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Letter to the Editor

The real pseudo-second-order rate equation

Recently, Mhamdi et al. published the paper entitled "Adsorption of zinc by a Tunisian Smectite through a filtration membrane" (Mhamdi et al., 2013). In the Section 3.6.1 Adsorption kinetics, authors noticed that "In this study we used, the pseudo second order kinetics law, according to the following equation:"

$$\frac{t}{q_t} = \frac{1}{2K} + \frac{t}{q_e}.$$

This pseudo second-order model is not correct. In fact, the pseudo-second-order kinetic expression for the adsorption systems of divalent metal ions using sphagnum moss peat has been presented by Ho in 1995 (Ho, 1995). The pseudo-second-order kinetic model has a non-linear form $q_t = q_e^2 kt/1 + q_e kt$ and four linear forms such as $t/q_t = 1/kq_e^2 + (1/q_e)t$, $1/q_t = (1/kq_e^2)1/t + 1/q_e$, $q_t = q_e - (1/kq_e)q_t/t$, and $q_t/t = kq_e^2 - kq_e q_t$ (Ho, 2006a). The model was also used in numbers of adsorption systems in subsequent years (Ho, 2005). A review of second-order models for adsorption systems gave more details (Ho, 2006b).

In order to stop the proliferation of the mistake a comment has been made (Ho, 2004). Citing the original paper not only respects the work of the authors who presented a novel research idea but also discussed this idea in detail in the body of their paper. In my view, Mhamdi et al. should have cited the original paper for the kinetic model and thereby provided greater accuracy and information details about the kinetic expression they employed.

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