Reply to Comments by S. Azizian on *J. Chem. Eng. Data* 2007, *52*, 1615−1620

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Introduction

Azizian claims[1] that the reported *k* values in our study[2] are doubtful because there is no trend in the *k* values by changing C_o. As shown by Azizian,[3] on the basis of a theoretical point of view, there should be a change with a trend in the *k* values by changing C_o. After retesting the experimental data, we obtained the same *k* values, and there is no trend between the *k* and C_o values as given in Tables 4 and 5.[2] Although some researchers have found a change with a trend in the *k* values by changing C_o, in many papers[4–8] related to adsorption studies in the literature no trend between *k* and C_o values has been observed. Consequently, we believe that our results are correct, and there is good agreement with results in the literature.

Table 2. Langmuir and Freundlich Isotherm Constants at Different Temperatures and pH for the Adsorption of RR239

	Langmuir			Freundlich			
	R^2	q_{max}	K_L	R_L	R^2	K_F	*n*
temperature (pH, 5; C_o, (60 to 150) g·L^{-1})							
30 °C	0.934	12.929	0.264	0.059	0.958	2.521	2.181
35 °C	0.987	12.362	0.281	0.056	0.993	1.671	1.539
40 °C	0.933	12.177	0.261	0.060	0.943	0.825	1.120
pH (*T*, 25 °C; C_o, (60 to 150) g·L^{-1})							
3	0.947	9.635	3.283	0.005	0.964	1.545	1.426
7	0.953	9.941	1.565	0.011	0.972	1.698	1.495
10	0.964	9.891	1.827	0.009	0.977	1.873	1.583

Table 3. Langmuir and Freundlich Isotherm Constants at Different Temperatures and pH for the Adsorption of RB5

	Langmuir			Freundlich			
	R^2	q_{max}	K_L	R_L	R^2	K_F	*n*
temperature (pH, 5; C_o, (60 to 150) g·L^{-1})							
30 °C	0.997	15.942	0.007	0.724	0.971	0.227	1.346
35 °C	0.995	14.875	0.007	0.716	0.971	0.162	1.260
40 °C	0.972	11.020	0.008	0.708	0.903	0.124	1.211
pH (*T*, 25 °C; C_o, (60 to 150) g·L^{-1})							
3	0.988	11.908	0.012	0.602	0.984	0.216	1.304
7	0.990	9.098	0.038	0.303	0.988	0.803	1.965
10	0.966	9.370	0.021	0.447	0.960	0.229	1.308

Azizian[3] also referred to a strange effect of temperature on the q_e values of experiments in Tables 4 and 5 and to the poor agreement between experimental and calculated q_e values at temperatures (30, 35, and 40) °C. This strange effect resulted from our incorrect entry of data in the tables. In the second columns of Tables 4 and 5,[2] the q_e values of 60 mg·L for the temperatures (30, 35, and 40) °C and pH (3, 7, and 10) were written by mistake instead of 150 mg·L. Other data (R^2, $q_{e,calcd}$, and *k*) in the tables are given correctly. The true values and correct forms of the tables are given here.

Table 4. Pseudo-Second-Order Adsorption Rate Constants and Calculated q_e Values of RR239 for Different Initial Dye Concentrations, Temperatures, and pH

	q_e		$q_{e,calcd}$	*K*
	mg·g^{-1}	R^2	mg·g^{-1}	kg·g^{-1}·min^{-1}
initial dye concentration (*T*, 25 °C; pH, 5)				
60 mg·L^{-1}	6.093	1.000	6.388	1.288
90 mg·L^{-1}	8.743	1.000	9.132	1.073
120 mg·L^{-1}	12.551	1.000	12.930	1.048
150 mg·L^{-1}	15.663	1.000	15.860	2.096
temperature (pH, 5; C_o,150 mg·L^{-1})				
30 °C	15.202	1.000	15.526	1.198
35 °C	15.107	1.000	15.394	2.016
40 °C	14.328	1.000	15.649	1.203
pH (*T*, 25 °C; C_o,150 mg·L^{-1})				
3	15.546	1.000	15.853	1.216
7	15.554	1.000	15.887	1.179
10	15.524	1.000	15.532	1.555

Table 5. Pseudo-Second-Order Adsorption Rate Constants and Calculated q_e Values of RB5 for Different Initial Dye Concentrations, Temperatures, and pH

	q_e		$q_{e,calcd}$	*K*
	mg·g^{-1}	R^2	mg·g^{-1}	kg·g^{-1}·min^{-1}
Iinitial dye concentration (*T*, 25 °C; pH, 5)				
60 mg·L^{-1}	3.296	0.992	4.827	0.040
90 mg·L^{-1}	3.776	1.000	4.294	0.134
120 mg·L^{-1}	5.333	1.000	5.749	0.195
150 mg·L^{-1}	6.666	1.000	7.538	0.108
temperature (pH, 5; C_o, 150 mg·L^{-1})				
30 °C	6.592	1.000	7.227	0.122
35 °C	6.126	1.000	6.468	0.193
40 °C	5.328	0.999	7.530	0.042
pH (*T*, 25 °C; C_o, 150 mg·L^{-1})				
3	6.892	1.000	7.781	0.127
7	7.856	0.999	8.887	0.060
10	6.924	1.000	8.439	0.050

A pseudo-second-order kinetic model was tested using six experimental data points. However, in the previous paper, one of them (contact time = 1 min) was neglected to be shown on Figure S5.[2] The correct form of Figure S5 that should have been in the Supporting Information is given below. Fitting of the Freundlich isotherm model was retested using four equilibrium data and recompared with the Langmuir isotherm model. The correct forms of Tables 2 and 3 with the new data are given

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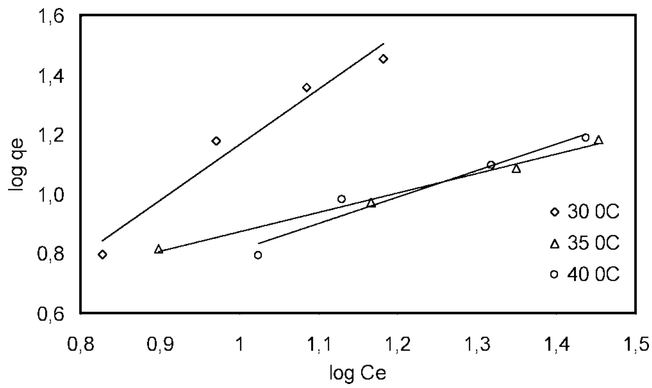

Figure S3. Linearized Freundlich isotherms for RB5 adsorption at different temperatures (pH 5).

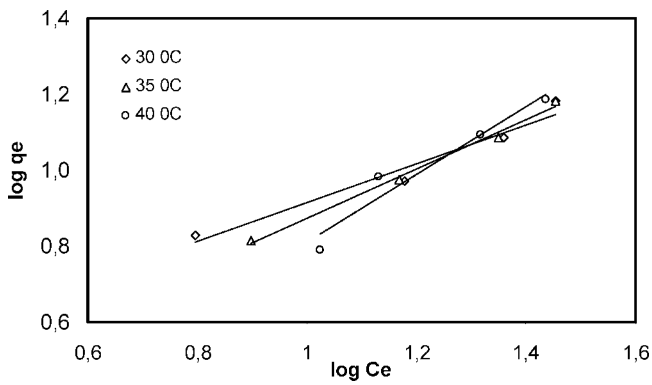

Figure S4. Linearized Freundlich isotherms for RR239 adsorption at different temperatures (pH 5).

below. Also, Figures S3 and S4 are replotted using the new data and are given below.

Azizian[3] recommended to apply nonlinear fitting or at least eq 1 instead of eq 2 (see ref 3 for equations). In our study, a linear method was preferred for the kinetic and isotherm modeling because it is faster, easier, and less complicated than nonlinear regression. Four linear forms of the Langmuir model were tested during isotherm modeling, and eq 2 yielded the highest agreement between experimental data and calculated values.

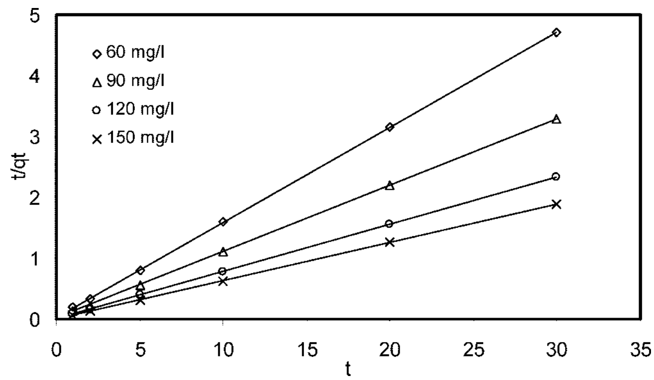

Figure S5. Pseudo-second-order kinetics of RR 239 adsorption at various concentrations (pH, 5; temperature, 25 °C).

Literature Cited

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