Supplementary Materials

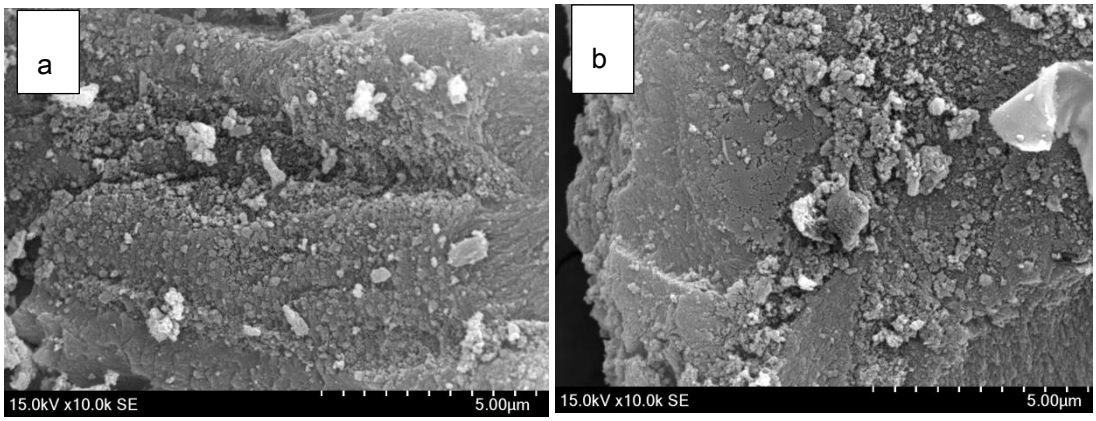


Fig. S1. SEM images of activated carbons: (a) AC-0, (b) AC-N.

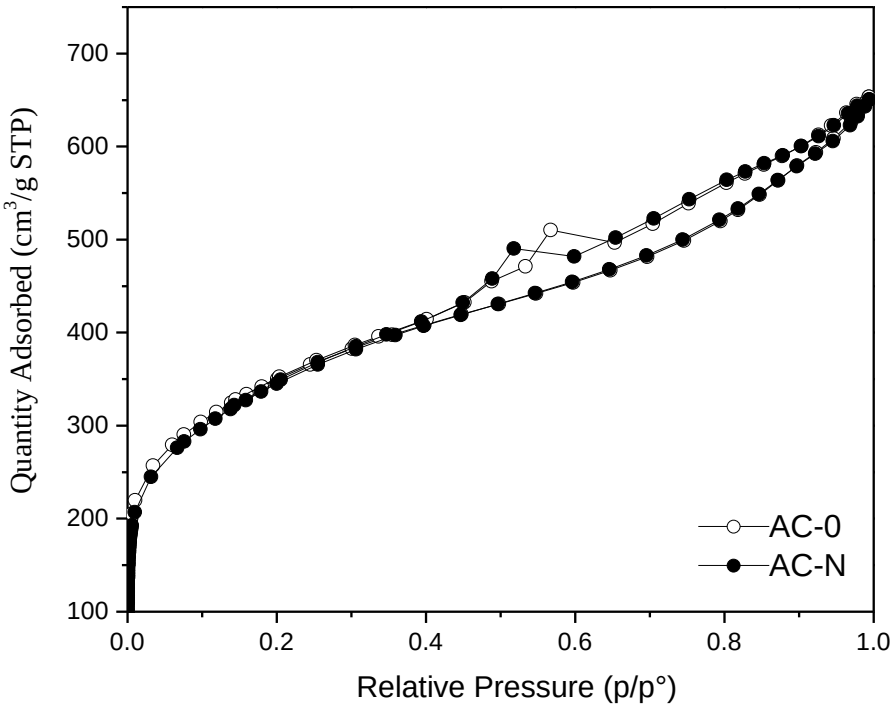


Fig. S2. Nitrogen adsorption-desorption curve of activated carbons.

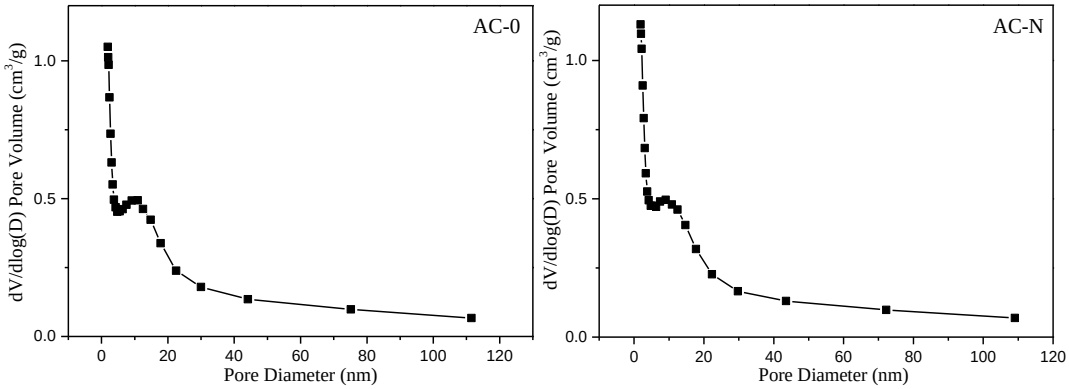


Fig. S3. Pore size distribution of the prepared samples.

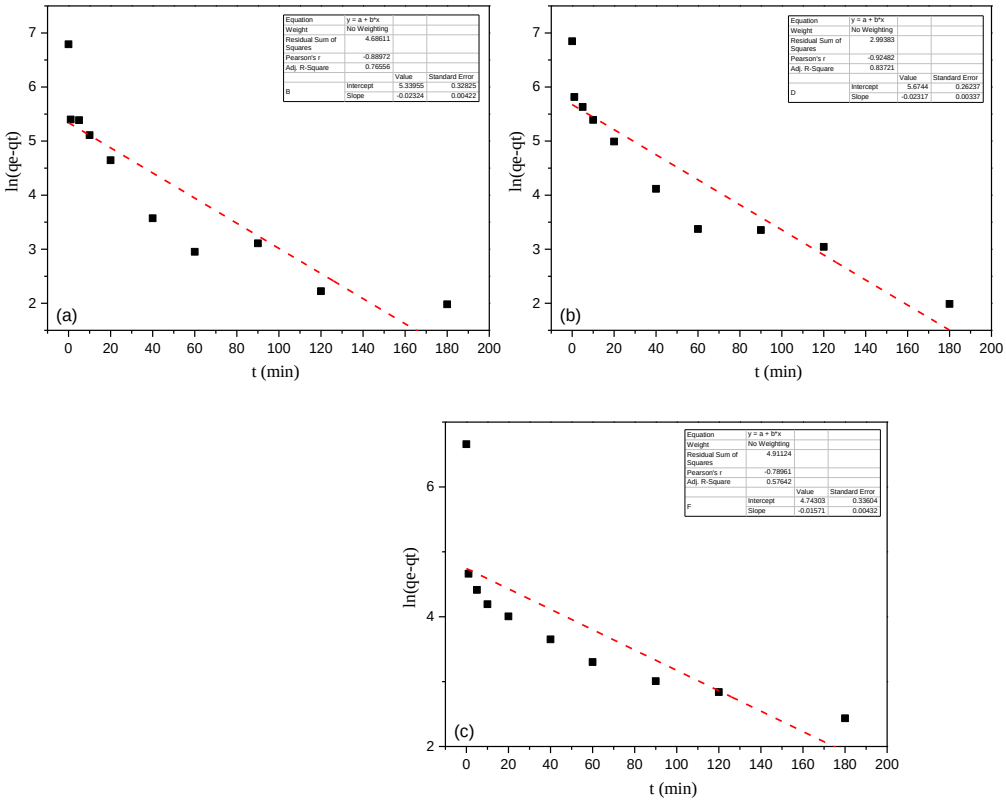


Fig. S4. Plots of pseudo-first-order kinetic model fitting. (a) AC-0; (b) AC-N; (c) CMC.

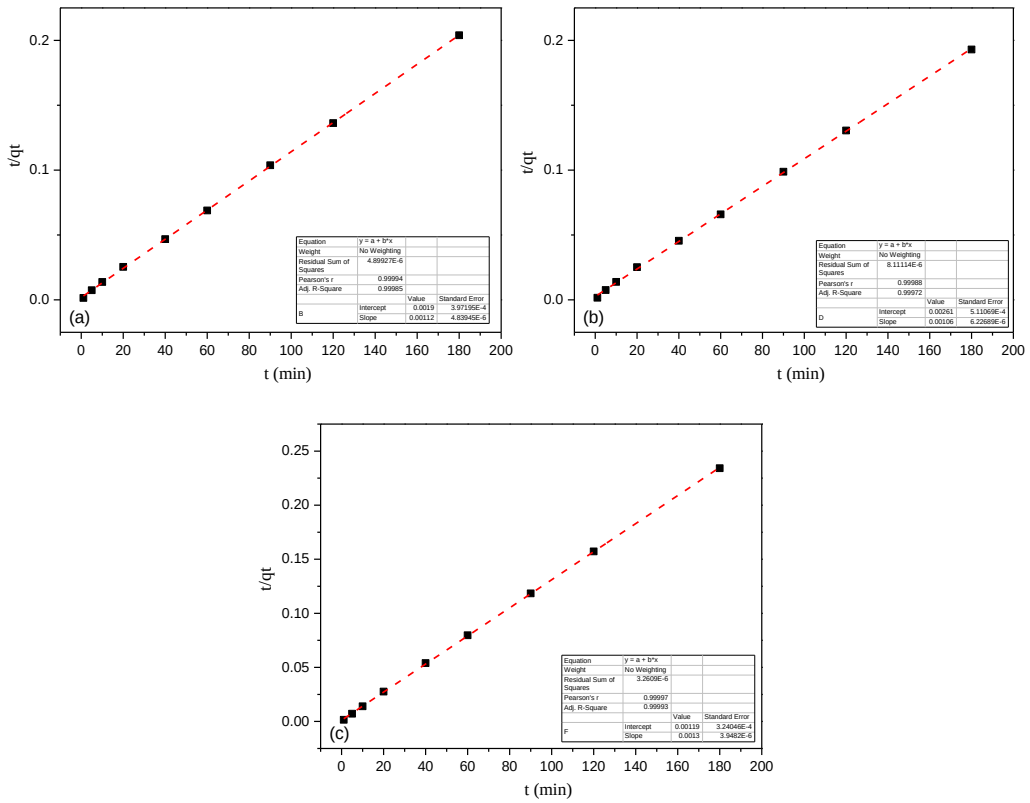


Fig. S5. Plots of pseudo-second-order kinetic model fitting. (a) AC-0; (b) AC-N; (c) MC.

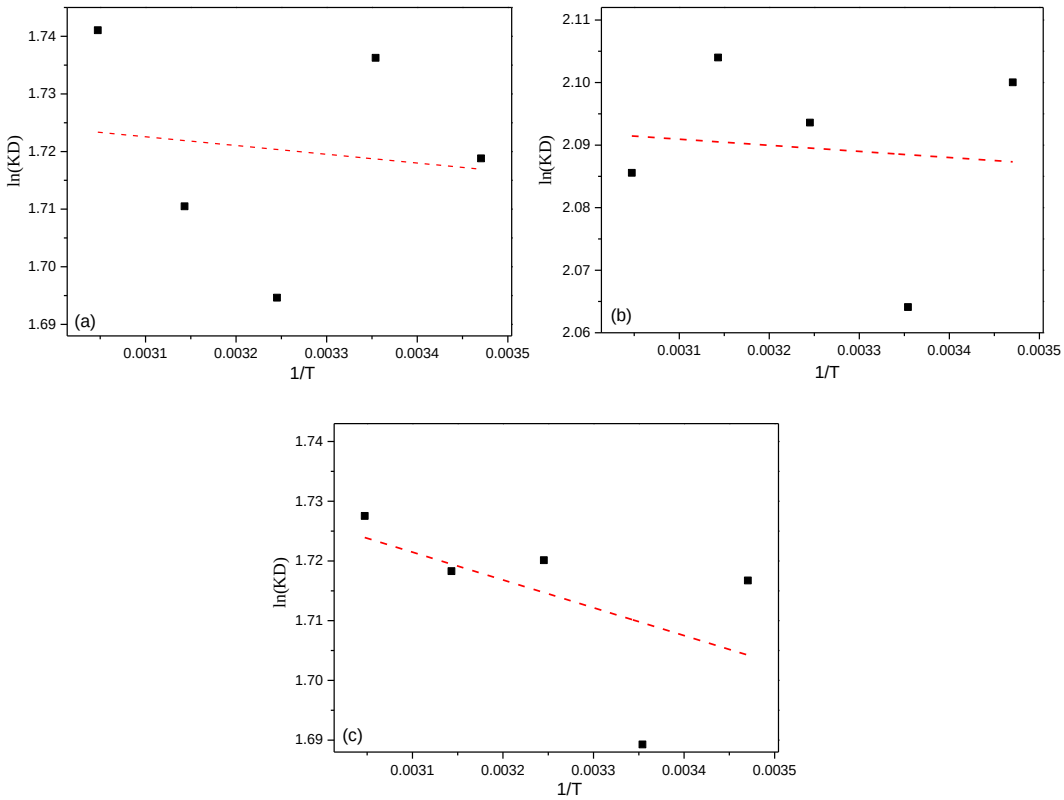


Fig. S6. Plots of adsorption thermodynamics model fitting. (a) AC-0; (b) AC-N; (c) CMC.

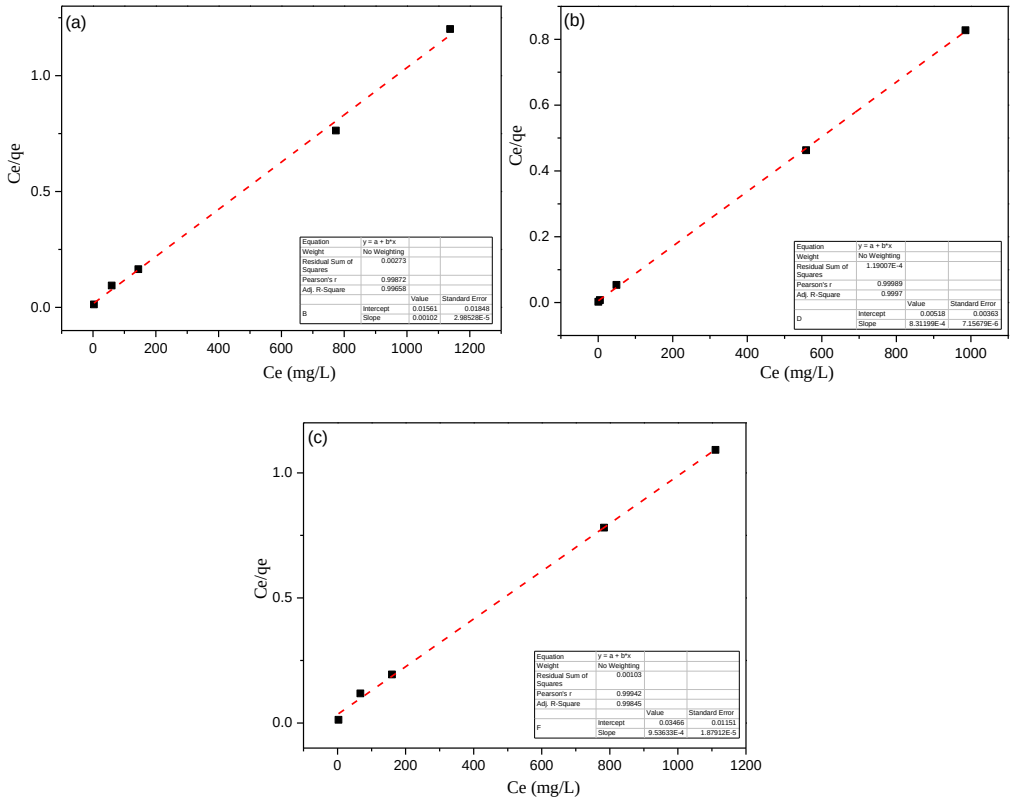
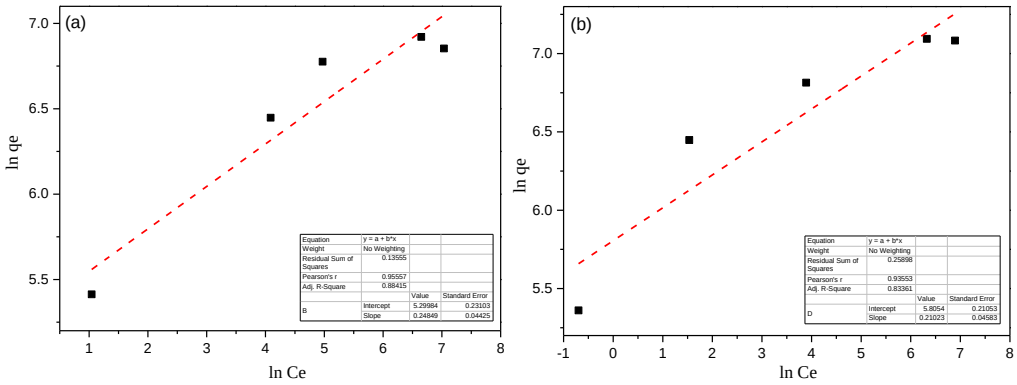


Fig. S7. Plots of Langmuir model fitting. (a) AC-0; (b) AC-N; (c) CMC.



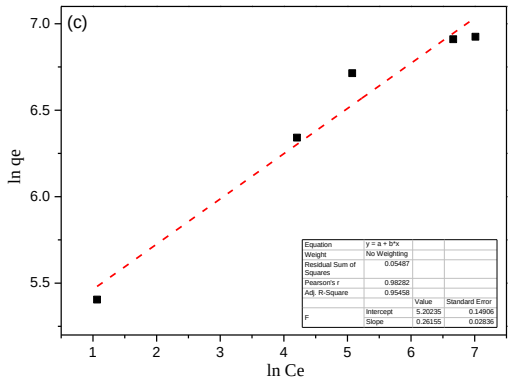


Fig. S8. Plots of Freundlich model fitting (a) AC-0; (b) AC-N; (c) CMC.

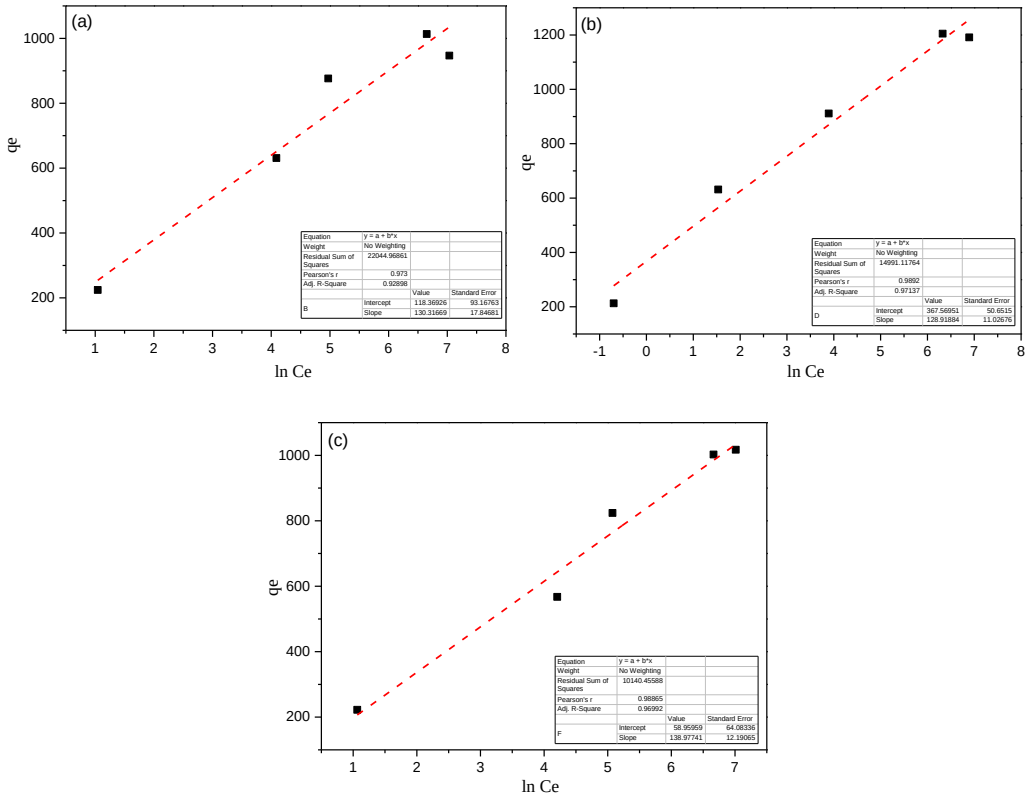


Fig. S9. Plots of Temkin model fitting. (a) AC-0; (b) AC-N; (c) CMC.

Table S1. Detailed Parameters of CMC

Project	**information**
Iodine value	> 800 mg/g
Specific surface area	> 850 m^2/g
Total pore volume	> 0.8m^3/g
Intensity	> 92%
Particle size	4 mm, 6 mm, 8 mm

Table S2. Kinetic Parameters for AC-0, AC-N and CMC

Kinetic model	Parameters	AC-0	AC-N	CMC
	q_e,exp (mg/g)	876.34	910.95	823.81
Pseudo-1 st -order	q_e,cal (mg/g)	208.60	291.36	114.61
	k_1 (min^{-1})	0.0233	0.0231	0.0157
	R^2	0.7656	0.8366	0.5748
Pseudo-2 nd -order	q_e,cal (mg/g)	892.86	943.40	769.23
	k_2 (g/(mg·min))	0.0007	0.0004	0.0014
	R^2	0.9999	0.9997	0.9999
Intraparticle diffusion	k_{id1} ($mg/g \cdot min^{1/2}$)	35.40	54.95	14.86
	C_1	616.44	545.38	662.33
	R_1^2	0.8329	0.9946	0.9529
	k_{id2} ($mg/g \cdot min^{1/2}$)	3.6995	6.5442	3.6104
	C_2	835.81	847.93	722.62
	R_2^2	0.7402	0.7688	0.8906

Table S3. Thermodynamics Parameters for the MB Adsorption onto Different Materials

Temperature (℃)	AC-0			AC-N			CMC		
	$\triangle G^0$ (kJ/mol)	$\triangle S^0$ (J /(mol·K))	$\triangle H^0$ (J/mol)	$\triangle G^0$ (kJ/mol)	$\triangle S^0$ (J/(mol·K))	$\triangle H^0$ (J/mol)	$\triangle G^0$ (kJ/mol)	$\triangle S^0$ (J/(mol·K))	$\triangle H^0$ (J/mol)
15	-4.12			-5.03			-4.11		
25	-4.30			-5.12			-4.18		
35	-4.34	14.71	126.25	-5.36	17.64	81.13	-4.41	15.51	386.95
45	-4.52			-5.57			-4.55		
55	-4.75			-5.69			-4.71		

Table S4. Parameters of Isotherm Models for the AC-0, AC-N and CMC

Sample	Temperature (℃)	Langmuir			Freundlich			Temkin		
		q_m (mg/g)	k_L (L/mg)	R^2	k_F ((mg/g)/(L/mg)$^{1/n}$)	n	R^2	A_T (L/mg)	b (J/mol)	R^2
AC-0	25	980.39	0.0653	0.9966	200.3048	4.0243	0.8842	2.4801	19.02	0.9290
AC-N	25	1203.08	0.1605	0.9997	332.0880	4.7574	0.8336	17.3107	19.23	0.9714
CMC	25	1048.62	0.0275	0.9985	181.6894	3.8241	0.9546	1.5285	17.84	0.9699

Table S5. The Original Formula Corresponding to Different Models

Models	**Original formula**
Pseudo first-order equation	$q_t = q_e(1 - e^{-k_1 t})$
Pseudo second-order equation	$q_t = \frac{k_2 q_e^2 t}{1 + k_2 q_e t}$
intra-particle diffusion equation	$q_t = k_{id} t^{1/2} + C$
Langmuir equation	$q_e = \frac{b Q_m C_e}{1 + b C_e}$
Freundlich equation	$q_e = k_F C_e^{1/n}$
Temkin equation	$q_e = \frac{RT}{b} ln\, A_T + \frac{RT}{b} ln\, C_e$