

Supplementary Information

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Synthesis of Fe₃O₄ nanocrystals:

In a typical synthetic process, 2 mmol FeCl₃·6H₂O and 1 mmol FeCl₂·4H₂O was dissolved in 6 ml H₂O. 2.54 ml oleic acid, 14 ml hexane and 8 ml ethanol was added and stirred at room temperature for 30 minutes. Then, 0.32 g NaOH was added to the above solution and heated with stirring in a closed vessel at 70°C for 4 hours. The resultant solution was separated from two different layers using a separatory funnel. The above organic layer containing iron oleate complex was collected, washed with deionized water for three times and then heated at 70 °C overnight in order to evaporate off hexane. The sticky iron oleate precursor was dispersed in 0.48 ml oleic and 20 ml 1-octadecene. The mixture solution was degassed with N₂ for 30 min at room temperature. After that, the mixture was heated to 320°C at 3°C/min rate and maintained at that temperature for 30 min under N₂ flow. Afterwards, the solution was cooled to room temperature and precipitated by excess ethanol. The precipitate was collected by centrifugation and the supernatant decanted. The isolated solid was redispersed in hexane and then precipitated with ethanol. The precipitation-redispersion process was repeated for several times to purify the as-prepared iron oxide nanocrystals.

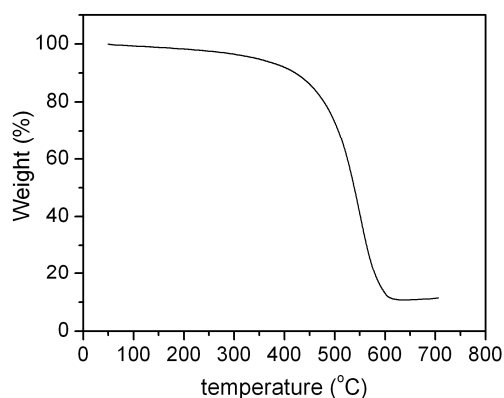


Fig.S1 TGA curve was recorded in air for the as-synthesized magnetic mesoporous carbon capsules. The weight percent of Fe₃O₄ in the nanocomposites can be calculated as 10.5 wt%.

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Table S1 . Langmuir and Freundlich adsorption isotherm constants for MB dye on MC, AC and FS

Absorbent	Langmuir mode				Freundlich mode			
	b (L mg ⁻¹)	Q (mg/g)	$\sum(errors)^2$	R ²	k (mg/g) (L/mg) ^{1/n}	n	$\sum(errors)^2$	R ²
MC	0.4159	608.04	484.10798	0.9854	237.534	4.0563	3336.52319	0.89904
AC	0.3133	353.4	228.9666	0.97106	143.95	4.88	600.41444	0.9241
MS	0.2191	51.2	19.95524	0.88011	17.949	4.162	5.13673	0.96914

Table S2 . Langmuir and Freundlich adsorption isotherm constants for CR dye on MC and AC

Absorbent	Langmuir mode				Freundlich mode			
	b (L mg ⁻¹)	Q (mg/g)	$\sum(errors)^2$	R ²	k (mg/g) (L/mg) ^{1/n}	n	$\sum(errors)^2$	R ²
MC	0.0132	1656.9	2032.45564	0.99231	129.42177	2.5619	17824.9105	0.93259
AC	0.011	191.05	86.95832	0.91183	8.94334	1.929	57.05043	0.94215

Table S3 . Langmuir and Freundlich adsorption isotherm constants for phenol on MC and AC

Absorbent	Langmuir mode				Freundlich mode			
	b (L mg ⁻¹)	Q (mg/g)	$\sum(errors)^2$	R ²	k (mg/g) (L/mg) ^{1/n}	n	$\sum(errors)^2$	R ²
MC	0.1607	108.38	17.58282	0.9797	23.93875	2.5025	103.15468	0.88093
AC	0.0993	61.08	12.41964	0.94364	10.5196	2.3327	22.20487	0.89924