

## Electronic Supplementary Information

### **Biomolecule-mediated CdS-TiO<sub>2</sub>-reduced graphene oxide ternary nanocomposites for efficient visible light driven photocatalysis**

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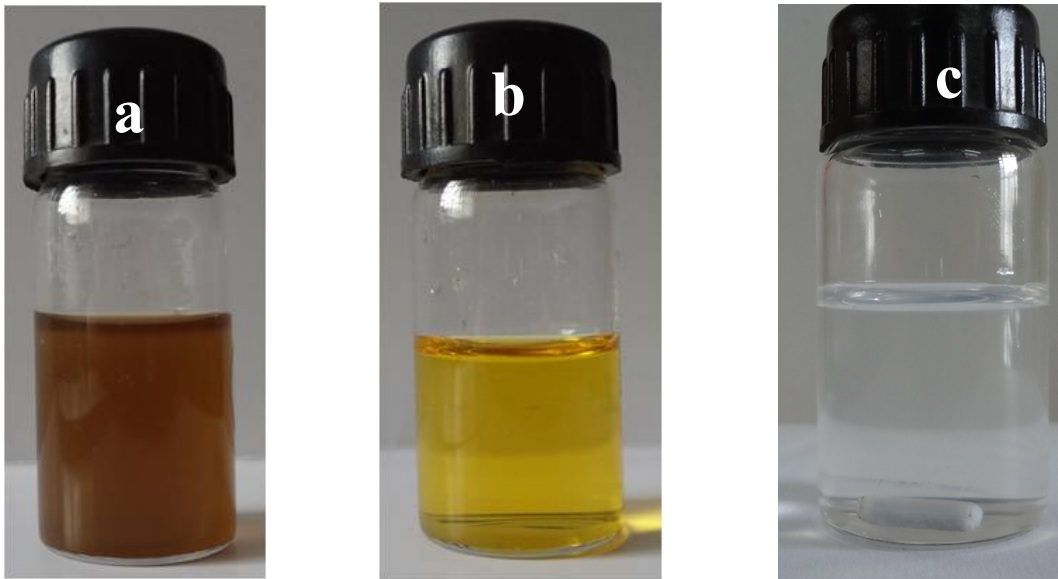


Fig. S1 Digital images of (a) aqueous GO dispersion and (b) solution of titanium peroxy compound (c) solution of titanium peroxy compound after pH adjusted to 5.0.

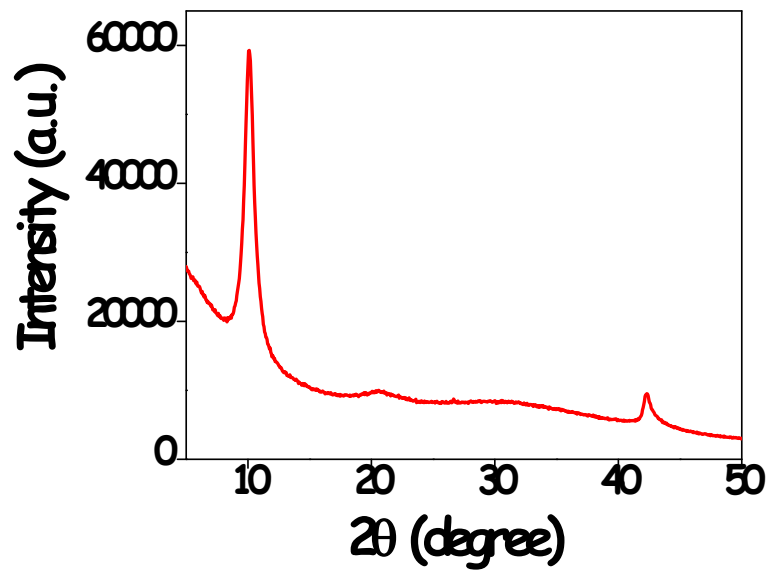
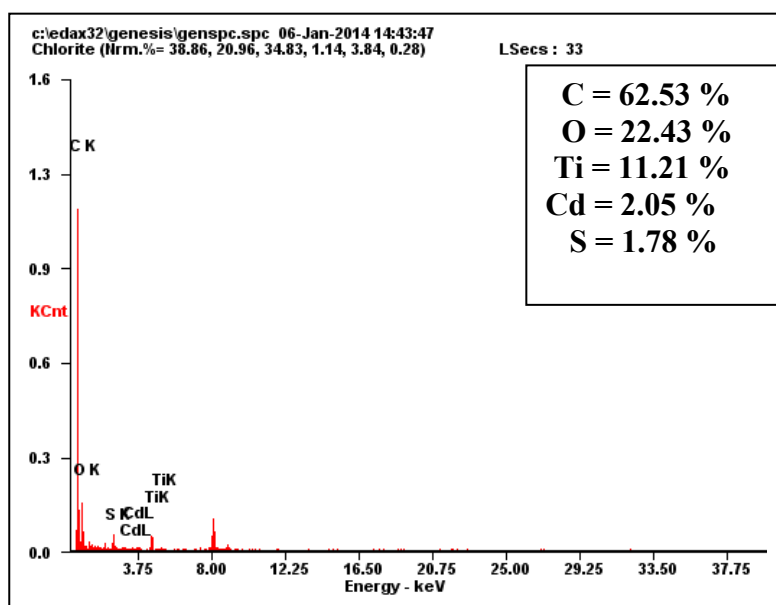
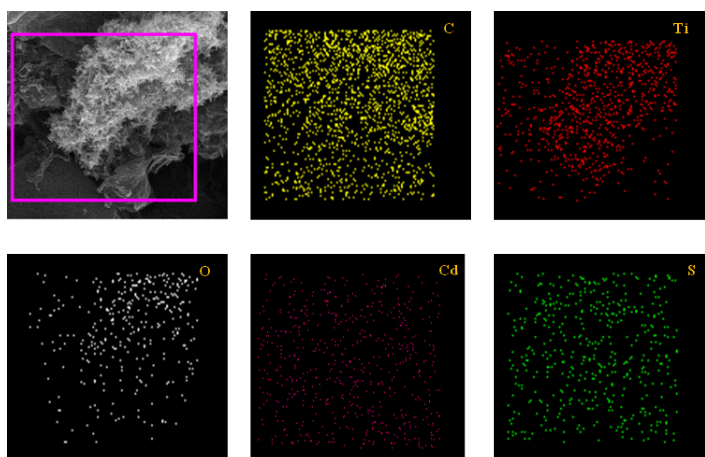
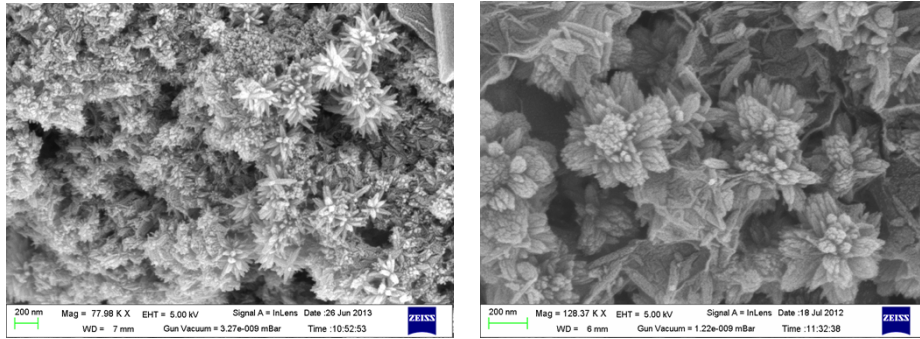


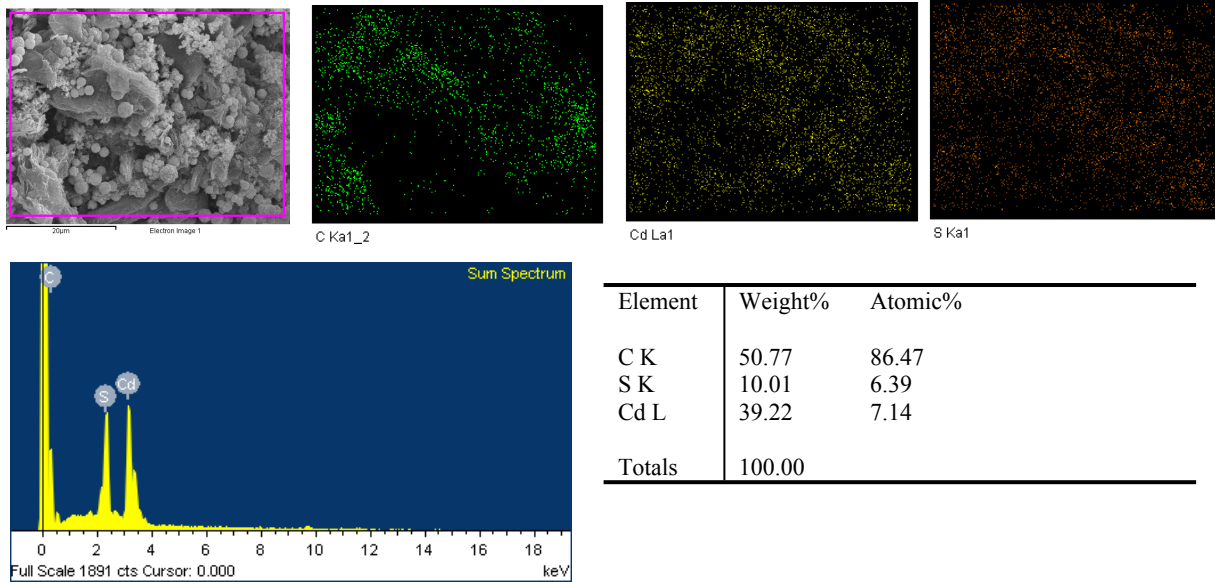
Fig. S2 XRD pattern of GO.



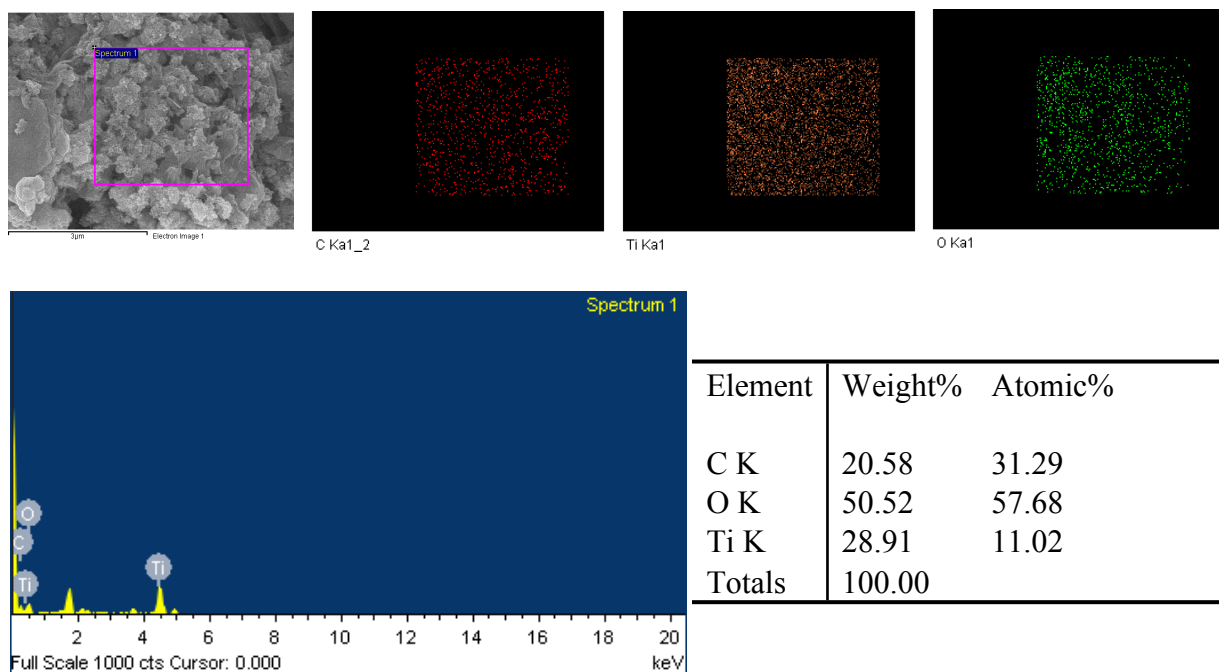
**Fig. S3** Elemental mapping and EDAX spectra of red CdS-TiO<sub>2</sub>-rGO nanocomposites.



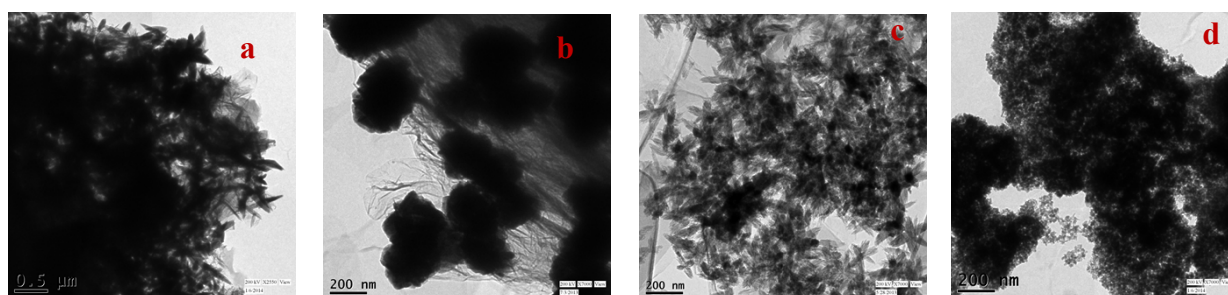
**Fig. S4** FESEM images of flowerly  $\text{TiO}_2$  nanostructures attached to rGO sheets in different magnification.



**Fig. S5** EDAX and elemental mapping analysis of CdS-rGO nanocomposites.



**Fig. S6** Elemental mapping and EDAX analysis of TiO<sub>2</sub>-rGO nanocomposites.



**Fig. S7** TEM images of (a) RCTG, (b) CG, (c) TG, and (d) CT.



Fig. S8 Digital images of CdS-TiO<sub>2</sub> nanocomposite.

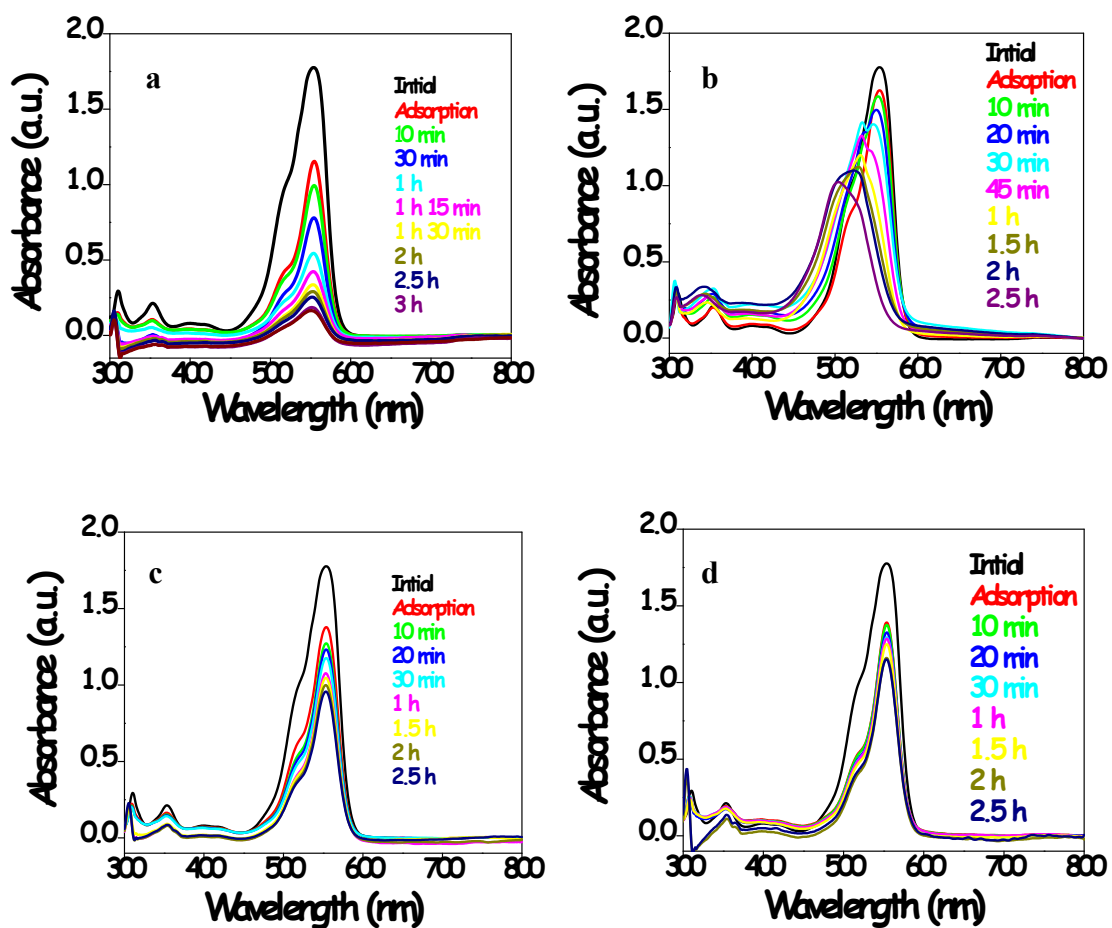


Fig. S9 Rhodamine B degradation under visible light irradiation in presence of (a) CG, (b) CT, (c) RCTG, and (d) TG.

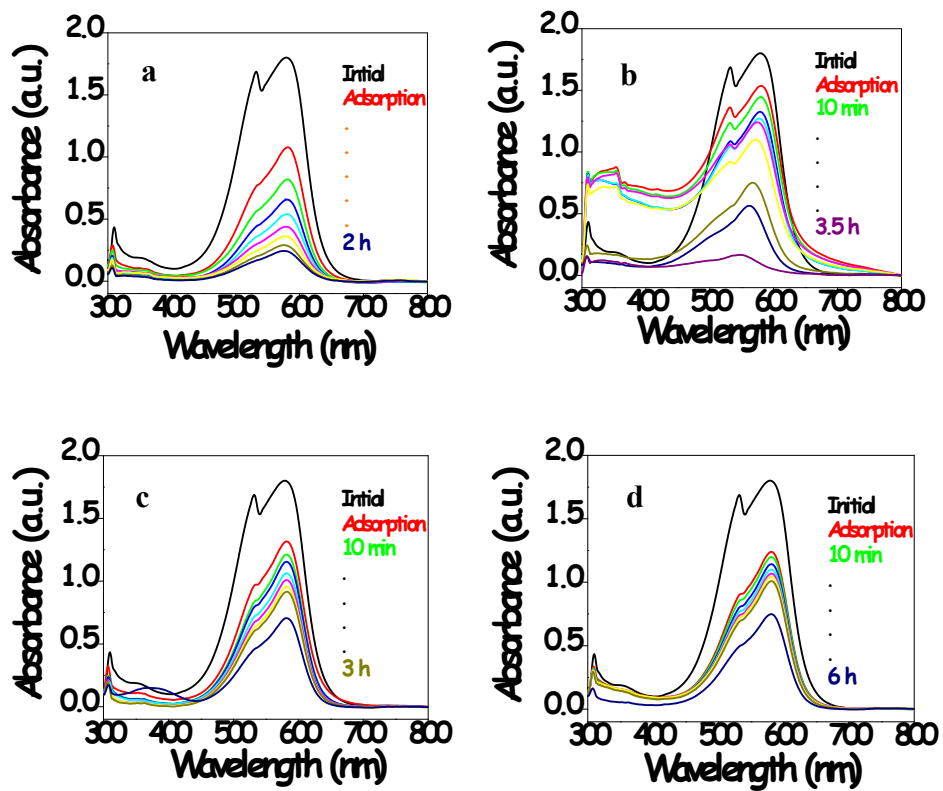


Fig. S10 Crystal violet degradation under visible light irradiation in presence of (a) CG, (b) CT, (c) RCTG, and (d) TG.

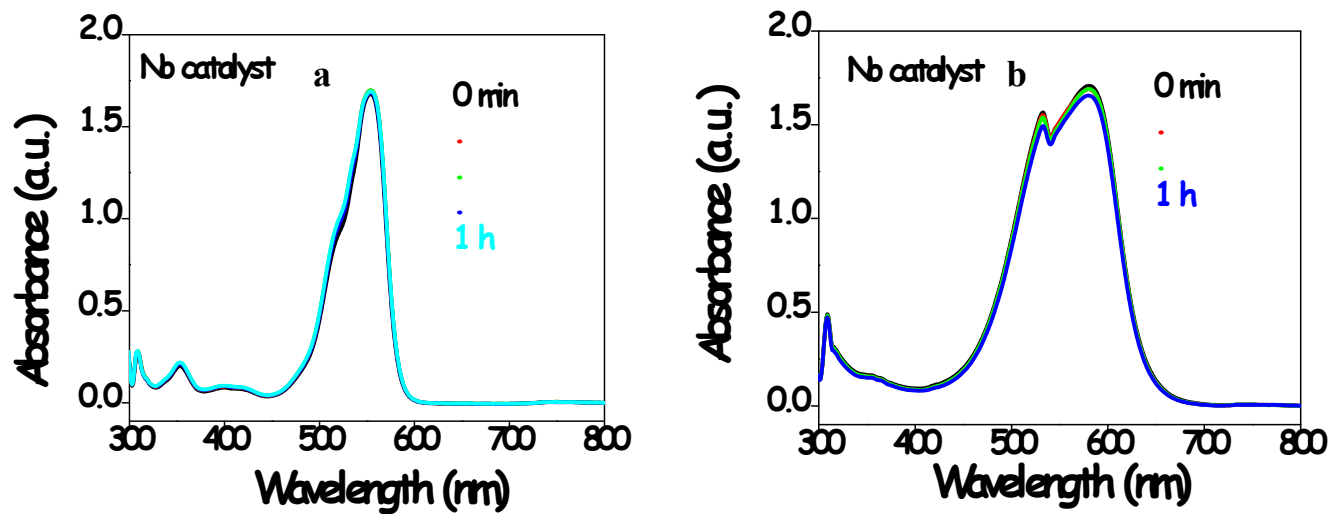


Fig. S11 (a) Rhodamine B and (b) crystal violet degradation under visible light irradiation in absence of any catalyst.



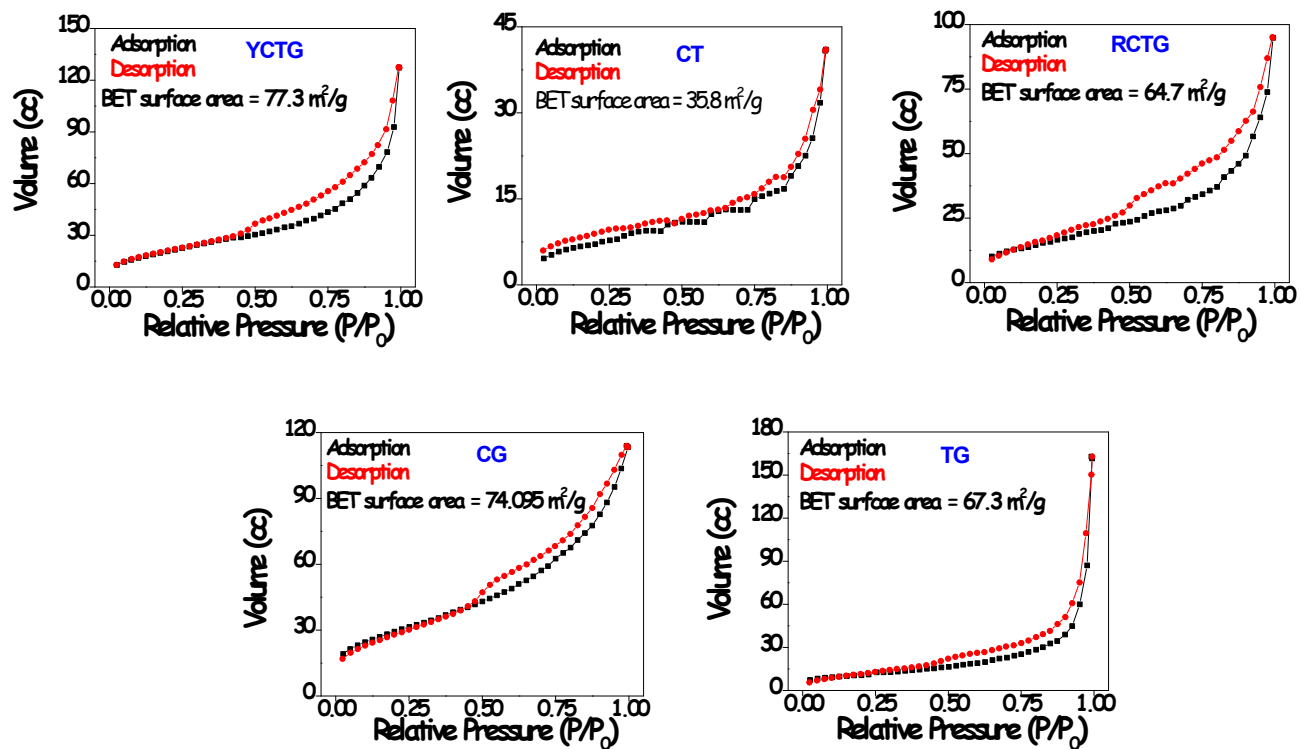


Fig. S12  $N_2$  adsorption-desorption isotherm for various photocatalysts.

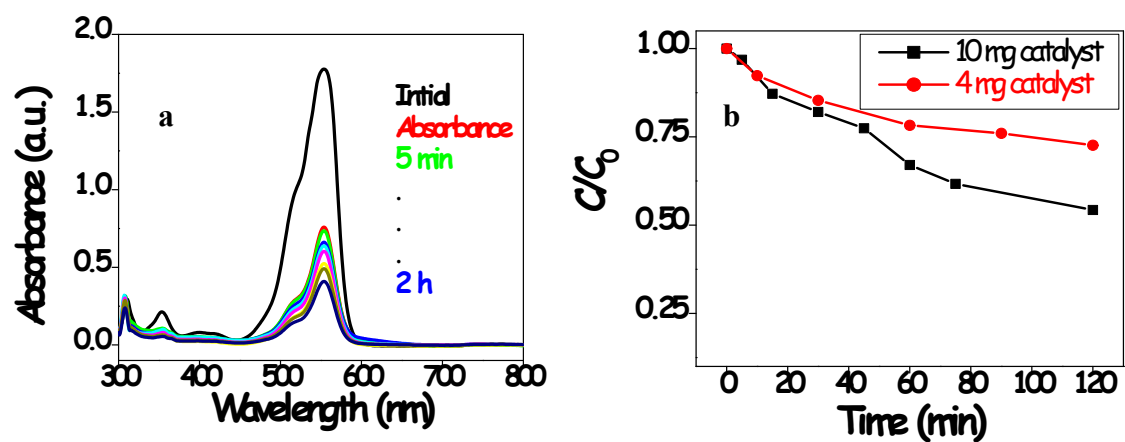


Fig. S13 (a) Rhodamine B degradation under visible light irradiation in presence of 10 mg of RCTG. The catalyst amount is 2.5 times higher than normal RB degradation case. (b) Comparison in dye degradation efficiencies with varying RCTG amount.