Short communication

# Comment on "Nitrate removal from aqueous solution by adsorption onto various materials" by N. Öztürk, T.E. Bektaş

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## Abstract

A research paper's contribution exists not only in its originality and creativity but also in its continuity and development for research that follows. The reference section can play a key role to researchers who are interested in a paper's statement or who would like to follow the study or find useful information from the paper. Citation error and quotation error occurred very frequently in a scientific paper, however, the author easily ignores it. Öztürk and Bektaş published a paper, there is no doubt about this paper, which was previously evaluated and accepted for publication. This study presents quotation and citation errors of Lagergren's pseudo-first order rate equation and Ho's pseudo-second order rate expression. It is also suggested that an author not only must be creative but also must be careful while writing in order to publish more valuable and papers more worthy of reading.
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*Keywords:* Adsorption; Kinetics; Pseudo-first order; Pseudo-second order; Citation error

Recently, Öztürk and Bektaş published the paper "Nitrate removal from aqueous solution by adsorption onto various materials" [1]. In Section 3.3 "Adsorption kinetics", the authors mentioned that "first-order rate expression given by Lagergren" using Eq. (3) in the paper, and cited five papers as secondary references in which there are quotation or citation errors. A citation review of the Lagergren rate equation for adsorption reactions has been presented [2]. The correct reference citing the original Lagergren paper was first presented by Ho and McKay in 1998 [3]; "S. Lagergren, Zur theorie der sogenannten adsorption gelöster stoffe, K. Sven. Vetenskapsakad. Handl. 24 (4) (1898) 1–39." Its English translation is "S. Lagergren, About the theory of so-called adsorption of soluble substances, K. Sven. Vetenskapsakad. Handl. 24 (4) (1898) 1–39." and the abbreviated style is "S. Lagergren, Zur theorie der sogenannten adsorption gelöster stoffe, K. Sven. Vetenskapsakad. Handl. 24 (4) (1898) 1–39." In order to distinguish a kinetics 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 [2–11]. Ho pointed that Lagergren's equation has been widely cited, but there are far more mistakes made in the reference section of papers than anywhere else, including the authors' name, journal title, year, volume, and page number [2]. It is clear that most of the papers citing Lagergren's original paper published in 1898 are incorrect. However, numerous researchers use secondary references without knowing that mistakes have already been made in their source of references, such as taking references straight from secondary references.

In Section 3.3 "Adsorption kinetics" the authors mentioned the "second-order equation based on adsorption equilibrium capacity" using Eq. (4) in the paper with no citation. In fact, the second-order kinetic expression for the adsorption systems of divalent metal ions using sphagnum moss peat has been reported by Ho [4]. Whereas, this second-order rate expression has been called pseudo-second-order [3–11]. The earlier application of the pseudo-second-order equation to the kinetic studies of competitive heavy metal

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adsorption by sphagnum moss peat was undertaken by Ho et al. [5]. The modified model was also reported in subsequent years [6–8]. Azizian presented a theoretical analysis of pseudo-second-order equation [9]. In addition, similar comments have also been published in "Journal of Colloid and Interface Science" [10], and "Bioresource Technology" [11]. The pseudo-second-order rate expression has been widely applied to the sorption of metal ions, dyes, herbicides, oil, and organic substances from aqueous solutions [10,11].

There is no doubt about this paper, which was previously evaluated and accepted for publication. Research papers conventionally include an introduction, a description of the objectives and procedures of the study, an account of the results, and a discussion of the results and their implications. However, a paper contributes not only by its originality and creativity, but also by its continuity and development toward subsequent research. The reference section can play a key role for researchers, who are interested in the paper's statement, and would like to follow the study or find useful information from the paper [2]. Calne and Calne [12] suggested that authors should cite relevant work of others, as well as their own. Authors may merely be instructed to include key citations in their introduction and to verify, in writing, that they have fully reviewed the published work. In a referencing and quotation accuracy study, Gosling et al. [13] concluded that "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". I suggest that Öztürk and Bektaş cite Lagergren's pseudo-first-order kinetic model paper and Ho's original pseudo-second-order kinetic expression paper.

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