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COMMENT

Adsorption Characteristics of Zinc-cyanide Complexes by Waste Brewery Biomass

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Abstract: Citation errors and quotation errors occurr very frequently in scientific papers, but, the authors mostly ignore them. Chu and coworkers published a paper that had been previously evaluated and accepted for publication. This Comment offers information citing the original papers describing Lagergren's pseudo-first-order and Ho's pseudo-second-order-rate expressions. The pseudo-second-order model applies to a range of solid-liquid systems, such as metal ions, dyestuffs, herbicides, oils, and organic substances in aqueous systems applied onto various sorbents. It is suggested that authors must not only be creative but also must be careful while writing up their results in order to publish that are more valuable and papers more worthy of reading.

Keywords: *pseudo-first-order, pseudo-second-order, citation error, quotation error, adsorption*

Recently, Chu and coworkers published a paper entitled "Adsorption characteristics of zinc-cyanide complexes by waste brewery biomass" [1]. In the section titled "Analysis of Kinetic Data," the authors mentioned Eqs. (4) and (5) for first- and second-order rate expressions without citing any references. In 1998, Ho and McKay first presented the correct reference citing the original Lagergren paper [2], namely "Lagergren, S. (1898), Zur theorie der sogenannten adsorption gelster stoffe. *Kungliga Svenska Vetenskapsakademiens Handlingar*, Band 24, No. 4, 1～39" ["Lagergren, S. (1898), About the theory of so-called adsorption of soluble substances. *Kungliga Svenska Vetenskapsakademiens Handlingar*, Band 24, No. 4, 1～39"], which has the abbreviated form "Lagergren, S. (1898), Zur theorie der sogenannten adsorption gelster stoffe. K." *Sven. Vetenskapsakad. Handl.*, Band 24, No. 4, 1～39". To distinguish a kinetic equation based on the adsorption capacity of a solid from one based on the concentration of a solution, Lagergren's first-order rate equation has been called pseudo-first-order [2]. It was pointed out that Lagergren's equation has been widely cited, but there are far more mistakes made in the reference sections of papers than anywhere else, including the author's name, journal title, year, volume, and page number [3].

In addition, the second-order kinetic expression for the adsorption systems of divalent metal ions using sphagnum moss peat has been reported by Ho [4]. To distinguish a kinetic equation based on the adsorption capacity of solids from one based on the concentration of solutions, Ho's second-order rate expression has been called pseudo-second-order [2]. Recently, Azizian presented a theoretical analysis of pseudo-second-order equations [5]. The most frequently cited papers were published in *Chemical Engineering Journal* [2], *Process Biochemistry* [6], and *Water Research* [7]. Moreover, similar comments have also been published in *Environmental Science & Technology* [8], *Industrial & Engineering Chemistry Research* [9], *Journal of Colloid and Interface Science* [10], *Journal of Hazardous Materials* [11], and *Water Research* [12]. The pseudo-second-order rate expression of Ho has been applied widely to the sorption of metal ions, dyes, herbicides, oils, pesticide, and organic substances from aqueous solutions [8-12].

A research paper's contribution exists not only in its originality and creativity but also in its continuity and development for research that follows. A number of researchers have pointed out that the rate of citation errors is often unacceptably high in journals, which significantly diminishes the value of the reference list [13,14]. Contributors to journals should be aware of the

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various risk factors for citation errors [15]. It has been strongly urged that the peer review of citation and quotation accuracy should be strengthened [14]. In a study of referencing and quotation accuracy, Gosling and coworkers [16] concluded: "Take no reference for granted. Verify the reference that your best friend gives you. Verify the reference that your revered chief gives you. Verify, most of all, the reference that you yourself found and jotted down. To err is human, to verify is necessary." Poor citation and quotation is a reflection on the scholarly work of the authors and the journal [16]. To read the original paper, which may contain more details regarding the idea, would result in fewer misunderstandings. I suggest that Chu and coworkers cite Lagergren's pseudo-first-order kinetic model paper, and Ho's original pseudo-second-order kinetic expression paper or other relevant work.

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