Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Electronic Supplementary Information

Removal of toxic Cr (VI) by UV-active functionalized graphene oxide for water purification

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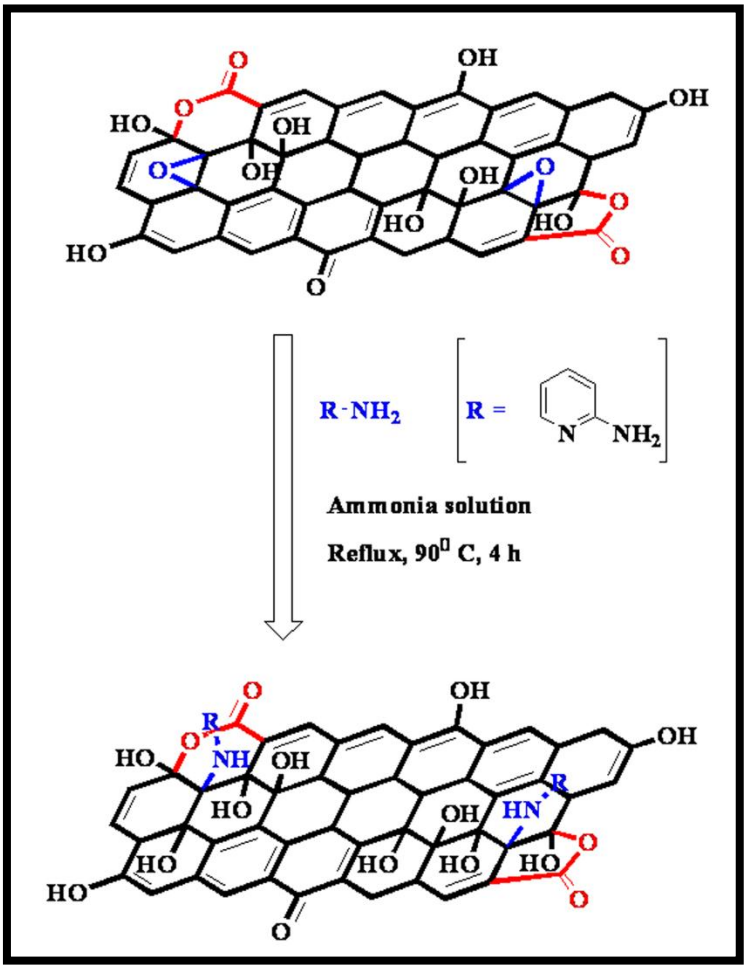

Scheme S1. Schematic diagram of the mechanism for functionalization of graphene oxide.

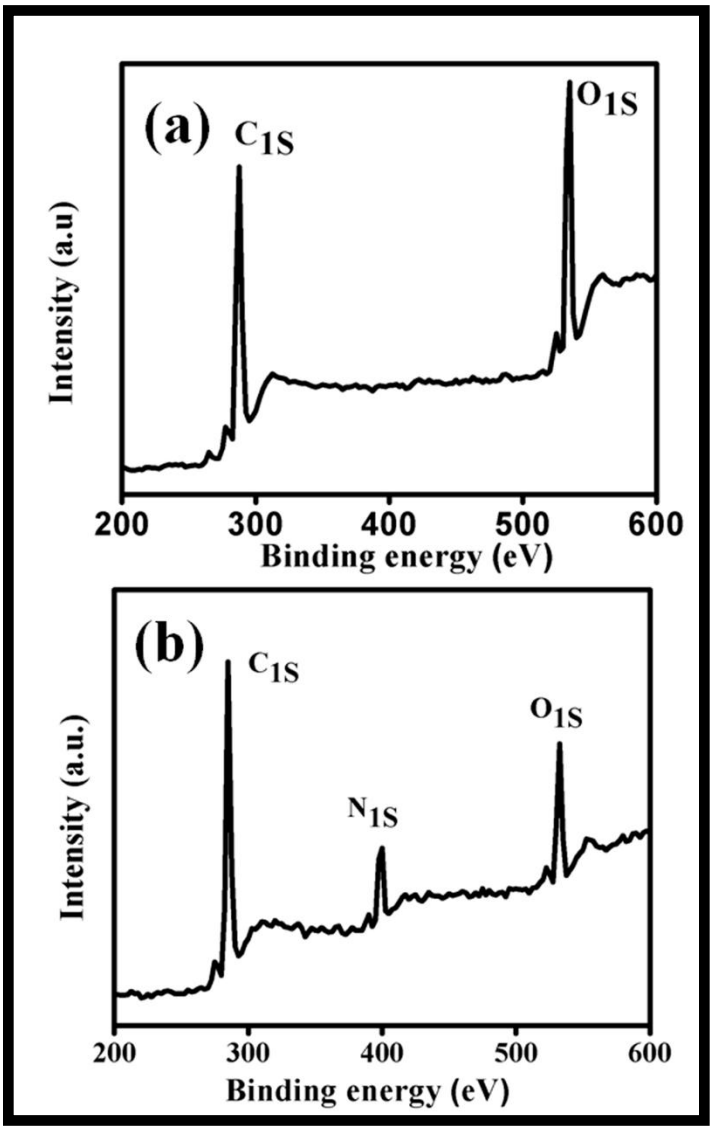

Fig. S2 Low range XPS spectra of (a) GO and (b) DAP-RGO composite. Appearance of nitrogen peak and largely reduced oxygen peak indicates that GO is largely reduced to DAP-RGO composite.

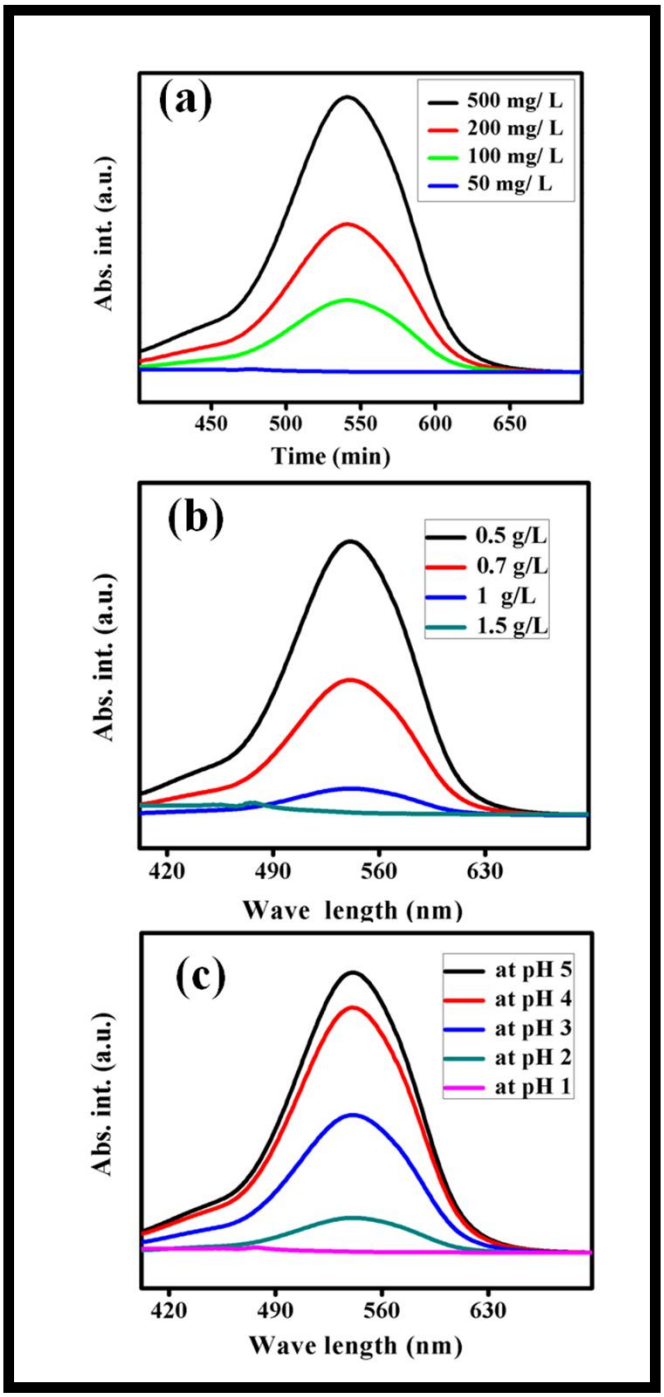

Fig.S3 (a) UV-Vis absorption spectra for different Cr (VI) concentrations after 40 mins of adsorption at pH 1, (b) 500 mg/L Cr (VI) soln. with different adsorbent doses after 180 min of adsorption at pH 1. (c) 500 mg/L Cr (VI) soln. at different pH after 6h of adsorption with a fixed adsorbent dose 1 g/L.

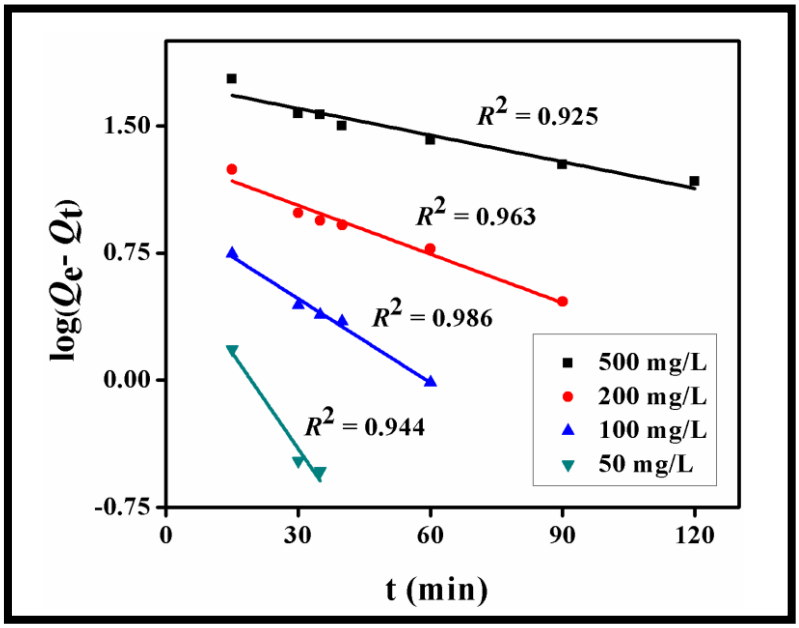

Fig. S4 The pseudo-first-order kinetics for Cr (VI) adsorption on DAP-RGO composite

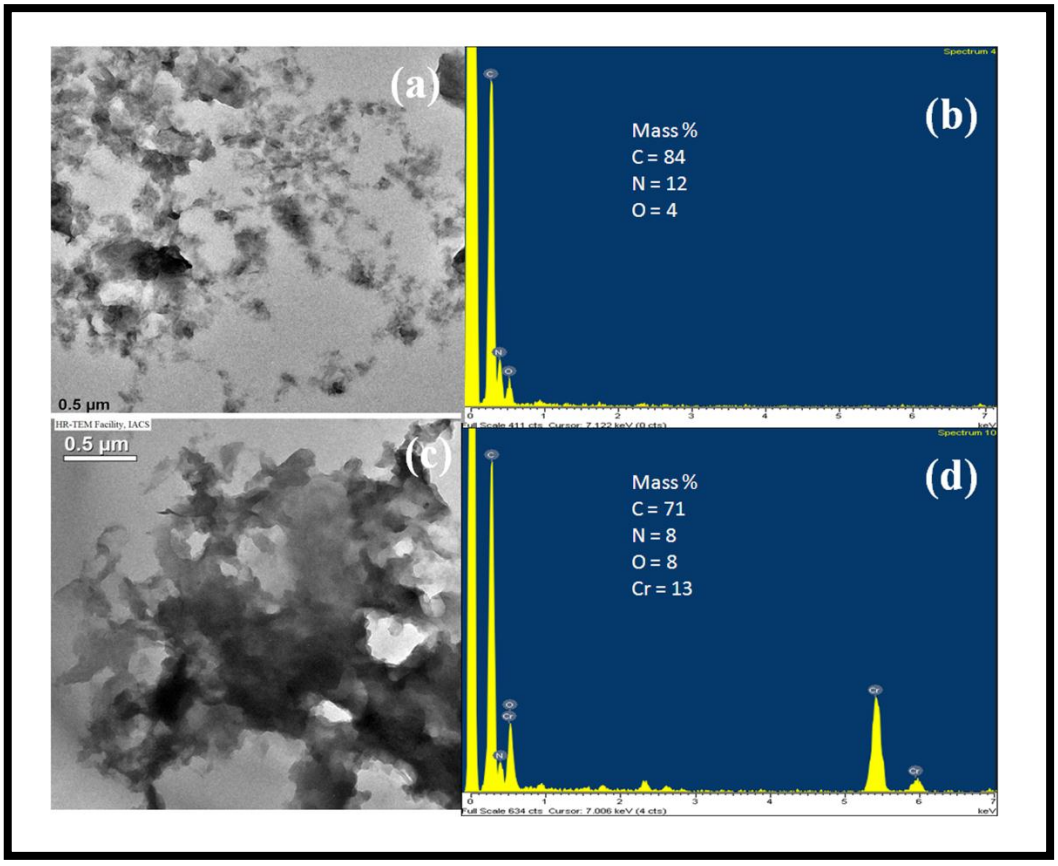

Fig. S5 TEM images of DAP-RGO composite of (a) before and (c) after Cr adsorption. EDX spectra and atomic% of DAP-RGO composite (b) before and (d) after Cr adsorption.

Table S1: Standard Deviation (±) data of different Cr (VI) concentrations

50 mg/L	.0559	.0334	.0003								
100 mg/L	.0581	.0412	.0443	.0503	0						
200 mg/L	.1112	.1428	.0447	.0723	.0634	.0448	.0008				
500 mg/L	.0381	.0443	.0533	.0836	.0559	.1145	.0919	.0403	.0558	.0073	.0005

Table S2: Standard Deviation (±) data of different adsorbent doses

1.5g/L	.0379	.0251	.0042	0							
1g/L	.0443	.0837	.0919	.0404	.0559	.0073	.0005				
.75g/L	.5089	.1931	.3026	.0772	.0750	.1828	.0345	.0264	.0007		
.5g/L	.3742	1.1728	.9015	.2038	.8962	.0658	.0992	.1156	.1133	.0680	.0411	.0009

Table S3: Standard Deviation (±) data of Cr (VI) at different pH

With UV at pH5	.20179	.14832	.07905	.00045
Without UV at pH 5	.22829	.59582	.55946	.42778
With UV at pH 4	.63319	.09711	.02886	.0010
Without UV at pH 4	.49295	.5174	.12787	.14612