

Supplementary Information

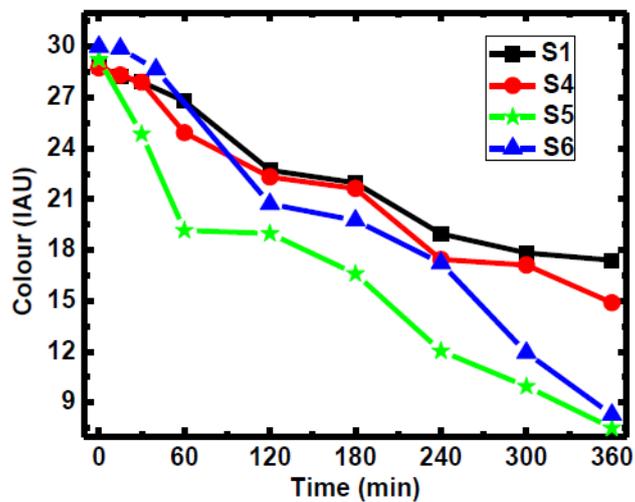


Fig. S1. Colour IAU (integrated Absorption Unit) of the samples collected at different time during MB dye degradation experiment under visible light irradiation.

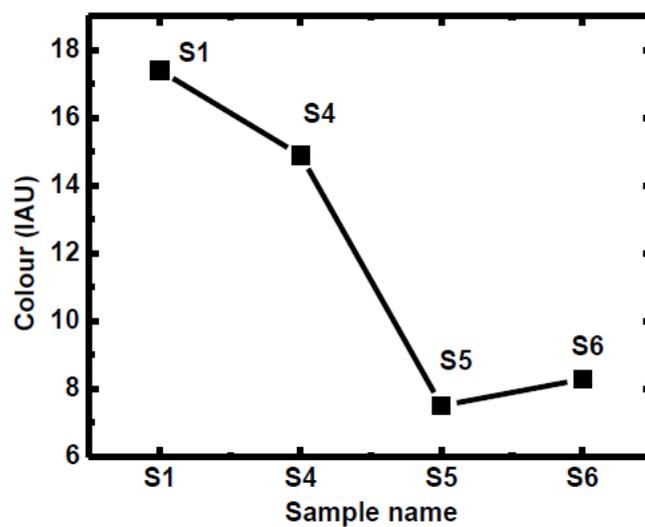


Fig. S2. Decolouration of the samples collected after 6h during MB dye degradation experiment under visible light irradiation.

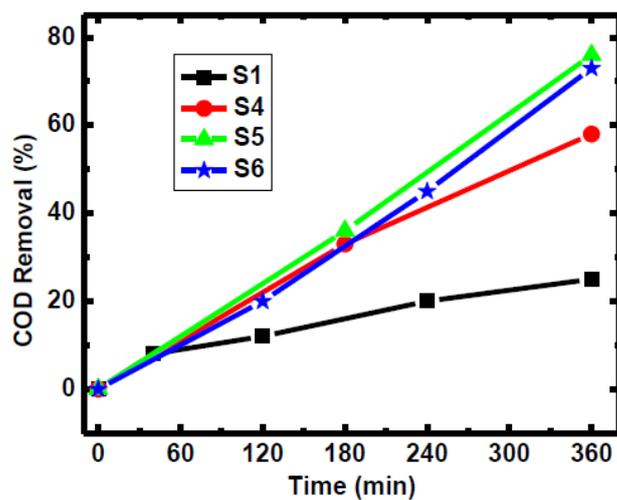


Fig. S3. Percentage removal of COD (Chemical Oxygen Demand) by the samples during MB dye degradation experiment under visible light irradiation

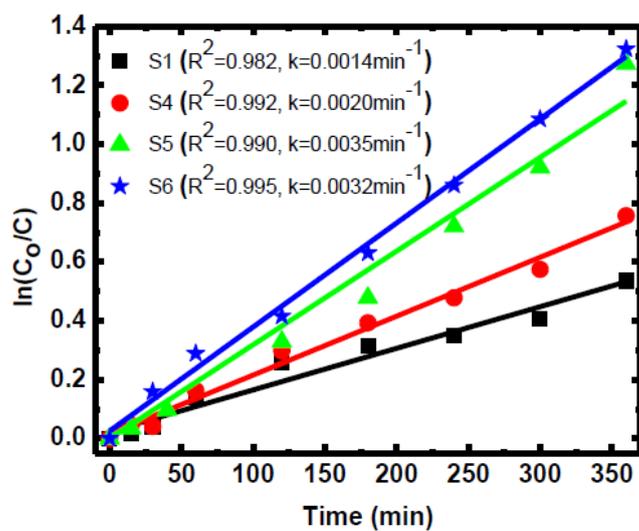


Fig. S4. Pseudo-first order dye degradation kinetics under visible light irradiation.

UV light irradiated photocatalysis

The UV light driven photocatalytic dye degradation activities of the samples have also been measured. The experiment was carried out in a 75ml quartz reactor and a 125W medium pressure Hg lamp (Model: 3010, Photochemical reactors limited, UK) has been used as the UV light source. The dye and sample concentration was kept same as used for visible light driven photocatalytic dye degradation experiment. The temperature was maintained constant throughout the reaction time by circulating the water in the jacketed wall reactor. A flow of air was bubbled into the reactor, and the oxygen in air served as oxidant. At regular time intervals the sample was taken out from the reactor, centrifuged and UV-Vis absorption spectra was monitored at 664nm corresponding to the absorption of MB dye. The absorption spectra of MB dye in presence of S1 and S6 samples at regular time intervals during dye degradation experiment is shown in Figs.S5 (a) and S5(b), respectively. As shown in Fig. S6(a), it is found that S5 and S6 samples show almost similar dye degradation efficiency (99%) after 30 min irradiation time whereas S1 sample shows 96% degradation efficiency after same irradiation time. The reaction kinetics has been fitted with pseudo-first order reaction kinetics as shown in Fig. S6(b). The dye degradation efficiency of the synthesized samples can be explained on the basis of electron-hole pair generation as indicated also by the other researcher.⁴¹⁻⁴²

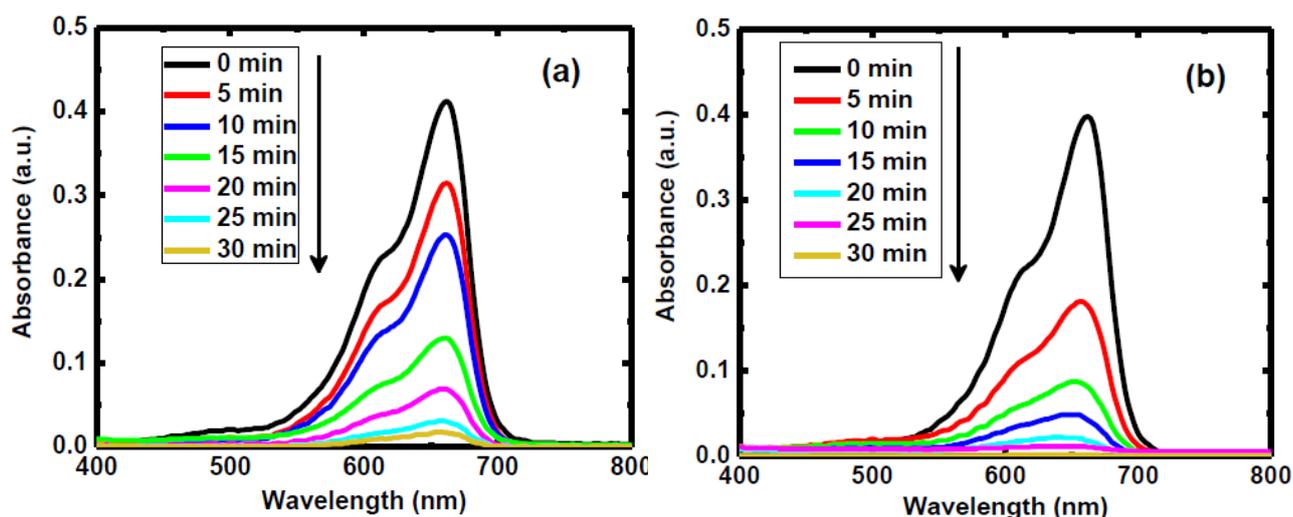


Fig. S5. UV light irradiated photocatalysis of MB dye in presence of (a) S1 sample (b) S6 sample.

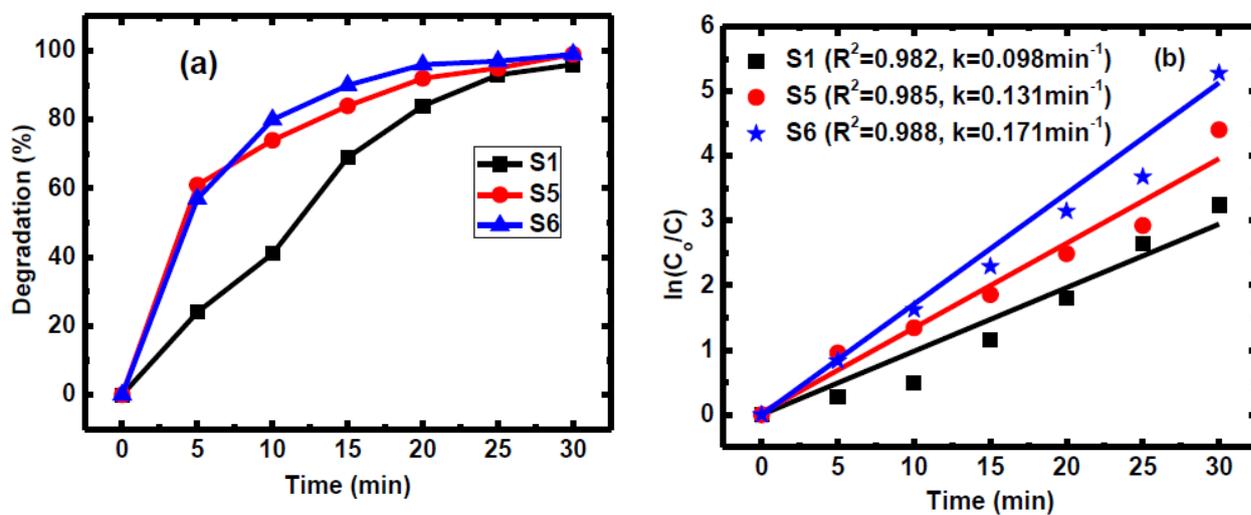


Fig. S6. (a) Dye degradation percentage with irradiation time. (b) Pseudo-first order reaction kinetics showing the reaction rates under UV light irradiated MB dye degradation.