Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Data:

Adsorption removal of Congo red over flower-like porous microspheres derived from Ni/Al layered double hydroxide

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Table S1. Molecular formula, chemical structure and maximum adsorption wavelength of Congo red used in this study.

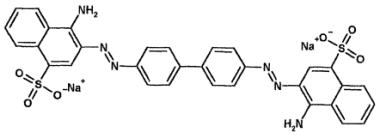
Generic name	Molecular formula	CAS	Molecular weight	Purity	Structure	λ_{max} (nm)
Congo red	$C_{32}H_{22}N_6Na_2O_6S_2$	573-58-0	696.66 g/mol	95%		498

Table S2. Pseudo-first-order, pseudo-second-order, intra-particle diffusion and Elovich model constants and correlation coefficients using Ni/Al-CLDH-H.

Model	Parameter	
Pseudo-first-order	k_1 (min^{-1})	0.0283
	q_e (cal) (mg g^{-1})	78.3
	r^2	0.9425
Pseudo-second-order	k_2 (g mg^{-1} min^{-1})	0.00171
	q_e (cal) (mg g^{-1})	245.0
	r^2	0.9999
Intra-particle diffusion	k_{d1} (mg g^{-1} $min^{-0.5}$)	95.34
	C_1	0
	r_1^2	1
	k_{d2} (mg g^{-1} $min^{-0.5}$)	23.65
	C_2	105.6
	r_2^2	0.9170
	k_{d3} (mg g^{-1} $min^{-0.5}$)	0.71
	C_3	231.4
	r_3^2	0.5996
Elovich	α (mg g^{-1} min^{-1})	27.16
	β (g mg^{-1})	21.28
	r^2	0.8514

Table S3. Effect of ion strength, dosage, and initial pH on CR adsorption using Ni/Al-CLDH-H.

	Ion strength (NaCl mol L^{-1})				Dosage of adsorbent ($g\ L^{-1}$)			Initial pH		
	0	0.001	0.005	0.1	0.25	0.4	1.0	6	8	10
q_e ($mg\ g^{-1}$)	232.63	235.65	238.28	239.0	372.2	234.67	97.20	238.86	239.52	238.17

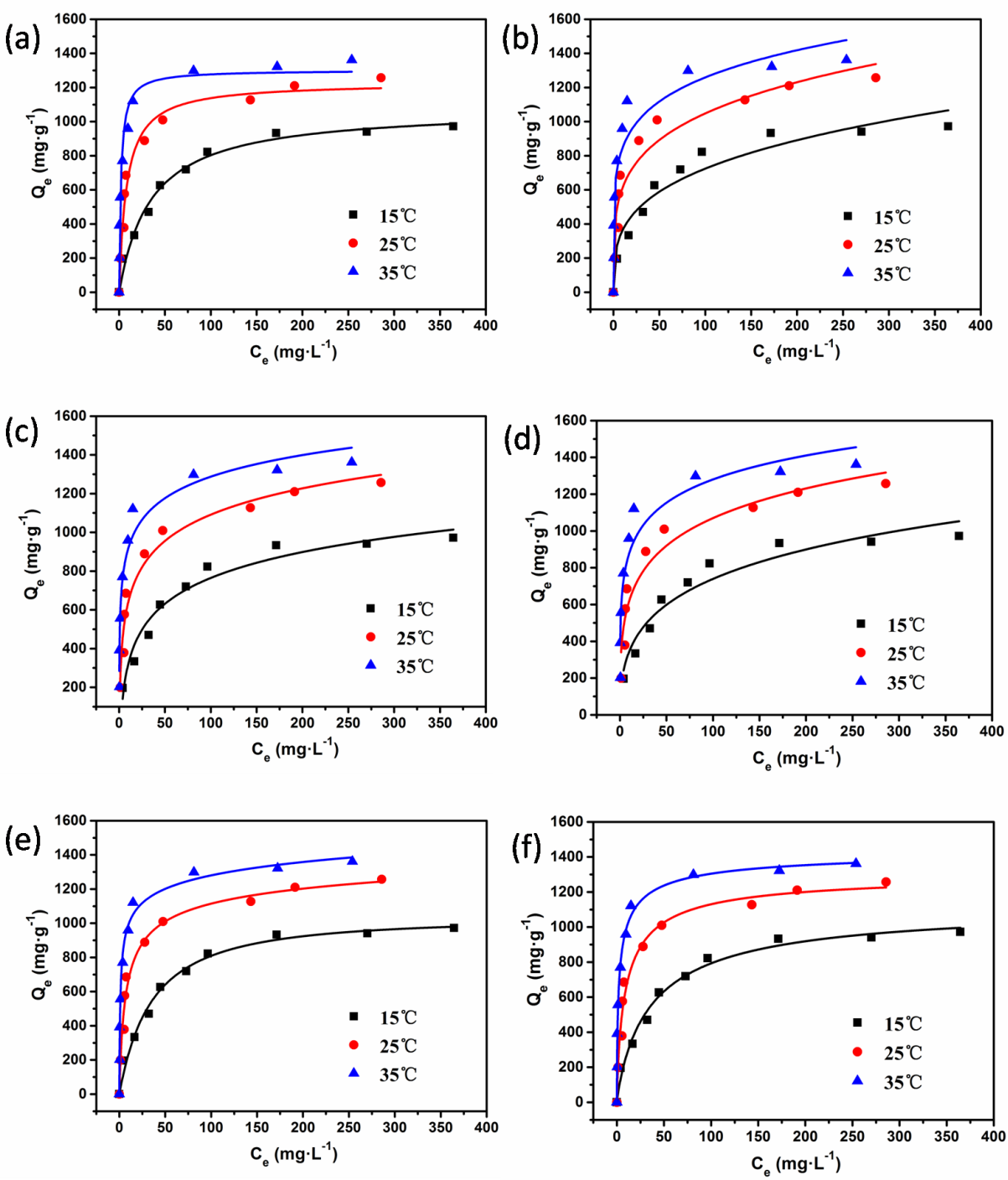


Fig. S1. (a) Langmuir, (b) Freundlich, (c) Dubinin-Radushkevich, (d) Temkin, (e) Redlich–Peterson, (f) Sips adsorption isotherms of Ni/Al-CLDH-H at 15 °C, 25 °C, and 35 °C.

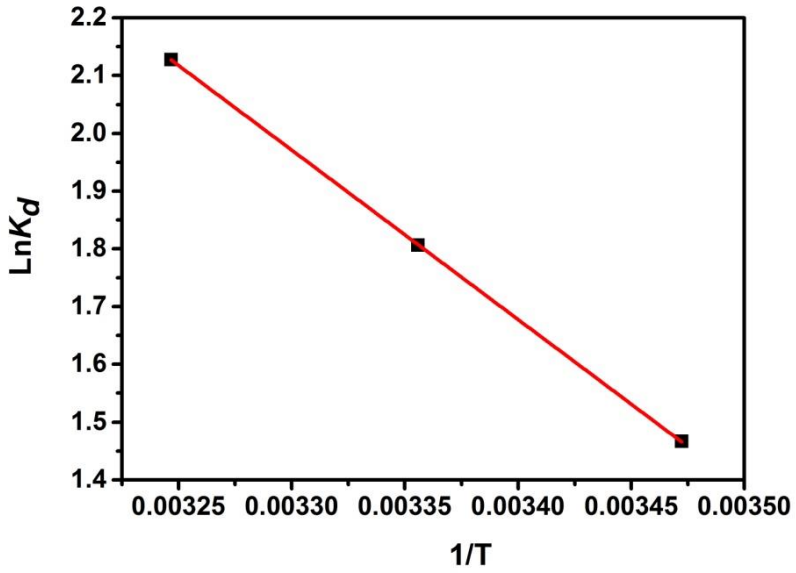


Fig. S2. Plot of LnK_d *vs.* 1/T for the adsorption of CR onto Ni/Al-CLDH-H.