

# COMMENTS ON “ADSORPTION PERFORMANCE OF NICKEL AND CADMIUM IONS ONTO BREWER’S YEAST”

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Recently, Cui et al. (2010) published the paper entitled “Adsorption performance of nickel and cadmium ions onto brewer’s yeast.” In section “Kinetics of Ni(II) and Cd(II) Ions Adsorption,” the authors presented the term “initial adsorption rate” as “The initial adsorption rate,  $h$  (mg/(g min)), at  $t \rightarrow 0$  is defined as Equation (4):” without any citations.

In fact, the definition of initial adsorption rate for the adsorption systems of divalent metal ions using sphagnum moss peat has been presented by Ho (1995), and this expression has also been published in 1996 (Ho et al., 1996). Unfortunately, a correction to the initial adsorption rate was rejected to be published by *Environmental Technology*. A modified equation has been presented in 1998, because a mistake was included in the previous paper that was published in 1996 (Ho and McKay, 1998a,b).

In the case of pseudo-first-order equation, Cui et al. noticed “the pseudo-first-order given by Lagergren and Svenska” without any citations. In fact, the first-order rate equation was presented by Lagergren (1898). The rate of a reaction is defined as the change in concentration of a reactant or product per unit time. Concentrations of products do not appear in the rate law because the reaction rate is studied under conditions where the reverse reactions do not contribute to the overall rate. The reaction order and rate constant must be determined by experiments. In order to distinguish kinetics equations based on concentrations of solution from adsorption capacities of solids which is not typical rate law definition, Lagergren’s first-order rate equation has been called pseudo-first-order (Ho and McKay, 1998a,b). In addition, a citation review of the Lagergren rate equation for adsorption reactions has been presented by Ho (2004). That is “Lagergren, S. (1898), Zur theorie der sogenannten adsorption gelöster 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”], and the abbreviated style is “Lagergren, S. (1898), Zur theorie der sogenannten adsorption gelöster stoffe. K. Sven. Vetenskapsakad. Handl., Band 24, No. 4, 1–39.” Ho pointed that Lagergren’s equation has been widely cited, but there are many mistakes made in the reference sections of papers than anywhere else, including the authors’ name, journal title, year,

volume, and page number (Ho, 2004). Because of this, numerous researchers use secondary references without knowing that mistakes have already been made in their sources of references, such as taking references straight from secondary references.

In the case of the pseudo-second-order model the authors noticed “The pseudo-second-order model is based on the assumption that the rate-limiting step may be chemical sorption or chemical sorption involving valence forces through sharing or exchange of electrons between sorbent and sorbate.” with Equation (3) without any citations. The second-order kinetic expression for the adsorption systems of divalent metal ions using sphagnum moss peat has been presented by Ho (1995). In order to distinguish kinetics equation based on adsorption capacity of solid from concentration of solution, Ho’s second-order rate expression has been named pseudo-second-order model (Ho and McKay, 1998a,b; Ho, 2006). The adsorption involved not only cation exchange but also chemical bonding. Cui et al. used the same idea of the pseudo-second-order model. Furthermore, another paper related to the pseudo-second-order model was published in 1984 by Blanchard et al. (1984). Authors noted that the overall exchange reaction of  $\text{NH}_4^+$  ions fixed in zeolite by divalent metallic ions in the solution using a second-order kinetic model.

When a scientific publication duplicate previously published idea, text, equations, or figures without any citations, it frequently is regarded as a sign of possible plagiarism (Noè and Batten, 2006). To avoid being misconstrued, as well as to provide more accurate information, I would suggest that the authors cite the original paper for the initial adsorption rate, the first-second-order model, and the pseudo-second-order model.

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