COMMENTS

Comment on "Kinetics of Solute Adsorption at Solid/Solution Interfaces: A Theoretical Development of the Empirical Pseudo-First and Pseudo-Second Order Kinetic Rate Equations, Based on Applying the Statistical Rate Theory of Interfacial Transport"

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Recently, Rudzinski and Plazinski proposed a theoretical development of the empirical pseudo-first and pseudo-second order adsorption kinetic models by using statistical rate theory (SRT).[1] This idea for the theoretical development of empirical models is very interesting, but because this paper is focused on pseudo-first and pseudo-second order models, I wish to point out some items on this paper:

(i) A pseudo-second order model for adsorption at a solution/solid interface was introduced for the first time empirically by Blanchard et al.,[2] but the authors did not cite this original paper.

(ii) On the first column of the forth page of this paper, they wrote "The experiments show that the coefficients k_1 and k_2 in the empirical eqs 2 and 4 depend, for instance, on the initial concentration $c^{(in)}$ but there is no theoretical explanation for that. Our SRT equation explains it for the first time because...". It should be noted that in 2004 we showed theoretically that both k_1 and k_2 are functions of initial concentration,[3] and therefore, Rudzinski and Plazinski's report[1] is not the first theoretical explanation and is just the first explanation by SRT. But, they did not consider our report.[3]

(iii) For derivation of the pseudo-first order model (eq 27), the authors supposed that the bulk concentration is essentially unchanged during the experiments. This idea that the pseudo-first order model can be derived theoretically only at nearly constant bulk concentration was proposed by us,[3] but the authors did not cite our paper.

(iv) The authors concluded that pseudo-first and pseudo-second order models are simplified forms of a more general equation. This conclusion was also obtained by us, because we derived both pseudo-first and pseudo-second order models from the Langmuir kinetic model by some simplification assumptions.

So on the basis of the above explanations, it was expected that the authors cite my paper[3] which was the first attempt to made a theoretical explanation on empirical pseudo-first and pseudo-second order models. It should be noted that a correct and updated citation is very important for researchers to find relevant information, pioneer ideas, and progress of the subject.

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References and Notes

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