Supplementary Material

Effect of reduced graphene oxide on the structural, optical, adsorption and photocatalytic property of iron oxide nanoparticles

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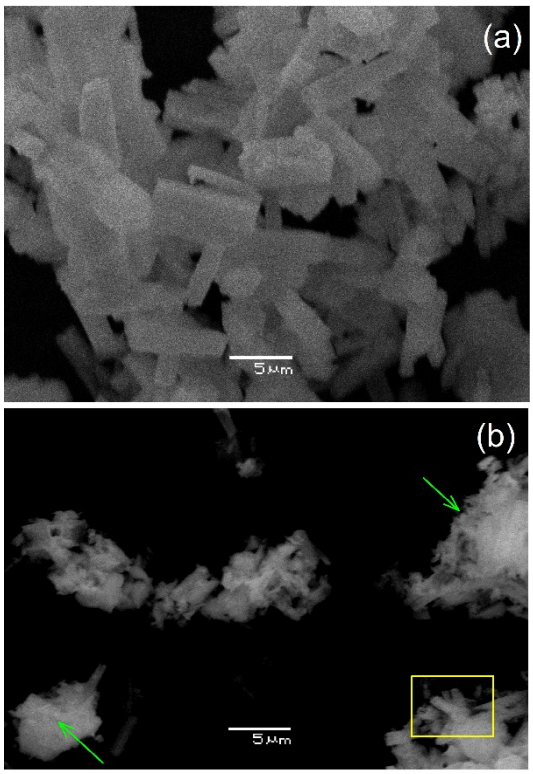

Fig. S1: SEM image of (a) pure Fe_2O_3 and (b) 5%rGO@Fe_2O_3 hybrid. Arrow mark indicates the deposition of rGO on Fe_2O_3 particles. Rectangular mark point outs Fe_2O_3 rods.

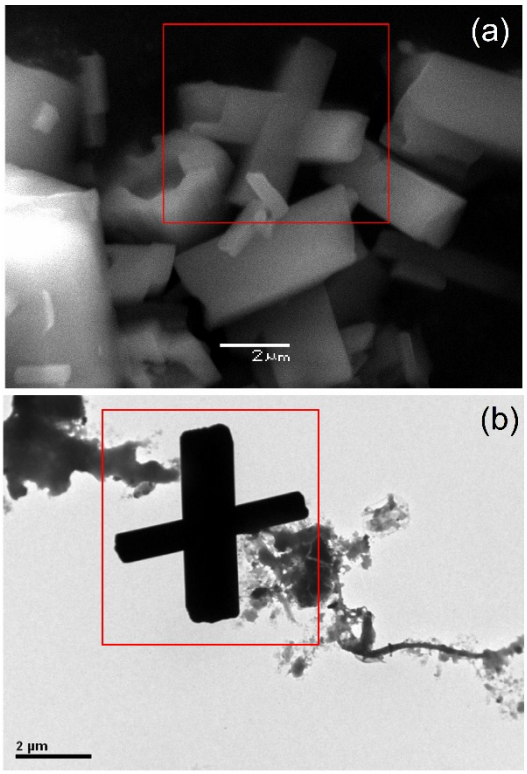

Fig. S2: (a) SEM and (b) TEM image of ferrous oxalate.

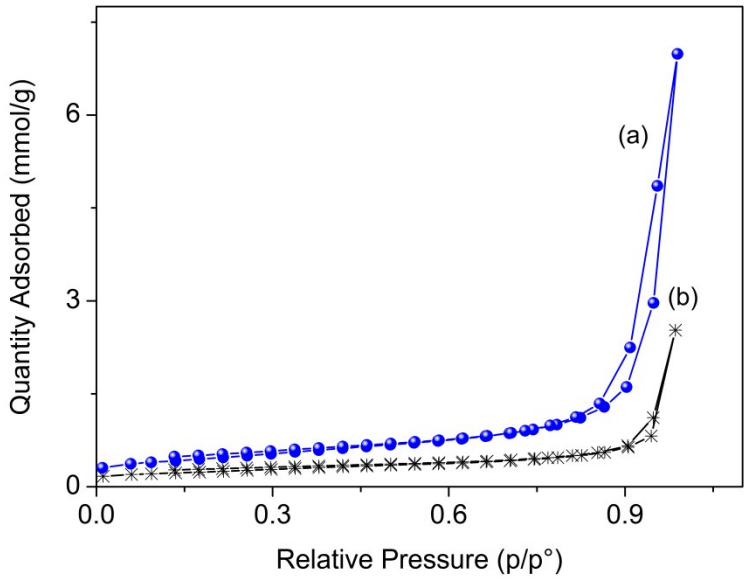

Fig. S3: N_2 adsorption-desorption isotherms of (a) pure Fe_2O_3 and (b) 5%rGO@Fe_2O_3 hybrid.

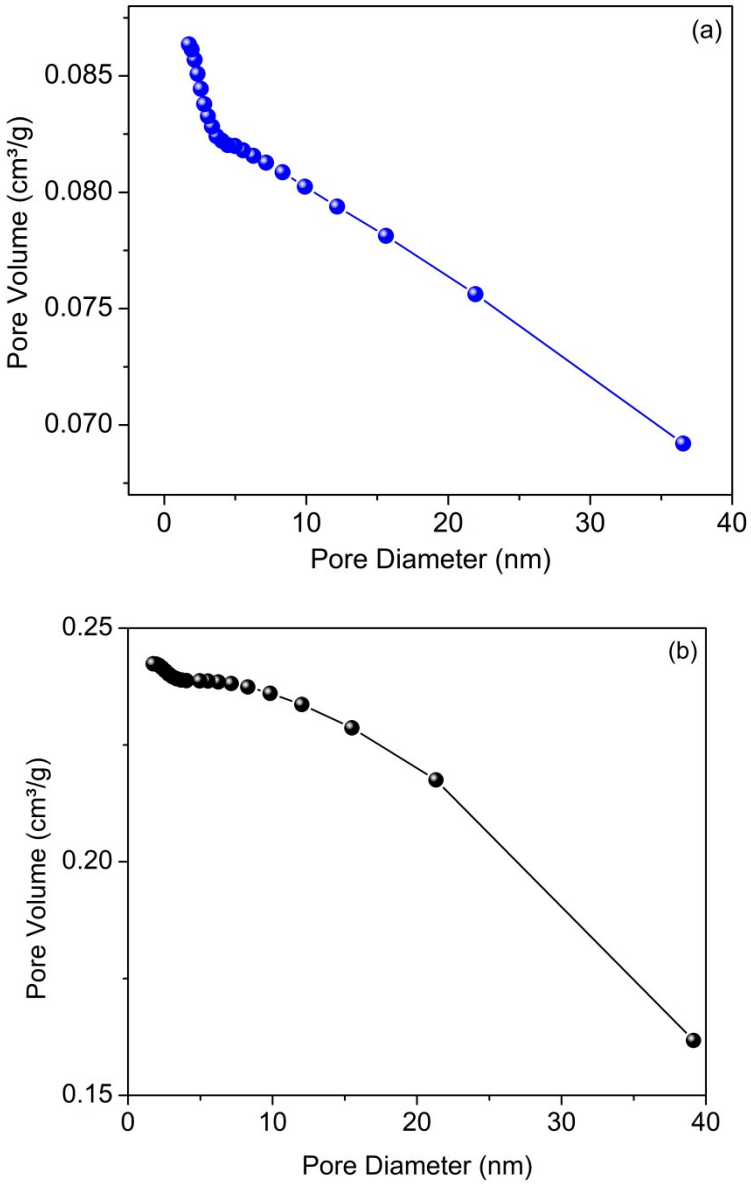

Fig. S4: Pore size distribution curve of (a) pure Fe_2O_3 and (b) 5%rGO@Fe_2O_3 hybrid.

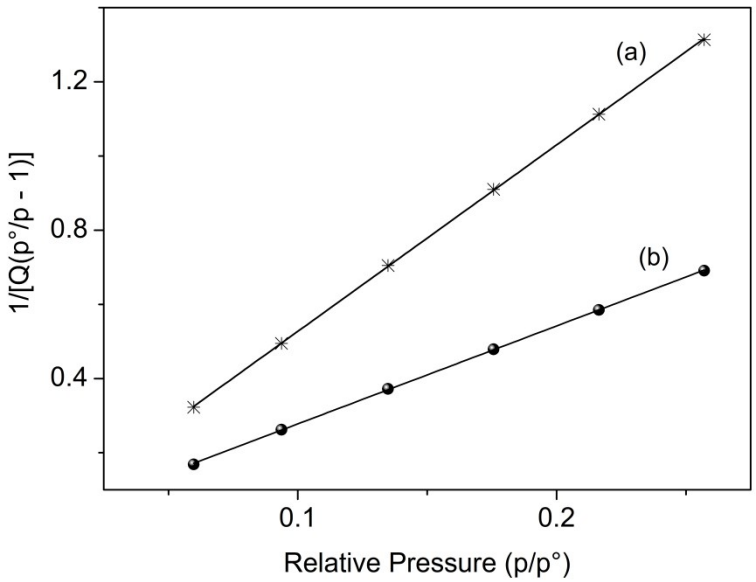

Fig. S5: BET surface area plot of (a) pure Fe_2O_3 and (b) 5%rGO@Fe_2O_3 hybrid.

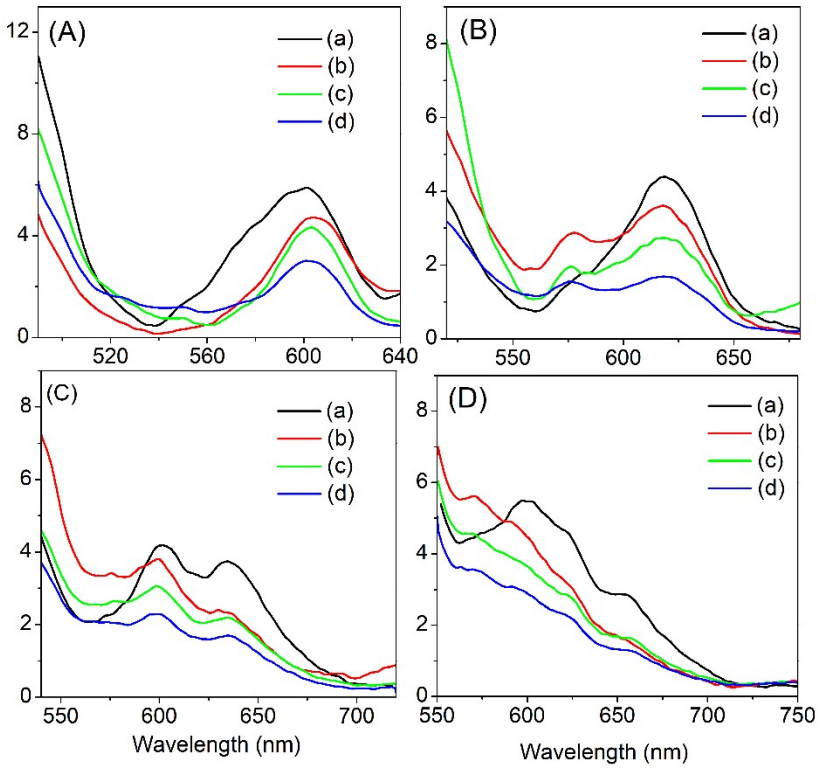

Fig. S6: PL spectrum of (a) pure Fe_2O_3, (b) 1%rGO@Fe_2O_3, (c) 3%rGO@Fe_2O_3 and (d) 5%rGO@Fe_2O_3 hybrid at (A) 460 nm, (B) 480 nm (C) 500 nm and (D) 520 nm excitations.

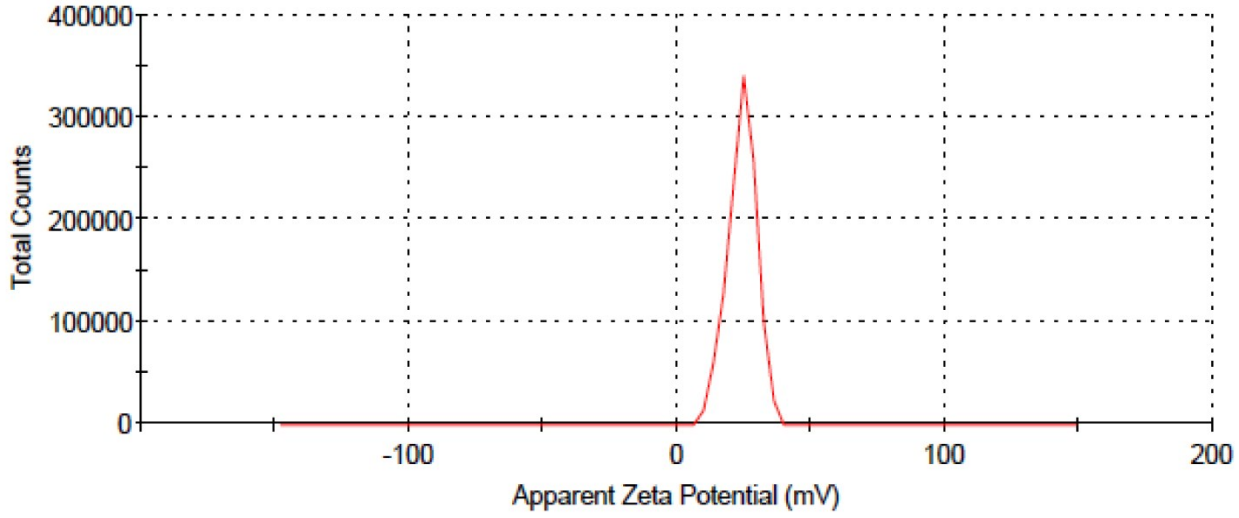

Fig. S7: Zeta potential distribution curve of 5%rGO@Fe_2O_3 hybrid

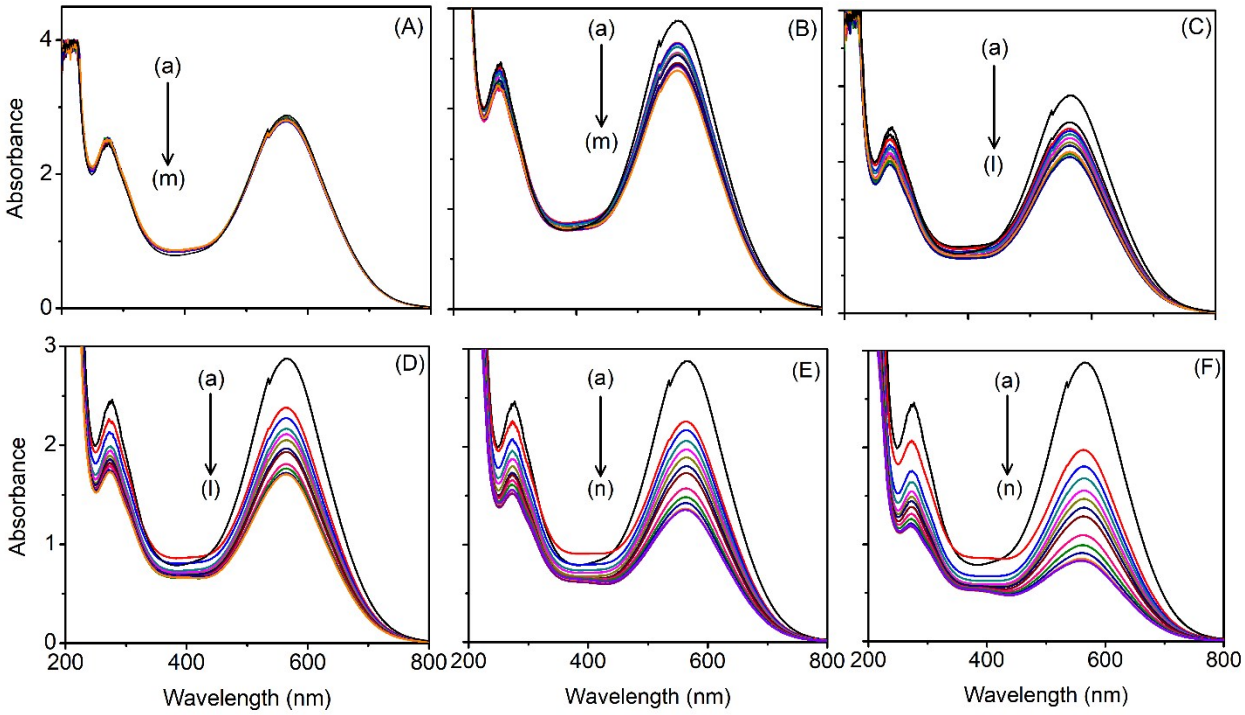

Fig. S8: UV visible spectrum of AB_{113} (100 ppm, 100 mL) after diferrent contact time with (A) 20 mg, (B) 40 mg, (C) 60 mg (D) 80 mg (E) 100 mg and (F) 150 mg of 5%rGO@Fe_2O_3hybrid. (a) 10, (b) 20, (c) 30, (d) 40, (e) 50, (f) 65, (g) 80, (h) 140, (i) 200, (j) 260, (k) 320, (l) 380, (m) 440, and (n) 500 min.

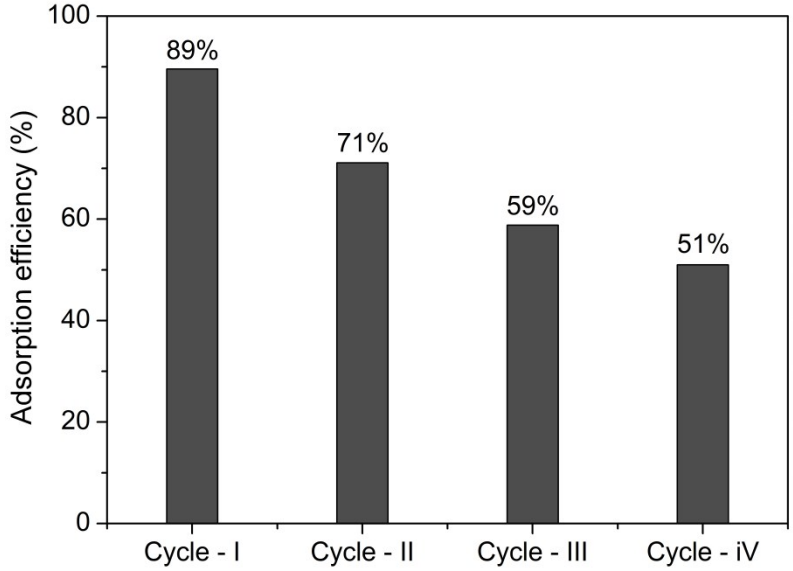

Fig. S9: Cyclic adsorption behavior of 5%rGO@Fe_2O_3 hybrid

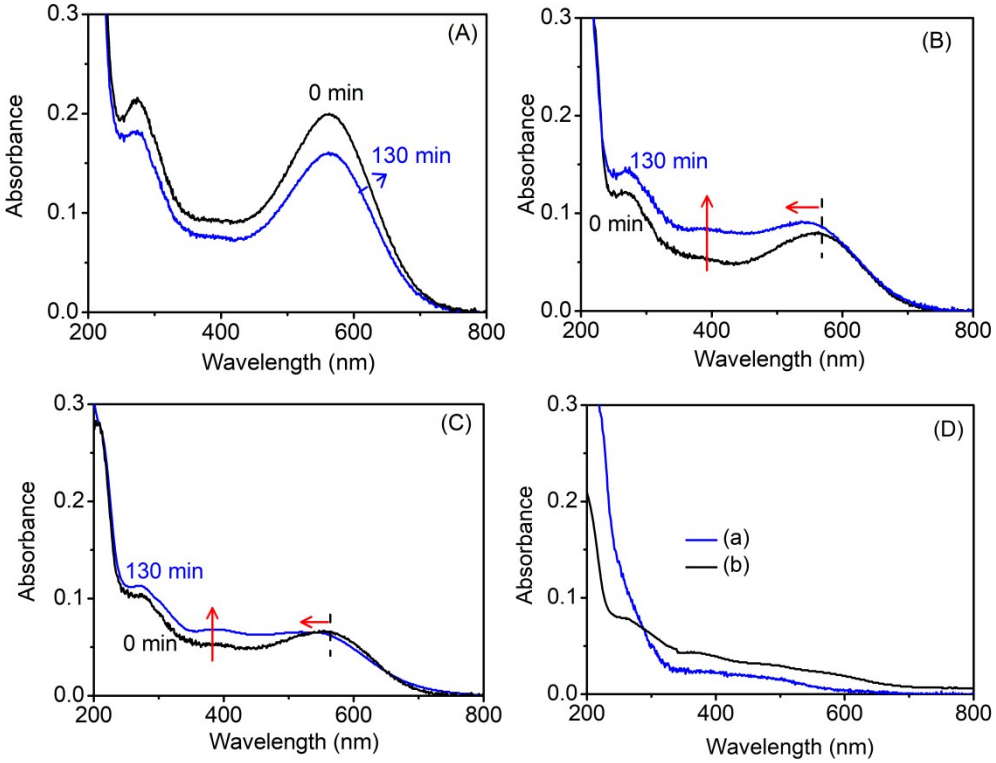

Fig. S10: UV visible spectra of AB_{113} (7 mg L^{-1}, 100 mL) in presence of (A) 5 mg, (B) 10 mg and (C) 15 of 5%rGO@Fe_2O_3hybrid. Figure D: UV visible spectra of AB_{113} (7 mg L^{-1}, 100 mL) in presence of 20 mg of 5%rGO@Fe_2O_3hybrid and visible light intensity with (a) 180 mW/cm^2 and (b) 2.2 mW/cm^2.