

Supplementary Material

Adsorption of toxic acidic dye from aqueous solution onto diethylenetriamine functionalized magnetic glycidyl methacrylate - N,N' methylenebisacrylamide

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Table SM1: Kinetics models and their linear forms

Kinetic model	Non-Linear form	Linear form	Plot	Author
Pseudo-First order	$q_t = q_e [1 - e^{-k_1 t}]$	$\log (q_e - q_t) = \log q_e - \left(\frac{k_1}{2.303}\right)t$	$\log (q_e - q_t)$ vs. t	(Lagergren, 1898) [16]
Pseudo-Second order	$q_t = \frac{k_2 t}{1 + k_2 q_e t}$	$\frac{t}{q_t} = \frac{1}{k_2 q_e^2} + \left(\frac{1}{q_e}\right)t$	(t/q_t) vs. t	(Ho and McKay, 1999) [17]
Intraparticle diffusion	-	$q_t = k_i t^{0.5} + X$	q_t vs. $t^{0.5}$	(Weber and Morris, 1963) [18]
Elovich equation	$\frac{dq_t}{dt} = \alpha e^{-\beta q}$	$q_t = \frac{1}{\beta} \ln \alpha \beta + \frac{1}{\beta} \ln t$	q_t vs. $\ln t$	(Zeldowitsch, 1934) [19]

Table SM2: Sorption isotherms and their linear forms

Isotherm	Non-Linear form	Linear form	Plot	Author
Langmuir	$q_e = \frac{q_{m,L} K_L C_e}{1 + K_L C_e}$	$\frac{C_e}{q_e} = \frac{C_e}{q_{m,L}} + \frac{1}{K_L q_{m,L}}$	$\frac{C_e}{q_e}$ vs. C_e	(Langmuir, 1918) [21]
Freundlich	$q_e = K_F C_e^{1/n}$	$\ln q_e = \ln K_f + \frac{1}{n} \ln C_e$	$\ln q_e$ vs. $\ln C_e$	(Freundlich, 1906) [22]
Dubinin–Radushkevich	$q_e = Q_{DR} e^{-K_{DR} \varepsilon^2}$	$\ln q_e = \ln Q_{DR} - K_{DR} \varepsilon^2$	$\ln q_e$ vs. ε^2	(Dubinin et al., 1947) [23]
Temkin	$q_e = \frac{RT}{b_T} [\ln(A_T C_e)]$	$q_e = \left(\frac{RT}{b_T}\right) \ln A_T + \left(\frac{RT}{b_T}\right) \ln C_e$	q_e vs. $\ln C_e$	(Temkin and Pyzhev, 1940) [24]

Figures captions

Figure SM1: FT-IR spectrum of the MGMA-DETA adsorbent.

Figure SM2: Powder X-ray diffraction (XRD) pattern of MGMA-DETA particles (and tentative assignment of peaks).

Figure SM3: Vibrating sample magnetometer curves for MGMA and MGMA-DETA sorbent.

Figure SM4: TGA analysis of the MGMA-DETA adsorbent.

Figure SM5: Modeling of uptake kinetics with: (a) PFORE, (b) PSORE.

Figure SM6: Modeling of uptake kinetics with (a) simplified model of resistance to intraparticle diffusion (Morris and Weber equation), (b) Elovich equation.

Figure SM7: Linearized plots for sorption isotherms: (a) Langmuir equation, (b) Freundlich equation.

Figure SM8: Linearized plots for sorption isotherms: (a) Dubinin–Radushkevich equation, Temkin model.

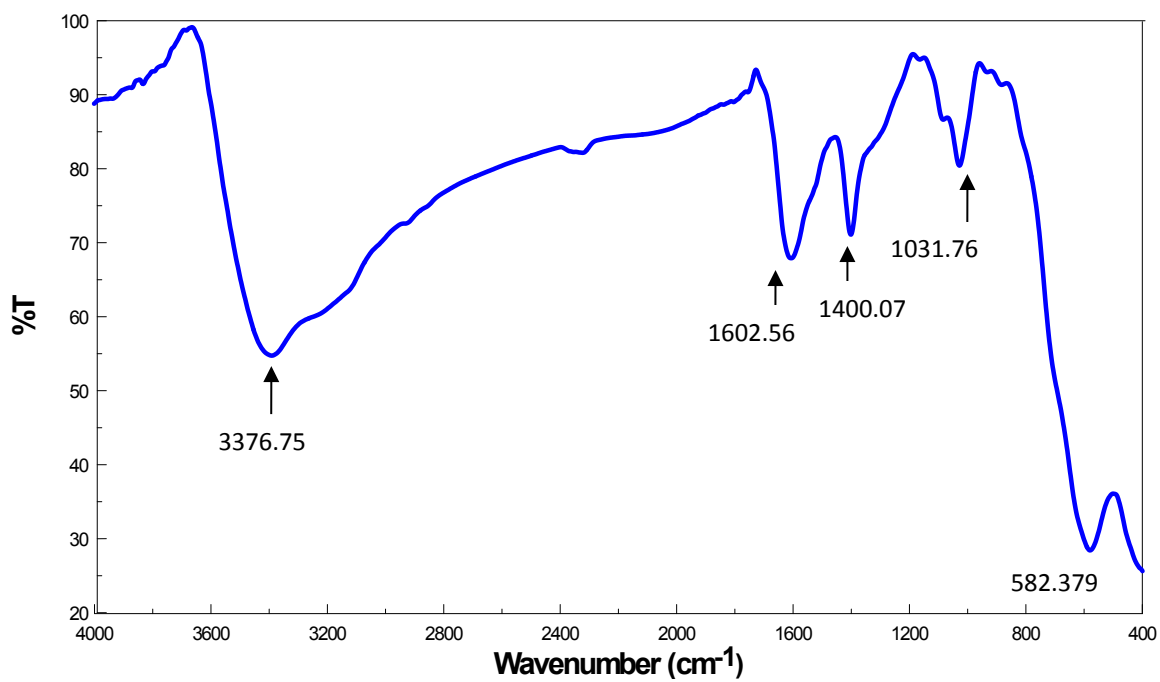


Figure SM1

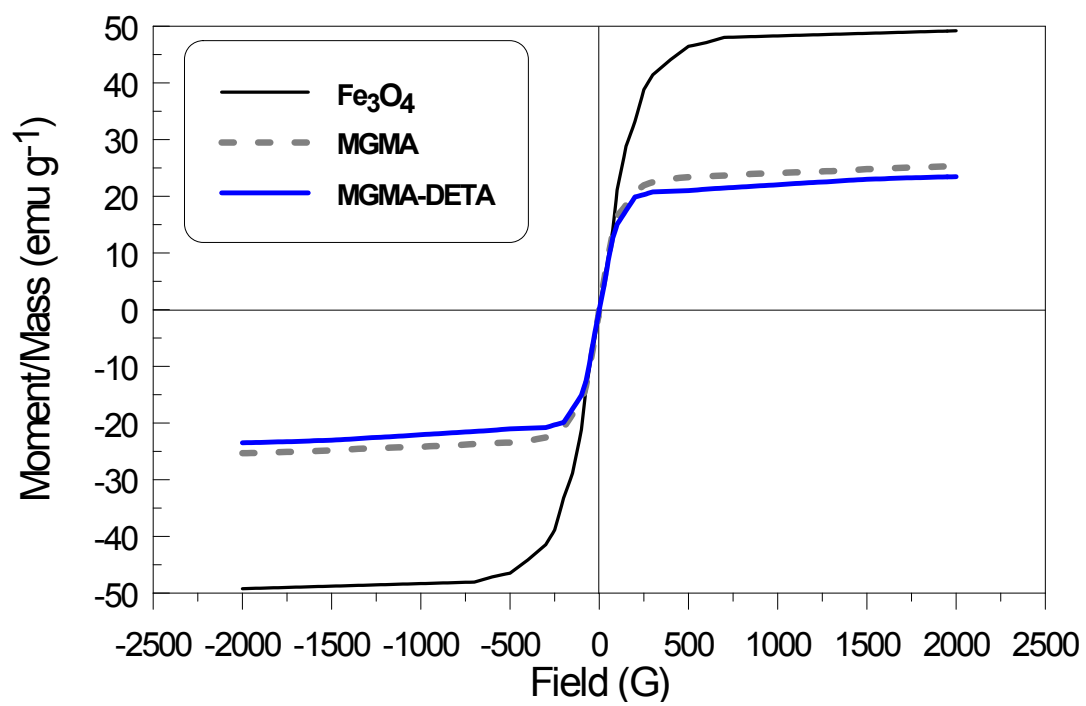


Figure SM2

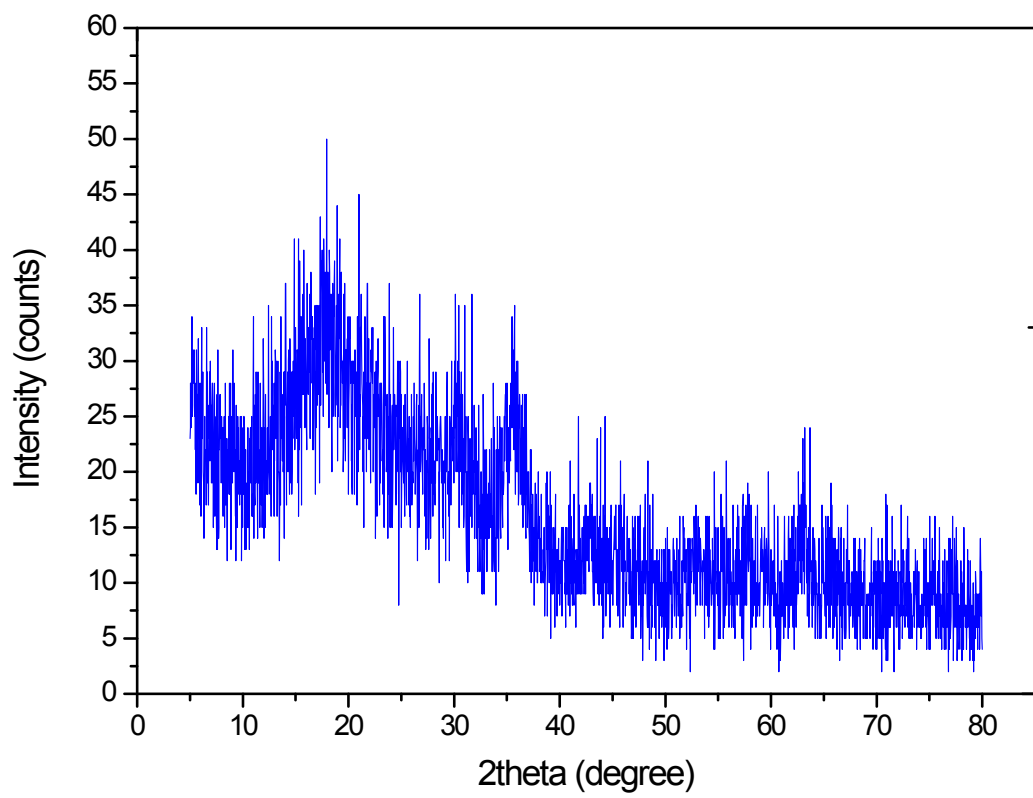


Figure SM3

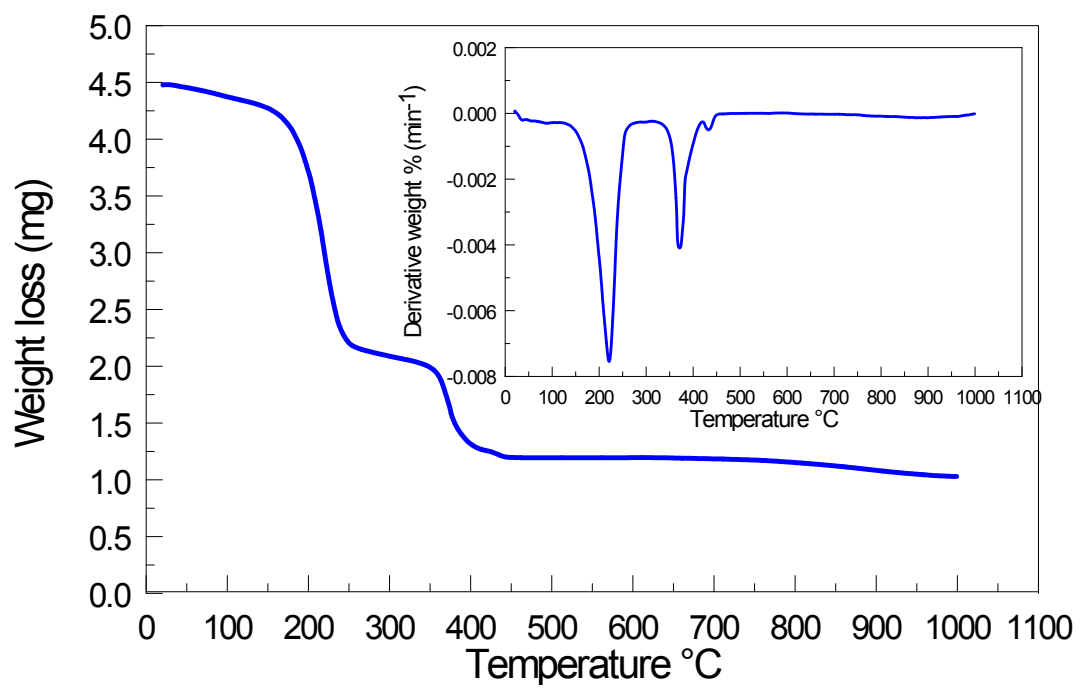


Figure SM4

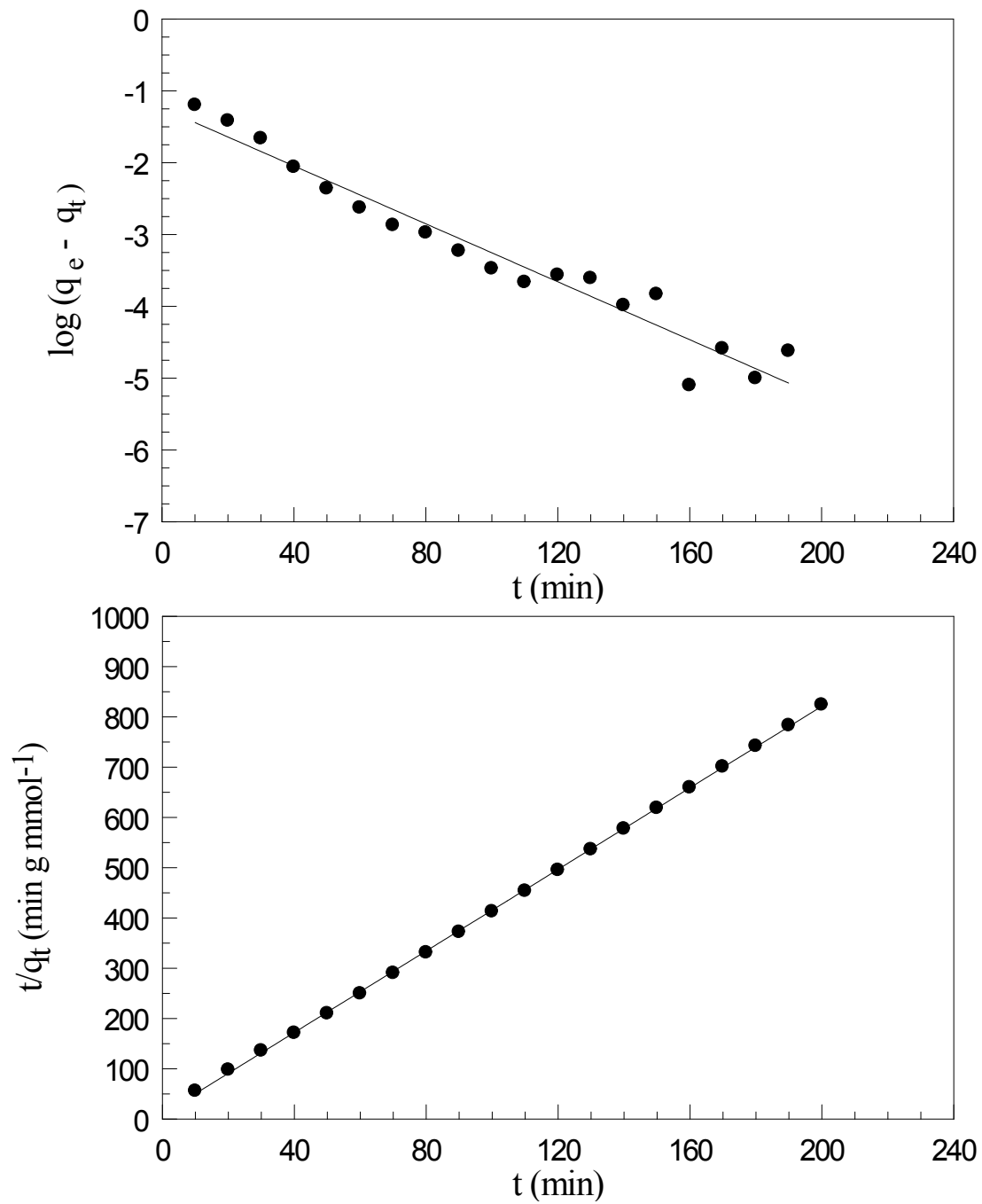


Figure SM5

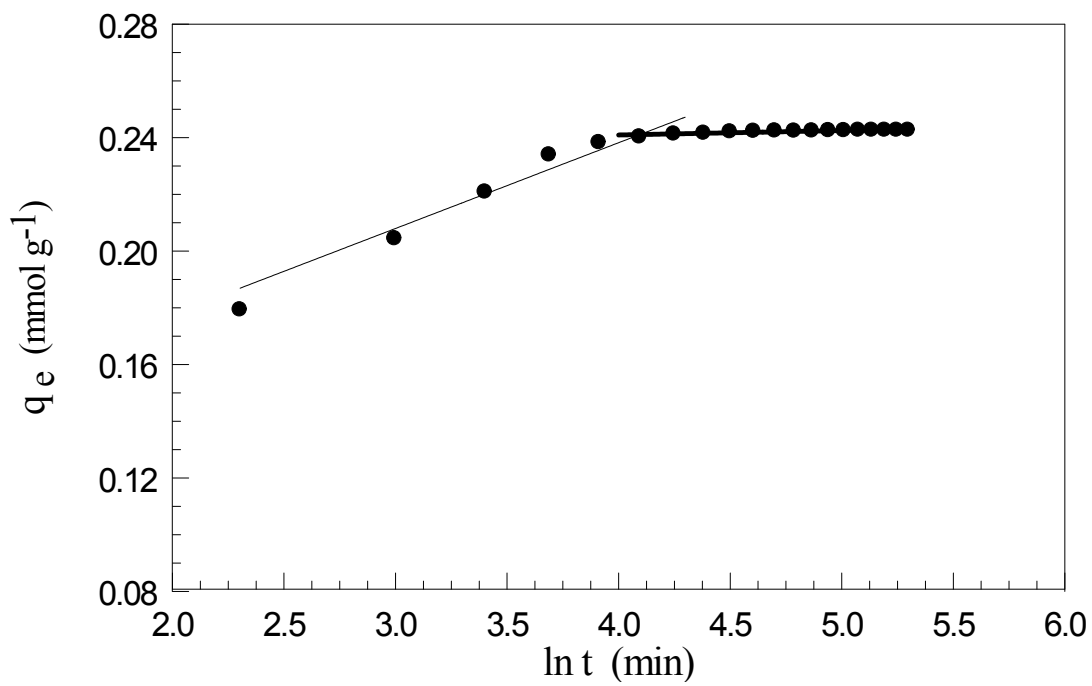
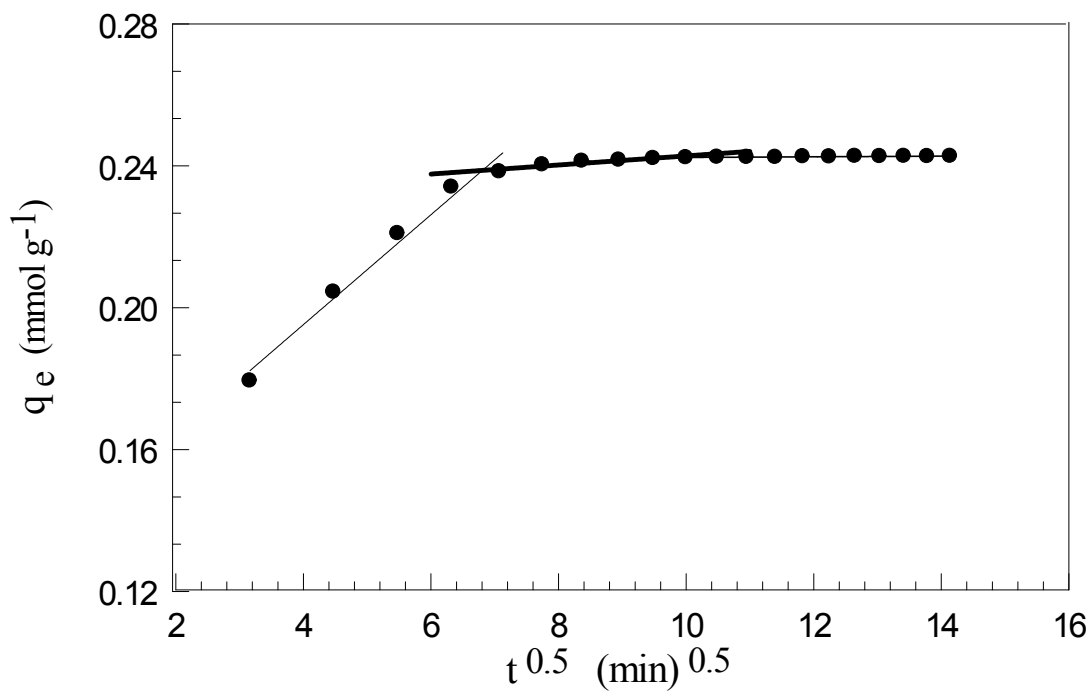


Figure SM6

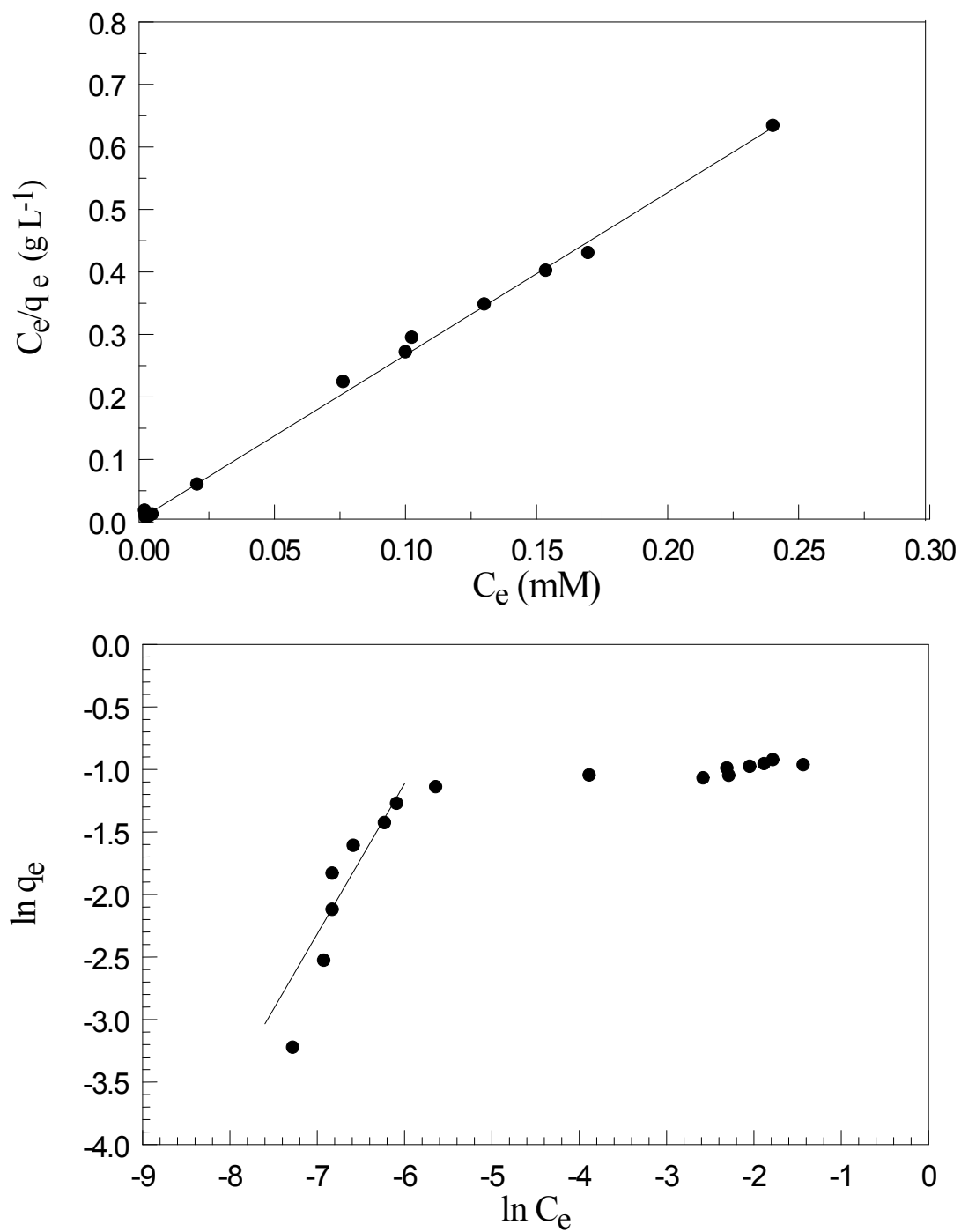


Figure SM7

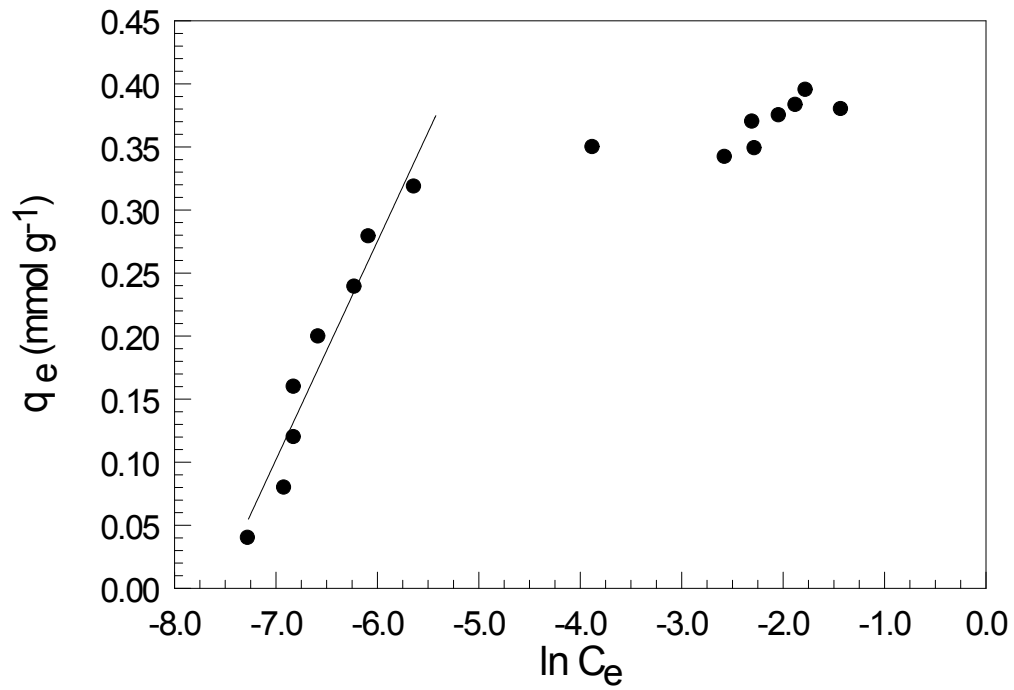
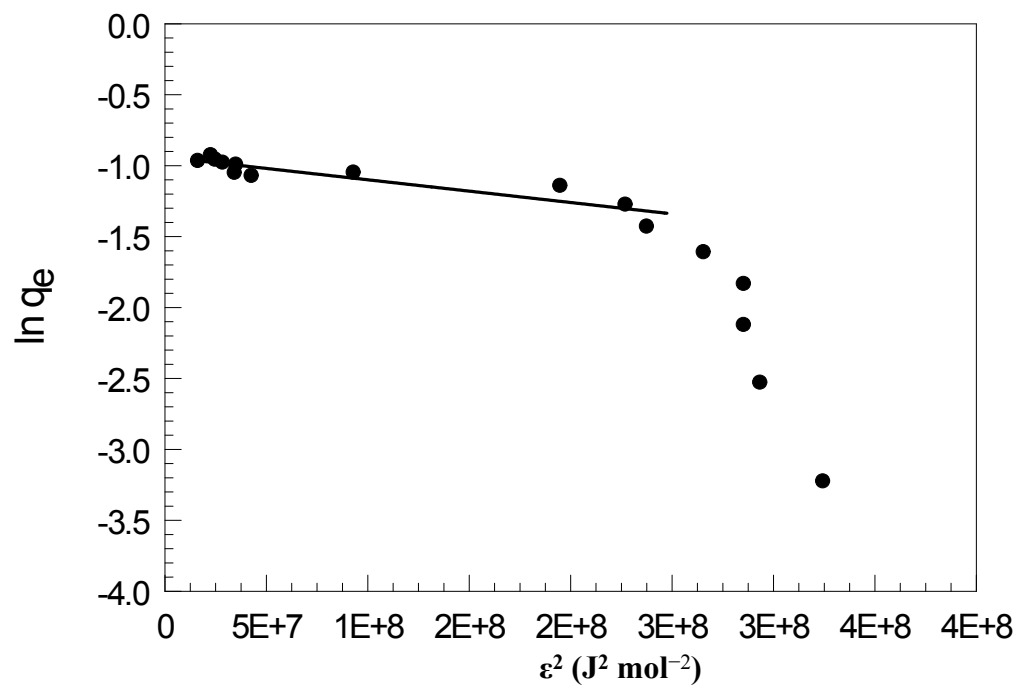


Figure SM8