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Comments on "Elimination of Bisphenol A from Water *via* Graphene Oxide Adsorption"

Xu and Zhu published the paper entitled "Elimination of Bisphenol A from Water *via* Graphene Oxide Adsorption".[1] In section of 3.2 BPA adsorption kinetics, authors stated that "The pseudo-first-order model" and cited Blanchard *et al*.[2] to be a reference. There is nothing about the pseudo-first-order model in the reference. It is a quotation error. The Lagergren rate equation presented in 1898, is a first order model. Basically, 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.[3] In order to distinguish the kinetic equation based on the concentration of a solution from the adsorption capacity of solids, this Lagergren first order rate equation has been called a pseudo-first-order one.[4] In addition, regression of pseudo-first-order kinetic model in Fig. 1 would not be possible.

In the same section, authors also noticed that "The pseudo-second-order model includes all the steps of adsorption including external film diffusion, adsorption, and internal particle diffusion" and cited Langmuir[5] to be reference. In fact, Langmuir equation is a well known adsorption isotherm but is not a kinetic rate equation. The pseudo-second-order kinetic expression for the adsorption systems of divalent metal ions using sphagnum peat moss was presented by Ho.[6] A modified model was made in the following years because a mistake was included in Ho′s thesis in 1995.[4] A review of second order models for adsorption systems has also been discussed in details.[3] The model has a non-linear form $q_t = \frac{q_e^2 kt}{1+q_e kt}$ and four linear forms such as $\frac{t}{q_t} = \frac{1}{kq_e^2} + \frac{1}{q_e}t$, $\frac{1}{q_t} = \left(\frac{1}{kq_e^2}\right)\frac{1}{t} + \frac{1}{q_e}$, $q_t = q_e - \left(\frac{1}{kq_e}\right)\frac{q_t}{t}$, and $\frac{q_t}{t} = kq_e^2 - kq_e q_t$.[7] The four linear equations had different axial settings individually so that would alter the result of a linear regression and influence the determination process. Non-linear regression could be a better method to compare the best fitting of kinetic model.[7]

One common mistake is to cite papers that are devoid of the original information, but have used the original information of others to develop their own arguments.[8] To cite the original paper would be appropriate.[9] It not only respects authors who presented a novel idea in research but also facilitates colleagues to read the original work to better understand the idea in detail.[10] Accuracy of citations and quotations are very important for the transmission of scientific knowledge. In my view, Xu and Zhu should have cited the original paper for the kinetic models, and thereby, provided more accurate information about the kinetic expression employed in the article.

References

(1) Xu, J.; Zhu, Y. F. *Acta Phys.-Chim. Sin.* **2013**, *29*, 829. doi: 10.3866/PKU.WHXB201301211
(2) Blanchard, G.; Maunaye, M.; Martin, G. *Water Res.* **1984**, *18*, 1501.
(3) Ho, Y. S. *J. Hazard. Mater.* **2006**, *136*, 681. doi: 10.1016/j.jhazmat.2005.12.043
(4) Ho, Y.S.; McKay, G. *Chem. Eng. J.* **1998**, *70*, 115.
(5) Langmuir, I. *J. Am. Chem. Soc.* **1916**, *38*, 2221.
(6) Ho, Y.S. *Ph. D. Thesis*, University of Birmingham, Birmingham, U. K. 1995.
(7) Ho, Y.S. *Water Res.* **2006**, *40*, 119. doi: 10.1016/j.water.2005.10.040
(8) Taylor, D.McD.; Brown, A. F. T. *Emerg. Med. Australas* **2001**, 13, 444.
(9) Ho, Y. S. *Scientometrics* **2004**, *59*, 171. doi: 767DD
(10) Ho, Y. S. *Ecol. Eng.* **2010**, *36*, 832. doi: 10.1016/j.ecoleng.2009.11.023

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