Supporting Information

Reduced graphene oxide decorated CdS/ZnO nanocomposites for photoreduction of hexavalent chromium and photodegradation of methylene blue

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Data of $CdI_2(benztsczH)_2$ complex (Spectroscopic and physical):

Melting Point: 206 °C, (Yield: 86.19 %), Elemental analysis (%) found (calculated): Cd: 20.60 (20.74), C: 35.35 (35.46), H: 3.29 (3.34), N: 15.70 (15.51), S: 11.69 (11.83), Cl: 13.02 (13.08). I.R. (cm^{-1}): 3431, 3271 (ν_{NH2} asym and sym), 3190 (ν_{NH}), 1575 ($\nu_{C=N}$), 848 ($\nu_{C=S}$). N.M.R. (δ in ppm): ^{1}H: 7.36-8.19 (s, 2H, $-NH_2$; + m, 6H, C_6H_5-CH=); 11.42 (s, 1H, -NH-); ^{13}C (δ in ppm): 178.23 (>C=S), 142.92 (>C=N-), 134.57, 130.32, 129.10, 127.76 (aromatic carbons)

Figure S1: EDX of (a) ZnO/rGO, (b) ZnO/CdS and (c) CdS/ZnO/rGO nanocomposites.

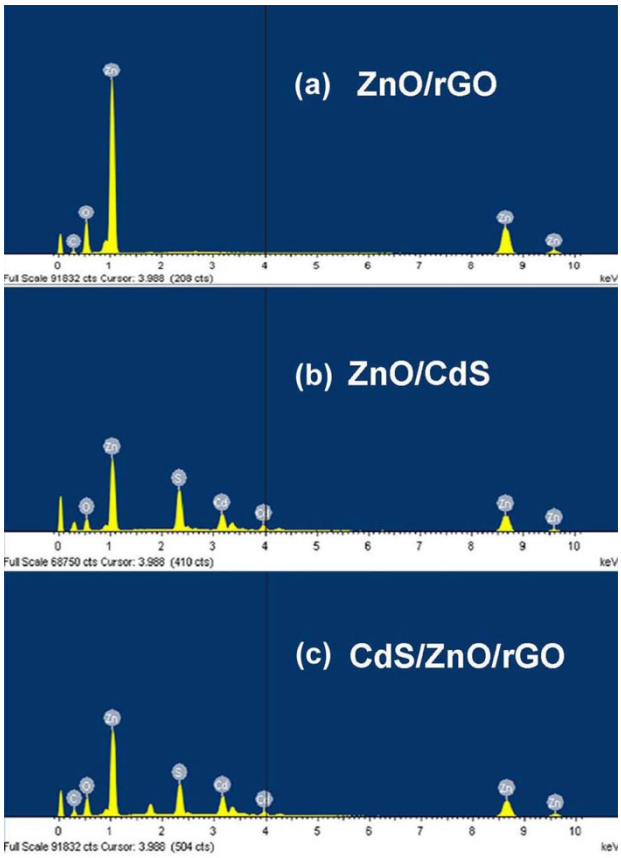

Figure S2: Photograph of the reduction of (a) Cr(VI) solution to (b) Cr(III) solution and (c) formation of a green precipitate of $Cr(OH)_3$ after adding saturated NaOH solution to (b) solution.

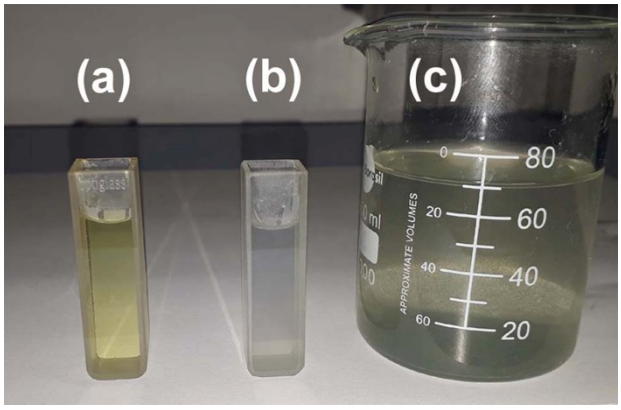

Figure S3: UV-Vis absorption spectra of MB photoreduction by EDTA-2Na as a hole scavenger.

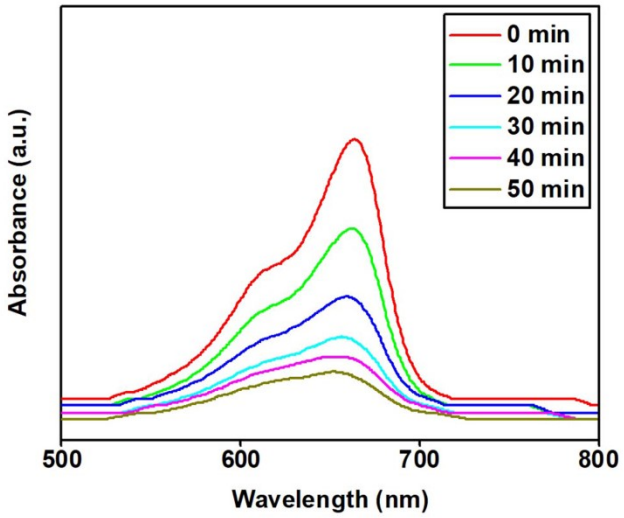

Figure S4: UV-Vis absorption spectra of MB photoreduction by H_2O_2 as an electron scavenger.

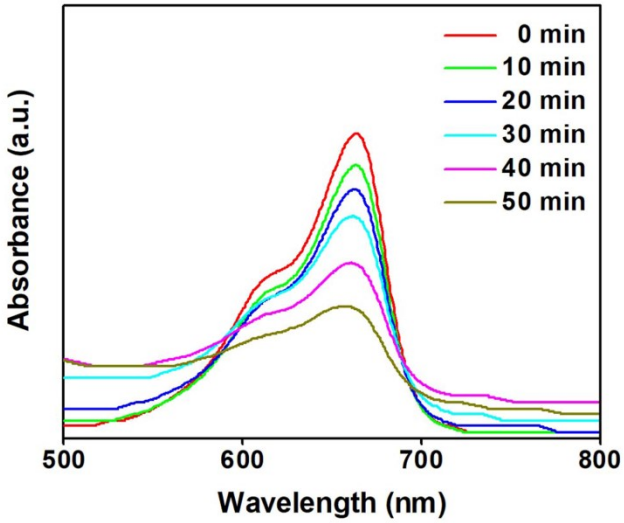

Figure S5: UV-Vis absorption spectra of MB photoreduction by DMSO used a hydroxyl radical scavenger

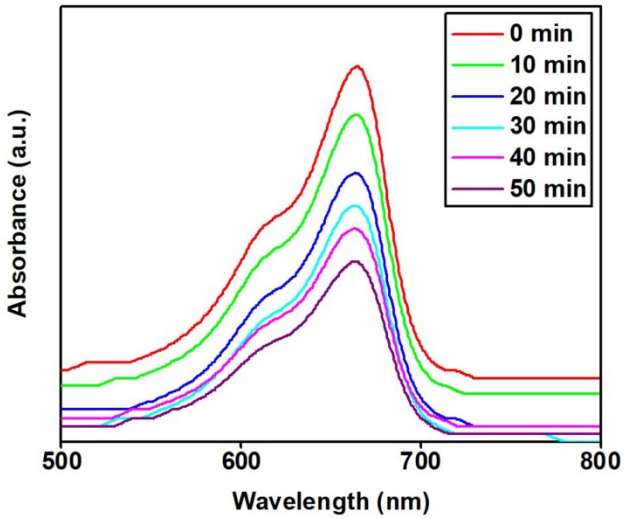

Figure S6: UV-Vis absorption spectra of MB photoreduction by ascorbic acid as a superoxide anion radical scavenger.

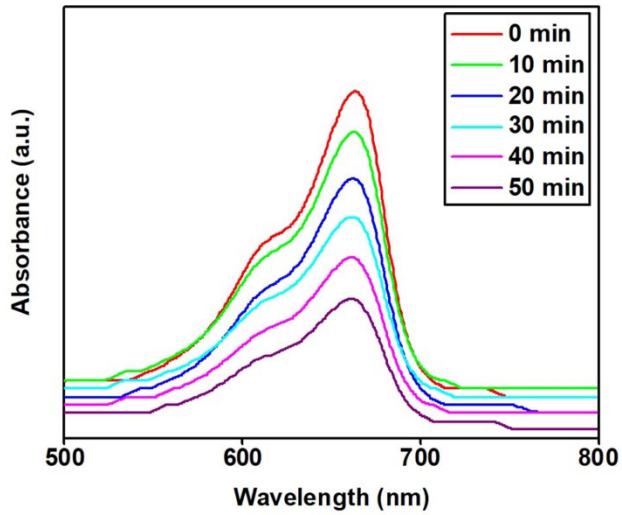

Figure S7: CV of the pure buffer (10 mL) is compared with the CV of 2 mg and 4 mg of the CdS/ZnO/rGO dispersed in 10 mL of the buffer pH of the buffer is 5.8.