**Last data updates: 19 June 2015**

Malarvizhi, R. and Ho, Y.S.\* (2010), The influence of pH and the structure of the dye molecules on adsorption isotherm modeling using activated carbon. *Desalination*, **264** (1-3), 97-101.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document type: Article | Language: English | Cited references: 21 | Times cited: 10 | Times self cited: 0 |

Abstract: The main aim of the study was to find out the influence of pH and the molecular weight of the dye molecules on adsorption isotherm models using activated carbon in a single solid-liquid system. In this study we derived activated carbon from the waste biomass of wood apple rind. Batch mode experiments were carried out in order to assess the influence of the initial pH and molecular weight of the dye on adsorption capacity of the carbon. Two basic dyes namely Methylene blue and Crystal violet having different molecular structures have been chosen. To find out the pH effect on the adsorption capacity of the activated carbon, the equilibrium isotherm experiments were carried out by varying the pH of the dye solutions by fixing the carbon dose as constant. A separate study was carried out to note down the change in pH of the dye solution during the adsorption of cationic dye molecules on the activated carbon surface. The adsorption capacity of the activated carbon increased while increasing the pH of the dye solution. The structure of the dye molecules and the nature of pores present on the surface of the activated carbon also decide the adsorption capacity of the carbon. (C) 2010 Elsevier B.V. All rights reserved.

Author Keywords: Sorption; Molecular structure; Methylene blue; Crystal violet; Ion exchange

Keywords Plus: Sphagnum Moss Peat; Aqueous-Solution; Methylene-Blue; Tree Fern; Equilibrium; Kinetics; Removal; Lead; Sorption; Fiber

Reprint Address: Ho, YS (reprint author), Asia Univ, Water Res Ctr, Taichung 41354, Taiwan

Addresses:

1. Asia Univ, Water Res Ctr, Taichung 41354, Taiwan

2. Natl Inst Technol, Dept Chem, Tiruchchirappalli, Tamil Nadu India

3. Peking Univ, Dept Environm Sci, Beijing 100871, Peoples R China

E-mail Addresses: ysho@asia.edu.tw

1. Pietrelli, L., Francolini, I. and Piozzi, A. (2015), Dyes Adsorption from Aqueous Solutions by Chitosan. *Separation Science and Technology*, **50** (8), 1101-1107.
2. Nowicki, P., Kazmierczak, J. and Pietrzak, R. (2015), Comparison of physicochemical and sorption properties of activated carbons prepared by physical and chemical activation of cherry stones. *Powder Technology*, **269**), 312-319.
3. Greenwald, M.J., Redding, A.M. and Cannon, F.S. (2015), A rapid kinetic dye test to predict the adsorption of 2-methylisoborneol onto granular activated carbons and to identify the influence of pore volume distributions. *Water Research*, **68**), 784-792.
4. Wang, M.X., Zhang, Q.L. and Yao, S.J. (2015), A novel biosorbent formed of marine-derived Penicillium janthinellum mycelial pellets for removing dyes from dye-containing wastewater. *Chemical Engineering Journal*, **259**), 837-844.
5. Yagub, M.T., Sen, T.K., Afroze, S. and Ang, H.M. (2014), Dye and its removal from aqueous solution by adsorption: A review. *Advances in Colloid and Interface Science*, **209**), 172-184.
6. Boke, N., Godongwana, Z.G. and Petrik, L.F. (2013), Synthesis of an ordered mesoporous carbon with graphitic characteristics and its application for dye adsorption. *Journal of Porous Materials*, **20** (5), 1153-1161.
7. Da Dalt, S., Alves, A.K. and Bergmann, C.P. (2013), Photocatalytic degradation of methyl orange dye in water solutions in the presence of MWCNT/TiO2 composites. *Materials Research Bulletin*, **48** (5), 1845-1850.
8. Danish, M., Hashim, R., Ibrahim, M.N.M. and Sulaiman, O. (2013), Characterization of Physically Activated Acacia mangium Wood-Based Carbon for the Removal of Methyl Orange Dye. *Bioresources*, **8** (3), 4323-4339.
9. Theydan, S.K. and Ahmed, M.J. (2012), Adsorption of methylene blue onto biomass-based activated carbon by FeCl3 activation: Equilibrium, kinetics, and thermodynamic studies. *Journal of Analytical and Applied Pyrolysis*, **97**), 116-122.
10. bou Taleb, M.F., Hegazy, D.E. and Ismail, S.A. (2012), Radiation synthesis, characterization and dye adsorption of alginate-organophilic montmorillonite nanocomposite. *Carbohydrate Polymers*, **87** (3), 2263-2269.
11. Hubbe, M.A., Beck, K.R., O'Neal, W.G. and Sharma, Y.C. (2012), Cellulosic Substrates for Removal of Pollutants from Aqueous Systems: A Review. 2. Dyes. *Bioresources*, **7** (2), 2592-+.
12. Kizilkaya, B. and Tekinay, A.A. (2011), Comparative Study and Removal of Co and Ni (II) Ions from Aqueous Solutions Using Fish Bones.  *Science of Advanced Materials*, **3** (6), 949-961.
13. Machado, F.M., Bergmann, C.P., Fernandes, T.H.M., Lima, E.C., Royer, B., Calvete, T. and Fagan, S.B. (2011), Adsorption of Reactive Red M-2BE dye from water solutions by multi-walled carbon nanotubes and activated carbon. *Journal of Hazardous Materials*, **192** (3), 1122-1131.
14. Janus, M., Kusiak-Nejman, E. and Morawski, A.W. (2011), Determination of the photocatalytic activity of TiO2 with high adsorption capacity. *Reaction Kinetics Mechanisms and Catalysis*, **103** (2), 279-288.
15. Foo, K.Y. and Hameed, B.H. (2011), Preparation of oil palm (Elaeis) empty fruit bunch activated carbon by microwave-assisted KOH activation for the adsorption of methylene blue. *Desalination*, **275** (1-3), 302-305.
16. El-Sayed, G.O. (2011), Removal of methylene blue and crystal violet from aqueous solutions by palm kernel fiber. *Desalination*, **272** (1-3), 225-232.
17. Cheng, R.M., Xiang, B., Li, Y.J. and Zhang, M.Z. (2011), Application of dithiocarbamate-modified starch for dyes removal from aqueous solutions. *Journal of Hazardous Materials*, **188** (1-3), 254-260.
18. Deshpande, P.A., Polisetti, S. and Madras, G. (2011), Rapid Synthesis of Ultrahigh Adsorption Capacity Zirconia by a Solution Combustion Technique. *Langmuir*, **27** (7), 3578-3587.