

Experimental Section

Kinetic Models

Table S1. Kinetic model [42].

Isotherm	Linear form	Plot	Slope and intercept
1 st order model	$\log(q_e - q_t) = \log q_e + \frac{K_{ads}t}{2.303}$	Log(q _e -q _t) vs t	Slope = K _{ads} /2.303 Intercept = log q _e
2 nd order model	$\frac{t}{q_t} = \frac{1}{K_2 q_e^2} + \frac{t}{q_e}$	t/q _t vs t	Slope = 1/q _e Intercept = 1/K ₂ q _e ²

Table S2. Linear forms of adsorption isotherm models [42,43].

Isotherm	Linear Form	Plot	Slope and Intercept
Langmuir	$\frac{C_e}{q_e} = \left(\frac{1}{Q_o b}\right) + \left(\frac{1}{Q_o}\right) C_e$	C _e /q _e versus C _e	Slope= 1/ Q _o Intercept =1/ Q _o b
Freundlich	$\log q_e = \log K_f + \frac{1}{n} \log C_e$	log q _e versus log C _e	Slope= 1/n Intercept = logK _f
Temkin	$q_e = B \ln K_t + B \ln C_e$	q _e versus lnC _e	Slope= B Intercept = B ln K _T