.

Full Text: 2004\Bul Ele20, 199.pdf

Abstract: The electrochemical behaviour of tetrachlorobenzoquinone (TCBQ) are studied. In aqueous solution, tetrachlorobenzoquinone can be reduced. The cathodic peak potential, E-p, is affected by the acidity of the solution. E-p shifts in the positive direction when pH decreases. That is to say with increasing acidity of the solution, the reduction of TCBQ becomes easier. We also conclude that the electrode reaction is controlled by adsorption.

Keywords: Acidity, Adsorption, Aqueous Solution, Behaviour, Electrochemistry, Low-Temperature, pH, Potential, Reduction, Solution, Tetrachlorobenzoquinone

# Title: Bulletin of Engineering Geology and the Environment

Full Journal Title: [Bulletin of Engineering Geology and the Environment](http://www.springerlink.com/content/1435-9537/); [Bulletin of Engineering Geology and the Environment](http://www.springerlink.com/content/101156/?p=b9e10c0a5f9e408f8e8562e3196e7d3d&pi=0)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Banat, F., Al-Asheh, S., Al-Anbar, S. and Al-Refaie, S. (2007), Microwave- and acid-treated bentonite as adsorbents of methylene blue from a simulated dye wastewater. *Bulletin of Engineering Geology and the Environment*, **66** (1), 53-58.

Full Text: [2007\Bul Eng Geo Env66, 53.pdf](2007/Bul%20Eng%20Geo%20Env66,%2053.pdf)

Abstract: Batch adsorption tests for removal of methylene blue dye (MBD) from aqueous solutions onto bentonite was investigated using natural chemically treated (sulphuric acid) and physically treated (microwaved) bentonite. In batch sorption tests for MBD removal by the developed sorbents, the time needed to reach equilibrium was less than 30 min. The uptake of MBD by the microwave-treated bentonite was the highest, followed by the acid-treated and finally the untreated bentonite. The uptake of MBD increased with an increase in the dye concentration or the solution temperature. Three kinetic models were used for elucidation of the probable mechanisms of MBD uptake by the three sorbents. The rates of MBD uptake followed the pseudo second-order model with a high correlation. Intraparticle diffusion was involved in the sorption process but was not the rate-controlling factor. The Freundlich and Langmuir isotherm models were employed and well represented the experimental data.

Keywords: Bentonite, Adsorption, MBD, Microwave, Natural, Kinetics, Isotherm, Color Removal, Aqueous-Solutions, Fly-Ash, Adsorption, Equilibrium, Kinetics

? Al-Asheh, S., Banat, F. and Al-Derham, A. (2007), Assessment of Al-Madra clay as an adsorbent of copper ions from aqueous solutions. *Bulletin of Engineering Geology and the Environment*, **66** (3), 289-294.

Full Text: [2007\Bul Eng Geo Env66, 289.pdf](2007/Bul%20Eng%20Geo%20Env66,%20289.pdf)

Abstract: Al-Madra clay, a local, cheap and readily available material in Qatar, was tested for the removal of copper ions from aqueous solutions. Batch experiments of copper ion adsorption onto natural and treated clay in different conditions were undertaken. Different types of activated Al-Madra clay were used, such as Na-clay, Al-clay, thermal-clay and cyclohexane-clay. Thermally treated clay achieved the highest removal of Cu ions, followed by Al-clay, cyclohexane-clay, and finally Na-clay. A maximum of 50% adsorption of copper ions can be achieved using the natural clay while about 72% adsorption can be achieved when the clay is thermally treated. The amount of copper adsorbed by untreated Al-Madra clay was dependent on the process conditions; increasing with an increase in pH and initial metal concentration but decreasing with an increase in sorbent concentration. The increase in temperature from 5 to 50°C resulted in only a very slight increase in copper uptake by untreated Al-Madra clay.

Keywords: Adsorption, Copper, Clay, Al-Madra, Metal-Ions, Adsorption, Peat, Sorption, Removal, Biosorption, Bentonite, Exchange, Binding, Phenol

# Title: Bulletin of Environmental Contamination and Toxicology

Full Journal Title: [Bulletin of Environmental Contamination and Toxicology](http://www.springerlink.com/app/home/journal.asp?wasp=0883ljxtrqdtycxwhkdr&referrer=parent&backto=linkingpublicationresults,id:101156,1)

ISO Abbreviated Title: Bull. Environ. Contam. Toxicol.

JCR Abbreviated Title: Bull Environ Contam Toxicol

ISSN: 0007-4861

Issues/Year: 12

Journal Country/Territory: United States

Language: English

Publisher: Springer Verlag

Publisher Address: 175 Fifth Ave, New York, NY 10010

Subject Categories:

Environmental Sciences: Impact Factor 0.513, 87/127 (2000)

Toxicology: Impact Factor 0.513, 66/77 (2000)

? Wheeler, S.R. and Hamdy, M.K. (1977), Removal of soluble mercury from water by rubber. *Bulletin of Environmental Contamination and Toxicology*, **17** (2), 150-158.

Full Text: [1960-80\Bul Env Con Tox17, 150.pdf](1960-80/Bul%20Env%20Con%20Tox17,%20150.pdf)

Henderson, R.W., Lightsey, G.R. and Poonawala, N.A. (1977), Competitive adsorption of metal ions from solutions by low-cost organic materials. *Bulletin of Environmental Contamination and Toxicology*, **18**, 340-344.

Full Text: [1960-80\Bul Env Con Tox18, 340.pdf](1960-80/Bul%20Env%20Con%20Tox18,%20340.pdf)

? Okieimen, F.E., Ogbeifun, D.E., Nwals, G.N. and Kumash, C.A. (1985), Binding of cadmium, copper and lead ions by modified cellulosic materials. *Bulletin of Environmental Contamination and Toxicology*, **34**, 866-870.

Full Text: [1985\Bul Env Con Tox34, 866.pdf](1985/Bul%20Env%20Con%20Tox34,%20866.pdf)

? Ohyama, T., Jin, K., Katoh, Y., Chiba, Y. and Inoue, K. (1987), Fate and behavior of herbicides, butachlor, CNP, chlomethoxynil, and simetryne in river water, shellfish, and sediments of the Ishikari River. *Bulletin of Environmental Contamination and Toxicology*, **39** (4), 555-562.

Full Text: [1987\Bul Env Con Tox39, 555.pdf](1987/Bul%20Env%20Con%20Tox39,%20555.pdf)

? Oishi, S. and Takahashi, O. (1987), Mutagenicity of Tama River sediments. *Bulletin of Environmental Contamination and Toxicology*, **39** (4), 696-700.

Full Text: [1987\Bul Env Con Tox39, 696.pdf](1987/Bul%20Env%20Con%20Tox39,%20696.pdf)

? Kroneld, R. and Reunanen, M. (1988), Elimination of volatile pollutants from water. *Bulletin of Environmental Contamination and Toxicology*, **40** (1), 54-59.

Full Text: [1988\Bul Env Con Tox40, 54.pdf](1988/Bul%20Env%20Con%20Tox40,%2054.pdf)

? Wong, P.K. (1988), Mutagenicity of heavy-metals. *Bulletin of Environmental Contamination and Toxicology*, **40** (4), 597-603.

Full Text: [1988\Bul Env Con Tox40, 597.pdf](1988/Bul%20Env%20Con%20Tox40,%20597.pdf)

? Mochida, K., Gomyoda, M., Fujita, T. and Yamagata, K. (1988), Cell culture systems are more sensitive than Saccharomyces cervisiae tests for assessing the toxicity of aquatic pollutants. *Bulletin of Environmental Contamination and Toxicology*, **41** (1), 1-3.

Full Text: [1988\Bul Env Con Tox41, 1.pdf](1988/Bul%20Env%20Con%20Tox41,%201.pdf)

? Leung, H.W. (1988), Environmental sampling of lead near a battery reprocessing factory. *Bulletin of Environmental Contamination and Toxicology*, **41** (3), 427-433.

Full Text: [1988\Bul Env Con Tox41, 427.pdf](1988/Bul%20Env%20Con%20Tox41,%20427.pdf)

? Liimatainen, A. and Grummt, T. (1988), In vitro genotoxicity of chlorinated drinking water processed from humus-rich surface water. *Bulletin of Environmental Contamination and Toxicology*, **41** (5), 712-718.

Full Text: [1988\Bul Env Con Tox41, 712.pdf](1988/Bul%20Env%20Con%20Tox41,%20712.pdf)

? Jan, J. and Tratnik, M. (1988), Polychlorinated biphenyls in residents around the River Krupa, Slovenia, Yugoslavia. *Bulletin of Environmental Contamination and Toxicology*, **41** (6), 809-814.

Full Text: [1988\Bul Env Con Tox41, 809.pdf](1988/Bul%20Env%20Con%20Tox41,%20809.pdf)

? Marcus, J.M. and Scott, G.I. (1989), Effects of two diesel fuel mixtures on fecal coliform bacteria densities. *Bulletin of Environmental Contamination and Toxicology*, **42** (3), 395-401.

Full Text: [1989\Bul Env Con Tox42, 395.pdf](1989/Bul%20Env%20Con%20Tox42,%20395.pdf)

? Kira, S., Hayatsu, H. and Ogata, M. (1989), Detection of mutagenicity in mussels and their ambient water. *Bulletin of Environmental Contamination and Toxicology*, **43** (4), 583-589.

Full Text: [1989\Bul Env Con Tox43, 583.pdf](1989/Bul%20Env%20Con%20Tox43,%20583.pdf)

Ahmed, M., Ahmed, P. and Kutbi, I.I. (1989), Lead pollution in urban and Rural Saudi Arabian children. *Bulletin of Environmental Contamination and Toxicology*, **43**, 660-666.

Full Text: [1989\Bul Env Con Tox43, 660.pdf](1989/Bul%20Env%20Con%20Tox43,%20660.pdf)

? Lee, B.M. and Scott, G.I. (1989), Acute toxicity of temephos, fenoxycarb, diflubenzuron, and methoprene and bacillus thuringiensis var. israelensis to the mummichog (*Fundulus heteroclitus*). *Bulletin of Environmental Contamination and Toxicology*, **43** (6), 827-832.

Full Text: [1989\Bul Env Con Tox43, 827.pdf](1989/Bul%20Env%20Con%20Tox43,%20827.pdf)

? Ogata, M. and Fujisawa, K. (1990), Gas chromatographic and capillary gas chromatographic/mass spectrometric determination of organic sulfur compounds (OSCs) in sediment from ports: Significance of these compounds as an oil pollution index. *Bulletin of Environmental Contamination and Toxicology*, **44** (6), 884-891.

Full Text: [1990\Bul Env Con Tox44, 884.pdf](1990/Bul%20Env%20Con%20Tox44,%20884.pdf)

? Tanada, M., Miyoshi, T., Nakamura, T. and Tanada, S. (1990), Adsorption removal of cresol by granular activated carbon for medical waste water treatment. *Bulletin of Environmental Contamination and Toxicology*, **45** (2), 170-176.

Full Text: [1990\Bul Env Con Tox45, 170.pdf](1990/Bul%20Env%20Con%20Tox45,%20170.pdf)

? Hosokawa, M., Endo, G., Kuroda, K. and Horiguchi, S. (1991), Influence of sulfate, Ca, and Mg on the acute toxicity of potassium dichromate to Daphnia similis. *Bulletin of Environmental Contamination and Toxicology*, **46** (3), 461-465.

Full Text: [1991\Bul Env Con Tox46, 461.pdf](1991/Bul%20Env%20Con%20Tox46,%20461.pdf)

? Turnquest, E.M. and Hallenbeck, W.H. (1991), Blood aluminum levels as a function of aluminum intake from drinking water. *Bulletin of Environmental Contamination and Toxicology*, **46** (4), 554-560.

Full Text: [1991\Bul Env Con Tox46, 554.pdf](1991/Bul%20Env%20Con%20Tox46,%20554.pdf)

Keywords: Aqueous Aluminum, Disease, Serum

? Gersberg, R.M., Dawsey, W.J. and Bradley, M.D. (1991), Biodegradation of monoaromatic hydrocarbons in groundwater under denitrifying conditions. *Bulletin of Environmental Contamination and Toxicology*, **47** (2), 230-237.

Full Text: [1991\Bul Env Con Tox47, 230.pdf](1991/Bul%20Env%20Con%20Tox47,%20230.pdf)

Kalavská, D. (1992), Blood lead level as a criterion of global pollution. *Bulletin of Environmental Contamination and Toxicology*, **48**, 487-493.

Full Text: [1992\Bul Env Con Tox48, 487.pdf](1992/Bul%20Env%20Con%20Tox48,%20487.pdf)

? Mugachia, J.C., Kanja, L. and Maitho, T.E. (1992), Organochlorine pesticide residues in estuarine fish from the Athi River, Kenya. *Bulletin of Environmental Contamination and Toxicology*, **49** (2), 199-206.

Full Text: [1992\Bul Env Con Tox49, 199.pdf](1992/Bul%20Env%20Con%20Tox49,%20199.pdf)

? Mugachia, J.C., Kanja, L. and Gitau, F. (1992), Organochlorine pesticide residues in fish from Lake Naivasha and Tana River, Kenya. *Bulletin of Environmental Contamination and Toxicology*, **49** (2), 207-210.

Full Text: [1992\Bul Env Con Tox49, 207.pdf](1992/Bul%20Env%20Con%20Tox49,%20207.pdf)

? Carroquino, M.J., Gersberg, R.M., Dawsey, W.J. and Bradley, M.D. (1992), Toxicity reduction associated with bioremediation of gasoline-contaminated groundwaters. *Bulletin of Environmental Contamination and Toxicology*, **49** (2), 224-231.

Full Text: [1992\Bul Env Con Tox49, 224.pdf](1992/Bul%20Env%20Con%20Tox49,%20224.pdf)

? Hashizume, T., Ueda, K., Tokutsu, S., Hanawa, I. and Kinae, N. (1992), Monitoring of mutagens in river and marine sediments by Salmonella/microsome assay combined with blue cotton method. *Bulletin of Environmental Contamination and Toxicology*, **49** (4), 497-503.

Full Text: [1992\Bul Env Con Tox49, 497.pdf](1992/Bul%20Env%20Con%20Tox49,%20497.pdf)

? van Vlaardingen, P.L. and van Beelen, P. (1992), Toxic effects of pollutants on methane production in sediments of the River Rhine. *Bulletin of Environmental Contamination and Toxicology*, **49** (5), 780-786.

Full Text: [1992\Bul Env Con Tox49, 780.pdf](1992/Bul%20Env%20Con%20Tox49,%20780.pdf)

? de Peyster, A. and Long, W.F. (1993), Fathead minnow optomotor response as a behavioral endpoint in aquatic toxicity testing. *Bulletin of Environmental Contamination and Toxicology*, **51** (1), 88-95.

Full Text: [1993\Bul Env Con Tox51, 88.pdf](1993/Bul%20Env%20Con%20Tox51,%2088.pdf)

? van Vlaardingen, P.L. and van Beelen, P. (1994), Toxic effects of pollutants on the mineralization of acetate in methanogenic river sediment. *Bulletin of Environmental Contamination and Toxicology*, **52** (1), 46-53.

Full Text: [1994\Bul Env Con Tox52, 46.pdf](1994/Bul%20Env%20Con%20Tox52,%2046.pdf)

? Iwami, O., Moon, C.S., Watanabe, T. and Ikeda, M. (1994), Association of metal concentrations in drinking water with the incidence of motor neuron disease in a focus on the Kii peninsula of Japan. *Bulletin of Environmental Contamination and Toxicology*, **52** (1), 109-116.

Full Text: [1994\Bul Env Con Tox52, 109.pdf](1994/Bul%20Env%20Con%20Tox52,%20109.pdf)

Keywords: Amyotrophic Lateral Sclerosis, Parkinsonism-Dementia, Aluminum, Calcium, Guam

Eromosele, I.C. and Otitolaye, O.O. (1994), Binding of iron, zinc and lead ions from aqueous solution by shea butter (*Butyrospermum parkii*) seed husks. *Bulletin of Environmental Contamination and Toxicology*, **52**, 530-537.

Full Text: [1994\Bul Env Con Tox52, 530.pdf](1994/Bul%20Env%20Con%20Tox52,%20530.pdf)

? Hoekstra, J.A., Vaal, M.A., Notenboom, J. and Slooff, W. (1994), Variation in the sensitivity of aquatic species to toxicants. *Bulletin of Environmental Contamination and Toxicology*, **53** (1), 98-105.

Full Text: [1994\Bul Env Con Tox53, 98.pdf](1994/Bul%20Env%20Con%20Tox53,%2098.pdf)

? Kira, S., Itoh, T., Hayatsu, H., Taketa, K., Zheng, Y., Li, R., Holliday, T.L., Giam, C.S. (1994), Detection of waterborne mutagens and characterization of chemicals in selected Galveston sites after an oil spill. *Bulletin of Environmental Contamination and Toxicology*, **53** (2), 285-291.

Full Text: [1994\Bul Env Con Tox53, 285.pdf](1994/Bul%20Env%20Con%20Tox53,%20285.pdf)

? Antón, F.A. and Ariz, M. (1994), Acute toxicity of technical trichlorphon to cyprinid fish. *Bulletin of Environmental Contamination and Toxicology*, **53** (4), 627-632.

Full Text: [1994\Bul Env Con Tox53, 627.pdf](1994/Bul%20Env%20Con%20Tox53,%20627.pdf)

? Filipic, M., Lovincic, D., Erjavec, M., Glavic, D. and Planina, P. (1995), Toxic and genotoxic activity of water samples from the River Ljubljanica. *Bulletin of Environmental Contamination and Toxicology*, **55** (2), 237-244.

Full Text: [1995\Bul Env Con Tox55, 237.pdf](1995/Bul%20Env%20Con%20Tox55,%20237.pdf)

Low, K.S., Lee, C.K. and Ow-Wee, S.T. (1995), Removal of chromium(III) from aqueous solution using chrome sludge. *Bulletin of Environmental Contamination and Toxicology*, **55** (2), 270-275.

Full Text: [1995\Bul Env Con Tox55, 270.pdf](1995/Bul%20Env%20Con%20Tox55,%20270.pdf)

? Mochida, K., Gomyoda, M. and Fujita, T. (1995), Toxicity of 1,1-dichloroethane and 1,2-dichloroethylene determined using cultured human KB cells. *Bulletin of Environmental Contamination and Toxicology*, **55** (2), 316-319.

Full Text: [1995\Bul Env Con Tox55, 316.pdf](1995/Bul%20Env%20Con%20Tox55,%20316.pdf)

? Hosokawa, M., Endo, G. and Kuroda, K. (1995), Acute toxic effect of River Yodo water (Japan) on Daphnia magna. *Bulletin of Environmental Contamination and Toxicology*, **55** (3), 419-425.

Full Text: [1995\Bul Env Con Tox55, 419.pdf](1995/Bul%20Env%20Con%20Tox55,%20419.pdf)

Abstract: The River Yodo originates from Lake Biwa, the largest and oldest lake in Japan and flows down to Osaka Bay, a distance of 75 km. It is the main source of drinking water for 14 million people in the Kinki area, the second largest urban community in Japan. The preservation of water quality and the protection of water bodies from human activities have been considered to be important issues. Worldwatch, on the other hand, reported that there are 70,000 synthetic chemicals in everyday use, with 500 to 1,000 new ones added to the list each year on the earth (Blum and Speece 1990). These chemicals are being discharged into the environment in each step of their production, transport, use and disposal. It is extremely difficult to make a quantitative estimate of their possible risks as a whole since most of them exist at levels too low to be estimated by any chemical analysis methods. To solve this problem, the U.S. Environmental Protection Agency has proposed a toxicity Identification evaluation (TIE) method, which combines toxicity testings with physical and chemical analyses of effluents to identify potentially causative toxicants (Mount and Anderson-Carnahan 1988a, 1988b, 1988c). In this study, we report results of one year test of acute toxicity of the River Yodo water on Daphnia magna.

Keywords: Mutagenicity

González, M.J., Jiménez, B., Hernández, L.M. and Gonnord, M.F. (1996), Levels of PCDDs and PCDFs in human milk from populations in Madrid and Paris. *Bulletin of Environmental Contamination and Toxicology*, **56** (2), 197-204.

Full Text: [B\Bul Env Con Tox56, 197.pdf](B/Bul%20Env%20Con%20Tox56,%20197.pdf)

Keywords: Dibenzo-p-Dioxins, Adipose-Tissue, United-States, Vietnam

Lalah, J.O. and Wandiga, S.O. (1996), Adsorption desorption and mobility of carbofuran in soil samples from Kenya. *Bulletin of Environmental Contamination and Toxicology*, **56** (4), 575-583.

Full Text: [B\Bul Env Con Tox56, 575.pdf](B/Bul%20Env%20Con%20Tox56,%20575.pdf)

Pérez-Coll, C.S. and Herkovits, J. (1996), Stage-dependent uptake of cadmium by *Bufo arenarum* embryos. *Bulletin of Environmental Contamination and Toxicology*, **56** (4), 663-669.

Full Text: [B\Bul Env Con Tox56, 663.pdf](B/Bul%20Env%20Con%20Tox56,%20663.pdf)

Keywords: Zinc Protection, Susceptibility, Accumulation

Rodamilans, M., Torra, M., To-Figueras, J., Corbella, J., López, B., Sánchez, C. and Mazzara, R. (1996), Effect of the reduction of petrol lead on blood lead levels of the population of Barcelona (Spain). *Bulletin of Environmental Contamination and Toxicology*, **56** (5), 717-721.

Full Text: [B\Bul Env Con Tox56, 717.pdf](B/Bul%20Env%20Con%20Tox56,%20717.pdf)

Kong, Z.M., Yu, L.W., Liu, Z.T., Wu, Q.L., Wang, L.S., Kong, L.R. and Han, S.Q. (1996), Mutagenicity of organic pollutants and their active components in the Xi River water at Shenyang. *Bulletin of Environmental Contamination and Toxicology*, **56** (5), 803-808.

Full Text: [B\Bul Env Con Tox56, 803.pdf](B/Bul%20Env%20Con%20Tox56,%20803.pdf)

Keywords: Mouse Bone-Marrow, Micronucleus

Miranda, M.G. and Ilangovan, K. (1996), Uptake of lead by *Lemna gibba* L: Influence on specific growth rate and basic biochemical changes. *Bulletin of Environmental Contamination and Toxicology*, **56** (6), 1000-1007.

Full Text: [B\Bul Env Con Tox56, 1000.pdf](B/Bul%20Env%20Con%20Tox56,%201000.pdf)

Keywords: Aquatic Macrophytes, Copper, Cadmium

Kira, S., Nogami, Y., Taketa, K. and Hayatsu, H. (1996), Comparison of techniques for monitoring water-borne polycyclic mutagens: Efficiency of blue rayon, Sep-Pak C18, and a biota, *Corbicula*, in concentrating benzo(a)pyrene in a model water system. *Bulletin of Environmental Contamination and Toxicology*, **57** (2), 278-283.

Full Text: [B\Bul Env Con Tox57, 278.pdf](B/Bul%20Env%20Con%20Tox57,%20278.pdf)

Keywords: Ambient Water, River Water, Mussels

Tsuda, T., Inoue, T., Kojima, M. and Aoki, S. (1996), Pesticides in water and fish from rivers flowing into Lake Biwa. *Bulletin of Environmental Contamination and Toxicology*, **57** (3), 442-449.

Full Text: [B\Bul Env Con Tox57, 442.pdf](B/Bul%20Env%20Con%20Tox57,%20442.pdf)

Keywords: Willow Shiner, Excretion, Bioconcentration, Accumulation

Raldua, D. and Pedrocchi, C. (1996), Mercury concentrations in three species of freshwater fishes from the Lower Gallego and Cinca Rivers, Spain. *Bulletin of Environmental Contamination and Toxicology*, **57** (4), 597-602.

Full Text: [B\Bul Env Con Tox57, 597.pdf](B/Bul%20Env%20Con%20Tox57,%20597.pdf)

Abstract: Mercury pollution in aquatic ecosystems has received great attention since the discovery of mercury as the cause of Minamata disease in Japan in the 1950s. Large quantities of mercury are released to the environment and are washed into aquatic systems, where it is biologically converted into methylmercury and taken up by aquatic organisms. Fishes accumulate mercury directly from food and the surrounding water (Rainbow 1985) and they can concentrate large amounts of this metal. They are, for instance, the single largest source of mercury to man, often from natural sources (Chovjka and Williams 1980). Investigations of mercury in aquatic ecosystems have been documented in North America and many countries of Europe, but few studies have been concerned with levels of contamination that occur in natural fish populations in Spain. There is, therefore, increasing need for current information on mercury contamination in these aquatic ecosystems. The objectives of the present study were: (1) to determine mercury concentrations in fishes of the lower Gallego and Cinca Rivers, (2) to determine the distribution of this pollutant within the fish community, and (3) to compare the concentrations of mercury in these fishes with action levels established by the European Union (EU) in order to protect the public health.

Pellettieri, M.B., Hallenbeck, W.H., Brenniman, G.R., Cailas, M. and Clark, M. (1996), PCB intake from sport fishing along the northern Illinois shore of Lake Michigan. *Bulletin of Environmental Contamination and Toxicology*, **57** (5), 766-770.

Full Text: [B\Bul Env Con Tox57, 766.pdf](B/Bul%20Env%20Con%20Tox57,%20766.pdf)

Wang, T.C., Weissman, J.C., Ramesh, G., Varadarajan, R. and Benemann, J.R. (1996), Parameters for removal of toxic heavy metals by water milfoil (*Myriophyllum spicatum*). *Bulletin of Environmental Contamination and Toxicology*, **57** (5), 779-786.

Full Text: [B\Bul Env Con Tox57, 779.pdf](B/Bul%20Env%20Con%20Tox57,%20779.pdf)

Cheng, P.C., Saito, S. and Kojima, Y. (1996), Lead content in human scalp hair of rural and urban residents in Taiwan. *Bulletin of Environmental Contamination and Toxicology*, **57** (6), 952-956.

Full Text: [B\Bul Env Con Tox57, 952.pdf](B/Bul%20Env%20Con%20Tox57,%20952.pdf)

Keywords: Children, Exposure, Pollution, Urine

Heckman, C.W., dos Campos, J.L. and Hardoim, E.L. (1997), Nitrite concentration in well water from Poconé, Mato Grosso, and its relationship to public health in rural Brazil. *Bulletin of Environmental Contamination and Toxicology*, **58** (1), 8-15.

Full Text: [B\Bul Env Con Tox58, 8.pdf](B/Bul%20Env%20Con%20Tox58,%208.pdf)

Sarma, D.R.R. and Rao, S.L.N. (1997), Fluoride concentrations in ground waters of Visakhapatnam, India. *Bulletin of Environmental Contamination and Toxicology*, **58** (2), 241-247.

Full Text: [B\Bul Env Con Tox58, 241.pdf](B/Bul%20Env%20Con%20Tox58,%20241.pdf)

Santerre, C.R., Blazer, V.S., Khanna, N., Reinert, R.E. and Barrows, F.T. (1997), Absorption of dietary dieldrin by striped bass. *Bulletin of Environmental Contamination and Toxicology*, **58** (2), 334-340.

Full Text: [B\Bul Env Con Tox58, 334.pdf](B/Bul%20Env%20Con%20Tox58,%20334.pdf)

Keywords: Rainbow-Trout

? Low, K.S., Lee, C.K. and Lee, P.L. (1997), Chromium(III) sorption enhancement through NTA - Modification of biological materials. *Bulletin of Environmental Contamination and Toxicology*, **58** (3), 380-386

Full Text: [1997\Bul Env Con Tox58, 380.pdf](1997/Bul%20Env%20Con%20Tox58,%20380.pdf)

Keywords: Bark, Cadmium, Copper, Materials, Metals, Moss, Nta, Removal, Sorption, Waste

Gasana, J., Twagilimana, L., Hallenbeck, W. and Brenniman, G. (1997), Industrial discharges of metals in Kigali, Rwanda, and the impact on drinking water quality. *Bulletin of Environmental Contamination and Toxicology*, **58** (4), 523-526.

Full Text: [B\Bul Env Con Tox58, 523.pdf](B/Bul%20Env%20Con%20Tox58,%20523.pdf)

Chiang, H.C., Yen, J.H. and Wang, Y.S. (1997), Sorption of herbicides butachlor, thiobencarb, and chlomethoxyfen in soils. *Bulletin of Environmental Contamination and Toxicology*, **58** (5), 758-763.

Full Text: [B\Bul Env Con Tox58, 758.pdf](B/Bul%20Env%20Con%20Tox58,%20758.pdf)

Keywords: Ionic Organic-Compounds, Equilibria, Water

Kira, S., Sakano, M. and Nogami, Y. (1997), Measurement of a time-weighted average concentration of polycyclic aromatic hydrocarbons in aquatic environment using solid phase extraction cartridges and a portable pump. *Bulletin of Environmental Contamination and Toxicology*, **58** (6), 879-884.

Full Text: [B\Bul Env Con Tox58, 879.pdf](B/Bul%20Env%20Con%20Tox58,%20879.pdf)

Meyer, S.F. and Gersberg, R.M. (1997), Heavy metals and acid-volatile sulfides in sediments of the Tijuana Estuary. *Bulletin of Environmental Contamination and Toxicology*, **59** (1), 113-119.

Full Text: [B\Bul Env Con Tox59, 113.pdf](B/Bul%20Env%20Con%20Tox59,%20113.pdf)

Nakama, A., Yoshikura, T. and Fukunaga, I. (1997), Induction of cytochrome P450 in Hep G2 cells and mutagenicity of extracts of sediments from a waste disposal site near Osaka, Japan. *Bulletin of Environmental Contamination and Toxicology*, **59** (3), 344-351.

Full Text: [B\Bul Env Con Tox59, 344.pdf](B/Bul%20Env%20Con%20Tox59,%20344.pdf)

Bao, M.L., Dai, S.G. and Pantani, F. (1997), Effect of dissolved humic material on the toxicity of tributyltin chloride and triphenyltin chloride to Daphnia magna. *Bulletin of Environmental Contamination and Toxicology*, **59** (4), 671-676.

Full Text: [B\Bul Env Con Tox59, 671.pdf](B/Bul%20Env%20Con%20Tox59,%20671.pdf)

Schuhmacher, M., Meneses, M., Granero, S., Llobet, J.M. and Domingo, J.L. (1997), Trace element pollution of soils collected near a municipal solid waste incinerator: Human health risk. *Bulletin of Environmental Contamination and Toxicology*, **59** (6), 861-867.

Full Text: [B\Bul Env Con Tox59, 861.pdf](B/Bul%20Env%20Con%20Tox59,%20861.pdf)

Kira, S., Horiguchi, H., Nogami, Y., Komatsu, T., Fujisawa, K., Ito, T. and Hayatsu, H. (1997), Improved blue rayon hanging technique that can measure a time-weighted average concentration of benzo (a)pyrene in sea water. *Bulletin of Environmental Contamination and Toxicology*, **59** (6), 941-947.

Full Text: [B\Bul Env Con Tox59, 941.pdf](B/Bul%20Env%20Con%20Tox59,%20941.pdf)

Suzuki, Y., Imai, S., Kawakami, M., Masuda, Y. and Akasaka, K. (1998), Identification and determination of low-molecular weight organic compounds in contaminated fog water using proton nuclear magnetic resonance spectroscopy. *Bulletin of Environmental Contamination and Toxicology*, **60** (3), 355-362.

Full Text: [B\Bul Env Con Tox60, 355.pdf](B/Bul%20Env%20Con%20Tox60,%20355.pdf)

Greco, R.J., Robson, M.G., Meyer, L.W. and Russell, D. (1998), Hydrocoolers: Are they a mechanism for pesticide transfer? *Bulletin of Environmental Contamination and Toxicology*, **60** (5), 685-692.

Full Text: [B\Bul Env Con Tox60, 685.pdf](B/Bul%20Env%20Con%20Tox60,%20685.pdf)

Lee, C.L., Wang, T.C., Hsu, C.H. and Chiou, A.A. (1998), Heavy metal sorption by aquatic plants in Taiwan. *Bulletin of Environmental Contamination and Toxicology*, **61** (4), 497-504.

Full Text: [B\Bul Env Con Tox61, 497.pdf](B/Bul%20Env%20Con%20Tox61,%20497.pdf)

Keywords: Water Hyacinth, Cadmium, Accumulation, Toxicity, Azolla

Zabik, M.J., Polin, D., Underwood, M., Wiggers, P. and Zabik, M.E. (1998), Tissue residues in male chickens fed a 50 ng/kg dietary concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin. *Bulletin of Environmental Contamination and Toxicology*, **61** (5), 664-668.

Full Text: [B\Bul Env Con Tox61, 664.pdf](B/Bul%20Env%20Con%20Tox61,%20664.pdf)

Keywords: Excretion, TCDD

Caldas, E.D., Coelho, R., Souza, L.C. and Silva, S.C. (1999), Organochlorine pesticides in water, sediment, and fish of Paranoá Lake of Brasilia, Brazil. *Bulletin of Environmental Contamination and Toxicology*, **62** (2), 199-206.

Full Text: [B\Bul Env Con Tox62, 199.pdf](B/Bul%20Env%20Con%20Tox62,%20199.pdf)

Keywords: Residues

Foster, E.P., Drake, D. and Farlow, R. (1999), Polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran congener profiles in fish, crayfish, and sediment collected near a wood treating facility and a bleached kraft pulp mill. *Bulletin of Environmental Contamination and Toxicology*, **62** (3), 239-246.

Full Text: [B\Bul Env Con Tox62, 239.pdf](B/Bul%20Env%20Con%20Tox62,%20239.pdf)

Keywords: 2,3,7,8-Tetrachlorodibenzo-Para-Dioxin, Furans, Rats

Senthilnathan, S. and Azeez, P.A. (1999), Influence of dyeing and bleaching industries on ground water of Tirupur, Tamilnadu, India. *Bulletin of Environmental Contamination and Toxicology*, **62** (3), 330-335.

Full Text: [B\Bul Env Con Tox62, 330.pdf](B/Bul%20Env%20Con%20Tox62,%20330.pdf)

Low, K.S., Lee, C.K. and Koo, W.H. (1999), Sorption of acid dyes by chemically modified peanut hulls. *Bulletin of Environmental Contamination and Toxicology*, **62** (4), 428-433.

Full Text: [B\Bul Env Con Tox62, 428.pdf](B/Bul%20Env%20Con%20Tox62,%20428.pdf)

Keywords: Removal

? Zhou, Q.X. (1999), Combined chromium and phenol pollution in a marine prawn fishery. *Bulletin of Environmental Contamination and Toxicology*, **62** (4), 476-482.

Full Text: [1999\Bul Env Con Tox62, 476.pdf](1999/Bul%20Env%20Con%20Tox62,%20476.pdf)

Farooq, M., Hans, R.K., Viswanathan, P.N. and Joshi, P.C. (1999), Health hazard from dry river bed agriculture. *Bulletin of Environmental Contamination and Toxicology*, **62** (5), 555-562.

Full Text: [B\Bul Env Con Tox62, 555.pdf](B/Bul%20Env%20Con%20Tox62,%20555.pdf)

Yang, C.Y. (1999), Relationship between trace metal concentrations and hardness in drinking water in Taiwan. *Bulletin of Environmental Contamination and Toxicology*, **63** (1), 59-64.

Full Text: [B\Bul Env Con Tox63, 59.pdf](B/Bul%20Env%20Con%20Tox63,%2059.pdf)

Keywords: Cardiovascular Mortality, Heart-Disease, Magnesium, Calcium, Lead, Risk

Thompson, T.S., Le, M.D., Kasick, A.R. and Macaulay, T.J. (1999), Arsenic in well water supplies in Saskatchewan. *Bulletin of Environmental Contamination and Toxicology*, **63** (4), 478-483.

Full Text: [B\Bul Env Con Tox63, 478.pdf](B/Bul%20Env%20Con%20Tox63,%20478.pdf)

Keywords: Drinking-Water, Cancer Mortality, Bladder, Exposure, Risks, Lung

Bruehler, G. and de Peyster, A. (1999), Selenium and other trace metals in pelicans dying at the Salton Sea. *Bulletin of Environmental Contamination and Toxicology*, **63** (5), 590-597.

Full Text: [B\Bul Env Con Tox63, 590.pdf](B/Bul%20Env%20Con%20Tox63,%20590.pdf)

Sisinno, C.L., Oliveira Filho, E.C., Dufrayer, M.C., Moreira, J.C. and Paumgartten, F.J. (2000), Toxicity evaluation of a municipal dump leachate using zebrafish acute tests. *Bulletin of Environmental Contamination and Toxicology*, **64** (1), 107-113.

Full Text: [B\Bul Env Con Tox64, 107.pdf](B/Bul%20Env%20Con%20Tox64,%20107.pdf)

Davies, M.S. and Cliffe, E.J. (2000), Adsorption of metals in seawater to limpet (*Patella vulgata*) pedal mucus. *Bulletin of Environmental Contamination and Toxicology*, **64** (2), 228-234.

Full Text: [B\Bul Env Con Tox64, 228.pdf](B/Bul%20Env%20Con%20Tox64,%20228.pdf)

Keywords: Littorina-Littorea, Rainbow-Trout, Soft-Water, Accumulation, Gastropods, Cadmium, Copper, Zinc

Finklea, B., Miller, G., and Busbee, D. (2000), Polychlorinated biphenyl residues in blubber of male Atlantic bottlenose dolphins (*Tursiops truncatus*) that stranded and died at Matagorda Bay. *Bulletin of Environmental Contamination and Toxicology*, **64** (3), 323-332.

Full Text: [B\Bul Env Con Tox64, 323.pdf](B/Bul%20Env%20Con%20Tox64,%20323.pdf)

Nakamura, T., Kawasaki, N, Tamura, T. and Tanada, S. (2000), *In vitro* adsorption characteristics of paraquat and diquat with activated carbon varying in particle size. *Bulletin of Environmental Contamination and Toxicology*, **64** (3), 377-382.

Full Text: [B\Bul Env Con Tox64, 377.pdf](B/Bul%20Env%20Con%20Tox64,%20377.pdf)

Keywords: Charcoal, Intoxications

Li, Y.S., Chiou, C.S. and Shieh, Y.S. (2000), Adsorption of acid black 1 wastewater by basic oxygen furnace slag. *Bulletin of Environmental Contamination and Toxicology*, **64** (5), 659-665.

Full Text: [B\Bul Env Con Tox64, 659.pdf](B/Bul%20Env%20Con%20Tox64,%20659.pdf)

Keywords: Fly-Ash, Water

Carapeto, C. and Purchase, D. (2000), Distribution and removal of cadmium and lead in a constructed wetland receiving urban runoff. *Bulletin of Environmental Contamination and Toxicology*, **65** (3), 322-329.

Full Text: [B\Bul Env Con Tox65, 322.pdf](B/Bul%20Env%20Con%20Tox65,%20322.pdf)

Sharma, K.P., Chaturvedi, R.K., Sharma, S. and Sharma, K. (2000), Scavenging potential of hydrophytes for copper removal from textile dye wastewaters. *Bulletin of Environmental Contamination and Toxicology*, **65** (3), 330-336.

Full Text: [B\Bul Env Con Tox65, 330.pdf](B/Bul%20Env%20Con%20Tox65,%20330.pdf)

Keywords: Cadmium Accumulation, Water-Hyacinth, Waste-Water, Plants, Zinc, Lead, Metals

Saygideğer, S. (2000), Sorption of cadmium and their effects on growth, protein contents, and photosynthetic pigment composition of *Veronica anagallis-aquatica* L. and *Ranunculus aquatilis* L. *Bulletin of Environmental Contamination and Toxicology*, **65** (4), 459-464.

Full Text: [B\Bul Env Con Tox65, 459.pdf](B/Bul%20Env%20Con%20Tox65,%20459.pdf)

Abstract: Toxic metal pollution of waters is a major environmental problem. Pollution et al. 1987), Azolla pinnata (Jackson et al. 1990), Lemna minor (Mo et al. 1989), of the biosphere with toxic metals, has accelerated dramatically since the beginning of the industrial revolution (Niriago 1979, Settle and Patterson 1980). The primary sources of this pollution are the mining and smelting of metalliferous ores, burning of the fossil fuels, municipal wastes, fertilizes, pesticides and sewage (Kanbata and Pendias 1989). Cadmium enters the aquatic environment through anthropogenic sources such as industry and agriculture (Kay et al. 1986). Cadmium is not known to be an essential element to plants. Although a limited transport of Cadmium to shoots and binding to cell walls occur in the roots (Balsberg 1989). In many ways living plants can be compared to solar driven pumps which can extract and concentrate certain elements from their environment (Raskin et al. 1994). Aquatic plants and algae are known to accumulate metals and other toxic elements from contaminated water (Wang et al. 1995). All plants have the ability to accumulate from sail and water, those heavy metals (Fe, Mn Zn, Cu, Mg, Mo and Ni) which are essential for their growth and development (Raskin et al. 1994). Certain plants also have the ability to accumulate heavy metals (Cd, Cr, Pb, Co, Ag, Se and Hg) which have no known biological function (Raskin et al. 1994, Baker and Brooks 1989). However excessive accumulation of these heavy metals can be toxic to most plants. The ability to both tolerate them to unusually high concentrations has evolved both independently and together in a number of different plant species (Ernst et al. 1992, Banuelas et al. 1990). The aquatic plants are often the first link in aquatic food chains, the metal concentrations of a few plant species have been analysed in relation to metal contents of aquatic environments (Baker et al. 1989).

Some aquatic or semiaquatic macrophytes such as Eichornia crassipes (Dierberg at al. 1987) Azolla pinnata (Jackson at al. 1990), Cladophora glomerata (Mc Hardy 1990), Spirogyra fluviatilis (Saygideger, 1998) can take up Zn, Pb, Cu, Cd Fe and Hg from contaminated solutions. They are also known to be tolerant to these metals. This study was carried out to investigate, the short-term uptake of Cd by Veronica anagallis-aquatica L. and Ranunculus aquatilis L. Effects of Cadmium on growth, protein contents and photosynthetic pigment composition, as well as to determinate tolerance to Cadmium were investigated.

Keywords: Heavy-Metals, Toxicity, Plants, Bioaccumulation, Lead, Zinc

Ringelband, U. and Hehl, O. (2000), Kinetics of vanadium bioaccumulation by the brackish water hydroid *Cordylophora caspia* (Pallas). *Bulletin of Environmental Contamination and Toxicology*, **65** (4), 486-493.

Full Text: [B\Bul Env Con Tox65, 486.pdf](B/Bul%20Env%20Con%20Tox65,%20486.pdf)

Abstract: Vanadium is an abundant metal, which enters the environment via natural rock leaching. A large fraction however, enters the environment through the combustion of coal or petroleum products, which can contain high vanadium concentrations of biological origin. In steel industry vanadium is used as an alloy, therefore, the residual slag stones of steel production can contain rather high concentrations of this heavy metal. Since slag stones are increasingly used in riverbank reinforcement and since it is known that vanadium can leach from these artificial stones into the aquatic environment current interest arose on the toxicity of vanadium towards aquatic organisms. Vanadium, inhaled by humans as vanadium pentoxid, accumulates mainly in hair, liver. kidney and bones (Nechay et al. 1986) and causes several health hazards (for review see: Philipps et al. 1983). For the aquatic environment, very little is known about accumulation in biota and about toxic effects arising in invertebrates. Apart from studies with several ascidian species, which are known to accumulate vanadium from sea water up to the 10(6)-fold (Michibata et al. 1989) sparse information exists on accumulation of vanadium by invertebrates. Ringelband & Karbe (1996) showed that vanadium inhibits the colonial growth of hydroids, and that it acts as a potent inhibitor of hydroidal Na-K-ATPase. Up to now, very little is known about the biokinetic behaviour of vanadium in hydroids. The aim of the present study is to determine accumulation kinetics of vanadium in the brackish water polyp Cordylophora caspia.

Cordylophora caspia is a colonial polyp (fam.: Clavidae) with optimal population growth in brackish water with salinity ranging between 10 and 16 parts per thousand (Kinne 1956). Hydroids are particularly sensitive to heavy metals and they serve as test organisms in a well-established population growth test (Stebbing. 1976, Karbe et al. 1984).

Keywords: Ascidians

Fraysse, B., Baudin, J.P., Garnier-Laplace, J., Boudou, A., Ribeyre, F. and Adam, C. (2000), Cadmium uptake by *Corbicula fluminea* and *Dreissena polymorpha*: Effects of pH and temperature. *Bulletin of Environmental Contamination and Toxicology*, **65** (5), 638-645.

Full Text: [B\Bul Env Con Tox65, 638.pdf](B/Bul%20Env%20Con%20Tox65,%20638.pdf)

Keywords: Fresh-Water Bivalves, Clam, Dynamics, Mussel, Metals

Sinha, S., Saxena, R. and Singh, S. (2000), Fluoride removal from water by *Hydrilla verticillata* (l.f.) Royle and its toxic effects. *Bulletin of Environmental Contamination and Toxicology*, **65** (5), 638-645.

Full Text: [B\Bul Env Con Tox65, 683.pdf](B/Bul%20Env%20Con%20Tox65,%20683.pdf)

Keywords: Lipid-Peroxidation

Mateo, R., Carrillo, J. and Guitart, R. (2000), p, p’-DDE residues in eggs of European kestrel Falco tinnunculus from Tenerife, Canary Islands, Spain. *Bulletin of Environmental Contamination and Toxicology*, **65** (6), 780-785.

Full Text: [B\Bul Env Con Tox65, 780.pdf](B/Bul%20Env%20Con%20Tox65,%20780.pdf)

Keywords: Predatory Birds, Polychlorinated-Biphenyls, Organochlorine Residues, Heavy-Metals, Pesticides, Trends

Jiang, W. and Liu, D. (2000), Effects of Pb2+ on root growth, cell division, and nucleolus of *Zea mays* L. *Bulletin of Environmental Contamination and Toxicology*, **65** (6), 786-793.

Full Text: [B\Bul Env Con Tox65, 786.pdf](B/Bul%20Env%20Con%20Tox65,%20786.pdf)

Keywords: Allium-Cepa, Lead, Plants, Calmodulin

Gupta, S., Gajbhiye, V.T. and Agnihotri, N.P. (2001), Adsorption-desorption, persistence, and leaching behavior of flufenacet in alluvial soil of India. *Bulletin of Environmental Contamination and Toxicology*, **66** (1), 9-16.

Full Text: [B\Bul Env Con Tox66, 9.pdf](B/Bul%20Env%20Con%20Tox66,%209.pdf)

Lu, Y., Han, S.K. and Zhang, C.D. (2001), Sorption of the herbicide mefenacet in soils. *Bulletin of Environmental Contamination and Toxicology*, **66** (1), 17-23.

Full Text: [B\Bul Env Con Tox66, 17.pdf](B/Bul%20Env%20Con%20Tox66,%2017.pdf)

Keywords: Water

Voigt, A., Hendershot, W.H. and Renoux, A.Y. (2001), Adsorption of Cd, Cu, Ni, and Pb on petri dishes and filter materials used in bioassay procedures. *Bulletin of Environmental Contamination and Toxicology*, **66** (1), 44-49.

Full Text: [B\Bul Env Con Tox66, 44.pdf](B/Bul%20Env%20Con%20Tox66,%2044.pdf)

Keywords: Container Surfaces, Seed-Germination, Soil Solutions, Aluminum, Cadmium, Metals, Growth, Silver, Zinc, Lead

Saçan, M.T. and Balcioğlu, I.A. (2001), Bioaccumulation of aluminium in Dunaliella tertiolecta in natural seawater: Aluminium-metal (Cu, Pb, Se) interactions and influence of pH. *Bulletin of Environmental Contamination and Toxicology*, **66** (2), 214-221.

Full Text: [B\Bul Env Con Tox66, 214.pdf](B/Bul%20Env%20Con%20Tox66,%20214.pdf)

Keywords: Green-Alga, Toxicity, Phytoplankton, Acid, Copper

Zheng, M.H., Chu, S.G., Sheng, G.Y., Min, Y.S., Bao, Z.C. and Xu, X.B. (2001), Polychlorinated dibenzo-p-dioxins and dibenzofurans in surface sediments from Pearl River Delta in China. *Bulletin of Environmental Contamination and Toxicology*, **66** (4), 504-507.

Full Text: [B\Bul Env Con Tox66, 504.pdf](B/Bul%20Env%20Con%20Tox66,%20504.pdf)

Joseph, V. and Joseph, A. (2001), Microalgae in petrochemical effluent: Growth and biosorption of total dissolved solids. *Bulletin of Environmental Contamination and Toxicology*, **66** (4), 522-527.

Full Text: [B\Bul Env Con Tox66, 522.pdf](B/Bul%20Env%20Con%20Tox66,%20522.pdf)

Keywords: Inhibition, Phenol

Gragnaniello, S., Fulgione, D., Milone, M., Soppelsa, O., Cacace, P. and Ferrara, L. (2001), Sparrows as possible heavy-metal biomonitors of polluted environments. *Bulletin of Environmental Contamination and Toxicology*, **66** (6), 719-726.

Full Text: [B\Bul Env Con Tox66, 719.pdf](B/Bul%20Env%20Con%20Tox66,%20719.pdf)

Keywords: Southern Poland, Birds

Peralta, J.R., Gardea-Torresdey, J.L., Tiemann, K.J., Gomez, E., Arteaga, S., Rascon, E. and Parsons, J.G. (2001), Uptake and effects of five heavy metals on seed germination and plant growth in alfalfa (*Medicago sativa L.*). *Bulletin of Environmental Contamination and Toxicology*, **66** (6), 727-734.

Full Text: [B\Bul Env Con Tox66, 727.pdf](B/Bul%20Env%20Con%20Tox66,%20727.pdf)

Keywords: Phytoremediation, Cadmium, Copper, Seedlings, Lead

Abdullah, A.R., Sinnakkannu, S. and Tahir, N.M. (2001), Adsorption, desorption, and mobility of metsulfuron methyl in Malaysian agricultural soils. *Bulletin of Environmental Contamination and Toxicology*, **66** (6), 762-769.

Full Text: [B\Bul Env Con Tox66, 762.pdf](B/Bul%20Env%20Con%20Tox66,%20762.pdf)

Keywords: Organic-Matter, Chlorsulfuron, Sorption, Triasulfuron, Persistence, Degradation, Herbicides, Pesticides, Kinetics, Movement

Takayanagi, K. (2001), Acute toxicity of waterborne Se(IV), Se(VI), Sb(III), and Sb(V) on red seabream (*Pargus major*). *Bulletin of Environmental Contamination and Toxicology*, **66** (6), 808-813.

Full Text: [B\Bul Env Con Tox66, 808.pdf](B/Bul%20Env%20Con%20Tox66,%20808.pdf)

Keywords: Selenium, Antimony

Kim, M.J. (2001), Separation of inorganic arsenic species in groundwater using ion exchange method. *Bulletin of Environmental Contamination and Toxicology*, **67** (1), 46-51.

Full Text: [B\Bul Env Con Tox67, 46.pdf](B/Bul%20Env%20Con%20Tox67,%2046.pdf)

Keywords: Atomic-Absorption Spectrometry, Neutron-Activation Analysis, Natural-Waters, Speciation, Chromatography

Nan, Z. and Cheng, G. (2001), Copper and zinc uptake by spring wheat (*Triticum aestivum L.*) and corn (*Zea mays L.*) grown in Baiyin Region. *Bulletin of Environmental Contamination and Toxicology*, **67** (1), 83-90.

Full Text: [B\Bul Env Con Tox67, 83.pdf](B/Bul%20Env%20Con%20Tox67,%2083.pdf)

Keywords: Soil, Cadmium, Plants, Sludge, China, Rice

Lin, M.C., Liao, C.M., Liu, C.W. and Singh, S. (2001), Bioaccumulation of arsenic in aquacultural large-scale mullet *Liza macrolepis* from Blackfoot disease area in Taiwan. *Bulletin of Environmental Contamination and Toxicology*, **67** (1), 91-97.

Full Text: [B\Bul Env Con Tox67, 91.pdf](B/Bul%20Env%20Con%20Tox67,%2091.pdf)

Keywords: Accumulation, Toxicity, Cycle, Fish

Hardisson, A., Rodríguez, M.I., Burgos, A., Flores, L.D., Gutiérrez, R. and Várela, H. (2001), Fluoride levels in publicly supplied and bottled drinking water in the Island of Tenerife, Spain. *Bulletin of Environmental Contamination and Toxicology*, **67** (2), 163-170.

Full Text: [B\Bul Env Con Tox67, 163.pdf](B/Bul%20Env%20Con%20Tox67,%20163.pdf)

Topcuoğlu, S., Güven, K.C., Kirbaşoğlu, Ç., Güngör, N., Ünlü, S. and Yilmaz, Y.Z. (2001), Heavy metals in marine algae from Şile in the Black Sea, 1994-1997. *Bulletin of Environmental Contamination and Toxicology*, **67** (2), 288-294.

Full Text: [B\Bul Env Con Tox67, 288.pdf](B/Bul%20Env%20Con%20Tox67,%20288.pdf)

Keywords: Sediments, Monitor, Lagoon

El-Sammak, A. (2001), Heavy metal pollution in bottom sediment, Dubai, United Arab Emirates. *Bulletin of Environmental Contamination and Toxicology*, **67** (2), 295-302.

Full Text: [B\Bul Env Con Tox67, 295.pdf](B/Bul%20Env%20Con%20Tox67,%20295.pdf)

Keywords: Marine-Sediments, Gulf

Stilwell, D.E. and Graetz, T.J. (2001), Copper, chromium, and arsenic levels in soil near highway traffic sound barriers built using CCA pressure-treated wood. *Bulletin of Environmental Contamination and Toxicology*, **67** (2), 303-308.

Full Text: [B\Bul Env Con Tox67, 303.pdf](B/Bul%20Env%20Con%20Tox67,%20303.pdf)

Wu, W.Z., Li, W., Schramm, K.W. and Kettrup, A. (2001), Evaluation of PCDD/F toxicity in fish livers from Ya-Er Lake, China: Chemical analysis compared with in vivo and in vitro EROD bioassays. *Bulletin of Environmental Contamination and Toxicology*, **67** (3), 376-384.

Full Text: [B\Bul Env Con Tox67, 376.pdf](B/Bul%20Env%20Con%20Tox67,%20376.pdf)

Keywords: Environmental-Samples, Polychlorinated-Biphenyls, Induction, Cleanup

Demirözü-Erdinç, B. and Saldamli, I. (2001), Variation of heavy metal contents in frozen vegetable products. *Bulletin of Environmental Contamination and Toxicology*, **67** (3), 416-422.

Full Text: [B\Bul Env Con Tox67, 416.pdf](B/Bul%20Env%20Con%20Tox67,%20416.pdf)

Keywords: Atomic-Absorption Spectrometry, Feed Crops, Cadmium, Lead, Wheat, Copper, Food, Corn

Fytianos, K., Katsianis, G., Triantafyllou, P. and Zachariadis, G. (2001), Accumulation of heavy metals in vegetables grown in an industrial area in relation to soil. *Bulletin of Environmental Contamination and Toxicology*, **67** (3), 423-430.

Full Text: [B\Bul Env Con Tox67, 423.pdf](B/Bul%20Env%20Con%20Tox67,%20423.pdf)

Keywords: Plant Availability, Contaminated Soil, Trace-Metals, Cadmium, Lead, Zinc

Jie, N., Zhang, Q. and Yao, G. (2001), Study on the adsorption of vanadium(V) with *Scenedesmus obliquus*. *Bulletin of Environmental Contamination and Toxicology*, **67** (3), 431-437.

Full Text: [B\Bul Env Con Tox67, 431.pdf](B/Bul%20Env%20Con%20Tox67,%20431.pdf)

Rouchaud, J., Neus, O., Eelen, H. and Bulcke, R. (2001), Persistence, mobility, and adsorption of the herbicide flufenacet in the soil of winter wheat crops. *Bulletin of Environmental Contamination and Toxicology*, **67** (4), 609-616.

Full Text: [B\Bul Env Con Tox67, 609.pdf](B/Bul%20Env%20Con%20Tox67,%20609.pdf)

Keywords: Degradation

Choi, J.W., Matsuda, M., Kawano, M., Iseki, N., Masunaga, S. and Wakimoto, T. (2001), Accumulation of polychlorinated dibenzo-p-dioxins, dibenzofurans, and dioxin-like PCBs in black-tailed gulls and eggs. *Bulletin of Environmental Contamination and Toxicology*, **67** (5), 733-740.

Full Text: [B\Bul Env Con Tox67, 733.pdf](B/Bul%20Env%20Con%20Tox67,%20733.pdf)

Keywords: Biphenyls, River, PCDDs, PCDFs, USA

Ely, J.T.A. (2001), Mercury induced alzheimer’s disease: Accelerating incidence? *Bulletin of Environmental Contamination and Toxicology*, **67** (6), 800-806.

Full Text: [B\Bul Env Con Tox67, 800.pdf](B/Bul%20Env%20Con%20Tox67,%20800.pdf)

Keywords: Brain, Toxicology, Amalgams, Aluminum, Release, Invitro, Cadmium, Invivo

Bhurtel, J., Higuchi, T., Ukita, M. and Kubota, A. (2001), Emission of poluchlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans from the combustion on municipal solid wastes produced by a nature disaster. *Bulletin of Environmental Contamination and Toxicology*, **67** (6), 848-855.

Full Text: [B\Bul Env Con Tox67, 848.pdf](B/Bul%20Env%20Con%20Tox67,%20848.pdf)

Keywords: Fly-Ash

Wen, X., Wu, L. and Tang, H. (2001), Adsorption of copper on polluted river sediment. *Bulletin of Environmental Contamination and Toxicology*, **67** (6), 913-920.

Full Text: [B\Bul Env Con Tox67, 913.pdf](B/Bul%20Env%20Con%20Tox67,%20913.pdf)

Keywords: Quality Criteria, Complexation, Le

Reboredo, F. (2001), Cadmium uptake by *Halimioune portulacoides*: An ecophysiological study. *Bulletin of Environmental Contamination and Toxicology*, **67** (6), 926-933.

Full Text: [B\Bul Env Con Tox67, 926.pdf](B/Bul%20Env%20Con%20Tox67,%20926.pdf)

Keywords: Chlorophyll Fluorescence, Tomato Plants, Localization, Accumulation

Tsai, W.T., Hsieh, M.F., Sun, H.F., Chien, S.F. and Chen, H.P. (2002), Adsorption of paraquat onto activated bleaching earth. *Bulletin of Environmental Contamination and Toxicology*, **69** (2), 189-194.

Full Text: [B\Bul Env Con Tox62, 189.pdf](B/Bul%20Env%20Con%20Tox62,%20189.pdf)

? Wu, C.D., Wei, D.B., Hu, G.P. and Wang, L.S. (2003), Estimation of the sorption of substituted aromatic compounds onto modified clay. *Bulletin of Environmental Contamination and Toxicology*, **70** (3), 513-519.

Full Text: [2003\Bul Env Con Tox70, 513.pdf](2003/Bul%20Env%20Con%20Tox70,%20513.pdf)

Keywords: Aromatic, Clay, Hydrophobic Organic-Chemicals, K-Oc, Organoclays, Ow, Pollutants, Soil Sorption, Sorption

? Cancilla, D.A., Baird, J.C. and Rosa, R. (2003), Detection of aircraft deicing additives in groundwater and soil samples from Fairchild Air Force Base, a small to moderate user of deicing fluids. *Bulletin of Environmental Contamination and Toxicology*, **70** (5), 868-875.

Full Text: [2003\Bul Env Con Tox70, 868.pdf](2003/Bul%20Env%20Con%20Tox70,%20868.pdf)

Keywords: Formulated Glycol Deicers, International-Airport, Propylene-Glycol, Toxicity, Ethylene, Water

? Singh, N., Megharaj, M., Gates, W.P., Churchman, J., Kookana, R.S., Naidu, R. and Sethunathan, N. (2004), Sorption-desorption of fenamiphos in surfactant-modified clays. *Bulletin of Environmental Contamination and Toxicology*, **72** (2), 276-282

Full Text: [2004\Bul Env Con Tox72, 276.pdf](2004/Bul%20Env%20Con%20Tox72,%20276.pdf)

Keywords: Adsorption, Controlled-Release, Formulations, Mobility, Montmorillonite, Organo-Clay, Soil

Zhou, P.J., Lin, J., Shen, H., Li, T., Song, L.R., Shen, Y.W. and Liu, Y.D. (2004), Kinetic studies on the combined effects of lanthanum and cerium on the growth of *Microcystis aeruginosa* and their accumulation by *M. aeruginosa*. *Bulletin of Environmental Contamination and Toxicology*, **72** (4), 711-716.

Full Text: [B\Bul Env Con Tox72, 711.pdf](B/Bul%20Env%20Con%20Tox72,%20711.pdf)

Keywords: Rare-Earth-Elements, Bioavailability

? Montes, S., Montes-Atenas, G., Salomo, F., Valero, E. and Diaz, O. (2006), On the adsorption mechanisms of copper ions over modified biomass. *Bulletin of Environmental Contamination and Toxicology*, **76** (1), 171-178

Full Text: [2006\Bul Env Con Tox76, 171.pdf](2006/Bul%20Env%20Con%20Tox76,%20171.pdf)

Keywords: Adsorption, Biomass, Copper, Decontamination, Heavy-Metal Ions, Mechanisms, Pine Bark, Recovery, Removal, Synthetic Solutions

? Fei, Q. and Bei, W. (2007), Single- and multi-component adsorption of Pb, Cu, and Cd on peat. *Bulletin of Environmental Contamination and Toxicology*, **78** (3-4), 265-269.

Full Text: [2007\Bul Env Con Tox78, 265.pdf](2007/Bul%20Env%20Con%20Tox78,%20265.pdf)

Keywords: Competitive Adsorption, Activated Carbon, Aqueous-Solution, Metal-Ions, Sorption, Soils, Goethite, Sphagnum, Cadmium, Copper

? Dikici, H., Saltali, K. and Bingölbalı, S. (2010), Equilibrium and kinetics characteristics of copper(II) sorption onto gyttja. *Bulletin of Environmental Contamination and Toxicology*, **84** (1), 147-151.

Full Text: [2010\Bul Env Con Tox84, 147.pdf](2010/Bul%20Env%20Con%20Tox84,%20147.pdf)

Abstract: The sorption characteristics of gyttja to remove copper (Cu2+) ions from aqueous solutions were satisfactorily described with the Freundlich, Langmuir and Dubinin-Redushckevich (D-R) models. The sorption capacity (*q*max) of gyttja was 11.76 mg g-1. The D-R model indicated that the sorption of Cu2+ by gyttja was almost taken place by chemisorption. Thermodynamic parameters such as change in free energy (ΔG), enthalpy (ΔH), and entropy (ΔS) suggested that the adsorption process of Cu2+ by gyttja was feasible, spontaneous and endothermic in nature. Kinetic examination of the equilibrium data showed that the sorption processes of Cu2+ ions followed well pseudo-second-order kinetics model.

Keywords: Adsorption, Aqueous Solutions, Aqueous-Solution, Capacity, Cd, Characteristics, Chemisorption, Copper, Cu(II), Cu2+, Data, Divalent Metal-Ions, Endothermic, Energy, Enthalpy, Entropy, Equilibrium, Examination, Freundlich, Gyttja, Ions, Kinetic, Kinetics, Kinetics Model, Langmuir, Model, Models, Pb(II), Peat, Pseudo Second Order, Pseudo Second Order Kinetics, Pseudo-Second-Order, Pseudo-Second-Order Kinetics, Removal, Sawdust, Solutions, Sorption, Sorption Capacity, Thermodynamic, Thermodynamic Parameters, Thermodynamics, Zn

# Title: Bulletin of Experimental Biology and Medicine

Full Journal Title: Bulletin of Experimental Biology and Medicine

ISO Abbreviated Title: Bull. Exp. Biol. Med.

JCR Abbreviated Title: B Exp Biol Med

ISSN: 0007-4888

Issues/Year: 12

Journal Country/Territory: Russia

Language: English

Publisher: Plenum Publ Corp

Publisher Address: Consultants Bureau, 233 Spring St, New York, NY 10013

Subject Categories:

Medicine, Research & Experimental: Impact Factor

? Khonicheva, N.M., Gulyaeva, N.V., Zhdanova, I.V., Obidin, A.B., Dmitrieva, I.L. and Krushinskaya, N.L. (1986), Type of behavior and activity of superoxide dismutase in the rat brain (comparison of 2 Tryon strains). *Bulletin of Experimental Biology and Medicine*, **102** (12), 1619-1622.

Full Text: [1986\Bul Exp Bio Med102, 1619.pdf](1986/Bul%20Exp%20Bio%20Med102,%201619.pdf)

? Monakhov, A.G., Smirnov, V.P., Karev, I.D., Monakhova, L.V. and Dolotov, B.K. (1996), Characteristics of cell damage in breast cancer with the use of modifiers of radiotherapy. *Bulletin of Experimental Biology and Medicine*, **121** (6), 618-620.

Full Text: [1996\Bul Exp Bio Med121, 618.pdf](1996/Bul%20Exp%20Bio%20Med121,%20618.pdf)

Abstract: Ultrastructural peculiarities of breast tumor cells damaged by radiotherapy modulated by thermomodifiers are studied. The destructive changes are characteristically more pronounced in the center of nodes rather than in their peripheral parts after hyperthermia of superhigh frequency. Alterations induced by high-frequency interstitial hyperthermia are distributed more evenly in the central and peripheral regions. Ferromagnetic hyperthermia activates phagolysosomes containing iron particles, while hyperthermia with current-conducting fluids causes intra-and intercellular edema.

Keywords: Breast Carcinoma, Ultrastructure, Radiotherapy Modifiers

# Title: Bulletin of the History of Medicine

Full Journal Title: Bulletin of the History of Medicine

ISO Abbreviated Title: Bull. Hist. Med.

JCR Abbreviated Title: B Hist Med

ISSN: 0007-5140

Issues/Year: 4

Journal Country/Territory: United States

Language: English

Publisher: Johns Hopkins Univ Press

Publisher Address: Journals Publishing Division, 2715 North Charles St, Baltimore, MD 21218-4319

Subject Categories:

Health Care Sciences & Services: Impact Factor 0.325, (2002)

History & Philosophy of Science: Impact Factor 0.325, (2002)

? Houck, J.A. (2003), “What do these women want?”: Feminist responses to Feminine Forever, 1963-1980. *Bulletin of the History of Medicine*, **77** (1), 103-132.

Abstract: In 1963, Brooklyn gynecologist Robert A. Wilson and his wife, Thelma, published a paper in the Journal of the American Geriatrics Society arguing that untreated menopause robbed women of their femininity and ruined the quality of their lives. In 1966 Robert Wilson published a best-selling book, Feminine Forever, in which he maintained that menopause was an estrogen-deficiency disease that should be treated with estrogen replacement therapy to prevent the otherwise inevitable “living decay.” This paper explores the issues raised by the convergence of Wilson’s campaign and the emergence of the women’s movement. Between 1963 and 1980, feminists did not respond with one voice to Wilson’s ideas: at first, some embraced them as a boon for aging women, while others resisted regarding female aging as pathological. In 1975, studies linking ERT and endometrial cancer challenged the wisdom of routine hormone therapy, this shifted the tenor of the feminist discussion, but it did not create a consensus about the meaning of menopause or its treatment. Nevertheless, the feminist discussion of menopause revealed a larger women’s health agenda-namely, the unyielding belief that women should retain control of their bodies and participate fully in the decision-making efforts regarding their health. By controlling their bodies, all women, whether feminist or not, could ultimately control their lives.

Keywords: Menopause, Women’s Health Movement, Aging, Feminism, Estrogen Replacement Therapy (ERT), Robert A. Wilson, Menopause, Politics, Science

# Title: Bulletin. Indian Society of Soil Science

(Bull. Indian. Soc. Soil Sci.)

? Vig, A.C., Biswas, C.R. and Sinha, M.K. (1979), Kinetics of phosphorus desorption and diffusion in differentially P fertilized soils. *Bulletin. Indian Society of Soil Science*, **12**, 279.

# Title: Bulletin of the International Statistical Institute

Full Journal Title: Bulletin of the International Statistical Institute

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0074-8609

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Goudswaard, G. and Verstege, J.C.W. (1963), The construction of a classification scheme for a general statistical bibliography. *Bulletin of the International Statistical Institute*, **40** (2), 1128-1132.

# Title: Bulletin of the Japanese Society of Scientific Fisheries

Full Journal Title: Bulletin of the Japanese Society of Scientific Fisheries

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0021-5392

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Kariya, T., Haga, H., Haga, Y. and Kawasaki, Y. (1978), Studies on postmortem identification of pollutant in fish killed by water-pollution. 13. Cadmium-(1). *Bulletin of the Japanese Society of Scientific Fisheries*, **44** (10), 1065-1072.

# Title: Bulletin of the Johns Hopkins Hospital

Full Journal Title: Bulletin of the Johns Hopkins Hospital

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Cabot, A.T. (1900), Personal experience in operations for stone in the bladder. *Bulletin of the Johns Hopkins Hospital*, **11**, 107-111.

# Title: Bulletin of the Korean Chemical Society

Full Journal Title: [Bulletin of the Korean Chemical Society](http://journal.kcsnet.or.kr/kcs/bkcs/bkcs_index.htm)

ISO Abbreviated Title: Bull. Korean Chem. Soc.

JCR Abbreviated Title: B Kor Chem Soc

ISSN: 0253-2964

Issues/Year: 12

Journal Country/Territory: South Korea

Language: English

Publisher: Korean Chemical Soc

Publisher Address: 635-4 Yeogsam-Dong, Kangnam-Gu, Seoul 135-703, South Korea

Subject Categories:

Chemistry: Impact Factor 0.415, 80/121

Fouda, A.S., Madkour, L.H., Elshafei, A.A. and Elmaksoud, S.A.A. (1995), Corrosion-inhibitors for zinc in 2M HCl solution. *Bulletin of the Korean Chemical Society*, **16** (5), 454-458.

Full Text: [B\Bul Kor Che Soc16, 454.pdf](B/Bul%20Kor%20Che%20Soc16,%20454.pdf)

Abstract: Inhibiting action of semicarbazide, thiosemicarbazide, sym. diphenylcarbazide towards corrosion of zinc in hydrochloric acid has been investigated. The rate of corrosion depends on the nature of the inhibitor and its concentration. The values of inhibition efficiency from, weight loss, thermometric measurements are in good agreement with those obtained from polarization studies. From the polarization studies, the inhibitors used act as mixed adsorption type inhibitors, increased adsorption resulting from an increase in the electron density at the reactive C=S and C=O groups and N-atoms. The thermodynamic parameters of adsorption obtained using Bockris-Swinkels adsorption isotherm reveal a strong interaction of these carbazides on zinc surface.

Jeong, S.Y. and Lee, J.M. (1998), Removal of heavy metal ions from aqueous solutions by adsorption on magadiite. *Bulletin of the Korean Chemical Society*, **19** (2), 218-222.

Full Text: [B\Bul Kor Che Soc19, 218.pdf](B/Bul%20Kor%20Che%20Soc19,%20218.pdf)

Abstract: Removal of Cd(II), Zn(II) and Cu(II) from aqueous solutions using the adsorption process on magadiite has been investigated. It was found that the removal percentage of metal cations at equilibrium increases with increasing temperature, and follows the order of Cd(II)>Cu(II)>Zn(II). Equilibrium modeling of adsorption showed that the adsorptions of Cd(II), Cu(II), and Zn(II) were fitted to Langmuir isotherm. Kinetic modeling of the adsorption showed that first order reversible kinetic model fitted to experimental data. From kinetic model and equilibrium data, the overall rate constant (k) and the equilibrium constant (K) for the adsorption process were calculated. The overall rates of adsorption of metal ions follow the order of Cd(II)>Cu(I)>Zn(II). From the results of thermodynamic analysis, standard Gibbs free energy (ΔG°), standard enthalpy (ΔH°), and standard entropy (ΔS°) of adsorption process were calculated.

Keywords: Waste-Water, Zeolites, Kenyaite, Cations

Horsfall, Jr., M., Spiff, A.I. and Abia, A.A. (2004), Studies on the influence of mercaptoacetic acid (MAA) modification of cassava (*Manihot sculenta* Cranz) waste biomass on the adsorption of Cu2+ and Cd2+ from aqueous solution. *Bulletin of the Korean Chemical Society*, **25** (7), 969-976.

Full Text: [B\Bul Kor Che Soc25, 969.pdf](B/Bul%20Kor%20Che%20Soc25,%20969.pdf)

Abstract: Cassava peelings waste, which is both a waste and pollutant, was chemically modified using mercaptoacetic acid (MAA) and used to adsorb Cu2+ and Cd2+ from aqueous solution over a wide range of reaction conditions at 30°C. Acid modification produced a larger surface area, which significantly enhanced the metal ion binding capacity of the biomass. An adsorption model based on the Cu2+/Cd2+ adsorption differences was developed to predict the competition of the two metal ions towards binding sites for a mixed metal ion system. The phytosorption process was examined in terms of Langmuir, Freundlich and Dubinin-Radushkevich models. The models indicate that the cassava waste biomass had a greater phytosorption capacity, higher affinity and greater sorption intensity for Cu2+, than Cd2+. According to the evaluation using Langmuir equation, the monolayer binding capacity obtained was 127.3 Mg/g Cu2+ and 119.6 mg/g Cd2+. The kinetic studies showed that the phytosorption rates could be described better by a pseudo-second order process and the rate coefficients was determined to be 2.04×10-3 min-1 and 1.98×10-3 min-1 for Cu2+ and Cd2+ respectively. The results from these studies indicated that acid treated cassava waste biomass could be an efficient sorbent for the removal of toxic and valuable metals from industrial effluents.

Keywords: Biosorption, Cassava Waste, Heavy Metal Removal, Sorption, Removal, Ions, Adsorbent, Cadmium, Lead

? Gao, J.Z., Wang, Y.D., Yang, W. and Li, Y. (2010), Synthesis and characterization of adsorbent for Pb(II)-capture by using glow discharge electrolysis plasma. *Bulletin of the Korean Chemical Society*, **31** (2), 406-414.

Full Text: [2010\Bul Kor Che Soc31, 406.pdf](2010/Bul%20Kor%20Che%20Soc31,%20406.pdf)

Abstract: A novel polyacrylamide grafted hydrous ferric oxide adsorbent composite has been synthesized by using glow discharge electrolysis plasma. To optimize the synthesis conditions, the following parameters were examined in detail: applied power, discharge time, post polymerization temperature, post polymerization time, amount of crosslinking agent and hydrous ferric oxide gel added and so on. The adsorbent was characterized by Fourier transform infrared spectroscopy (FT-IR) and X-ray photoelectron spectroscopy (XPS). The removal percentage of the adsorbent in Pb(II) solution was examined and the data obtained showed that the adsorbent composite has a high capacity for lead ion. For the use in wastewater treatment, the thermodynamic and kinetic of Pb(II)-capture were also studied. Results indicated that the adsorption reaction was a spontaneous and an endothermic process, and it seems to be obeyed a pseudo-second-order rate model. Moreover, the adsorption isotherm of Pb(II)-capture is following the Langmuir and Freundlich isotherm models.

Keywords: Adsorbent, Adsorption, Adsorption Isotherm, Amino-Acids, Aqueous-Solution, Capacity, Characterization, Chitosan, Composite, Crosslinking, Data, Discharge, Electrolysis, Endothermic, Ferric Oxide, Freundlich, Freundlich Isotherm, FT-IR, FTIR, Gel, Glow Discharge Electrolysis Plasma, Grafted, Heavy-Metals, Hydrous Ferric Oxide, Infrared Spectroscopy, Ions, Isotherm, Kinetic, Langmuir, Lead, Lead Ion, Metal Removal, Model, Models, Oxide, Pb(II), Plasma, Polyacrylamide, Polymerization, Power, Pseudo Second Order, Pseudo-Second-Order, Pseudo-Second-Order Rate, Reaction, Removal, Solution, Spectroscopy, Synthesis, Temperature, Thermodynamic, Thermodynamics And Kinetics, Time, Treatment, Waste-Water, Wastewater, Wastewater Treatment, X-Ray, X-Ray Photoelectron Spectroscopy, XPS

? Haque, E., Khan, N.A., Talapaneni, S.N., Vinu, A., Jegal, J. and Jhung, S.H. (2010), Adsorption of phenol on mesoporous carbon CMK-3: Effect of textural properties. *Bulletin of the Korean Chemical Society*, **31** (6), 1638-1642.

Full Text: [2010\Bul Kor Che Soc31, 1638.pdf](2010/Bul%20Kor%20Che%20Soc31,%201638.pdf)

Abstract: Mesoporous carbon CMK-3s with different textural properties have been used for the adsorption of phenol to understand the necessary physicochemical properties of carbon for the efficient removal of phenol from contaminated water. The kinetic constants (both pseudo-second order and pseudo-first-order kinetics) increase with increasing pore size of carbons. The maximum adsorption capacities correlate well with micropore volume compared with surface area or total pore volume even though large pore (meso or macropore) may contribute partly to the adsorption. The pore occupancies also explain the importance of micropore for the phenol adsorption. For efficient removal of phenol, carbon adsorbents should have large micropore volume and wide pore size for high uptake and rapid adsorption, respectively.

Keywords: Activated Carbon, Adsorption, Chlorophenols, CMK-3, Kinetic, Kinetics, Mesoporous Carbon, Molecular-Sieves, Nanoporous Carbon, Natural Zeolite, pH, Phenol, Polymeric Adsorbents, Removal, System, Textural Property, Water

# Title: Bulletin of the Institute of Maritime and Tropical Medicine in Gdynia

Full Journal Title: Bulletin of the Institute of Maritime and Tropical Medicine in Gdynia

ISO Abbreviated Title: Bull. Inst. Marit. Trop. Med. Gdynia

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Voitenko, A.M., Sobol, Z., Sidenko, V.P. and Pushenskaya, N.K. (1989), Medical and biological problems of the environment protection at seafaring. *Bulletin of the Institute of Maritime and Tropical Medicine in Gdynia*, **40** (3-4), 237-241.

# Title: Bulletin of the Macdonald Physics Building, McGill University

Full Journal Title: Bulletin of the Macdonald Physics Building, McGill University

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Boyle, R. (1910), Absorption and adsorption with reference to the radio-active emanations. *Bulletin of the Macdonald Physics Building, McGill University*, (1), 1-59.

Abstract: An extensive thesis on the absorption of radium and thorium emanations by charcoal and by various liquids.

Keywords: Absorption, Adsorption

# Title: Bulletin of Marine Science

Full Journal Title: Bulletin of Marine Science

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Araujo, R.J. and Shideler, G. (2011), Celebrating 60 years of publication of the *Bulletin of Marine Science*: A bibliometric history (1951-2010). *Bulletin of Marine Science*, **87** (4), 707-726.

Full Text: [2011\Bul Mar Sci87, 707.pdf](2011/Bul%20Mar%20Sci87,%20707.pdf)

Abstract: To commemorate the 60(th) anniversary of the Bulletin of Marine Science, we used a bibliometric approach to trace the history and present status of the journal. Our analysis included the 4303 papers and notes published from 1951 to 2010 and is based on data contained in the Thompson Reuters Web of Knowledge(SM) database, our in-house database, and miscellaneous online sources. The analysis revealed that through time, the publication has changed from a predominantly US-dominated journal to a more international outlet for science. Although current trends still rank the US at the top of most metrics (number of contributions, most authors, top institutions, top cities for online use, etc.), the journal has a strong international presence, with subscriptions in 46 countries, authors hailing from most geographical regions, and increasing numbers of emerging countries using our content and/or sending contributions to the journal.

Keywords: Analysis, Authors, Bibliometric, History, Journal, Metrics, Papers, Publication, Science, Trends, US

# Title: Bulletin of Materials Science

Full Journal Title: Bulletin of Materials Science

ISO Abbreviated Title: B. Mater. Sci.

JCR Abbreviated Title: B Mater Sci

ISSN: 0250-4707

Issues/Year: 5

Journal Country/Territory: India

Language: English

Publisher: Indian Academy Sciences

Publisher Address: P B 8005 C V Raman Avenue, Bangalore 560 080, India

Subject Categories:

Materials Science, Multidisciplinary: Impact Factor, 0.393

? Ravikumar, M.N.V. (1999), Chitin and chitosan fibres: A review. *Bulletin of Materials Science*, **22** (5), 905-915.

Full Text: [1999\Bul Mat Sci22, 905.pdf](1999/Bul%20Mat%20Sci22,%20905.pdf)

Abstract: Chitin is the most abundant natural amino polysaccharide and estimated to be produced annually almost as much as cellulose. It has become of great interest not only as an underutilized resource, but also as a new functional material of high potential in various fields and the recent progress in chitin chemistry is quite noteworthy. The purpose of this review is to take a closer look at fibres made of chitin and its derivatives. Based on the current research and existing products, some new and futuristic approaches, in the development of novel fibres and their applications have been thoroughly discussed.

Keywords: Chitin, Chitosan, Fibres, N-Acetylation, Ultraviolet Spectrophotometry, Wound Management, Textile Waste, Acid Dye, Fibers, Deacetylation, Chromatography, Adsorption, Equilibria

? Patel, H., Parikh, A. and Chudasama, U. (2005), A comparatives study of proton transport properties of metal(IV) tungstates and their organic derivatives. *Bulletin of Materials Science*, **28** (2), 137-144.

Full Text: [2005\Bul Mat Sci28, 137.pdf](2005/Bul%20Mat%20Sci28,%20137.pdf)

Abstract: New hybrid inorgano-organic materials were synthesized by anchoring organic moieties, ortho chlorophenol and para chlorophenol onto metal (IV) tungstates viz. tin tungstate (SnW), titanium tungstate (TiW) and zirconium tungstate (ZW) to give SnWoCP, SnWpCP, TiWoCP, TiWpCP, ZWoCP and ZWpCP, respectively. The materials were characterized for elemental analysis, thermal analysis (TGA, DSC), X-ray analysis and FTIR spectroscopy. Chemical resistivity of these materials were assessed in several acidic, basic and organic media. Further, the study of transport properties of these materials has been explored by measuring proton conductivity at different temperatures in the range 30-175 degrees C using HP4192A impedance analyser over a frequency range 5 Hz-13 MHz at a signal level below 1 V. Based on the specific conductance data and Arrhenius plots, a suitable mechanism was proposed and conductance performance of derivatized and nonderivatized materials compared.

Keywords: AC Conductivity, Adsorption Thermodynamics, Analysis, Carbofuran, Conductivity, Data, FTIR, FTIR Spectroscopy, Hybrid, Impedance, Inorganic-Ion-Exchanger, Intercalation Compounds, Ionic Conductors, IV, Layered Structure, Mechanism, Media, Metal, Molybdate, Organic, Performance, Phosphonates, Proton Conduction in Derivatized Metal(IV) Tungstates, Proton Conduction in Metal(IV) Tungstates, Proton Conductors, Proton Transport Properties, Resistivity, Solid Electrolytes, Specific Conductance, Spectroscopy, TGA, Thermal Analysis, Titanium, Transport, X-Ray, Zirconium Hydrogen Phosphate

# Title: Bulletin of Mathematical Biology

Full Journal Title: [Bulletin of Mathematical Biology](http://www.sciencedirect.com/science?_ob=JournalURL&_cdi=6731&_auth=y&_acct=C000047720&_version=1&_urlVersion=0&_userid=2007471&md5=251177e747f6f763f37e126fb3f11ace)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Snoussi, E.H. and Thomas, R. (1993), Logical identification of all steady states: The concept of feedback loop characteristic states. *Bulletin of Mathematical Biology*, **55** (5), 973-991.

Full Text: [1993\Bul Mat Bio55, 973.pdf](1993/Bul%20Mat%20Bio55,%20973.pdf)

Abstract: Biological regulatory systems can be described in terms of non-linear differential equations or in logical terms (using an “infinitely non-linear” approximation). Until recently, only part of the steady states of a system could be identified on logical grounds. The reason was that steady states frequently have one or more variable located on a threshold (see below), those steady states were not detected because so far no logical status was assigned to threshold values. This is why we introduced logical scales with values 0, 1-theta, 1, 2-theta, 2,..., in which 1-theta, 2-theta,...are the logical values assigned to the successive thresholds of the scale. We thus have, in addition to the regular logical states, singular states in which one or more variables is located on a threshold. This permits identifying all the steady states on logical grounds. It was noticed that each feedback loop (or reunion of disjointed loops) can be characterized by a logical state located at the thresholds at which the variables of the loop operate. This led to the concept of loop-characteristic state, which, as well will see, enormously simplifies the analysis. The core of this paper is a formal demonstration that among the singular states of a system, only loop-characteristic states can be steady. Reciprocally, given a loop-characteristic state, there are parameter values for which this state is steady, in this case, the loop is effective (i.e. it generates multistationarity if it is a positive loop, homeostasis if it is a negative loop). This not only results in the above-mentioned radical simplification of the identification of the steady states, but in an entirely new view of the relation between feedback loops and steady states.

Schnell, S. and Maini, P.K. (2000), Enzyme kinetics at high enzyme concentration. *Bulletin of Mathematical Biology*, **62** (3), 483-499.

Full Text: [B\Bul Mat Bio62, 483.pdf](B/Bul%20Mat%20Bio62,%20483.pdf)

Abstract: We re-visit previous analyses of the classical Michaelis–Menten substrate–enzyme reaction and, with the aid of the reverse quasi-steady-state assumption, we challenge the approximation *d* [ *C* ] / *dt* ≈ 0 for the basic enzyme reaction at high enzyme concentration. For the first time, an approximate solution for the concentrations of the reactants uniformly valid in time is reported. Numerical simulations are presented to verify this solution. We show that an analytical approximation can be found for the reactants for each initial condition using the appropriate quasi-steady-state assumption. An advantage of the present formalism is that it provides a new procedure for fitting experimental data to determine reaction constants. Finally, a new necessary criterion is found that ensures the validity of the reverse quasi-steady-state assumption. This is verified numerically.

Tzafriri, A.R. (2003), Michaelis–Menten kinetics at high enzyme concentrations. *Bulletin of Mathematical Biology*, **65** (6), 1111-1129.

Full Text: [B\Bul Mat Bio65, 1111.pdf](B/Bul%20Mat%20Bio65,%201111.pdf)

Abstract: The total quasi-steady state approximation (tQSSA) for the irreversible Michaelis–Menten scheme is derived in a consistent manner. It is found that self-consistency of the initial transient guarantees the uniform validity of the tQSSA, but does not guarantee the validity of the linearization in the original derivation of Borghans *et al.* (1996, *Bull. Math. Biol.*, **58**, 43–63). Moreover, the present rederivation yielded the noteworthy result that the tQSSA is at least roughly valid for any substrate and enzyme concentrations. This reinforces and extends the original assertion that the parameter domain for which the tQSSA is valid overlaps the domain of validity of the standard quasi-steady state approximation and includes the limit of high enzyme concentrations. The criteria for the uniform validity of the original (linearized) tQSSA are corrected, and are used to derive approximate solutions that are uniformly valid in time. These approximations overlap and extend the domains of validity of the standard and reverse quasi-steady state approximations.

Keywords: Quasi-Steady-State, Perturbation, Assumption

# Title: Bulletin of the Medical Library Association

Full Journal Title: [Journal of the Medical Library Association](http://www.pubmedcentral.nih.gov/tocrender.fcgi?journal=93&action=archive), [Journal of the Medical Library Association](http://www.mlanet.org/publications/jmla/)

Full Journal Title: [Bulletin of the Medical Library Association](http://www.pubmedcentral.nih.gov/tocrender.fcgi?action=archive&journal=72) Vols. 1 to 89, 1911 to 2001

ISO Abbreviated Title: Bull. Med. Libr. Assoc.

JCR Abbreviated Title: B Med Libr Assoc

ISSN: 0025-7338

Issues/Year: 4

Journal Country/Territory: United States

Language: English

Publisher: Medical Library Assoc

Publisher Address: 65 East Wacker Place, Ste 1900, Chicago, IL 60601-7298

Subject Categories:

Information Science & Library Science: Impact Factor 0.343, 32/55 (2000), Impact Factor 0.625, 18/55 (2001) SSCI

Brodman, E. (1944), Choosing physiology journals. *Bulletin of the Medical Library Association*, **32** (4), 479-483.

Full Text: [-1959\Bul Med Lib Ass32, 479.pdf](-1959/Bul%20Med%20Lib%20Ass32,%20479.pdf)

? Brodman, E. (1957), Scientific serials - Characteristics and lists of most cited publications in mathematics, physics, chemistry, geology, physiology, botany, zoology, and entomology - Brown, CH. *Bulletin of the Medical Library Association*, **45** (1), 114-115.

Full Text: [-1959\Bul Med Lib Ass45, 114.pdf](-1959/Bul%20Med%20Lib%20Ass45,%20114.pdf)

Keywords: Characteristics, Chemistry, Mathematics, Physics, Publications, Serials

Kronick, D.A. (1958), Literature citations, a clinico-pathological study, with the presentation of three cases. *Bulletin of the Medical Library Association*, **46** (2), 219-223.

Full Text: [-1959\Bul Med Lib Ass46, 219.pdf](-1959/Bul%20Med%20Lib%20Ass46,%20219.pdf)

? Raisig, L.M. (1962), Statistical bibliography in health sciences. *Bulletin of the Medical Library Association*, **50** (3), 450-461.

Full Text: [1960-80\Bul Med Lib Ass50, 450.pdf](1960-80/Bul%20Med%20Lib%20Ass50,%20450.pdf)

Abstract: Relatively few studies have been concerned with the use of biomedical books. This paper reports an investigation into use made of library books by biomedical investigators. Based on cancelled charge slips collected at the Yale Medical Library circulation desk, telephone appointments were made to interview those research investigators whose books had been returned the previous day. The interviewer obtained answers from the investigator to a questionnaire to discover how the investigator had learned of a book, if the book had been useful, and, if useful, how it had been used. During the six-month study period, 30.4 percent of researchers’ volumes returned were monographs. Almost four-fifths of books borrowed supplied information wanted, and about four-fifths of books used had been printed in the previous decade. Nine-tenths of the use of books was research-related, the other tenth being for lecture preparation.

? Pizer, I.H. (1964), Science Citation Index 1964 - Inst-SCI-Informat. *Bulletin of the Medical Library Association*, **52** (3), 629-632.

Full Text: [1960-80\Bul Med Lib Ass52, 629.pdf](1960-80/Bul%20Med%20Lib%20Ass52,%20629.pdf)

Keywords: Citation, Science Citation Index

? Raisig, L.M., Smith, M., Cuff, R. and Kilgour, F.G. (1966), How biomedical investigators use library books. *Bulletin of the Medical Library Association*, **54** (2), 104-107.

Full Text: [1960-80\Bul Med Lib Ass54, 104.pdf](1960-80/Bul%20Med%20Lib%20Ass54,%20104.pdf)

Abstrct: Relatively few studies have been concerned with the use of biomedical books. This paper reports an investigation into use made of library books by biomedical investigators. Based on cancelled charge slips collected at the Yale Medical Library circulation desk, telephone appointments were made to interview those research investigators whose books had been returned the previous day. The interviewer obtained answers from the investigator to a questionnaire to discover how the investigator had learned of a book, if the book had been useful, and, if useful, how it had been used. During the six-month study period, 30.4 percent of researchers’ volumes returned were monographs. Almost four-fifths of books borrowed supplied information wanted, and about four-fifths of books used had been printed in the previous decade. Nine-tenths of the use of books was research-related, the other tenth being for lecture preparation.

? Raisig, L.M. (1966), World biomedical journals 1951-60: A study of relative significance of 1388 titles indexed in *current list of medical literature*. *Bulletin of the Medical Library Association*, **54** (2), 108-125.

Full Text: [1960-80\Bul Med Lib Ass54, 108.pdf](1960-80/Bul%20Med%20Lib%20Ass54,%20108.pdf)

Abstract: This study is an application of the relationship of serial articles published to serial articles cited, developed in theory in the author’s “Statistical Bibliography in the Health Sciences” (Bulletin 50: 450-461, July 1962). A ranked list of the indexes of significance of most of the serials indexed in Current List of Medical Literature was derived and erected from 21,000 citations secured in a random sampling of 1962 and 1961 biomedical journals regularly received in the Yale Medical Library. The author measures the gross indexing effectiveness of Current List against his indexes of significance, offers his method and results as means to reach objective standards for indexing and abstracting, and projects his results as measures of general value of the serials analyzed.

? Raisig, L.M. (1967), Circulation analysis of serial use: Numbers game or key to service? *Bulletin of the Medical Library Association*, **55** (4), 399-407.

Full Text: [1960-80\Bul Med Lib Ass55, 399.pdf](1960-80/Bul%20Med%20Lib%20Ass55,%20399.pdf)

Abstract: The conventionally erected and reported circulation analysis of serial use in the individual and the feeder library is found to be statistically invalid and misleading, since it measures neither the intellectual use of the serial’s contents nor the physical handlings of serial units, and is nonrepresentative of the in-depth library use of serials. It fails utterly to report or even to suggest the relation of intralibrary and interlibrary serial resources. The actual mechanics of the serial use analysis, and the active variables in the library situation which affect serial use, are demonstrated in a simulated analysis and are explained at length. A positive design is offered for the objective gathering and reporting of data on the local intellectual use and physical handling of serials and the relating of resources. Data gathering in the feeder library, and implications for the extension of the feeder library’s resources, are discussed.

? Ash, J. (1974), Library use of public health materials - Description and analysis. *Bulletin of the Medical Library Association*, **62** (2), 95-104.

Full Text: [1960-80\Bul Med Lib Ass62, 95.pdf](1960-80/Bul%20Med%20Lib%20Ass62,%2095.pdf)

Abstract: A method is described for optimizing the efficiency of a journal collection. The method is employed to determine an optimal journal collection in public health. A citation analysis of 3,456 citations from the bibliographies of forty-four master’s and doctoral dissertations from five different universities is performed. It is verified that the distribution of references to journal titles is approximately logarithmic (Bradford’s Law) and that the distribution of references by year is exponential. These two parameters are combined to formulate an equation which may be used to specify a journal collection satisfying the greatest possible percent of demand. In public health, for example, a 1,500- volume library containing sixty titles could satisfy 73% of the demand for references in health related areas and 48% of the total demand for references for this particular, diverse research group. Other desirable aspects of a public health collection are also described as determined from the data.

? Williams, R.W. (1982), A comparison of the quarterly Index to Current Contents Life Sciences and the Science Citation Index as Indexes to Current Contents Life Sciences. *Bulletin of the Medical Library Association*, **70** (4), 412-414.

Full Text: [1982\Bul Med Lib Ass70, 412.pdf](1982/Bul%20Med%20Lib%20Ass70,%20412.pdf)

Keywords: Citation, Science Citation Index

? Poyer, R.K. (1984), Journal article overlap among Index-Medicus, Science Citation Index, Biological-Abstracts, and Chemical-Abstracts. *Bulletin of the Medical Library Association*, **72** (4), 353-357.

Full Text: [1984\Bul Med Lib Ass72, 353.pdf](1984/Bul%20Med%20Lib%20Ass72,%20353.pdf)

Keywords: Chemical Abstracts, Science Citation Index

Salem, S. (1990), Bibliometric aspects of medical information in Arab countries. *Bulletin of the Medical Library Association*, **78** (4), 339-344.

Full Text: [1990\Bul Med Lib Ass78, 339.pdf](1990/Bul%20Med%20Lib%20Ass78,%20339.pdf)

Abstract: This paper discusses the current state and development of health and biomedical literature in Arab countries. The study concentrates on the Arabic sources of medical articles, and surveys and analyzes the size of the literature and its development in the past 100 years. Two aspects of these sources are covered: the Arab medical information sources published within the Arab region, and those published outside the region. This includes the quantity of material available within and outside the Arab region. The size of the Arab medical literature indicates that it is worthy of collection. Treatment of the Arab medical literature, a pressing and urgent issue, is needed to assist in the research and development of an Arab medical infrastructure.

? Campbell, F.M. (1990), National bias: A comparison of citation practices by health professionals. *Bulletin of the Medical Library Association*, **78** (4), 376-382.

Full Text: [1990\Bul Med Lib Ass78, 376.pdf](1990/Bul%20Med%20Lib%20Ass78,%20376.pdf)

Burnham, J.F., Shearer, B.S. and Wall, J.C. (1992), Combining new technologies for effective collection development: A bibliometric study using CD-ROM and a database-management program. *Bulletin of the Medical Library Association*, **80** (2), 150-156.

Full Text: [1992\Bul Med Lib Ass80, 150.pdf](1992/Bul%20Med%20Lib%20Ass80,%20150.pdf)

Abstract: Librarians have used bibliometrics for many years to assess collections and to provide data for making selection and deselection decisions. With the advent of new technology-specifically, CD-ROM databases and reprint file database management programs-new cost-effective procedures can be developed. This paper describes a recent multidisciplinary study conducted by two library faculty members and one allied health faculty member to test a bibliometric method that used the MEDLINE and CINAHL databases on CD-ROM and the Papyrus database management program to produce a new collection development methodology.

Keywords: Selection, Citation

Dimitroff, A. (1992), Research in health-sciences library and information-science: A quantitative-analysis. *Bulletin of the Medical Library Association*, **80** (4), 340-346.

Full Text: [1992\Bul Med Lib Ass80, 340.pdf](1992/Bul%20Med%20Lib%20Ass80,%20340.pdf)

Abstract: A content analysis of research articles published between 1966 and 1990 in the Bulletin of the Medical Library Association was undertaken. Four specific questions were addressed: What subjects are of interest to health sciences librarians? Who is conducting this research? How do health sciences librarians conduct their research? Do health sciences librarians obtain funding for their research activities? Bibliometric characteristics of the research articles are described and compared to characteristics of research in library and information science as a whole in terms of subject and methodology. General findings were that most research in health sciences librarianship is conducted by librarians affiliated with academic health sciences libraries (51.8%); most deals with an applied (45.7%) or a theoretical (29.2%) topic; survey (41.0%) or observational (20.7%) research methodologies are used; descriptive quantitative analytical techniques are used (83.5%); and over 25% of research is funded. The average number of authors was 1.85, average article length was 7.25 pages, and average number of citations per article was 9.23. These findings are consistent with those reported in the general library and information science literature for the most part, although specific differences do exist in methodological and analytical areas.

Keywords: Articles

Curtis, K.L., Weller, A.C. and Hurd, J.M. (1993), Information-seeking behavior: A survey of health-sciences faculty use of indexes and databases. *Bulletin of the Medical Library Association*, **81** (4), 383-392.

Full Text: [1993\Bul Med Lib Ass81, 383.pdf](1993/Bul%20Med%20Lib%20Ass81,%20383.pdf)

Abstract: This study investigated information-seeking behavior, including use of major bibliographic tools by medical, pharmacy, nursing, and science faculty at the University of Illinois at Chicago. The study assessed the impact of availability of locally mounted databases, determined needs for modification of instructional programs, identified the need for promotional material, and established a baseline for subsequent studies. Results reflected a wide variation in the number and format of secondary services used by faculty. Over 70% of all faculty from the colleges of medicine, pharmacy, and nursing used Index Medicus or MEDLINE. There were statistically significant differences between colleges in their use of mediated and end-user searching of MEDLINE. Colleges exhibited significant differences in use of Current Contents, PsycLIT, ERIC, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Chemical Abstracts, and Science Citation Index. Statistically significant differences also were found among several clinical departments. The study concluded that, as new formats to bibliographic tools become available, traditional formats continue to be used; training sessions must be tailored to the audience; and the availability of local resources and their use by faculty needs to be understood.

? Reed, K.L. (1995), Citation analysis of faculty publication - Beyond Science Citation Index and Social Science Citation Index. *Bulletin of the Medical Library Association*, **83** (4), 503-508.

Full Text: [1995\Bul Med Lib Ass83, 503.pdf](1995/Bul%20Med%20Lib%20Ass83,%20503.pdf)

Abstract: When evaluated for promotion or tenure, faculty members are increasingly judged more on the quality than on the quantity of their scholarly publications. As a result, they want help from librarians in locating all citations to their published works for documentation in their curriculum vitae. Citation analysis using Science Citation Index and Social Science Citation Index provides a logical starting point in measuring quality, but the limitations of these sources leave a void in coverage of citations to an author’s work. This article discusses alternative and additional methods of locating citations to published works.

Keywords: Alternative, Analysis, Articles, Citation, Citation Analysis, Citations, Coverage, Curriculum, Documentation, Faculty, Impact, Journals, Methods, Promotion, Publications, Published Works, Quality, Science Citation Index, Social Science Citation Index, Sources, Tenure, Work

Sittig, D.F. (1996), Identifying a core set of medical informatics serials: An analysis using the MEDLINE database. *Bulletin of the Medical Library Association*, **84** (2), 200-204.

Full Text: [1996\Bul Med Lib Ass84, 200.pdf](1996/Bul%20Med%20Lib%20Ass84,%20200.pdf)

Abstract: A study was undertaken to test the hypothesis that a fore set of medical informatics serials could be identified by using standard bibliometric techniques. All journal articles indexed by the National Library of Medicine between 1990 and 1994 were included. Articles were identified by using the ‘MEDICAL INFORMATICS’ Medical Subject Heading (MeSH) term. Each serial title containing articles was then ranked according to (1) the total number of medical informatics journal articles indexed and (2) the percentage of medical informatics journal articles indexed, Twenty-eight serials had more than 100 articles indexed under the ‘MEDICAL INFORMATICS’ MeSH term. Thirty serials had more than 40% of their articles indexed under the ‘MEDICAL INFORMATICS’ MeSH term. A ‘core’ set of fourteen serials had 100 or more medical informatics articles indexed, including more than 70% of all articles they published. The methodology described provides librarians with another tool to use in the difficult task oi journal selection. The set of ‘core’ serials identified provides librarians with a ranked list of serials, based on which a medical informatics collection can be developed.

Keywords: Academic Discipline

Weller, A.C. (1996), Editorial peer review: A comparison of authors publishing in two groups of US medical journals. *Bulletin of the Medical Library Association*, **84** (3), 359-366.

Full Text: [1996\Bul Med Lib Ass84, 359.pdf](1996/Bul%20Med%20Lib%20Ass84,%20359.pdf)

Abstract: This study compared the editorial peer review experiences of authors who published in two groups of indexed U.S. medical journals. The study tested the hypothesis that after one journal rejects a manuscript an author selects a less well-known journal for submission. Group One journals were defined as those indexed in 1992 MEDLINE that satisfied several additional qualitative measures; Group Two journals were indexed in the 1992 MEDLINE only. Surveys were sent to the first authors of 616 randomly selected articles, and 479 surveys were returned, for a response rate of 78.1%. A total of 20.8% of Group One and 15.7% of Group Two articles previously had been rejected. Group One authors were more likely to select a journal for its prestige and article quality, while Group Two authors were more likely to have been invited to submit the manuscript. More than 60% of both groups felt the peer review had offered constructive suggestions, but that it had changed article conclusions less than 3% of the time. Both groups thought the review process only marginally improved content, organization, or statistical analysis, or clarified conclusions. Between 3% and 15% of all authors received considerable conflicting advice from different reviewers. Authors from both groups differed as to their reasons for journal selection, their connections with the publishing journal, and patterns of resubmission after rejection.

Keywords: Publication

? Zhang, H.Q. (1996), Author characteristics in three medical library periodicals. *Bulletin of the Medical Library Association*, **84** (3), 423-426.

Full Text: [1996\Bul Med Lib Ass84, 423.pdf](1996/Bul%20Med%20Lib%20Ass84,%20423.pdf)

Keywords: Institutional Affiliations, Information-Science, Research Articles, Journals

? Dorsch, J.L. (1997), BIOETHICSLINE use by medical students: Curriculum-integrated instruction and collection development implications. *Bulletin of the Medical Library Association*, **85** (2), 147-153.

Full Text: [1997\Bul Med Lib Ass85, 147.pdf](1997/Bul%20Med%20Lib%20Ass85,%20147.pdf)

Abstract: BIOETHICSLINE uselogs were analyzed during months when second-year medical students were engaged in ethics coursework that included curriculum-integrated bibliographic instruction. Uselog data showed that peak activity occurred while students were preparing a required paper. Further uselog analysis indicated that students applied database features such as controlled vocabulary, the “explode” command, and a combination of multiple search concepts. In addition, the study examined journal use and interlibrary loan activity for a correlation with online search activity. Higher bioethics journal use and interlibrary loan statistics coincided with peak BIOETHICSLINE activity periods. Citation analysis of student bibliographies reflected the interdisciplinary nature of BIOETHICSLINE and the need for ethics, legal, and clinical information sources in a bioethics collection. This study suggests that the integration of bibliographic instruction and the coordination of collection development with students’ curricular needs lead to increased and more competent use of information resources.

Keywords: Activity, Analysis, Bioethics, Clinical, Coordination, Correlation, Development, Ethics, Features, Information, Integration, Interdisciplinary, Journal, Lead, Medical, Medical Students, Paper, Sources, Statistics, Student, Students

Schloman, B.F. (1997), Symposium: Mapping the literature of allied health - introduction. *Bulletin of the Medical Library Association*, **85** (3), 270.

Full Text: [1997\Bul Med Lib Ass85, 270.pdf](1997/Bul%20Med%20Lib%20Ass85,%20270.pdf)

Schloman, B.F. (1997), Mapping the literature of allied health: Project overview. *Bulletin of the Medical Library Association*, **85** (3), 271-277.

Full Text: [1997\Bul Med Lib Ass85, 271.pdf](1997/Bul%20Med%20Lib%20Ass85,%20271.pdf)

Abstract: The Nursing and Allied Health Resources Section of the Medical Library Association (MLA) created the Task Force on Bibliographic Access for the Allied Health Literature to identify the core journals of various allied health fields and assess the coverage given these titles by the major indexing and abstracting services; The larger objective is to influence increased bibliographic access to the core literature. This paper introduces the Project for Mapping the Literature of Allied Health and the common bibliometric methodology used for the five specific studies reported in the accompanying papers. Findings relating to format used, age of citations, dispersion of literature, and indexing coverage for the different fields are compared. Journals;Ire the most heavily cited format. Fields differ by the currency of cited material, with physical therapy and speech language pathology displaying use of the oldest citations. The set of core journals is small for each field, particularly in speech-language pathology. MEDLINE provided the strongest indexing coverage overall, followed by EMBASE. Information such as that reported by the project can help librarians in improving information transfer for the allied health professionals they serve.

Schloman, B.F. (1997), Mapping the literature of health education. *Bulletin of the Medical Library Association*, **85** (3), 278-283.

Full Text: [1997\Bul Med Lib Ass85, 278.pdf](1997/Bul%20Med%20Lib%20Ass85,%20278.pdf)

Abstract: Health education is a relatively new multidisciplinary field concerned with educational programs that empower individuals and communities to play active roles in achieving, protecting, and sustaining their health Its practitioners have bachelor’s, master’s, or doctoral degrees and work in educational, worksite, health facility, or agency settings. This bibliometric study was part oi: the Medical Library Association (MLA) Nursing and Allied Wealth Resources Section’s Project for Mapping the Literature of Allied Health, It sought to identify the core journals in health education and to determine the extent to which these titles are covered by the standard indexing sources, Cited references appearing from 1991 through 1993 in articles of four journals published by the major professional associations in the field were analyzed. It was found that only thirteen journals supply one-third of all references in the study. Another eighty journals provide the second third, MEDLINE gives the best indexing coverage with nearly 69% of the journals receiving indexing for at least half of their articles, followed by EMBASE (52%) and PsycINFO (43%). Limited coverage is given by the Cumulative Index to Nw: sing and Allied Health Literature (16%) and ERIC (14%). The findings name titles that should be added by indexing services and those that should have more complete coverage.

Wakiji, E.M. (1997), Mapping the literature of physical therapy. *Bulletin of the Medical Library Association*, **85** (3), 284-288.

Full Text: [1997\Bul Med Lib Ass85, 284.pdf](1997/Bul%20Med%20Lib%20Ass85,%20284.pdf)

Abstract: Physical therapy is a fast growing profession because of the aging population, medical advances, and the public’s interest in health promotion. This study is part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section’s project to map the allied health literature. It identifies the core journals in physical therapy by analyzing the cited references of articles in two established physical therapy journals, Physical Therapy and AI chives of Physical Medicine and Rehabilitation, during the period 1991 through 1993. This bibliometric analysis also determines the extent to which these journals are covered by the primary indexing sources, Allied and Alternative Medicine (AMED), the Cumulative Index to Nursing and Allied Health Literature, EMBASE, and MEDLINE. in this study fourteen journals were found to supply one-third of all references studied. Ninety-five journals provided an additional third ol: the references. MEDLINE rated the highest as the indexing tool of choice for these 109 journals. The study results can assist in collection development decisions, advise physical therapists as to the best access to their core literature, and influence database producers to increase their coverage of the literature important to physical therapy.

Burnham, J.F. (1997), Mapping the literature of radiologic technology. *Bulletin of the Medical Library Association*, **85** (3), 289-292.

Full Text: [1997\Bul Med Lib Ass85, 289.pdf](1997/Bul%20Med%20Lib%20Ass85,%20289.pdf)

Abstract: While analysis of the literature of radiology has been conducted in the discipline, none of the studies have focused on identifying the core journals. The bibliometric method was used to conduct research to identify the core journals in the radiologic technology field and determine the extent of indexing of those journals. This study was a part of Medical Library Association (MLA) Nursing and Allied Health Resource Section’s project to map the literature of allied health. Findings indicate that there is a small core of literature with a heavy reliance on the journal literature. Books are used to a lesser extent. The majority of the citations analyzed were published during the fourteen years between 1980 and 1993. MEDLINE and EMBASE provided the best indexing coverage of the radiologic technology literature; minimal coverage was provided by the Cumulative Index to Nursing and Allied Health Literature and Health.

Burnham, J.F. (1997), Mapping the literature of respiratory therapy. *Bulletin of the Medical Library Association*, **85** (3), 293-296.

Full Text: [1997\Bul Med Lib Ass85, 293.pdf](1997/Bul%20Med%20Lib%20Ass85,%20293.pdf)

Abstract: Little research has been conducted on the characteristics of the literature of respiratory care. The bibliometric method was used to identify the core journals in the discipline and the extent of indexing of those journals. This study was a part of Medical Library Association (MLA) Nursing and Allied Health Resources Section’s project to map the literature of allied health. Findings indicate that the research writings of the discipline cite journal articles most heavily, with the majority of the citations published between 1980 and 1993. The literature has a small core of cited journals with a wide dispersion. MEDLINE and EMBASE provided the best indexing coverage of the literature, and minimal coverage was given by the Cumulative Index to Nursing and Allied Health Literature and Health.

Slater, L.G. (1997), Mapping the literature of speech-language pathology. *Bulletin of the Medical Library Association*, **85** (3), 297-302.

Full Text: [1997\Bul Med Lib Ass85, 297.pdf](1997/Bul%20Med%20Lib%20Ass85,%20297.pdf)

Abstract: The purpose of this study, part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section’s project to map the allied health literature, is to identify the core journals in the field of speech-language pathology and to identify indexing and abstracting services that provide access to these journals. Four representative speech-language pathology journals were selected and subjected to citation analysis to determine which journals were cited and how many times each was cited. Bradford’s Law of Scattering was applied to the resulting list of journals to identify the core journals of this discipline. Six indexing and abstracting services were selected and scanned to determine coverage for the speech-language pathology core journals. The core journals received broad coverage in the health sciences and social sciences indexing and abstracting databases surveyed, although there was no one database that provided complete coverage of all core journals. The full Current Contents database provides the most extensive coverage of core journals. For individuals without access to the complete Current Contents database, a combined search of both MEDLINE and PsycINFO provides very comprehensive coverage of core journals.

Eldredge, J.D. (1997), Identifying peer-reviewed journals in clinical medicine. *Bulletin of the Medical Library Association*, **85** (4), 418-422.

Full Text: [1997\Bul Med Lib Ass85, 418.pdf](1997/Bul%20Med%20Lib%20Ass85,%20418.pdf)

Abstract: Background: Two directories that contain information about serials also offer lists of thousands of journals identified as peer-reviewed, Librarians generally regard these lists as authoritative. Objective: To identify clinical medicine journals on both peer-reviewed lists, measure the extent of discrepancies between these two lists, and determine the cause for these discrepancies. Design: Comparison Study. Measurements: The extent of the discrepancies were tallied once the author had attempted to control for all extraneous variables. Interviews with the editorial staffs of each directory in regard to procedures for compiling the directories did not produce an explanation for these discrepancies, Results: Nearly half (46%) of the 784 clinical medicine journals were unique to either one directory’s list of peer-reviewed journals or the other’s, indicating significant discrepancies between the two directories. Specifically, The Serials Directory listed 211 (27%) unique titles and Ulrich’s International Periodicals Directory listed 150 (19%) unique titles (total unique titles = 46%). both directories listed 423 of the same titles (54%). Conclusion: Widespread confusion about the actual identities of peer reviewed clinical medicine journals appears to explain the discrepancies between lists in these two periodical directories.

Keywords: Ingelfinger Rule, Embargoes, Editors

Tsay, M.Y. (1998), The relationship between journal use in a medical library and citation use. *Bulletin of the Medical Library Association*, **86** (1), 31-39.

Full Text: [1998\Bul Med Lib Ass86, 31.pdf](1998/Bul%20Med%20Lib%20Ass86,%2031.pdf)

Abstract: The purpose of the study was to investigate the relationship between library journal use and journal citation use in the medical sciences. The six-month journal use study was conducted in the Library of the Veterans General Hospital in Taipei. The data on citation frequency and impact factors were obtained from Journal Citation Reports, 1993 microfiche edition. The study explored the use, citation, and impact factor data, especially for heavily used, highly cited, or high-impact-factor journals. The correlations between frequency of use and citation frequency and between frequency of use and impact factor were determined by using the Spearman rank and Pearson correlation tests. The same comparisons were also made within four Subject Categories: clinical medicine journals, life science journals, hybrid journals publishing both clinical medicine and life science papers, and journals that publish neither clinical medicine nor life science articles. The results of the study showed that there is a significant correlation between frequency of use and citation frequency and between frequency of use and impact factor for all titles. There is also a significant correlation between frequency of use and citation frequency and between frequency of use and impact factor for journals that publish either clinical medicine or life science articles, or both. However, the correlation is not significant for other journals.

Keywords: Impact Factor

Vishwanatham, R. (1998), Citation analysis in journal rankings: Medical informatics in the library and information science literature. *Bulletin of the Medical Library Association*, **86** (4), 518-522.

Full Text: [1998\Bul Med Lib Ass86, 518.pdf](1998/Bul%20Med%20Lib%20Ass86,%20518.pdf)

Abstract: Medical informatics is an interdisciplinary field. Medical informatics articles will be found in the literature of various disciplines including library and information science publications. The purpose of this study was to provide an objectively ranked list of journals that publish medical informatics articles relevant to library and information science. Library Literature, Library and Information Science Abstracts, and Social Science Citation Index were used to identify articles published on the topic of medical informatics and to identify a ranked list of journals. This study also used citation analysis to identify the most frequently cited journals relevant to library and information science.

Stone, V.L., Fishman, D.L. and Frese, D.B. (1998), Searching online and Web-based resources for information on natural products used as drugs. *Bulletin of the Medical Library Association*, **86** (4), 523-527.

Full Text: [1998\Bul Med Lib Ass86, 523.pdf](1998/Bul%20Med%20Lib%20Ass86,%20523.pdf)

Abstract: Finding and evaluating information on natural products used as drugs can present challenges to the information professional. In this study, eight databases including resources retrieved on the Web were compared for relevancy and uniqueness. Ten reference questions related to natural products used as drugs were searched in the latest three year file of a number of databases, including MEDLINE, International Pharmaceutical Abstracts, and EMBASE/Excerpta Medica. In addition, the Web was searched for relevant Internet sites using the Alta Vista search engine. EMBASE/Excerpta Medica retrieved the largest number of relevant citations for four of the ten questions. MEDLINE, the Health Reference Center, and Alta Vista each retrieved the largest numbers in two questions. Overall, the standard medical databases were the first choice for the health professional and for many lay people because of their more extensive indexing and coverage of authoritative journals.

Keywords: Alternative Medicine

Obst, O. (1998), Use of Internet resources by German medical professionals. *Bulletin of the Medical Library Association*, **86** (4), 528-533.

Full Text: [1998\Bul Med Lib Ass86, 528.pdf](1998/Bul%20Med%20Lib%20Ass86,%20528.pdf)

Abstract: A survey of German medical professionals, students, and librarians was performed in 1995 to examine how they used the Internet. The great majority used e-mail, the Web, and Internet sources based in the United States. Respondents claimed various advantages from Internet use. There was a clearly expressed need for Internet courses as well as evaluation and presentation of Internet sources. A majority of respondents wanted the librarians to provide Internet related services. A follow-up survey in 1996 suggested a trend towards a more realistic view among medical Internet users that incorporated expected benefits and advantages from the Internet.

Keywords: Librarian, Faculty

? Bergen, P.L. and Nemec, D. (1999), An assessment of collections at the University of Wisconsin Madison Health Sciences Libraries: Drug resistance. *Bulletin of the Medical Library Association*, **87** (1), 37-42.

Full Text: [1999\Bul Med Lib Ass87, 37.pdf](1999/Bul%20Med%20Lib%20Ass87,%2037.pdf)

Abstract: In December 1997 the authors completed an in-depth collection assessment project at the University of Wisconsin-Madison Health Sciences Libraries. The purpose was to develop a framework for future collection assessment projects by completing a multifaceted evaluation of the libraries’ monograph and serial collections in the subject area of drug resistance. Evaluators adapted and synthesized several traditional collection assessment tools, including shelflist measurement, bibliography and standard list checking, and citation analysis. Throughout the project, evaluators explored strategies to overcome some of the problems inherent in the application of traditional collection assessment methods to the evaluation of biomedical collections. Their efforts resulted in the identification of standard monographs and core journals for the subject area, a measurement of the collections’ strength relative to the collections of benchmark libraries, and a foundation for future collection development within the subject area. The project’s primary outcome was a collection assessment methodology that has potential application to both internal and cooperative collection development in medical, pharmaceutical, and other health sciences libraries.

Keywords: Analysis, Application, Assessment, Bibliography, Biomedical, Citation, Citation Analysis, Collection, Development, Drug, Drug Resistance, Evaluation, Framework, Health, Health Sciences, Identification, Journals, Measurement, Medical, Methodology, Methods, Outcome, Potential, Primary, Purpose, Resistance, Sciences, Standard, Strength, Wisconsin

Schloman, B.F. (1999), Symposium: Mapping the literature of allied health: phase II - Introduction. *Bulletin of the Medical Library Association*, **87** (3), 276.

Full Text: [1999\Bul Med Lib Ass87, 276.pdf](1999/Bul%20Med%20Lib%20Ass87,%20276.pdf)

Hook, S.A. and Wagner, C.F. (1999), Mapping the literature of dental assisting. *Bulletin of the Medical Library Association*, **87** (3), 277-282.

Full Text: [1999\Bul Med Lib Ass87, 277.pdf](1999/Bul%20Med%20Lib%20Ass87,%20277.pdf)

Abstract: The purpose of this study was to identify core journals and the databases that provide access to these journals for the field of dental assisting. This study was completed as a part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section’s project to map the literature of allied health. There were three original journals selected for analysis using the prescribed methodology, Dental Assistant, the journal of the American Dental Assistants Association; Journal of the CDAA, the journal of the Canadian Dental Assistants’ Association; and Dental Teamwork, published by the American Dental Association. Dental Teamwork ceased publication in December 1996; however, it was considered a necessary part of the analysis due to its extensive coverage of dental assisting as well as its numerous scientific articles with references. In Dental Assistant, there were 16 source articles, containing 206 citations. In Dental Teamwork, there were 31 source articles with 308 citations. In Journal of the CDAA, there were only 3 source articles with 14 citations. Bradford’s Law of Scattering was applied to the journal citations. Four databases, MEDLINE, the Cumulative Index to Nursing and Allied Health Literature EMBASE/Excerpta Medica, and HEALTH were analyzed for their coverage of these cited journals. This study may encourage the dental assisting profession to take a close look at its existing journals and to consider enhancing the content of these journals or the publication of additional journals in the field. Dental assistants of today need substantive literature that deals with all aspects of their chosen profession in order to meet the challenges of providing dental health care in the future.

Haaland, A. (1999), Mapping the literature of dental hygiene. *Bulletin of the Medical Library Association*, **87** (3), 283-286.

Full Text: [1999\Bul Med Lib Ass87, 283.pdf](1999/Bul%20Med%20Lib%20Ass87,%20283.pdf)

Abstract: Despite the long history of the dental hygiene profession, little research has been conducted on the characteristics of its Literature. In this study, the bibliometric method was used to identify the core journals in the discipline and the extent of indexing of these journals. The study was a part of the Medical Library Association (MLA) Nursing and Allied Health Resources Section’s project to map the allied health literature. Five journals were found to provide one-third of all references studied. Forty-two journals yielded an additional one-third of the references. MEDLINE had the best indexing coverage with 87% of the journals receiving indexing for at least one-half of the articles included. Limited coverage was provided by EMBASE/Excerpta Medica (11%) and the Cumulative Index to Nursing and Allied Health Literature (9%). The findings identified titles that should be added by indexing services as well as those that should have more complete coverage.

Walcott, B.M. (1999), Mapping the literature of diagnostic medical sonography. *Bulletin of the Medical Library Association*, **87** (3), 287-291.

Full Text: [1999\Bul Med Lib Ass87, 287.pdf](1999/Bul%20Med%20Lib%20Ass87,%20287.pdf)

Abstract: Diagnostic medical sonography has been evolving as a recognized allied health occupation since the early 1970s, but no bibliometric studies of the literature of the field have been published. This study, part of the Medical Library Association Nursing and Allied Health Resources Section’s Project for Mapping the Literature of Allied Health, attempted to identify the core journals in diagnostic medical sonography and determine how well these journals are indexed by MEDLINE, EMBASE/Excerpta Medica, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Citation analysis was done using the three journals listed for the field by the Brandon/Hill List. Characteristics of two of these three journals affected the results to the extent that more data should be gathered to reach conclusions about the literature of diagnostic medical sonography as a whole. Results of the analysis do suggest that the literature of echocardiography, which is a special area of diagnostic medical sonography, is indexed much more completely by MEDLINE and EMBASE/Excerpta Medics than by CINAHL. Suggestions are made for librarians making collection development decisions in this area of allied health.

Smith, A.M. (1999), Mapping the literature of dietetics. *Bulletin of the Medical Library Association*, **87** (3), 292-297.

Full Text: [1999\Bul Med Lib Ass87, 292.pdf](1999/Bul%20Med%20Lib%20Ass87,%20292.pdf)

Abstract: Research on the literature of dietetics, apart from the broader field of nutrition, has not been reported in the Literature. The purpose of this bibliometric study was to identify the core journals of dietetics and to determine the extent of indexing coverage for these journals. The study was conducted as part of a larger: project, the Project for Mapping the Literature of Allied Health, sponsored by the Nursing and Allied Health Resources Section of the Medical Library Association. Citations appearing in three journals between 1995 and. 1997 were analyzed by the methodology common to studies in the project. Results revealed that dietetic literature relies heavily on journal literature and on those journals that are from associated health sciences fields. of the indexing services examined, EMBASE/Excerpta Medica and MEDLINE provided the most complete coverage of the literature The study’s findings have implications for those involved with the literature of dietetics.

Reed, K.L. (1999), Mapping the literature of occupational therapy. *Bulletin of the Medical Library Association*, **87** (3), 298-304.

Full Text: [1999\Bul Med Lib Ass87, 298.pdf](1999/Bul%20Med%20Lib%20Ass87,%20298.pdf)

Abstract: Occupational therapy, formally organized in the United States in 1917, is considered an allied health field, Mapping occupational therapy literature is part of a bibliometric project of the Medical Library Association’s Nursing and Allied Health Resources Section’s project for mapping the Literature of allied health. Three core journals were selected from the years 1995 and 1996 and a determination was made of the extent to which the cited journal references were covered by standard indexing sources. Using Bradford’s Law of Scattering three zones were created, each containing approximately one-third of the cited journal references. The results showed that three journals made up the first zone, 117 journals: the second, and 657 the third. The most cited journal was the American Journal of Occupational Therapy. In the second zone, journals from twelve disciplines were identified. While MEDLINE provided the best overall indexing, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) was the only database that indexed the three most cited journals plus nine of the currently active titles in occupational therapy. MEDLINE could improve its coverage of occupational therapy by indexing the journals of the British, Canadian, and Australian national associations.

Hall, E.F. (1999), Mapping the literature of perfusion. *Bulletin of the Medical Library Association*, **87** (3), 305-311.

Full Text: [1999\Bul Med Lib Ass87, 305.pdf](1999/Bul%20Med%20Lib%20Ass87,%20305.pdf)

Abstract: Perfusionists select and operate the equipment necessary for monitoring, supporting, or temporarily replacing the patient’s circulatory or respiratory function. There are over 3,000 perfusionists working in U.S. hospitals, medical and perfusionist groups, and as independent contractors. The purpose of this study was to identify the core literature of perfusion and to determine which major databases provide the most thorough access to this literature. This paper is part of the Medical Library Association Nursing and Allied Health Resource Section’s project to map the literature of the allied health professions. It uses a bibliometric methodology to identify core journals. A group of; forty-three journals was determined to make up the core journal literature of perfusion. MEDLINE provided the best overall indexing coverage for these journals, but librarians and perfusionists will wish to supplement its use with the Cumulative Index to Nursing and Allied Health Literature in order to access the journals written primarily for perfusionists. The study results can guide purchasing and database searching decisions of collection development and reference librarians, encourage the database producer to increase coverage of titles that are unindexed or underindexed, and advise perfusionists of the best access to their core literature.

Byrd, G.D. (1999), Medical faculty use of the journal literature, publishing productivity and the size of health sciences library journal collections. *Bulletin of the Medical Library Association*, **87** (3), 312-321.

Full Text: B[1999\Bul Med Lib Ass87, 312.pdf](1999/Bul%20Med%20Lib%20Ass87,%20312.pdf)

Abstract: Objectives: This 1990-1991 study explored the relationship between the size of health sciences Library journal collections and the number of different journals cited by medical school faculty in departments of biochemistry and medicine.

Methods: Two regression equations, including variables associated with a national stratified sample of 622 faculty who published articles during those two years, were used to explore factors correlated with variations in faculty use of the journal literature and faculty publishing productivity.

Results: Results suggest that, after controlling for other variables in the models, neither the number of different journals those faculty cited nor the number of articles they published, had statistically significant correlations with the number of journals in the health sciences library collection.

Conclusion: The traditional view that the size of an academic health sciences library’s journal collection is a good measure of how well that library is positioned to support faculty research may not be entirely accurate.

Keywords: Price-Discrimination, Publication Output, Academic Journals

Macias-Chapula, C.A. (2000), AIDS in Haiti: A bibliometric analysis. *Bulletin of the Medical Library Association*, **88** (1), 56-61.

Full Text: [2000\Bul Med Lib Ass88, 56.pdf](2000/Bul%20Med%20Lib%20Ass88,%2056.pdf)

Abstract: Objectives: In Haiti, AIDS has become the leading cause of death in sexually active adults. Increasingly, AIDS has become a disease of women and children. Previous bibliometric studies have shown the emergence of Haiti as a leading country in the production of AIDS literature in the Latin American and. Caribbean regions, No information exists, however, regarding the type of publications produced, the collaboration patterns used, or the subject content analysis of this production. The purpose of this study was to gain insight into the construction of this literature production. Methods: A bibliometric analysis regarding Haitian AIDS research was conducted in the AIDSLINE database for the period 1980 to 1998. An attempt was made to identify the patterns of the growth in AIDS Literature, as well as the types of documents published, authorship, institutional affiliations of authors, and subject content. Results: Results indicated that most documents were published in periodicals. The International Conference on AIDS obtained the highest frequency. The United States, Haiti, and Canada were the main productive countries. Conclusions: While nearly 40% of the records corresponded to ethnology-related articles, HIV infections, sex behavior, pregnancy, and substance-related disorders headed the Medical Subject Headings (MeSH) found. Main aspects of AIDS papers focused on epidemiology, complications, and trends issues.

Keywords: AID, AIDS, Analysis, Authorship, Behavior, Bibliometric, Bibliometric Analysis, Bibliometric Studies, Canada, Cause of Death, Children, Collaboration, Complications, Construction, Content Analysis, Country, Database, Death, Epidemiology, Growth, HIV, HIV Infections, Infections, Information, Literature, Papers, Periodicals, Pregnancy, Publications, Purpose, Records, Research, Sex, Substance-Related Disorders, Trends, United States, Women

Stevens, S.R. (2000), Mapping the literature of cytotechnology. *Bulletin of the Medical Library Association*, **88** (2), 172-177.

Full Text: [2000\Bul Med Lib Ass88, 172.pdf](2000/Bul%20Med%20Lib%20Ass88,%20172.pdf)

Abstract: The major purpose of this study was to identify and assess indexing coverage of core journals in cytotechnology. It was part of a larger project Sponsored by the Nursing and Allied Health Resources Section of the Medical Library Association to map the literature of allied health. Three representative journals in cytotechnology were selected and subjected to citation analysis to determine what journals, other publication types, and years were cited and how often. Bradford’s Law of Scattering was applied to the resulting list of cited journals to identify core titles in the discipline, and five indexes were searched to assess coverage of these core titles. Results indicated that the cytotechnology journal literature had a small core but wide dispersion one third of the 21,021 journal citations appeared in only 3 titles; another third appeared in an additional 26 titles; the remaining third M ere scattered in 1,069 different titles. Science Citation Index Expanded rated highest in indexing coverage of the core titles, followed by MEDLINE, EMBASE/Excerpta Medica, HealthSTAR, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). The study’s results also showed that journals were the predominantly cited format and that citing authors relied strongly on more recent literature.

Evans, D. (2002), Database searches for qualitative research. *Bulletin of the Medical Library Association*, **90** (3), 290-293.

Full Text: [2002\Bul Med Lib Ass90, 290.pdf](2002/Bul%20Med%20Lib%20Ass90,%20290.pdf)

Abstract: Interest in the role of qualitative research in evidence-based health care is growing. However, the methods currently used to identify quantitative research do not translate easily to qualitative research. This paper highlights some of the difficulties during searches of electronic databases for qualitative research. These difficulties relate to the descriptive nature of the titles used in some qualitative studies, the variable information provided in abstracts, and the differences in the indexing of these studies across databases.

# Title: Bulletin of Mineralogy, Petrology and Geochemistry

Full Journal Title: Bulletin of Mineralogy, Petrology and Geochemistry

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Song, Y.X., Xie, Q.Q., Chen, T.H., Tang, Y., Peng, S.C., Sun, Y.B., Liu, J.L. and Wang, J. (2006), The kinetics of oxidizing phenol in wastewater by natural manganese oxide minerals. *Bulletin of Mineralogy, Petrology and Geochemistry*, **25** (4), 324-329.

Full Text: [2006\Bul Min Pet Geo25, 324.pdf](2006/Bul%20Min%20Pet%20Geo25,%20324.pdf)

Abstract: The kinetics of oxidizing phenol in wastewater by natural manganese oxide minerals, which have strong oxidation capability, is investigated. The reaction process for oxidizing phenol by manganese oxide minerals is simulated. Through measuring the oxidation results by manganese oxide minerals at initial concentrations of 100-1000mg/L, pH values of 1.0, 1.5, 2.0, experimental temperatures of 293-333K, and various time periods respectively, and comparing linearity simulations of the pseudo-first and the pseudo second order equations, it is indicated that the correlation coefficient of linearity simulation of the pseudo-second order model is higher than that of the pseudo-first order model, so this oxidation reaction can be simulated by the pseudo-second order equation. The Arrhenius reaction activation energy of 11.62kJ/mol indicated that this reaction is not obviously influenced by the experimental temperature and it is a diffusion-controlled reaction.

Keywords: Manganese Oxide Mineral, Oxidation, Phenol, Kinetics

# Title: Bulletin of National Natural Science Foundation of China

Full Journal Title: Bulletin of National Natural Science Foundation of China

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Lin, F.P. (2002), With the natural science foundation as guidance developing the persistent creativity of a research oriented university. *Bulletin of National Natural Science Foundation of China*, **16** (2), 115-119.

Full Text: [2002\Bul Nat Nat Sci Fou Chi16, 115.pdf](2002/Bul%20Nat%20Nat%20Sci%20Fou%20Chi16,%20115.pdf)

Abstract:中国科学技术大学是国家“七五”、“八五”期间重点建设并进入“211工程”、“世界知名高水平大学”建设的重点大学之一，现已发展成国家重要的高质量人才培养和高水平科学研究基地，中国科学院学科综合的大型科研基地。在建设教学与科研紧密结合的研究型大学的进程中，学校始终重视和充分发挥国家自然科学基金的导向与激励作用，通过国家自然科学基金持续有效的支持，为学校积累了丰厚的学术基础，孕育了应用研究和高新技术发展的创新源头，促进了创造性人才培养，从而为建设世界知名高水平研究型大学提供了持续的科技创新能力。

? Li, C., Sui, S. and Jiang, G. (2006), The promotion of research in Yanbian University supported by funds for development regions. *Bulletin of National Natural Science Foundation of China*, **20** (1), 35-37.

Full Text: [2006\Bul Nat Nat Sci Fou Chi20, 35.pdf](2006/Bul%20Nat%20Nat%20Sci%20Fou%20Chi20,%2035.pdf)

? 石春薇and陈乐生(2006),星光计划—德国的 “211工程”. *Bulletin of National Natural Science Foundation of China*, **20** (4), 255-256.

Full Text: [2006\Bul Nat Nat Sci Fou Chi20, 255.pdf](2006/Bul%20Nat%20Nat%20Sci%20Fou%20Chi20,%20255.pdf)

Abstract:近年来,德国大学饱受经费匮乏、财政赤字、管理制度僵硬等问题的困扰,优秀人才流失严重,科研实力日渐削弱,国际竞争力每况愈下.与欧美国家名校相比,德国大学的灿烂光芒已经不复存在.为此,德国高校界强烈要求进行系列改革,各种改革计划纷纷出台,其中星光计划是最重要的举措之一.

? Meng, X.Y. (2008), Analysis of the output of fund theses in the universities of China. *Bulletin of National Natural Science Foundation of China*, **22** (2), 125-128.

Full Text: [2008\Bul Nat Nat Sci Fou Chi22, 125.pdf](2008/Bul%20Nat%20Nat%20Sci%20Fou%20Chi22,%20125.pdf)

Abstract:高校科学研究能力是衡量一个国家基础研究和高技术前沿领域原始性创新能力的重要标志,对国家未来能否在日趋激烈的全球科技竞争中占据有利地位具有举足轻重的影响.我国”985工程”高校是国家科技创新的重要力量,国家实施”985工程”8年来,这些高校科研状况如何呢?本文选取2006年有代表性的20所”985工程”高校学报(自然科学版和工学版)作为调研对象,从基金论文的数量、基金论文获基金资助数量、基金类型分布、基金论文的学科分布等方面,分析基金资助课题的现状,并与2001年、1998年的数据进行比较,从这一个方面透视我国高等学校科学研究的新趋势、新动向.

Keywords: China

# Title: Bulletin of the New York Academy of Medicine

Full Journal Title: Bulletin of the New York Academy of Medicine

ISO Abbreviated Title: Bull. N. Y. Acad. med.

JCR Abbreviated Title: B New York Acad Med

ISSN: 0028-7091

Issues/Year: 2

Journal Country/Territory: United States

Language: English

Publisher: New York Acad Medicine

Publisher Address: 1216 Fifth Ave, New York, NY 10029

Subject Categories:

Public, Environmental & Occupational Health: Impact Factor, 0.370, 76/85

Medicine, General & Internal: Impact Factor, 0.370,

? Committee on Public Health (1991), Statement on preserving New York City’s drinking-water quality and protecting public-health. *Bulletin of the New York Academy of Medicine*, **67** (3), 320-322.

# Title: Bull Pan Am Health Organ

(Bull. Pan. Am. Health Organ.)

? Christensen, P.B. and Karlqvist, S. (1990), Community health workers in a Peruvian slum area: An evaluation of their impact on health behavior. *Bull Pan Am Health Organ*, **24** (2), 183-196.

Abstract: In 1986 the authors conducted a survey examining the performance of health promoters in Pucallpa, Peru, three years after an initial Danish project for training and supervising those promoters ended. The survey found that some two-fifths of the promoters were still active, that increased stress had been placed on curative tasks, and that the promoters appeared to have had their greatest impact in the areas of vaccination coverage and increased use of the available public health care service. No significant changes were found in the affected population’s treatment of diarrhea or improvement of drinking water quality.

# Title: Bulletin de Physio-Pathologie Respiratoire

Full Journal Title: Bulletin de Physio-Pathologie Respiratoire

ISO Abbreviated Title:

JCR Abbreviated Title: Bull Physio-Pathol Resp

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Calsini, P., Papeschi, G., Sesti, A.G., Gazzarri, O. and Allegra, L. (1973), Kinetics of adsorption of lung surfactant. *Bulletin de Physio-Pathologie Respiratoire*, **9** (5), 1253.

# Title: Bulletin of the Seismological Society of America

Full Journal Title: Bulletin of the Seismological Society of America

ISO Abbreviated Title: Bull. Seismol. Soc. Amer.

JCR Abbreviated Title: B Seismol Soc Am

ISSN: 0037-1106

Issues/Year: 6

Journal Country/Territory: United States

Language: English

Publisher: Seismological Soc Amer

Publisher Address: Plaza Professional Bldg, Suite 201, EL Cerrito, CA 94530

Subject Categories:

Geochemistry & Geophysics: Impact Factor 1.587, 13/45 (2000)

? Berninghausen, W.H. (1964), Tsunamis and seismic seiches reported from the eastern Atlantic south of the Bay of Biscay. *Bulletin of the Seismological Society of America*, **54** (1), 439-442.

Borcherdt, R.D. and Glassmoyer, G. (1992), On the characteristics of local geology and their influence on ground motions generated by the Loma Prieta earthquake in the San Francisco bay region, California. *Bulletin of the Seismological Society of America*, **82** (2), 603-641.

Abstract: Strong ground motions recorded at 34 sites in the San Francisco Bay region from the Loma Prieta earthquake show marked variations in characteristics dependent on crustal structure and local geological conditions. Peak horizontal acceleration and velocity inferred for sites underlain by “rock” generally occur on the transverse component of motion. They are consistently greater with lower attenuation rates than the corresponding mean value predicted by empirical curves based on previous strong-motion data. Theoretical amplitude distributions and synthetic seismograms calculated for 10-layer models suggest that “bedrock” motions were elevated due in part to the wide-angle reflection of S energy from the base of a relatively thin (25 km) continental crust in the region. Characteristics of geologic and geotechnical units are currently mapped for the San Francisco Bay region show that average ratios of peak horizontal acceleration, velocity and displacement increase with decreasing mean shear-wave velocity. Ratios of peak acceleration for sites on “soil” (alluvium, fill/Bay mud) are statistically larger than those for sites on “hard rock” (sandstone, shale, Franciscan Complex). Spectral ratios establish the existence of predominant site periods with peak amplifications near 15 for potentially damaging levels of ground motion at some sites underlain by alluvium and fill/bay mud. Average spectral amplifications inferred for vertical and the mean horizontal motion are, respectively, (1, 1) for sites on the Franciscan Complex (KJf), (1.4, 1.5) for sites on Mesozoic and Tertiary rocks (TMzs), (2.1, 2.0) for sites on the Santa Clara Formation (QTs), (2.3, 2.9) for sites on alluvium (Qal), and (2.1, 4.0) for sites on fill/Bay mud (Qaf/Qhbm). These mean values are not statistically different at the 5% significance level from those inferred from previous low-strain data. Analyses suggest that soil amplification and reflected crustal shear energy were major contributors to levels of ground motion sufficient to cause damage to vulnerable structures at distances near 100 km in the cities of San Francisco and Oakland.

Keywords: Peak Horizontal Acceleration, II S-Waves, Anelastic Solids, Reflection, Refraction

Saikia, C.K. (1993), Estimated ground motions in Los Angeles due to *Mw* = 7 earthquake on the Elysian thrust fault. *Bulletin of the Seismological Society of America*, **83** (3), 780-810.

Abstract: The Elysian thrust fault has been identified as a blind thrust fault (Davis et al., 1989, Hauksson and Jones, 1989) representing a potentially serious seismic hazard to the metropolitan Los Angeles and its neighboring areas. We have simulated time histories, peak ground accelerations and their uncertainties using a semi-empirical method for a M(W) = 7.0 earthquake on the Elysian thrust fault using a flat-layered crustal structure. The accelerograms from the 4 October 1987 Whittier-Narrows aftershock (10h: 50m, M(L) = 5.3) are used to represent the source functions of each subfault on the fault surface. To account for the velocity variation in the surface sediments, we compared simulated ground motions using two separate shearwave velocities, 0.6 km/sec and 0.9 km/sec, respectively, in the top layer of the crustal model. The use of such a simple crustal model is validated by modeling the accelerograms recorded during the 1 October 1987 Whittier-Narrows mainshock (M(L) = 6.0). The duration and the relative frequency content observed on these accelerograms are successfully modeled. At some stations, the simulated peak accelerations agree well with the observed values, however, at some sites, the simulated and observed values differ by a factor of 2 to 3. The variation is attributed to a laterally varying crustal structure that is significant for small earthquakes. Additional site specific study is needed for an improved prediction of the observed peak accelerations. For large magnitude earthquakes, the near-source peak ground acceleration appears to be controlled by the source-receiver geometry relative to the fault, as well as the location of asperities on the fault surface. This is validated by simulating the peak acceleration data of the 1989 Loma Prieta earthquake recorded within 30 km of the source. For our simulations on the Elysian thrust fault, an additional component is added to the uncertainty by analyzing several asperity models. Finally, an analytical representation is given to the simulated average peak horizontal ground accelerations, Y(R), which is expressed by In(Y(R)) = (5, 38±0.085) + (-2.09±0.0268)In(R + 8.0)±0.343 in the range of 7.5 less-than-or-equal-to R less-than-or-equal-to 35 km (R is the closest distance to the seismogenic rupture zone). This functional form predicts a rapid fall-off rate for the simulated ground motions compared with the fall-off rate predicted by the other published empirical attenuation relations.

We use the finite-difference method to investigate the effects of irregular structure on ground motions resulting from point sources on the Elysian Park fault. The response computed at several depths beneath the basin suggests that the response is dominated by the initial direct arrivals for sources located interior to the basin. When the receivers are located at one end of the basin, and the seismic sources are located at the opposite edge, the characteristic features on the seismograms are the long durations caused by the trapped energy within the basin. The level of trapped energy decreases as the depth of the source increases. Thus, the fault model becomes important in determining the level of peak ground motions and shaking duration.

Keywords: 1987 Whittier-Narrows, Eastern North-America, Geological Structures, Southern-California, Loma-Prieta, Waves, Aftershocks, Inversion, Sequence, Growth

Wald, D.J., Kanamori, H., Helmberger, D.V. and Heaton, T.H. (1993), Source study of the 1906 San Francisco earthquake. *Bulletin of the Seismological Society of America*, **83** (4), 981-1019.

Abstract: All quality teleseismic recordings of the great 1906 San Francisco earthquake archived in the 1908 Carnegie Report by the State Earthquake Investigation Commission were scanned and digitized. First order results were obtained by comparing complexity and amplitudes of teleseismic waveforms from the 1906 earthquake with well calibrated, similarly located, more recent earthquakes (1979 Coyote Lake, 1984 Morgan Hill, and 1989 Loma Prieta earthquakes) at nearly co-located modern stations. Peak amplitude ratios for calibration events indicated that a localized moment release of about 1 to 1.5×1027 dyne-cm was responsible for producing the peak the teleseismic body wave arrivals. At longer periods (50 to 80 sec), we found spectral amplitude ratios of the surface waves require a total moment release between 4 and 6×1027 dyne-cm for the 1906 earthquake, comparable to previous geodetic and surface wave estimates (Thatcher, 1975). We then made a more detailed source analysis using Morgan Hill S body waves as empirical Green’s Functions in a finite fault subevent summation. The Morgan Hill earthquake was deemed most appropriate for this purpose as its mechanism is that of the 1906 earthquake in the central portion of the rupture. From forward and inverse empirical summations of Morgan Hill Green’s functions, we obtained a good fit to the best quality teleseismic waveforms with a relatively simple source model having two regions of localized strong radiation separated spatially by about 110 km. Assuming the 1906 epicenter determined by Bolt (1968), this corresponds with a large asperity (on the order of the Loma Prieta earthquake) in the Golden Gate / San Francisco region and one about three times larger located northwest along strike between Point Reyes and Fort Ross. This model implies that much of the 1906 rupture zone may have occurred with relatively little 10 to 20 sec radiation. Consideration of the amplitude and frequency content of the 1906 teleseismic data allowed us to estimate the scale length of the largest asperity to be less than about 40 km. With rough constraints on the largest asperity (size and magnitude) we produced a suite of estimated synthetic ground velocities assuming a slip distribution similar to that of the Loma Prieta earthquake but with three times as much slip. For purposes of comparison with the recent, abundant Loma Prieta strong motion data set, we “moved” the largest 1906 asperity into Loma Prieta region. Peak ground velocity amplitudes are substantially greater than those recorded during the Loma Prieta earthquake, and are comparable to those predicted by the attenuation relationship of Joyner and Boore (1988) for a magnitude M (w) = 7.7 earthquake.

Yomogida, K. and Etgen, J.T. (1993), 3-D wave propagation in the Los Angeles basin for the Whittier-narrows earthquake. *Bulletin of the Seismological Society of America*, **83** (5), 1325-1344.

Abstract: Elastic wave propagation within and around the Los Angeles basin during the Whittier-Narrows earthquake in 1988 is simulated with a 3-D finite difference method. The model consists mainly of a sedimentary layer over the basement, but lateral variations inside the sedimentary basin is also included to approximate observed variations in surface shear velocity. The minimum shear velocity is 1 km/sec on the surface and fairly reliable results are obtained up to 0.75 Hz. The total simulation lasts 26 sec. Our simulation can reproduce the general amplification pattern: small east of the epicenter and large in the L.A. basin and the San Fernando Valley, due to thick sediments of low velocity in these areas. Surface waves are generated by the primary S wave and trapped inside the basins. In the southern part of the L.A. basin, a distinct later phase, delayed by 5 to 6 sec relative to the primary S wave, is produced in our simulation, which matches some strong motion records.

Seekins, L.C. and Boatwright, J. (1994), Ground motion amplification, geology, and damage from the 1989 Loma Prieta earthquake in the city of San Francisco. *Bulletin of the Seismological Society of America*, **84** (1), 16-30.

Abstract: Main shock and aftershock accelerograms from the Loma Prieta earthquake sequence are analyzed to study relative ground amplification at sites in the city of San Francisco. Main shock spectra are estimated for those stations that recorded only aftershocks by comparing their records to those from stations that recorded both. The ratios of the spectra with respect to a stable bedrock station located at Fort Mason show distinct spectral shapes that are strongly correlated with the rock type underlying the site. Earthquake damage is quantified using estimates of the Modified Mercalli Intensity at the recording sites and safety tags issued by the City of San Francisco Building Department. These intensities are compared with ground amplification in three frequency bands and with the intensities at the same sites from the 1906 San Francisco earthquake. There is sufficient correlation to show that site amplification is one of the controlling factors in damage distribution.

Pitarka, A. and Irikura, K. (1996), Basin structure effects on long-period strong motions in the San Fernando Valley and the Los Angeles basin from the 1994 Northridge earthquake and an aftershock. *Bulletin of the Seismological Society of America*, **86** (1B), S126-S137.

Abstract: The strong ground motions recorded within the San Fernando Valley and in the Los Angeles Basin during the 17 January 1994 Northridge earthquake show complex waveforms and complicated patterns of peak acceleration and velocity. This complexity persists even at long periods (1 to 10 sec). We investigate basin structure effects on long-period wave propagation in the San Fernando Valley and in the Los Angeles Basin by the two-dimensional finite-difference modeling of the mainshock and one selected aftershock with M = 4.1. The aftershock ground motion records in the San Fernando Valley and in the Los Angeles Basin can be explained by basin structure effects, assuming a simple point source model. The structural effects and a source model composed of two subevents can explain the most prominent characteristics of the strong-motion waveforms observed during the mainshock at sites south of the epicenter, while such a combination is not enough to explain the large strong motions observed in the north. This result suggests that the rupture propagation effects significantly amplified the ground motions at sites north of the epicenter.

Hartzell, S., Leeds, A., Frankel, A. and Michael, J. (1996), Site response for urban Los Angeles using aftershocks of the Northridge earthquake. *Bulletin of the Seismological Society of America*, **86** (1B), S168-S192.

Abstract: Ground-motion records from aftershocks of the 1994 Northridge earthquake are used to estimate site response in the urban Los Angeles area. Over 1300 shear-wave records from 61 sources and 90 sites are used in a linear inversion for source and site-response spectra. The methodology makes no assumptions about the shape of the source spectrum. To obtain a stable unique inverse, a Q model and geometrical spreading factor are assumed. In addition, the site response at a hardrock site is constrained to be approximately 1.0 with a kappa of 0.02. The site-response spectra compare favorably with the results of previous and on-going investigations in Los Angeles. A couple of first-order effects are lower site response in the surrounding mountains, dominated by Mesozoic and Tertiary rocks, and higher values in the San Fernando and Los Angeles Basins, containing surficial Pleistocene and Holocene alluvial deposits. Results show good correlation of high site-response spectral values with localized areas of severe damage (Interstate 10 collapse, Sherman Oaks, Northridge, Interstate 5/14 collapse). However, widespread trends in site response across the sedimentary basins are not obvious. The data suggest that site responses are lower near the southern margin of the San Fernando Valley for sources to the north, due to north-dipping sedimentary structures. But the general pattern of site response is characterized by high variability on length scales less than a kilometer. Variations of a factor of 2 in site response are observed over the length scale of 200 m and for the same surficial geologic unit. For some of the alluvial basin sites, surface-wave generation is a significant contributor to elevated site response at lower frequencies, below 2 Hz. The total damage pattern for the Northridge earthquake is influenced by strong source directivity to the north and strong local site effects. The correlation of weak-motion site-response estimates with areas of significant damage demonstrates the value of these field measurements in future urban planning and in the reduction of seismic risk in urban areas.

Petersen, M.D., Cramer, C.H., Bryant, W.A., Reichle, M.S. and Toppozada, T.R. (1996), Preliminary seismic hazard assessment for Los Angeles, Ventura, and Orange Counties, California, affected by the 17 January 1994 Northridge earthquake. *Bulletin of the Seismological Society of America*, **86** (1B), S247-S261.

Abstract: The seismic ground motion hazard is assessed for a 10% probability of exceedance in 50 years for the three counties (Los Angeles, Ventura, and Orange) impacted by the 1994 Northridge earthquake (M (W) 6.7). The earthquake source model of the Southern California Earthquake Center has been modified with additional slip-rate information for mapped faults and blind thrusts and incorporated into seismic hazard maps that will be used for making regional hazard and risk mitigation decisions by state and local government agencies. Peak horizontal ground acceleration (pga) and 5% damped spectral acceleration (SA) (0.3 and 1 sec) were calculated with three equally weighted attenuation relationships of Boore et al. (1993), Campbell and Bozorgnia (1994), and Sadigh (written comm., 1994). The results of this assessment indicate high hazard over the entire tri-county area with ground motions exceeding 0.4 g (pga), 1.0 g (0.3-sec SA), and 0.5 g (1-sec SA) nearly everywhere. A Monte Carlo uncertainty analysis is described for two sites located in Los Angeles and Northridge. This analysis yields 95% confidence limits for peak ground acceleration at the two sites that range between±0.1 and±0.2 g. Our calculations indicate that the uncertainty in the magnitude-rupture length relations, magnitude distribution, moment-magnitude relation, attenuation relation, and slip-rate contribute most to the hazard uncertainty at these sites and that the highest uncertainties in the mapped ground motion are associated with the strongest anticipated ground motions.

Real, C.R., DeLisle, M.J. and McCrink, T. (1996), Provisional seismic zoning for ground failures in portions of Los Angeles and Ventura counties following the 17 January 1994 Northridge earthquake. *Bulletin of the Seismological Society of America*, **86** (1B), S262-S269.

Abstract: Provisional seismic hazard zones for earthquake-induced ground failures have been delineated for portions of the three-county area most affected by the Northridge earthquake using a simplified hazard assessment methodology. The procedure integrates surface geology, topography, and groundwater information using GIS technology. While not a replacement for “official” seismic hazard zones, which are based on a more detailed and comprehensive analysis of hazard, these provisional zones will assist in the immediate and cost-effective distribution of postearthquake hazard mitigation funds.

Zhang, B. and Papageorgiou, A.S. (1996), Simulation of the response of the Marina district basin, San Francisco, California, to the 1989 Loma Prieta earthquake. *Bulletin of the Seismological Society of America*, **86** (5), 1382-1400.

Abstract: In an attempt to estimate the intensity of ground motion that the Marina District, San Francisco, California, experienced during the 1989 Loma Prieta earthquake, we investigate the 3D seismic response of a 2D model (referred to in the present article as “2.5D model”) of a SW-NE trending cross section of the Marina Basin. As a first step in this endeavor, the simulated elastic response characteristics of the model are compared with recorded aftershock data. The comparison, in terms of peak amplitudes, duration, and frequency content of the time response, is favorable. In simulating the response of the Marina Basin to the Loma Prieta mainshock excitation, we account for the effect of soil nonlinearities by an iterative procedure, referred to as the “equivalent linear approach” according to which the values of soil damping and stiffness are selected to be consistent with the level of strain. Our results show that accelerations and velocities may have reached values as high as 0.23 g and 34 cm/sec, respectively, strains induced by wave propagation were of the order of 10-4, while spectral acceleration Sa for damping ratio 5% reached values as high as 0.8 g for periods in the range of 0.8 less than or equal to T less than or equal to 1.2 sec, which contains the fundamental frequencies of the most heavily damaged structures in the Marina District. The simulations confirm the conjecture made by Hanks and Brady (1991) that the motion recorded at Treasure Island is the most likely strong-motion surrogate for the filled areas of the Marina District. Based on the results of the simulations, it may be stated that for strong-motion (i.e., large strain) excitation, 3D focusing and lateral interferences, while still present, are not as prominent as in the weak-motion (i.e., small-strain) excitation case. The above conclusion suggests that, in general, the damping characteristics of soil deposits (particularly of poorly consolidated soft-soil deposits, i.e., mean shear-wave velocity of the upper 30 m of deposits, less than 200 m/sec), selected to be consistent with the level of strain induced by the seismic excitation, are a key factor in controlling the nature of the overall response of a sedimentary basin. Finally, in computing empirical amplification ratios based on recorded motions, selection of an appropriate “free-field” motion, representative of the incident excitation, is very crucial.

Singh, S.K., Ordaz, M. and Perez Rocha, L.E. (1996), The Great Mexican earthquake of 19 June 1858: Expected ground motions and damage in Mexico City from a similar future event. *Bulletin of the Seismological Society of America*, **86** (6), 1655-1666.

Abstract: The description of the great earthquake of 19 June 1858 is unusual: damage and high intensities were reported both in the state of Michoacan and in Mexico City. Although a coastal epicenter for this earthquake cannot be ruled out, the reports agree better with an intermediate-depth (about 50 km), normal-faulting event in the subducted Cocos plate. A careful examination of the reports of this event and other normal-faulting events below the Mexican altiplano suggests that a likely location is 18.0 degrees N, 100.8 degrees W, near the epicenter of the 6 June 1964 (M7.3, H = 55 km) event. This location is 220 km SW of the city. The magnitude of the earthquake is estimated to be about 7.7. We synthesize expected ground motions in CU, a hillzone site in the city, from an event similar to that of 1858, using records from the 23 May 1994 earthquake (18.0 degrees N, 100.6 degrees W, H = 50 km, M5.7) as an empirical Green’s function and stress parameter, Delta sigma, of 50, 160, and 300 bar. The expected peak horizontal acceleration in CU of Delta sigma = 160 bar is about 30 gals. Similar acceleration was recorded in CU during the 1985, Michoacan earthquake (M8.0). We compute expected ground motions at many sites in Mexico City using empirical transfer functions and random vibration theory and compare these motions and the expected damage in the city with those from the 1985 Michoacan earthquake. Results show that the overall expected damage during the postulated earthquake is 2/3 and 1 1/3 of that during the Michoacan earthquake for Delta sigma = 160 and 300 bar, respectively. A greater percentage of low-rise construction, which constitute about 80% of the total in the city, will be damaged during the postulated earthquake than during the Michoacan earthquake. The expected ground motions for Delta sigma = 50 bar are smaller at all periods than those from the Michoacan earthquake. As the present building code for Mexico City contemplates coastal earthquakes of magnitude greater than 8.0, the case of Delta sigma = 50 bar is not of interest in this article. This preliminary study suggests a need for a more careful evaluation of expected ground motion in the Valley of Mexico from the postulated earthquake and its impact on the current design spectra of the city.

Courboulex, F., Santoyo, M.A., Pacheco, J.F. and Singh, S.K. (1997), The 14 September 1995 (*M* = 7.3) Copala, Mexico, earthquake: A source study using teleseismic, regional, and local data. *Bulletin of the Seismological Society of America*, **87** (4), 999-1010.

Abstract: We analyze source characteristics of the 14 September 1995, Copala, Mexico, earthquake (M = 7.3) using teleseismic, regional, and local seismograms, In the analysis of the teleseismic and the regional seismic waves, we apply the empirical Green’s function (EGF) technique. The recording of an appropriate aftershock is taken as the EGF and is used to deconvolve the mainshock seismogram, thus obtaining an apparent far-field source-time function at each station. The deconvolution has been done using surface waves, For teleseismic data, we apply a spectral deconvolution method that enables us to obtain 37 apparent source-time functions (ASTFs) at 29 stations. In the analysis of the regional broadband seismograms, we use two different aftershocks as EGF, and the deconvolution is performed in the time domain with a nonlinear method, imposing a positivity constraint, and the best azimuth for the directivity vector is obtained through a grid-search approach.

We also analyze two near-source accelerograms. The traces are inverted for the slip distribution over the fault plane by applying a linear inversion technique. With the aid of a time-window analysis, we obtain an independent estimation of the source-time function and a more detailed description of the source process,

The analysis of the three datasets permits us to deduce the main characteristics of the source process. The rupture initiated at a depth of 16 km and propagated in two directions: updip along the plate interface toward 165 degrees N and toward 70 degrees N. The source duration was between 12 and 14 sec, with the maximum of energy release occurring 8 sec after the initiation of the rupture. The estimated rupture dimension of 35×45 km is about one-fourth of the aftershock area. The average dislocation over the fault was 1.4 m (with a maximum dislocation of 4.1 m located 10 km south of the hypocenter), which gives roughly 1 MPa as the average static stress drop.

Bernard, P., Gariel, J.C. and Dorbath, L. (1997), Fault location and rupture kinematics of the magnitude 6.8, 1992 Erzincan earthquake, Turkey, from strong ground motion and regional records. *Bulletin of the Seismological Society of America*, **87** (5), 1230-1243.

Abstract: The hypocenter location of the 13 March 1992, M = 6.9 Erzincan earthquake (Turkey) and its rupture kinematics have been studied using local and regional seismic records to understand its relationship with the tectonic activity of the Erzincan basin and of the North Anatolian fault (NAF). Regional records of the mainshock and the largest aftershocks were used to locate the respective epicenters. The mainshock S-P travel time delay and the P-wave polarization of the near-source accelerogram record in Erzincan (ERZ), calibrated by the aftershock records, constrain the mainshock hypocenter to be located about 10 km to the east-southeast of Erzincan, 39 degrees 42.3 N, 39 degrees 35.2 E, and at a best-fit depth of about 9 km. The activated fault is a major branch of the NAF along the eastern edge of the basin. Hypocentral depths greater than about 16 km are not supported by the data. The ground velocity record at ERZ has been synthesized for constraining the northwestward rupture, assuming a kinematic model with constant slip and rupture velocity, and a strike 125 degrees, for a large number of models. The latter were constructed by varying the rupture parameters in a discrete domain. The best-fit fault models are located within 1 km of the epicenter above and have all their northwestern end within 5 km of ERZ. The up-dip limit of the rupture in the vicinity of ERZ ranges from 5 to 2 km in depth, in agreement with the absence of surface breakage. The estimated rupture velocity is 3 km/sec, the rise time is 0.35 sec, and the mean slip of about 1 m is poorly resolved, with a standard uncertainty of 0.5 m, being strongly sensitive to the rupture velocity and to the fault location. Combining these results with the seismic moment and the source duration provided by other studies leads to a total rupture length ranging between 20 and 35 km. The rupture thus propagated bilaterally on the NAF and was confined within the limits of the basin, stopping to the southeast near the intersection of the NAF with the Ovacik fault.

Hartzell, S., Harmsen, S., Frankel, A., Carver, D., Cranswick, E., Meremonte, M. and Michael, J. (1998), First-generation site-response maps for the Los Angeles region based on earthquake ground motions. *Bulletin of the Seismological Society of America*, **88** (2), 463-472.

Abstract: Ground-motion records from aftershocks of the 1994 Northridge earthquake and mainshock records from the 1971 San Fernando, 1987 Whittler Narrows, 1991 Sierra Madre, and 1994 Northridge earthquakes are used to estimate site response relative to a rock site for the urban Los Angeles area. Site response is estimated at 232 mainshock and 201 aftershock sites relative to a low-amplitude site in the Santa Monica Mountains. Average amplification values are calculated for the frequency bands: 1 to 3, 3 to 5, and 5 to 7 Hz. These bands are chosen based on limitations in aftershock recording equipment at lower frequencies and reduced significance to the building inventory at higher frequencies. Site amplification factors determined at the instrumented locations are grouped by the surficial geology and contoured to produce a continuous spatial estimation of amplification. The maps in this article represent the first attempt to produce estimates of site amplification based on observations of ground motion for such a large areal extent of the Los Angeles region. These maps are expected to evolve as more data become available and more analysis is done.

Zobin, V.M. and Ventura-Ramirez, J.F. (1998), The Macroseismic field generated by the Mw 8.0 Jalisco, Mexico, earthquake of 9 October 1995. *Bulletin of the Seismological Society of America*, **88** (3), 703-711.

Abstract: The Mw 8.0 earthquake of 9 October 1995 occurred within the Jalisco block that represents the northern part of the Mexican subduction zone where the Rivera plate subducts beneath the North America plate along the Middle American trench. The source rupture of the 1995 low-angle thrust-type event was complicated. The studies of rupture history had shown that the slip occurred within an area of about 180×90 km2 along the Middle American trench at the depth interval from 9 to 33 km. The rupture duration was estimated in interval from 55 to 62 sec. At least three main asperities ruptured along the fault plane. The earthquake was felt along the 600-km coast of the Mexican states of Colima, Jalisco, and Michoacan and in the continental part of Mexico. The macroseismic study presented in this article was carried out in March through July 1997, more than one year after the earthquake. We had about 300 interviews with people who felt the earthquake in their houses located in 56 cities and towns of the states of Colima, Jalisco, and Michoacan. All our estimates of the earthquake intensity were referred to the intermediate type of masonry situated on the intermediate type of soils. For this purpose, corrections were introduced for type of soil and masonry. The study of macroseismic effects related to the 1995 Jalisco earthquake allows description of some properties of the macroseismic field generated by the earthquake. (1) Three zones of intensity 4, 5, and 6 to 7 grades of MM (Modified Mercalli) scale were distinguished. (2) The zone of maximum intensity of 6 to 7 MM was heterogeneous. This heterogeneity was in accordance with the rupture asperities distribution. (3) The study of intensity attenuation along the coast had demonstrated the asymmetry in intensity distribution according to the epicenter. The maximum intensities were observed for the sites that were situated to the northwest of the epicenter. (4) A good correlation was observed between the observed intensities and the values of GPS displacements.

Beresnev, I.A., Field, E.H., van Den Abeele, K. and Johnson, P.A. (1998), Magnitude of nonlinear sediment response in Los Angeles basin during the 1994 Northridge, California, earthquake. *Bulletin of the Seismological Society of America*, **88** (4), 1079-1084.

Abstract: The study of nonlinear site response has practical difficulties due to large ambiguities in isolating local response from other competing effects. We chose a sedimentary site LF6 in Los Angeles basin that (1) has the closest reference rock sites available, compared to other stations, allowing an accurate estimation of local amplification, and (2) illustrates clear resonance in the near surface. In our opinion, this case represents the least ambiguity in the identification of possible nonlinearity. The site responses during the Northridge, the 1987 Whittler Narrows events and the Northridge aftershocks are compared. The station shows a fundamental resonance-frequency change between the higher-and lower-amplitude motions in the entire ensemble of 17 events used. The net shear-modulus reduction during the Northridge event is a factor of 1.3 to 1.4 compared to the Whittler Narrows event and is a factor of 1.7 compared to the aftershocks. This result provides guidance of what to expect at other sites in the basin, where the nonlinear response is less easy to characterize.

Catchings, R.D., Goldman, M.R., Lee, W.H.K., Rymer, M.J. and Ponti, D.J. (1998), Faulting apparently related to the 1994 Northridge, California, earthquake and possible co-seismic origin of surface cracks in Potrero km, Los Angeles County, California. *Bulletin of the Seismological Society of America*, **88** (6), 1379-1391.

Abstract: Apparent southward-dipping, reverse-fault zones are imaged to depths of about 1.5 km beneath Potrero Canyon, Los Angeles County, California. Based on their orientation and projection to the surface, we suggest that the imaged fault zones are extensions of the Oak Ridge fault. Geologic mapping by others and correlations with seismicity studies suggest that the Oak Ridge fault is the causative fault of the 17 January 1994 Northridge earthquake (Northridge fault). Our seismically imaged faults may be among several faults that collectively comprise the Northridge thrust fault system. Unusually strong shaking in Potrero Canyon during the Northridge earthquake may have resulted from focusing of seismic energy or co-seismic movement along existing, related shallow-depth faults. The strong shaking produced ground-surface cracks and sand blows distributed along the length of the canyon, Seismic reflection and refraction images show that shallow-depth faults may underlie some of the observed surface cracks. The relationship between observed surface cracks and imaged faults indicates that some of the surface cracks may have developed from nontectonic alluvial movement, but others may be fault related. Immediately beneath the surface cracks, P-wave velocities are unusually low (<400 m/sec), and there are velocity anomalies consistent with a seismic reflection image of shallow faulting to depths of at least 100 m. On the basis of velocity data, we suggest that unconsolidated soils (<800 m/sec) extend to depths of about 15 to 20 m beneath our datum (<25 m below ground surface), The underlying rocks range in velocity from about 1000 to 5000 m/sec in the upper 100 m, This study illustrates the utility of high-resolution seismic imaging in assessing local and regional seismic hazards.

Nakahara, H., Sato, H., Ohtake, M. and Nishimura, T. (1999), Spatial distribution of high-frequency energy radiation on the fault of the 1995 Hyogo-Ken Nanbu, Japan, earthquake (*MW* 6.9) on the basis of the seismogram envelope inversion. *Bulletin of the Seismological Society of America*, **89** (1), 22-35.

Abstract: We studied the generation and propagation of high-frequency (above 1 Hz) S-wave energy from the 1995 Hyoggo-Ken Nanbu (Kobe), Japan, earthquake (M-W 6.9) by analyzing seismogram envelopes of the mainshock and aftershocks. We first investigated the propagation characteristics of high-frequency S-wave energy in the heterogeneous lithosphere around the source region. By applying the multiple lapse time window analysis method to aftershock records, we estimated two parameters that quantitatively characterize the heterogeneity of the medium: the total scattering coefficient and the intrinsic absorption of the medium for S waves. Observed envelopes of aftershocks were well reproduced, by the envelope Green functions synthesized based on the radiative transfer theory with the obtained parameters. Next, we applied the envelope inversion method to 13 strong-motion records of the mainshock. We divided the mainshock fault plane of 49×21 km into 21 subfaults of 7×7 km square and, estimated the spatial distribution of the high-frequency energy radiation on that plane. The average constant rupture velocity and the duration of energy radiation for each subfault were determined by grid searching to be 3.0 km/sec and 5.0 sec, respectively, Energy radiated from the whole fault plane was estimated as 4.9×1014 J for 1 to 2 Hz, 3.3×1014 J for 2 to 4 Hz, 1.5×1014 J for 4 to 8 Hz, 8.9×1012 J for 8 to 16 Hz, and 9.8×1014 J in all four frequency bands. We found that: strong energy was mainly radiated from three regions on the mainshock fault plane: around the initial rupture point, near the surface at Awaji Island, and a shallow portion beneath Kobe. We interpret that energetic portions were associated with rupture acceleration, a fault surface break, and rupture termination, respectively.

Rebollar, C.J., Quintanar, L., Yamamoto, J. and Uribe, A. (1999), Source process of the Chiapas, Mexico, intermediate-depth earthquake (*Mw* = 7.2) of 21 October 1995. *Bulletin of the Seismological Society of America*, **89** (2), 348-358.

Abstract: On 21 October 1995, we recorded with a local array an earthquake that occurred at a depth of 165 km in the subduction zone of Chiapas, The Harvard focal mechanism solution indicates a normal fault responding to the down-dip tension of the subducted oceanic crust. This is the first intermediate-depth earthquake well recorded with accelerographs and seismometers in Southeastern Mexico. Peak ground accelerations (PGA) range from 21 to 436 cm/sec (2) at hypocentral distances of 174 to 256 km, respectively. The recorded PGAs are larger than those of the Copala, Guerrero, earthquake of 14 September 1995, which was a shallow (16 km) thrust fault with a similar magnitude (M-w = 7.4), The large PGA generated by the Chiapas earthquake are probably due to an enhancement of the signals produced by the upward intraslab propagation of energy and are similar to those observed from other intermediate-depth earthquakes in the subduction zone of Japan (Molas and Yamazaki, 1995). The duration of the strongest shaking increases from about 10 sec in the southeast at the town of San Vicente (close to the Tacana volcano) to nearly 20 sec in the northwest, in the city of Tuxtla Gutierrez located near the epicenter. Teleseismic P-wave inversion using the Harvard focal mechanism solution indicates that the seismic moment was released in three events with a total duration of about 20 sec. The results of the inversion indicate that the rupture propagated from the northwest to the southeast along a 30-km distance. From spectral analysis, we calculate a total seismic moment release of 5.2±0.5×1019 N-m equivalent to an Mw = 7.1 magnitude event. Using three sources with an average depth of 150 km, we were able to reach a reasonable match of the first 40 sec of the displacement records recorded at the broadband seismic stations of Huatulco (HUIG) and Pinotepa Nacional (PNIG), For the station located in Tuxtla Gutierrez (TUXD), we used two sources, since only the first 5 sec were modeled. The amplitude spectrum at teleseismic distances follows a typical Prune’s (1970) omega (-2) model. We obtained a corner frequency of 0.045 Hz from the spectra, which is equivalent to a source radius of 15 km and a stress drop of 65 bars assuming a circular fault.

Tertulliani, A. (1999), Comment on “the macroseismic field generated by the *MW* 8.0 Jalisco, Mexico, earthquake of 9 October 1995” by Vyacheslav M. Zobin and J. Francisco Ventura-Ramirez. *Bulletin of the Seismological Society of America*, **89** (2), 555.

Zobin, V.M. and Ventura Ramirez, J.F. (1999), Reply to comment by A. Tertulliani on “the macroseismic field generated by the *MW* 8.0 Jalisco, México, earthquake of 9 October 1995” by Vyacheslav M. Zobin and J. Francisco Ventura-Ramirez. *Bulletin of the Seismological Society of America*, **89** (2), 556.

Sato, T., Graves, R.W. and Somerville, P.G. (1999), Three-dimensional finite-difference simulations of long-period strong motions in the Tokyo metropolitan area during the 1990 Odawara earthquake (M-J 5.1) and the great 1923 Kanto earthquake (M-S 8.2) in Japan. *Bulletin of the Seismological Society of America*, **89** (3), 579-607.

Abstract: Utilizing a crustal velocity model that includes the complexity of the irregular subsurface structure of the Kanto basin, we have performed three-dimensional (3D) finite-difference (FD) simulations of near-source long-period strong ground motions in the Tokyo metropolitan area for the 1990 Odawara (M-J 5.1) and the 1923 Kanto (M-S 8.2) earthquakes. Constraints on the development of the 3D velocity model come from available geological and geophysical data, as well as our previous 1D waveform modeling results (Sato et nl., 1998a). The simulation of the moderate-sized Odawara earthquake demonstrates that the 3D velocity model works quite well at reproducing the recorded long-period (T > 3.33 sec) strong motions, including basin-generated surface waves, for a number of sires located throughout the Kanto basin region. Using this validated 3D model along with the variable-slip rupture model of Wald and Somerville (1995), we then simulate the long-period (T > 4 sec) ground motions in this region for the 1923 Kanto earthquake. The simulation results for the 1923 event show that the largest ground motions occur east of the epicenter along the central and southern part of the Bose Peninsula. These large motions arise from strong rupture directivity effects and are comprised of relatively simple, source-controlled pulses with a dominant period of about 10 sec. North of the epicentral region, in the Tokyo area, 3D basin-generated phases are quite significant, and these phases produce large-amplitude late-arriving pulses in the ground motions. At station Hongo (HNG), which is the only site having digitized and restored near-fault strong-motion records for this event, our 3D simulations compare quite well with the ground motions of the restored Imamura seismogram. For the restored Ewing record, our 3D simulations reproduce the phase and amplitude of the initial pulses of motion, however, the dominant period of the large-amplitude later phases is noticeably shorter in the simulations (about 5 to 6 sec) than in the observation (13 sec). These results suggest that the restored Imamura seismogram may be a better representation of the gross features of the actual motion than the restored Ewing seismogram, although the first (clipped and restored) part of the Imamura seismogram may still underestimate the strength of the actual motion.

Anooshehpoor, A., Heaton, T.H., Shi, B.P. and Brune, J.N. (1999), Estimates of the ground accelerations at Point Reyes Station during the 1906 San Francisco earthquake. Bulletin of the Seismological Society of America, **89** (4), 845-853.

Abstract: We have developed an analytical solution for the rocking and overturning response of a two-dimensional, symmetric rigid block subject to a full sine wave of horizontal ground acceleration. We use this solution to provide lower-bound estimates of the peak ground acceleration at Point Reyes Station, California, during the 1906 San Francisco earthquake that toppled the San Francisco-bound train. Our results, for a 3% damping ratio, indicate that for a single cycle of a sine wave the minimum toppling accelerations at 1, 1.5, and 2 Hz are 0.35g, 0.5g, and 1.05g, respectively. For more realistic accelerograms the toppling accelerations are about 1.1g (complex synthetic) and 0.76g (Lucerne record of the 1992 Landers earthquake).

# Title: Bulletin des Societes Chimiques Belges

Full Journal Title: Bulletin des Societes Chimiques Belges

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor,

? Reyes, P.A. and Delosreyes, J.F.P. (1984), Kinetics Study of Adsorption of CO2 on ZnCo2O4. *Bulletin des Societes Chimiques Belges*, **93** (10), 851-856.

# Title: Bulletin de la Societe Chimique de France

Full Journal Title: Bulletin de la Societe Chimique de France

ISO Abbreviated Title: Bull. Soc. Chim. Fr.

JCR Abbreviated Title: Bull Soc Chim France

ISSN: 0037-8968

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor,

? Bonnetain, L. and Letort, M. (1952), Adsorption de methane sur graphite a - 195°C. *Bulletin de la Societe Chimique de France*, **19** (5-6), 436-436.

? Vergnaud, J.M., Reycoqua, B., Buathier, B. and Neybon, R. (1968), USe of atomic absorption spectrophotometry for simultaneously measuring adsorption kinetics of platinum on alumina and dissolution kinetics of alumina. *Bulletin de la Societe Chimique de France*, (9), 3881-??.

? Gross, M. and Brenet, J. (1972), Influence of specific adsorption of Cl-anions on electrochemical reduction kinetics of ReCl62-. *Bulletin de la Societe Chimique de France*, (3), 1214-??.

# Title: Bulletin de la Societe Chimique de France Partie I- Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique

Full Journal Title: Bulletin de la Societe Chimique de France Partie I- Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique

ISO Abbreviated Title:

JCR Abbreviated Title: Bull Soc Chim Fr 1-Phys Syst

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor,

? Sevenster, A., Kobel, L. and Donnet, J.B. (1975), Study of adsorption-kinetics of nitrogen on porous glasses at 77°K. *Bulletin de la Societe Chimique de France Partie I- Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique*, (1-2), 53-58.

? Ferriol, M., Saugier, M.T. and Cohenadad, R. (1979), Contribution to the study of sulfamic and preparation - reciprocal quaternary system H+, NH4+ Parallel-ToSO42-, SO3NH2-H2O. 2. 25°C isotherm. *Bulletin de la Societe Chimique de France Partie I-Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique*, (7-8), 301-305.

? Bouchacourt, M., Saugier, M.T., Cohenadad, R. and Floreancig, A. (1977), Quaternary system Na+, Zn2+, Cl-, SO42-, H2O. 2. Isotherm 27°C. *Bulletin de la Societe Chimique de France Partie I- Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique*, (9-10), 847-853.

? Tenu, R., Counioux, J.J. and Cohenadad, R. (1979), Determination by conductivity of the 45°C isotherm of the H2O-CaCl2-SrCl2-BaCl2 system. 1. Method of study and its application to the H2O-CaCl2-SrCl2 ternary-system. *Bulletin de la Societe Chimique de France Partie I-Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique*, (3-4), I82-I85.

? Tenu, R. and Counioux, J.J. (1980), Isotherm 65°C of the quinary system H2O-NaCl-CaCl2-SrCl2-BaCl2. 2. the System H2O-CaCl2-SrCl2-BaCl2. *Bulletin de la Societe Chimique de France Partie I-Physicochimie des Systemes Liquides Electrochimie Catalyse Genie Chimique*, (9-10), I321-I326.

# Title: Bulletin de la Société Impériale des Naturalistes de Moscou

Full Journal Title: Bulletin de la Société Impériale des Naturalistes de Moscou

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Milaschewitsch, K. (1881), Études sur la faune des mollusques vivants terrestres et fluviatiles de Moscou. *Bulletin de la Société Impériale des Naturalistes de Moscou*, **56**, 216-241.

Full Text: -1959\Bul Soc Imp Nat Mos56, 216.pdf

Abstract: Moscow. 54 terrestrial and 55 fresh-water species enumerated by C. MILACHEVICH (title supra); 11 of them belong to alpine, 17 to the boreal province of Europe, and the rest are more generally distributed; all species of Helix of large size are wanting, not. only H. pomatia, but also nemoralis, hortensis, and arbustorum. The author thinks that the isotherm of 4[degree] R. forms the southern limit of the boreal zoological province in Russia. Bull. Mosc. lvi. pp. 215-241.

# Title: Bulletin de la Societe de Pathologie Exotique

Full Journal Title: Bulletin de la Societe de Pathologie Exotique

ISO Abbreviated Title: Bull. Soc. Pathol. Exot.

JCR Abbreviated Title: B Soc Pathol Exot

ISSN: 0037-9085

Issues/Year: 6

Journal Country/Territory: France

Language: Multi-Language

Publisher: S P E

Publisher Address: 25 Rue Du Docteur Roux, 75015 Paris, France

Subject Categories:

Public, Environmental & Occupational Health: Impact Factor, 0.290, 78/85 (2000)

Pathology Tropical Medicine: Impact Factor, 0.290, (2000)

? Buisson, Y., Vancuyckgandre, H. and Deloince, R. (1993), Water and viral-hepatitis. *Bulletin de la Societe de Pathologie Exotique*, **86** (5), 479-483.

Abstract: The main agents responsible for acute viral hepatitis throughout the world are the hepatitis A virus (HAV) and the hepatitis E virus (HEV). Both are transmitted by fecal-oral route and can provoke large epidemics, HAV in developed countries and HEV in developing countries. Water is a major vehicle of spread. However, two different epidemiological patterns have to be distinguished: level of HAV excretion is short but high. Because of its resistance to physical and chemical agents, HAV remains infectious for a long time under environmental conditions. Progress in hygiene have nearly stopped the circulation of HAV in industrialized countries, making populations more susceptible to the infection and increasing the epidemic risk. Conventional measures sometimes fail to prevent HAV infections. Vaccine is currently the best way for hepatitis A prophylaxis, HEV is excreted briefly and at low concentrations. Viral particles are fragile in vitro and their viability in environment is not yet understood. Epidemics mainly occur in countries with poor sanitary conditions, resulting from heavy water pollutions. High case-fatality rates are observed, especially among pregnant women. The control of enterically transmitted viral hepatitis remains a major public health challenge. Virological surveillance of waste water could improve strategies based on hygiene, sanitation and supply of drinking water.

? Jacquet, F. (1993), Hypochlorite bleach and drinking-water. *Bulletin de la Societe de Pathologie Exotique*, **86** (5), 489-491.

Abstract: Because of its exceptional disinfecting properties, hypochlorite bleach is, along with vaccines and antibiotics, an outstanding tool in the prevention of water-borne infectious diseases such as cholera, and especially in tropical environments. In addition, hypochlorite bleach is available around the world, and at low cost. Moreover, hypochlorite bleach is safe for human when used as directed. It is also sale for the environment in household use. In the Public Health domain, hypochlorite bleach with its 200-year history remains both a modern product and a product of the future.

# Title: Bulletin of the Torrey Botanical Club

Full Journal Title: [Bulletin of the Torrey Botanical Club](http://uk.jstor.org/journals/00409618.html)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN: 0040 9618

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

Bush, B.F. (1927), The glabrate species of Tilia. *Bulletin of the Torrey Botanical Club*, **54** (3), 231-248.

Full Text: [B\Bul Tor Bot Clu54, 231.pdf](B/Bul%20Tor%20Bot%20Clu54,%20231.pdf)

# Title: Bulletin of the World Health Organization

Full Journal Title: [Bulletin of the World Health Organization](http://www.scielosp.org/scielo.php?script=sci_issues&pid=0042-9686&lng=en&nrm=iso)

ISO Abbreviated Title: Bull. World Health Organ.

JCR Abbreviated Title: B World Health Organ

ISSN: 0042-9686

Issues/Year: 6

Journal Country/Territory: Switzerland

Language: Multi-Language

Publisher: World Health Organization

Publisher Address: Distribution and Sales, CH-1211 Geneva 27, Switzerland

Subject Categories:

Public, Environmental & Occupational Health: Impact Factor 0.149, 35/85

? Wang, Z.S., Shepard, D.S., Zhu, Y.C., Cash, R.A., Zhao, R.J., Zhu, Z.X. and Shen, F.M. (1989), Reduction of enteric infectious disease in rural China by providing deep-well tap water. *Bulletin of the World Health Organization*, **67** (2), 171-180.

Full Text: [1989\Bul Wor Hea Org67, 171.pdf](1989/Bul%20Wor%20Hea%20Org67,%20171.pdf)

Abstract: Enteric infectious disease (EID), defined here as bacillary dysentery, viral hepatitis A, El Tor cholera, or acute watery diarrhoea, is an important public health problem in most developing countries. This study assessed the impact on EID of providing deep-well tap water (DWTW) through household taps in rural China. For this purpose, we compared the incidence of EID in six study villages (population, 10, 290) in Qidong County that had DWTW with that in six control villages (population 9397) that had only surface water. Both the bacterial counts and chemical properties of the DWTW met established hygiene standards for drinking water. The incidence of EID in the study region was 38.6% lower than in the control region, however, the introduction of DWTW supplies did not significantly affect the incidence of bacillary dysentery. These results indicate that the construction and use of DWTW systems with household taps is associated with decreased incidences of El Tor cholera, viral hepatitis A, and acute watery diarrhoea. Since high construction costs have led many authorities to question the value of DWTW, we carried out a cost-benefit analysis of the programme. The cost of constructing a DWTW system averaged US $36,000 at 1983 prices, or US $10.50 per capita. The combined capital and operating costs of a DWTW system were US $1.46 per capita per annum over its 20-year estimated life. The benefits derived from reductions in cost of illness and savings in time to fetch water were 2.2 times the costs at present values Capital outlays were recouped in a 3.6-year payback period and the provision of DWTW proved highly beneficial in both economic and social terms.

Moe, C.L., Sobsey, M.D., Samsa, G.P. and Mesolo, V. (1991), Bacterial indicators of risk of diarrhoeal disease from drinking-water in the Philippines. *Bulletin of the World Health Organization*, **69** (3), 305-317.

Full Text: [1991\Bul Wor Hea Org69, 305.pdf](1991/Bul%20Wor%20Hea%20Org69,%20305.pdf)

Abstract: Inadequate measures of water quality have been used in man studies of the health effects associated with water supplies in developing countries. The present 1-year epidemiological-microbiological study evaluated four bacterial indicators of tropical drinking-water quality (faecal coliforms, *Escherichia coli*, enterococci and faecal streptococci) and their relationship to the prevalence of diarrhoeal disease in a population of 690 under-2-year-olds in Cebu, Philippines. E. coli and enterococci were better predictors than faecal coliforms of the risk of waterborne diarrhoeal disease. Methods to enumerate E. coli and enterococci were less subject to interference from the thermotolerant, non-faecal organisms that are indigenous to tropical waters. Little difference was observed between the illness rates of children drinking good quality water (less than 1 E. coli per 100 ml) and those drinking moderately contaminated water (2-100 E. coli per 100 ml). Children drinking water with greater than 1000 E. coli per 100 ml had significantly higher rates of diarrhoeal disease than those drinking less contaminated water. This threshold effect suggests that in developing countries where the quality of drinking-water is good or moderate other transmission routes of diarrhoeal disease may be more important, however, grossly contaminated water is a major source of exposure to faecal contamination and diarrhoeal pathogens.

Knudsen, A.B. and Slooff, R. (1992), Vector-borne disease problems in rapid urbanization: New approaches to vector control. *Bulletin of the World Health Organization*, **70** (1), 1-6.

Full Text: [1992\Bul Wor Hea Org70, 1.pdf](1992/Bul%20Wor%20Hea%20Org70,%201.pdf)

Abstract: Owing to population growth, poor levels of hygiene, and increasing urban poverty, the urban environment in many developing countries is rapidly deteriorating. Densely packed housing in shanty towns or slums and inadequate drinking-water supplies, garbage collection services, and surface-water drainage systems combine to create favourable habitats for the proliferation of vectors and reservoirs of communicable diseases. As a consequence, vector-borne diseases such as malaria, lymphatic filariasis and dengue are becoming major public health problems associated with rapid urbanization in many tropical countries. The problems in controlling these diseases and eliminating vectors and pests can be resolved by decision-makers and urban planners by moving away from the concept of “blanket” applications of pesticides towards integrated approaches. Sound Environmental Management practices and community education and participation form the mainstay of some of the most outstanding successes in this area. On the basis of these examples, it is argued that the municipal authorities need to apply a flexible methodology, which must be based on the possibilities of mobilizing community resources, with minimal reliance on routine pesticidal spraying. In this way, vector control becomes a by-product of human development in the city environment. This is now a true challenge.

Wouters, A.V. (1992), Health care utilization patterns in developing countries: Role of the technology environment in “deriving” the demand for health care. *Bulletin of the World Health Organization*, **70** (3), 381-389.

Full Text: [1992\Bul Wor Hea Org70, 381.pdf](1992/Bul%20Wor%20Hea%20Org70,%20381.pdf)

Abstract: Health care services, in combination with several intermediate (proximate) determinants of health such as environmental sanitation and nutrition, directly influence health status. In the economics literature, this is referred to as the health production technology. Although many studies recognize that demand for health care depends on the health production technology, otherwise known as a “derived” demand, this review indicates that few of them have so far been able to fully incorporate this technology in estimating significant determinants of health care use. Understanding the technology environment could help explain why substantial portions of the population do not gain access to care even when financial factors do not appear to be a barrier. Also, low utilization of health services may simply reflect the low productivity of these services when other complementary factors such as nutrition or clean water and sanitation are lacking. Finally, since health-producing technology is often a multistep (multivisit) process, health care demand studies generally offer an incomplete picture of health care utilization patterns because they focus on a single event such as the first visit of an illness episode. Researchers should obtain more complete information on the interaction between all health production inputs, their availability and access to them. Multidisciplinary methodologies are likely to be useful.

van Derslice, J., Popkin, B. and Briscoe, J. (1994), Drinking-water quality, sanitation, and breast-feeding: Their interactive effects on infant health. *Bulletin of the World Health Organization*, **72** (4), 589-601.

Full Text: [1994\Bul Wor Hea Org72, 589.pdf](1994/Bul%20Wor%20Hea%20Org72,%20589.pdf)

Abstract: The promotion of proper infant feeding practices and the improvement of environmental sanitation have been two important strategies in the effort to reduce diarrhoeal morbidity among infants. Breast-feeding protects infants by decreasing their exposure to water-and foodborne pathogens and by improving their resistance to infection, good sanitation isolates faecal material from the human environment, reducing exposures to enteric pathogens. Taken together, breast-feeding and good sanitation form a set of sequential barriers that protect infants from diarrhoeal pathogens. As a result, breast-feeding may be most important if the sanitation barrier is not in place. This issue is explored using data from a prospective study of 2355 urban Filipino infants during the first 6 months of life. Longitudinal multivariate analyses are used to estimate the effects of full breast-feeding and mixed feeding on diarrhoeal disease at different levels of sanitation. Breast-feeding provides significant protection against diarrhoeal disease for infants in all environments. Administration of even small portions of contaminated water supplements to fully breast-fed infants nearly doubles their risk of diarrhoea. Mixed-fed and weaned infants consume much greater quantities of supplemental liquids, and as a result, the protective effect of full breast-feeding is greatest when drinking-water is contaminated. Similarly, full breast-feeding has stronger protective effects among infants living in crowded, highly contaminated settings.

Söderlund, N. and Zwi, A.B. (1995), Traffic-related mortality in industrialized and less developed countries. *Bulletin of the World Health Organization*, **73** (2), 175-182.

Murray, J., McFarland, D.A. and Waldman, R.J. (1998), Cost-effectiveness of oral cholera vaccine in a stable refugee population at risk for epidemic cholera and in a population with endemic cholera. *Bulletin of the World Health Organization*, **76** (4), 343-352.

Full Text: [B\Bul Wor Hea Org76, 343.pdf](B/Bul%20Wor%20Hea%20Org76,%20343.pdf)

Abstract: Recent large epidemics of cholera with high incidence and associated mortality among refugees have raised the question of whether oral cholera vaccines should be considered as an additional preventive measure in high-risk populations. The potential impact of oral cholera vaccines on populations prone to seasonal endemic cholera has also been questioned. This article reviews the potential cost-effectiveness of B-subunit, killed whole-cell (BS-WC) oral cholera vaccine in a stable refugee population and in a population with endemic cholera. In the population at risk for endemic cholera, mass vaccination with BS-WC vaccine is the least cost-effective intervention compared with the provision of safe drinking-water and sanitation or with treatment of the disease. In a refugee population at risk for epidemic disease, the cost-effectiveness of vaccination is similar to that of providing safe drinking-water and sanitation alone, though less cost-effective than treatment alone or treatment combined with the provision of water and sanitation. The implications of these data for public health decision-makers and programme managers are discussed. There is a need for better information on the feasibility and costs of administering oral cholera vaccine in refugee populations and populations with endemic cholera.

Varley, R.C., Tarvid, J. and Chao, D.N. (1998), A reassessment of the cost-effectiveness of water and sanitation interventions in programmes for controlling childhood diarrhoea. *Bulletin of the World Health Organization*, **76** (6), 617-631.

Full Text: [B\Bul Wor Hea Org76, 617.pdf](B/Bul%20Wor%20Hea%20Org76,%20617.pdf)

Abstract: Cost-effectiveness analysis indicates that some water supply and sanitation (WSS) interventions are highly cost-effective for the control of diarrhoea among under-5-year-olds, on a par with oral rehydration therapy. These are relatively inexpensive “software-related” interventions such as hygiene education, social marketing of good hygiene practices, regulation of drinking-water, and monitoring of water quality. Such interventions are needed to ensure that the potentially positive health impacts of WSS infrastructure are fully realized in practice. The perception that WSS programmes are not a cost-effective use of health sector resources has arisen from three factors: an assumption that all WSS interventions involve construction of physical infrastructure, amisperception of the health sector’s role in WSS programmes, and a misunderstanding of the scope of cost-effectiveness analysis. WSS infrastructure (“hardware”) is generally built and operated by public works agencies and financed by construction grants, operational subsidies, user fees and property taxes. Health sector agencies should provide “software” such as project design, hygiene education, and water quality regulation. Cost-effectiveness analysis should measure the incremental health impacts attributable to health sector investments, using the actual call on health sector resources as the measure of cost. The cost-effectiveness of a set of hardware and software combinations is estimated, using US$ per case averted, US$ per death averted, and US$ per disability-adjusted life year (DALY) saved.

Käferstein, F. and Abdussalam, M. (1999), Food safety in the 21st century. *Bulletin of the World Health Organization*, **77** (4), 347-351.

Full Text: [B\Bul Wor Hea Org77, 347.pdf](B/Bul%20Wor%20Hea%20Org77,%20347.pdf)

Abstract: The global importance of food safety is not fully appreciated by many public health authorities despite a constant increase in the prevalence of foodborne illness. Numerous devastating outbreaks of salmonellosis, cholera, enterohaemorrhagic *Escherichia coli* infections, hepatitis A and other diseases have occurred in both industrialized and developing countries. In addition, many of the re-emerging or newly recognized pathogens are foodborne or have the potential of being transmitted by food and/or drinking water. More foodborne pathogens can be expected because of changing production methods, processes, practices and habits. During the early 21st century, foodborne diseases can be expected to increase, especially in developing countries, in part because of environmental and demographic changes. These vary from climatic changes, changes in microbial and other ecological systems, to decreasing freshwater supplies. However, an even greater challenge to food safety will come from changes resulting directly in degradation of sanitation and the immediate human environment. These include the increased age of human populations, unplanned urbanization and migration and mass production of food due to population growth and changed food habits. Mass tourism and the huge international trade in food and feed is causing food and feedborne pathogens to spread transnationally. As new toxic agents are identified and new toxic effects recognized, the health and trade consequences of toxic chemicals in food will also have global implications. Meeting the huge challenge of food safety in the 21st century will require the application of new methods to identify, monitor and assess foodborne hazards. Both traditional and new technologies for assuring food safety should be improved and fully exploited. This needs to be done through legislative measures where suitable, but with much greater reliance on voluntary compliance and education of consumers and professional food handlers. This will be an important task for the primary health care system aiming at “health for all”.

Nogué, S., Sanz, P., Munné, P. and Gadea, E. (2000), Copper contamination from domestic tap water with a descaler. *Bulletin of the World Health Organization*, **78** (4), 565-566.

Full Text: [B\Bul Wor Hea Org78, 565.pdf](B/Bul%20Wor%20Hea%20Org78,%20565.pdf)

Keywords: Intoxication

? Tong, S., von Schirnding, Y.E. and Prapamontol, T. (2000), Environmental lead exposure: A public health problem of global dimensions. *Bulletin of the World Health Organization*, **78** (9), 1068-1077.

Full Text: [2000\Bul Wor Hea Org78, 1068.pdf](2000/Bul%20Wor%20Hea%20Org78,%201068.pdf)

Abstract: Lead is the most abundant of the heavy metals in the Earth’s crust. It has been used since prehistoric times, and has become widely distributed and mobilized in the environment. Exposure to and uptake of this non-essential element have consequently increased. Both occupational and environmental exposures to lead remain a serious problem in many developing and industrializing countries, as well as in some developed countries. In most developed countries, however, introduction of lead into the human environment has decreased in recent years, largely due to public health campaigns and a decline in its commercial usage, particularly in petrol. Acute lead poisoning has become rare in such countries, but chronic exposure to low levels of the metal is still a public health issue, especially among some minorities and socioeconomically disadvantaged groups. In developing countries, awareness of the public health impact of exposure to lead is growing but relatively few of these countries have introduced policies and regulations for significantly combating the problem. This article reviews the nature and importance of environmental exposure to lead in developing and developed countries, outlining past actions, and indicating requirements for future policy responses and interventions.

Keywords: Lead, Adverse Effects, Lead Toxicity, Lead Poisoning, Environmental Exposure, Occupational Diseases, Epidemiologic Studies

? Smith, A.H., Lingas, E.O. and Rahman, M. (2000), Contamination of drinking-water by arsenic in Bangladesh: A public health emergency. *Bulletin of the World Health Organization*, **78** (9), 1093-1103.

Full Text: [2000\Bul Wor Hea Org78, 1093.pdf](2000/Bul%20Wor%20Hea%20Org78,%201093.pdf)

Abstract: The contamination of groundwater by arsenic in Bangladesh is the largest poisoning of a population in history, with millions of people exposed. This paper describes the history of the discovery of arsenic in drinking-water in Bangladesh and recommends intervention strategies. Tube-wells were installed to provide “pure water” to prevent morbidity and mortality from gastrointestinal disease. The water from the millions of tube-wells that were installed was not tested for arsenic contamination. Studies in other countries where the population has had long-term exposure to arsenic in groundwater indicate that 1 in 10 people who drink water containing 500 μg of arsenic per litre may ultimately die from cancers caused by arsenic, including lung, bladder and skin cancers. The rapid allocation of funding and prompt expansion of current interventions to address this contamination should be facilitated. The fundamental intervention is the identification and provision of arsenic-free drinking water. Arsenic is rapidly excreted in urine, and for early or mild cases, no specific treatment is required. Community education and participation are essential to ensure that interventions are successful; these should be coupled with follow-up monitoring to confirm that exposure has ended. Taken together with the discovery of arsenic in groundwater in other countries, the experience in Bangladesh shows that groundwater sources throughout the world that are used for drinking-water should be tested for arsenic.

Keywords: Bangladesh, Arsenic Poisoning, Prevention and Control, Arsenic Poisoning, Therapy, Water Pollution, Chemical, Prevention and Control, Water Treatment, Environmental Monitoring, West-Bengal, Cancer Mortality, Skin-Lesions, Groundwater, Exposure, Bladder, India, Lung, Prevalence, Districts

? (2003), WHO frontline worker dies of severe acute respiratory syndrome (SARS). *Bulletin of the World Health Organization*, **81** (5), 384.

Full Text: [2003\Bul Wor Hea Org81, 384.pdf](2003/Bul%20Wor%20Hea%20Org81,%20384.pdf)

? Tomasi, E., Facchini, L.A. and Maia, M.D.S. (2004), Health information technology in primary health care in developing countries: A literature review. *Bulletin of the World Health Organization*, **82** (11), 867-874.

Full Text: 2004\Bul Wor Hea Org82, 867.pdf

Abstract: This paper explores the debate and initiatives concerning the use of information technology (IT) in primary health care in developing countries. The literature from 1992-2002 was identified from searches of the MEDLINE, Latin American and Caribbean Health Science Literature Database (LILACS), Cochrane Library and Web of Science databases. The search identified 884 references, 350 of which were classified according to the scheme described by the Pan American Health Organization (PAHO). For the analysis of advantages, problems and perspectives of IT applications and systems, 52 articles were selected according to their potential contribution to the primary health-care processes in non-developed countries. These included: 10 on electronic patient registries (EPR), 22 on process and programmatic action evaluation and management systems. (PPAEM) and 20 on clinical decision-support systems (CDS). The main advantages, limitations and perspectives are discussed.

Keywords: Analysis, Asthma, Cd, Challenges, Cochrane, Contribution, Databases, Decision Support Systems, Clinical, Utilization, Decision-Support Systems, Developing Countries, Education, Distance, Evaluation, General-Practice, Health, Health Care, Information, Information Systems, Utilization, Information Technology, Latin American, Literature, Literature Review, Management, Medical Records Systems,Computerized, Utilization, Medline, Primary, Primary Health Care, Quality, Records, Review, Review Literature, Science, Services, Surveillance, System, Telemedicine, Utilization, Trial, Web of Science

# Title: Bunseki Kagaku

Full Journal Title: [Bunseki Kagaku](http://bunsekikagaku.jstage.jst.go.jp/en/)

ISO Abbreviated Title: Bunseki Kagaku

JCR Abbreviated Title: Bunseki Kagaku

ISSN: 0525-1931

Issues/Year: 12

Journal Country/Territory: Japan

Language: English

Publisher: Japan Soc Analytical Chemistry

Publisher Address: 26-2 Nishigotanda 1 Chome Shinagawa-Ku, Tokyo 141, Japan

Subject Categories:

Chemistry, Analytical: Impact Factor 0.550, / (2000)

? Kimura, M. and Nagai, Y. (1987), Mercury(II) ion adsorption on surface of green tea particles: Collection and removal of micro-amounts of mercury(II) ion in water by using the tea adsorbent. *Bunseki Kagaku*, **36** (11), 666-671.

Full Text: Bun Kag36, 666.pdf

? Minamisawa, H., Arai, N. and Okutani, T. (1993), Preconcentration of Cu(II)-nitrosonaphtholdisulfonate complex on the chitin/metal-furnace AAS. *Bunseki Kagaku*, **42** (11), 767-771.

Full Text: Bun Kag42, 767.pdf

Abstract: Copper(II) is adsorbed as its anionic complex with 1-nitroso-2-naphthol-3, 6-disulfonic acid disodium salt (Nitroso R salt, NR) on chitin, because chitin is protonated in an acidic medium, and acts as an anion adsorbent. A simple and rapid determination method of trace amounts of Cu(II) by metal-furnace AAS using direct heating of metal-adsorbed chitin was thus investigated. The obtained method is as follows. To 100 similar to 1000 cm3 of a sample solution containing less than 0.5 µg of Cu(II), add 2.0 cm3 of 10-2 mol dm-3 NR solution and 50 mg of chitin. The pH is then adjusted to 4.0 using dilute ammonia water and nitric acid. The chitin which adsorbs the Cu.NR is separated from the sample solution by filtration. The chitin on the filter paper is dispersed in 5.0 cm3 of water. After shaking, 10 µl of the suspension is directly injected into the tungsten matal-furnace. The absorbance is measured at 324.7 nm by metal-furnace AAS. The calibration curve was liner below 0.5 µgCu(II)/100 cm3 (aqueous phase). The relative standard deviations (n = 8) were 4.2% for 0.3 µgCu(II)/100 cm3, 4.8% for 0.1 µgCu(II)/100 cm3. The determination limits (S/N greater than or equal to 3) were 0.03 µgCu(II)/100 cm3 (0.3 ppb). The proposed method was applied to the determination of Cu(II) in several water samples. The adsorption isotherm of Cu.NR on the chitin was found to be fitted by the Freundlich equation.

Keywords: Adsorption of Cu(II)-Nitrosonaphtholdisulfonate Complex on the Chitin, Determination of Cu(II) In Natural Water, Direct Injecting of Metal-Adsorbed Chitin to Tungsten Metal-Furnace AAS, Atomic-Absorption Spectrometry, Spectrophotometric Determination, Bismuth, Samples

? Sasaki, Y., Tagashira, S., Murakami, Y., Fujiwara, I. and Hayashi, K. (1994), Adsorption isotherms for bivalent cations on ion exchange resins. *Bunseki Kagaku*, **43** (2), 111-116.

Full Text: [1994\Bun Kag43, 111.pdf](1994/Bun%20Kag43,%20111.pdf)

Abstract: Adsorption of the bivalent cations, manganese, cadmium and copper, on a strongly acidic cation exchange resin (R-Na form) followed the Freundlich adsorption isotherm quite closely. On the basis of this fact, an empirical formula for such adsorption on iron exchange resins is proposed. The proposed formula describes quantitatively the amounts of ion adsorbed on the resin as a function of the concentration of ion in question, the concentration of coexistent salt and the pH of solution. Adsorption of bivalent cations onto a sodium form of cation exchange resin was an endothermic reaction. The proposed formula also describes the adsorption of copper on a chelating poly(4-vinylpyridine) resin.

Keywords: Freundlich Adsorption Isotherm, Ion Exchange Resin, Chelate Resin, Bivalent Cation

? Kasahara, I., Takayama, N., Yamamoto, H., Sakurai, K. and Taguchi, S. (1997), Synthesis of silica-gel immobilized 8-quinolinol using 1-ethoxycarbonyl-2-ethoxy-1,2-dihydroquinoline and 4-aminobenzoic acid and its application to a column preconcentration/determination of trace vanadium in water by ICP-AES. *Bunseki Kagaku*, **46** (3), 211-215.

Full Text: [1997\Bun Kag46, 211.pdf](1997/Bun%20Kag46,%20211.pdf)

Abstract: An improved synthetic method for silica-gel immobilized 8-quinolinol is proposed. An aminopropylated silica-gel was reacted with 4-aminobenzoic acid in the presence of 1-ethoxycarbonyl-2-ethoxy-1,2-dihydroquinoline (EEDQ) to synthesize aminobenzamide silica-gel. The product was diazotized with sodium nitrite and coupled with 8-quinolinol by the usual method. EEDQ is easy to handle, since it is stable, less toxic and does not require critical pH control in the synthesis reaction. The synthetic method was simplified and made certain. The adsorbent prepared by using EEDQ was compared with that prepared by a reported method using 4-nitro-benzoyl chloride and sodium dithionite, the other one was synthesized by a Mannich reaction. The silica-gel immobilized 8-quinolinol synthesized by an improved method was applied to the determination of a trace amount of vanadium in river, snow and bottled drinking water samples by ICP-AES after preconcentration. Vanadium(V) and vanadium(IV) were adsorbed quantitatively within the pH range 3.0 to 7.5 and 4.0 to 6.5, respectively. It was possible to determine sub µg l-1 levels of vanadium after a 100-fold preconcentration using synthesized silica-gel immobilized 8-quinolinol.

Keywords: Silica-Gel Immobilized 8-Quinolinol, Preconcentration, 1-Ethoxycarbonyl-2-Ethoxy-1,2-dihydroquinoline, Vanadium, 8-Hydroxyquinoline

? Miyazaki, T., Kadokami, K. and Tukamoto, H. (2001), Simultaneous determination of traces of hydrophilic and volatile compounds in water by solid-phase microextraction and GC/MS. *Bunseki Kagaku*, **50** (10), 685-693.

Full Text: [2001\Bun Kag50, 685.pdf](2001/Bun%20Kag50,%20685.pdf)

Abstract: A method for the simultaneous determination of 26 hydrophilic and volatile compounds (alcohols, nitriles, esters, ethers and pyridines) in water samples has been developed using solid-phase microextraction (SPME) and GC/MS. The GC conditions were first investigated to obtain sharp peaks. After that, the types of SPME fiber and salting-out reagents as well as the extraction time and sample volume were studied to increase the extraction efficiencies of the target compounds. After internal standards and sodium chloride were added to a water sample, the target compounds were extracted with a SPME fiber for 1 hour. The target compounds were then desorbed by heating the fiber in a GC insert. The determination was carried out by GC/MS-SIM. The results of the overall recovery tests of 26 compounds spiked into bottled water at concentrations 0.01 to 5 µg/l showed that the mean recovery was 99.9% and the mean relative standard deviation was 11.7%. The detection limits ranged from 0.005 to 3.9 µg/l. The method was applied to analyses of river water, seawater and an effluent. Several compounds were detected from ng/l to µg/l level. From these results, it was confirmed that the method can be applied to not only environmental waters, but also effluents containing many matrix.

Keywords: Solid-Phase Microextraction, Spme, Hydrophilic Compound, Volatile Compound, Water Sample

? Kiyohara, T., Anazawa, K., Sakamoto, H. and Tomiyasu, T. (2003), Adsorption of mercury on used tea leaves and coffee beans. *Bunseki Kagaku*, **52** (10), 887-890.

Full Text: [2003\Bun Kag52, 887.pdf](2003/Bun%20Kag52,%20887.pdf)

Abstract: The adsorption of mercury(II) from aqueous solutions on green tea leaves, coffee beans and activated carbons has been studied comparatively. The adsorption capacity of those adsorbents was little affected by pH and EDTA. The coffee beans and the activated carbons adsorption capacity were highly affected by chloride ion, whilst the green tea leaves were less affected. The adsorption data obtained from equilibrium experiments were well-fitted to Freundlich isotherms.

Keywords: Mercury, Adsorption, Tea Leaves, Coffee Beans, Activated Carbons, Removal, River

# Title: Burns

Full Journal Title: Burns

ISO Abbreviated Title: Burns

JCR Abbreviated Title: Burns

ISSN: 0305-4179

Issues/Year: 6

Journal Country/Territory: England

Language: English

Publisher: Elsevier Sci Ltd

Publisher Address: The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England

Subject Categories:

Critical Care Medicine: Impact Factor 0.791, / (2001)

Dermatology & Venereal Diseases: Impact Factor 0.791, /(2001)

Surgery: Impact Factor 0.791, /(2001)

Cedidi, C., Hierner, R., Pichlmaier, M., Forssmann, W.G. and Meyer, M. (2003), Survival of severe ARDS with five-organ system failure following burns and inhalation injury in a 15-year-old patient. *Burns*, **29** (4), 389-394.

Full Text: [2003\Burns29, 389.pdf](2003/Burns29,%20389.pdf)

Abstract: *Objective*: To show the effectiveness of an integrated therapeutical approach in a severe case of acute respiratory distress syndrome (ARDS) following burns, inhalation injury with therapy-refractory oxygenation under maximized ventilatory settings, and an overall complicated clinical course. *Patient and methods*: Case report of a patient with severe inhalation injury and burns in an intensive care unit setting, undergoing cardiopulmonary resuscitation (CPR), nitric oxide (NO)-inhalation, surfactant-, kinetic-, and urodilatin-therapy. *Case report*: A 15-year-old male presented with deep dermal and full thickness thermal injuries involving 25% of his total body surface area. Shortly after presentation, the patient developed therapy-refractory respiratory failure, cardiac arrest, and subsequently suffered five-organ system failure (lung, heart, gastrointestinal, liver, kidney), in addition to burn injury, and ischemia related cerebral lesions. The patient was successfully treated with cardiac resuscitation, extra corporeal membrane oxygenation (ECMO), NO, kinetic therapy, surfactant, urodilatin, and other standard intensive care regimens. Three months post-trauma the patient was discharged home, nearly fully recovered. *Conclusions*: In a patient with severe ARDS, oxygenation failure under maximized ventilatory settings, and subsequent five-organ system failure, an integrated therapeutical approach comprising ECMO, NO, kinetic therapy, surfactant, and urodilatin did cross-bridge respiratory and vital functions, enabling overall survival.

Keywords: ARDS, Burns, ECMO, NO, Surfactant, Urodilatin

? Al-Benna, S., Rajgarhia, P., Ahmed, S. and Sheikh, Z. (2009), Accuracy of references in burns journals. *Burns*, **35** (5), 677-680.

Full Text: [2009\Burns35, 677.pdf](2009/Burns35,%20677.pdf)

Abstract: Aims: To study the incidence and risk factors for citation and quotation errors in two major burns surgery journals. Methods: 120 references were randomly selected from original articles published in the following two journals - January to December 2006 issues of Burns and journal of Burn Care & Research. For each reference, the ease of retrieval on PubMed and the presence of citation errors were noted. Two independent observers analysed each reference for quotation errors. The characteristics of the root article, that is, type of study, author numbers, number of references and article word count were noted. Results: Of the 120 selected references, 117 referred to articles from indexed medical journals published in English. Among these, 4 articles could not be retrieved due to fatal citation errors (3.3%). A further 12 citation errors were noted giving a total citation error rate of 13.3% (95% Cl: 6.74-19.93%). Of the 117 references analysed, the quotation error rate was 13.7% (95% Cl: 8.6-19.5%) half of which were major errors. There was no significant association between the combined error rate per article and the journal (Kruskal-Wallis test; p = 0.861, type of study (Kruskal-Wallis test; p = 0.717), author numbers (Spearman’s rho = 0.197, p = 0.423), article length (Spearman’s rho = 0.118, p = 0.705) or references per article (Spearman’s rho = 0.229, p = 0.189). Conclusions Significant numbers of citation and quotation errors still appear in current burns literature. Incorrect spelling of author names and partial omissions of article titles were the two most common errors. No observable underlying factors were identified in this study. The present results serve as a reminder to authors, editors and peer reviewers for more care of citation accuracy when striving for their common goal of scientific excellence. (C) 2008 Elsevier Ltd and ISBI. All rights reserved.

Keywords: Accuracy, Association, Authors, Bibliography, Care, Characteristics, Citation, Citation Accuracy, Citation Error, Citation Errors, Documentation, Error, Error Rate, Errors, Incidence, Journal, Journals, Length, Literature, Medical, Medical Journals, Observers, Paper, Periodicals, Publishing, Pubmed, Quotation, Quotation Accuracy, Quotation Error, Quotation Errors, Reference, References, Research, Rights, Risk, Risk Factors, Surgery

? Brusselaers, N., Pirayesh, A., Hoeksema, H., Verbelen, J., Blot, S. and Monstrey, S. (2010), Burn scar assessment: A systematic review of objective scar assessment tools. *Burns*, **36** (8), 1157-1164.

Full Text: [2010\Burns36, 1157.pdf](2010/Burns36,%201157.pdf)

Abstract: Purpose All deep second and third degree burns are at risk to develop hypertrophic scars which can severely undermine the quality of survival To assess the seventy of scarring several technical devices or tools have been introduced to evaluate one or more aspects of the scar, enabling comparison of different treatment protocols and allowing an objective follow up The objective of this study was to review which tools can be used in objective burn scar assessment Basic procedures The Systematic literature search involving PubMed the Web of Science (incl Science Citation Index) Main findings 51 articles with burn scar assessment as main topic were found Several characteristics of the scar can be assessed such as color metric features and elasticity but none of the available tools covers the whole aspect of the scar Especially subjective factors such as pain and itching cannot be assessed with those tools in spite of their great impact on the patient s quality of life Conclusions Scar tools enable objective and reproducible evaluation of scars which is essential for scientific studies and medico legal purposes and in selected cases for the clinical follow up of an individual patient Further studies to evaluate these tools on scars are nevertheless required (C) 2010 Elsevier Ltd and ISBI All rights reserved.

Keywords: Citation, Color, Comparison, Depth Assessment, Evaluation, Hypertrophic Scars, Laser-Doppler, Literature, Oxygen-Tension, Pain, Patient, Pediatric Burns, Pubmed, Quality of Life, Quantitative Measurement, Review, Scar Assessment, Science, Science Citation Index, Skin Hardness, Stratum-Corneum, Subjective Evaluation, Survival, Systematic Review, Transepidermal Water-Loss, Treatment, Web of Science

# Title: Business History

Full Journal Title: [Business History](http://www.informaworld.com/smpp/title~db=all~content=t713634500~tab=issueslist)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? Alfalla-Luque, R. and Medina-López, C. (2009), Supply chain management: Unheard of in the 1970s, core to today’s company. *Business History*, **51** (2), 202-221.

Full Text: [2009\Bus His51, 202.pdf](2009/Bus%20His51,%20202.pdf)

Abstract: Although the Supply Chain Management (SCM) concept was born at the beginning of the 1980s, research in the field was almost non-existent until the mid-1990s. Since then, the growth of SCM research has been exponential. Currently, SCM is making the change from being an emerging research field to becoming a consolidated one. The aim of this paper is to analyse the way SCM has developed from its origins and to determine whether its present development corresponds to the needs that companies are experiencing. This article provides a frame of reference for SCM research, which is essential for the definitive consolidation of a fledgling field such as this. It also allows any possible gap between SCM research and practice to be minimised.

Keywords: Bibliometric Studies, Change, Companies, Company, Developed, Development, Discipline, Emerging, Evolution, Field, Growth, History Review, Integration, Japanese, Journals, Management, Needs, Operations Management, Operations Management (OM), Performance, Perspective, Practice, Reference, Research, Research Agendas, Strategy, Supply Chain Management (SCM)

# Title: Business and Society

Full Journal Title: [Business and Society](http://bas.sagepub.com/)

ISO Abbreviated Title:

JCR Abbreviated Title:

ISSN:

Issues/Year:

Journal Country/Territory:

Language:

Publisher:

Publisher Address:

Subject Categories:

: Impact Factor

? De Bakker, F.G.A., Groenewegen, P. and Den Hond, F. (2006), A research note on the use of bibliometrics to review the corporate social responsibility and corporate social performance literature. *Business and Society*, **45** (1), 7-19.

Full Text: [2006\Bus Soc45, 7.pdf](2006/Bus%20Soc45,%207.pdf)

Abstract: Recently, the authors presented a bibliometric analysis of research and theory on corporate social responsibility and corporate social performance, which included a list of frequently cited articles in these fields. This list caused some questions, and therefore this research note aims to supplement and discuss the findings presented in the original study to (a) explain the composition of the dataset used, (b) highlight some problems pertaining to bibliometric research, and (c) underline why such studies nevertheless are useful, also in business and society research. © 2006 Sage Publications.

Keywords: Bibliometry, Citation Studies, Corporate Social Performance, Corporate Social Responsibility

? De Bakker, F.G.A., Groenewegen, P. and Den Hond, F. (2010), A bibliometric analysis of 30 years of research and theory on corporate social responsibility and corporate social performance. *Business and Society*, **49** (4), 283-317.

Full Text: [2010\Bus Soc49, 283.pdf](2010/Bus%20Soc49,%20283.pdf)

Abstract: Social responsibilities of businesses and their managers have been discussed since the 1950s. Yet no consensus about progress has been achieved in the corporate social responsibility/corporate social performance literature. In this article, we seek to analyze three views on this literature. One view is that development occurred from conceptual vagueness, through clarification of central constructs and their relationships, to the testing of theory—a process supported by increased sophistication in research methods. In contrast, other authors claim that hardly any progress is to be expected because of the inherently normative character of the literature. A final view is that progress in the literature on the social responsibilities of business is obscured or even hampered by the continuing introduction of newconstructs. This article explores which of these three views better describes the evolution of the literature during a period of 30 years and suggests implications for further research.