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Supporting information

Reusable ZIF-8@Chitosan Sponge for Efficiently Selective Removal of Congo Red

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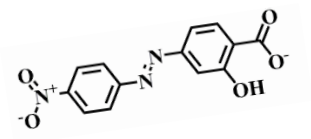
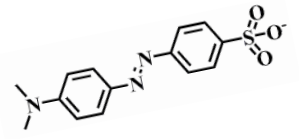
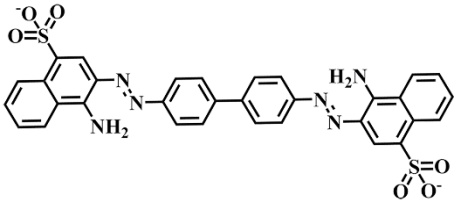
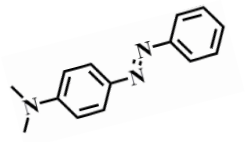
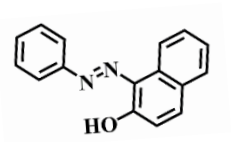
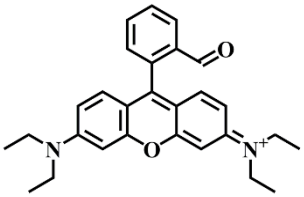
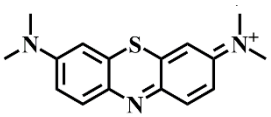
Anionic dyes	 Alizarin Yellow (AY)  Methyl Orange (MO)  Congo Red (CR)
Neutral dyes	 Dimethyl Yellow (DY)  Sudan-1 (SD-1)
Cationic dyes	 Rhodamine B (RhB)  Methylene Blue (MB)

Figure S1 Structures of organic dyes with different charges.

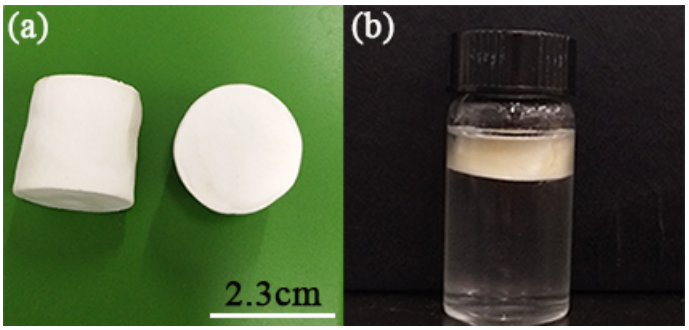


Figure S2 (a) Digital photo of the ZIF-8@CS composite sponge; (b) Digital photo of ZIF-8@CS composite sponge placed in water.

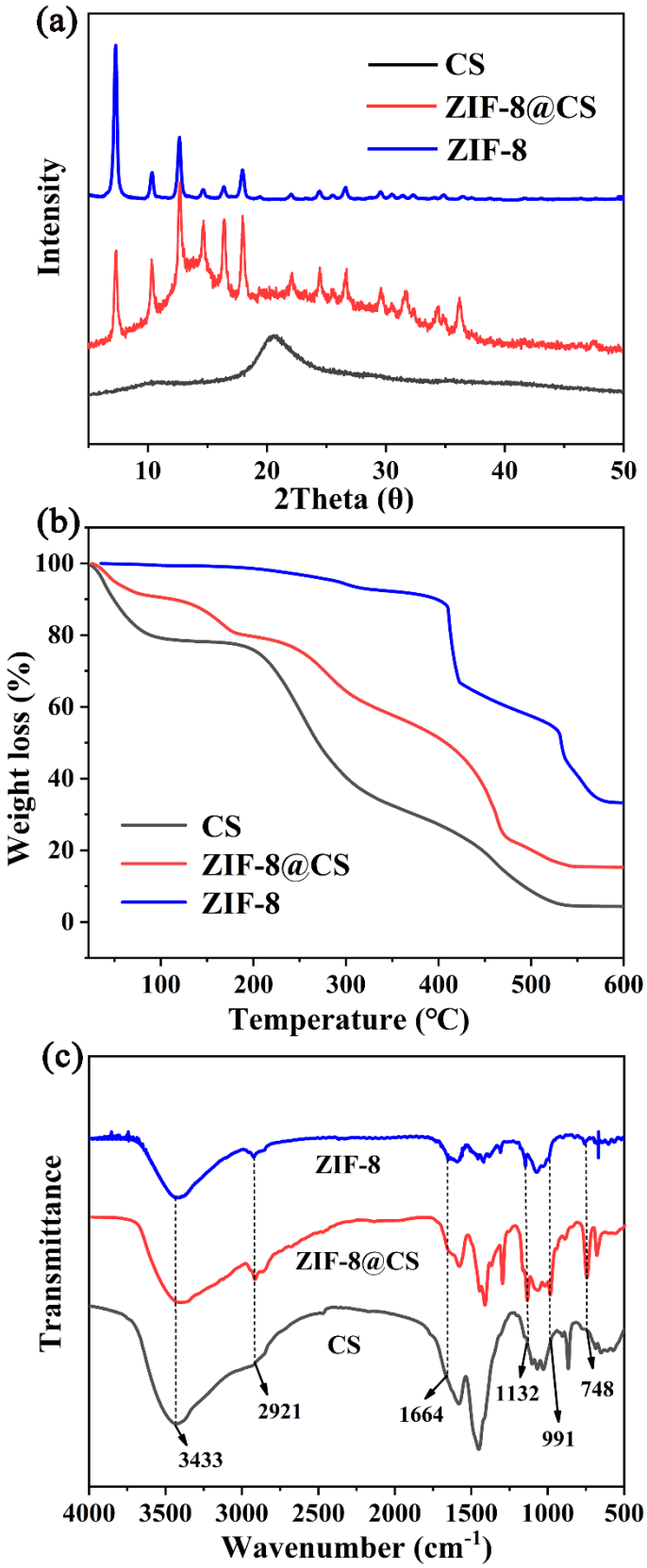


Figure S3 (a) PXRD patterns, (b) TG curves and (c) FTIR spectra of CS, ZIF-8 and ZIF-8@CS sponges.

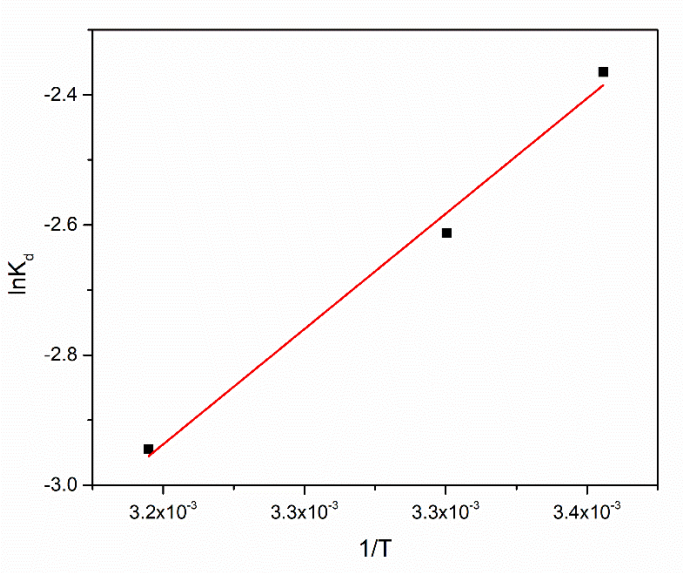


Figure S4 The influence of temperature on the CR sorption relationship curve between lnK_d and 1/T.

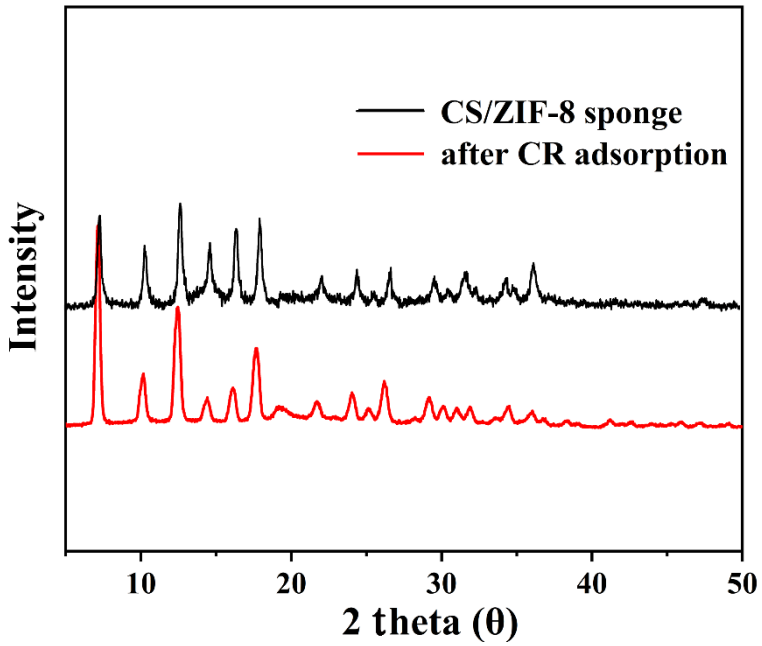


Figure S5 PXRD patterns of ZIF-8@CS sponges before and after CR adsorption.

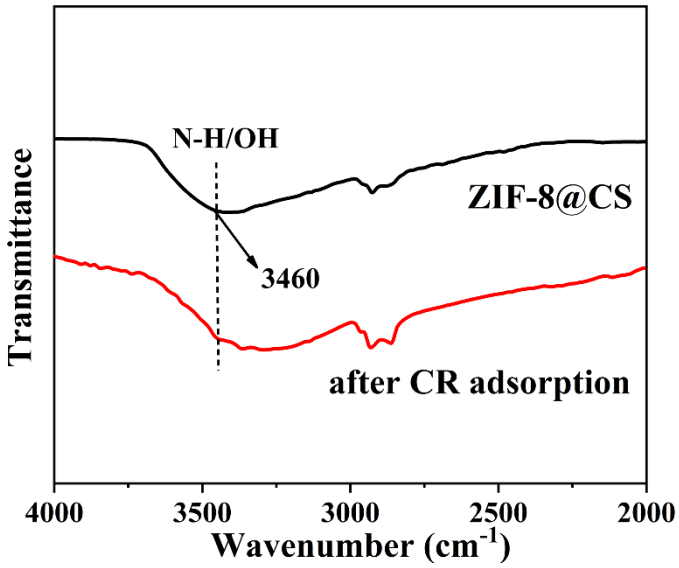


Figure S6 FT-IR spectra of ZIF-8@CS sponges before and after CR adsorption.

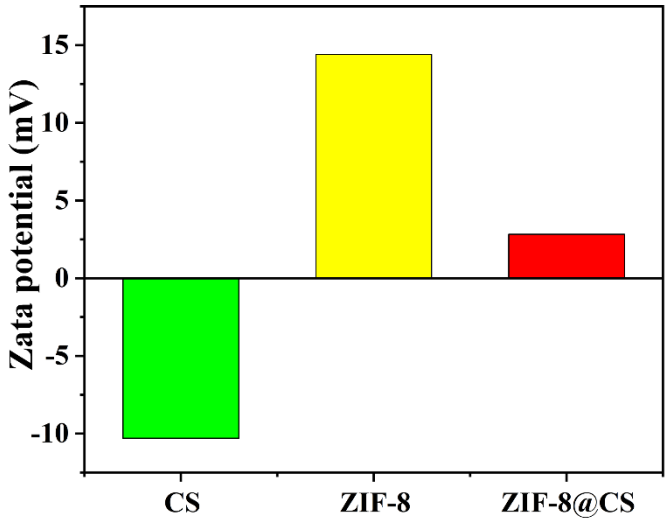


Figure S7 Zeta potentials of different materials.

Table S1 The adsorption kinetic fitting parameters.

	Pseudo-second-order model			**Pseudo-first-order model**		
	q_e	R^2	K_2	q_e	R^2	K_1
CS	105.12	0.98	3.31×10^{-4}	100.90	0.76	1.11×10^{-2}
ZIF-8	468.00	0.99	4.70×10^{-5}	459.96	0.97	1.32×10^{-2}
ZIF-8@CS	935.52	0.97	8.96×10^{-6}	932.57	0.91	1.48×10^{-2}

Table S2 Langmuir, Freundlich and Langmuir-Freundlich Constants and Correlation Coefficients.

	Langmuir			Freundlich			Langmuir-Freundlich			
	q_{max}	K_L	R^2	K_F	n	R^2	q_{max}	K_a	n	R^2
CS	273.24	0.013	0.996	5.145	1.254	0.934	344.72	0.009	0.948	0.999
ZIF-8	726.77	0.050	0.991	64.253	1.792	0.968	546.83	0.089	1.459	0.999
ZIF-8@CS	1221.06	0.093	0.982	195.216	2.253	0.945	987.01	0.141	1.612	0.995

Table S3 Langmuir Constants and Correlation Coefficients for CR adsorption upon ZIF-8@CS sponge at different temperature.

	q_{max} (mg/g)	K_L	R^2
298 K	1221.06	0.093	0.982
303 K	1064.08	0.073	0.984
313 K	791.86	0.052	0.968

Table S4 Thermodynamic parameters of CR sorption by ZIF-8@CS sponge.

ΔH	**ΔG (kJ mol^{-1})**			**ΔS**
(kJ mol^{-1})	298k	308k	318k	(J mol^{-1} k^{-1})
-29.47	-8.54	-8.19	-7.49	-70.22