

Supporting information

Selective Removal of Anionic Dyes using Poly (N,N-Dimethyl Amino Ethylmethacrylate) Functionalized Graphene Oxide

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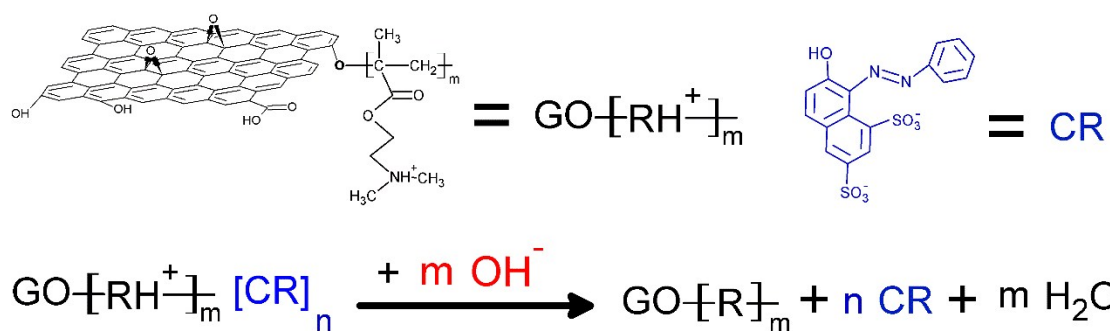
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Table S1 Kinetics values calculated for GO & GO-PDMAEMA at 25°C

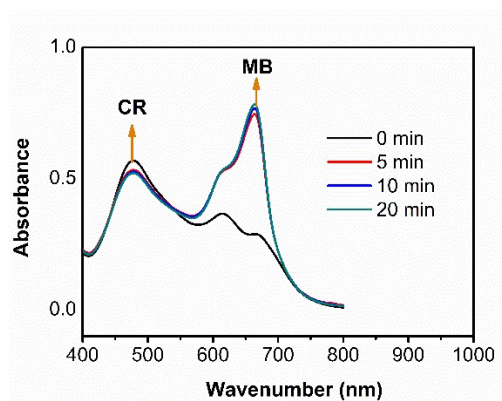
Models	Parameters	GO		GO-PDMAEMA	
		MB	OG	MB	OG
	C_0 (mg/g)	6.68	6.65	6.68	6.65
	$q_{e,exp}$ (mg/g)	3.80	0.71	0.90	3.36
Pseudo-first-order model	k_1 (min^{-1})	0.0017	0.0020	0.0012	0.0051
	$q_{e,cal}$ (mg/g)	3.43	0.67	0.82	2.45
	R^2	0.97	0.98	0.98	0.95
Pseudo-second-order model	K_2 (g/mg min)	0.00038	0.0021	0.00017	0.0037
	$q_{e,cal}$ (mg/g)	5.49	1.00	1.19	3.60
	R^2	0.97	0.97	0.95	1.00
Intra-particle diffusion model	k_{id} (g/mg min ^{0.5})	0.11	0.022	0.027	0.15
	C	-0.14	0.032	-0.0047	0.30
	R^2	0.99	1.00	1.00	0.97

Table S2 Parameters of the Langmuir and Freundlich models at 25°C

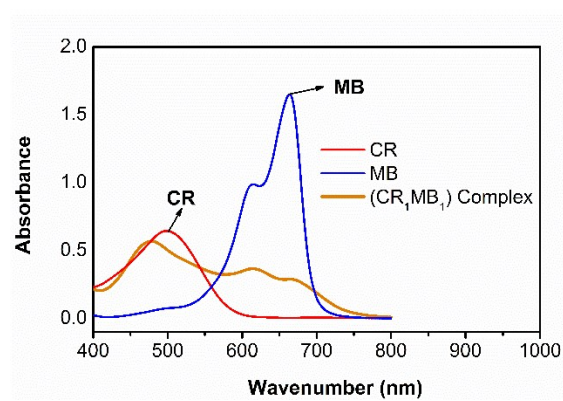
Dyes	Sorbent	Langmuir isotherm parameters		
		q_m (mg g ⁻¹)	k_l (dm ³ mg ⁻¹)	R ²
OG	GO	161.6	1.09×10^{-3}	0.97
	GO- DMAEMA	609.8	0.015	0.98
MB	GO	232.6	2.33	0.95
	GO-DMAEMA	41.1	0.19	0.99
		Freundlich isotherm parameters		
		k_F (mg ^{1-1/n} dm ^{3/n} g ⁻¹)	n	R ²
OG	GO	194.7	0.81	0.98
	GO- DMAEMA	665.3	2.04	0.95
MB	GO	371.4	6.39	0.96
	GO-DMAEMA	67.7	3.74	0.97



Scheme S1. Simplified schematic of the possible desorption mechanism of CR using the GO-PDMAEMA nanocomposite.



(a)



(c)

Figure S1 (a) UV-vis spectra shows (a) selective removal of CR in the mixture of MB (10.1 mg/L) and CR (10.1 mg/L) and (b) form of the (MB_1CR_1) complex.

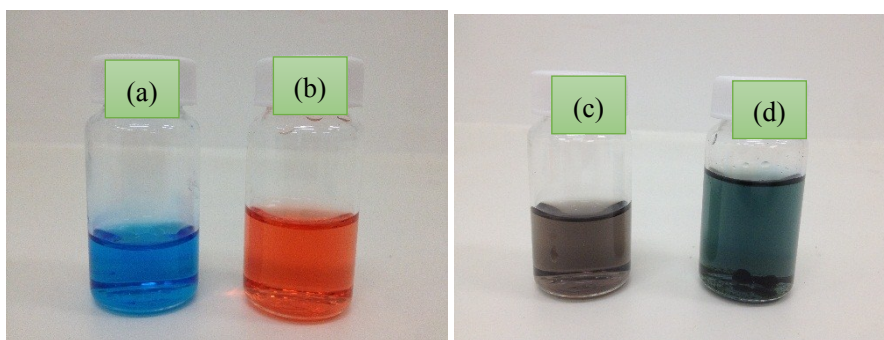


Figure S2 Photography of (a) MB solution (10.1mg/L), (b) OG solution (10.1mg/L), (c) mixture of MB and OG (10.1mg/L respectively) and (d) mixture of MB and OG (10.1mg/L respectively) after adsorption for 20 minutes.

After adsorption for 20 minutes, it is clearly observed that there are characteristic blue color of MB appeared in the solution, indicating that MB was released from the (MB₁OG₁) complex due to the removal of OG by GO-PDMAEMA.