

Discussion

A note on the comments by Dr. Y.S. Ho on “Nitrate removal from aqueous solution by adsorption onto various materials”

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Based on the comments by Y.S. Ho [1] on the work of Öztürk and Bektaş [2], I would like to address some important issues which are as follows:

The comments by Dr. Y.S. Ho claims to cite the work by Ho [3] for pseudo second order kinetics expression. I would like to point out that in 1984, Blanchard et al. proposed [4] a second order rate equation for the exchange reaction of divalent metallic ions onto NH_4^+ ions fixed zeolite particles. The linearized form of Blanchard et al. [4] second order kinetics was given by:

$$\frac{1}{q_e - q} - \alpha = kt \quad (1)$$

where q_e and q represent the amount of dye adsorbed at equilibrium and at any time t and represented in terms of mg/g, k the second order rate constant. The rate constant can be obtained from the slope of plot between $1/(q_e - q)$ versus time t . Applying boundary conditions $q = 0$ for $t = 0$, it follows that $\alpha = 1/q_e$. Thus this model has an advantage to predict the equilibrium uptake capacity without the support of experimental data. The non-linearized form of Eq. (1) can be given by:

$$q = \frac{ktq_e + \alpha q_e - 1}{kt + \alpha} \quad (2)$$

Applying the value of α in Eq. (1) and rearranging, the non-linearized form of pseudo second order expression can be obtained as follows:

$$q = \frac{q_e^2 kt}{1 + kq_e t} \quad (3)$$

The non-linear form of the pseudo second order expression of Ho was given by [3]:

$$q = \frac{q_e^2 kt}{1 + kq_e t} \quad (4)$$

From Eqs. (3) and (4), it is clear that the pseudo second order expression of the Blanchard et al. [4] and Ho [3] were the same. Further, it is clear that it was Blanchard et al. [4] who first proposed the pseudo second order kinetic expression in 1984 and only a linearized form of pseudo second order kinetic model was reported by Ho [3] in 1995. Recently it have been proved that Blanchard et al.'s and the expression of Ho [3] were the same for the sorption kinetics of safranin onto rice husk particles [5].

From scientific point of view it is always a must to give credit to the authors who first proposed the theoretical model. Thus I would like to point out that pseudo second order model was not proposed by Ho, it was originally reported by Blanchard et al. [4]. Thus it will be more appropriate to cite the works by Blanchard et al. [4] for pseudo second order kinetic expression.

Thus I would like to make a note that the works by Blanchard et al. [4] should be cited for pseudo second order kinetic expression.

References

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