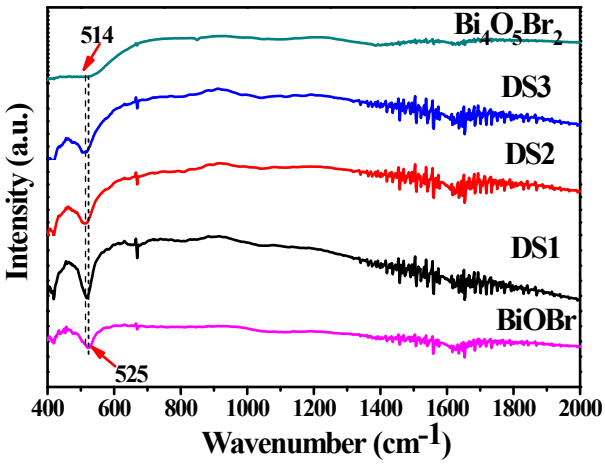

Fig. S1 FT-IR spectra of pure BiOBr, $Bi_4O_5Br_2$ and BiOBr-$Bi_4O_5Br_2$ heterostructures.

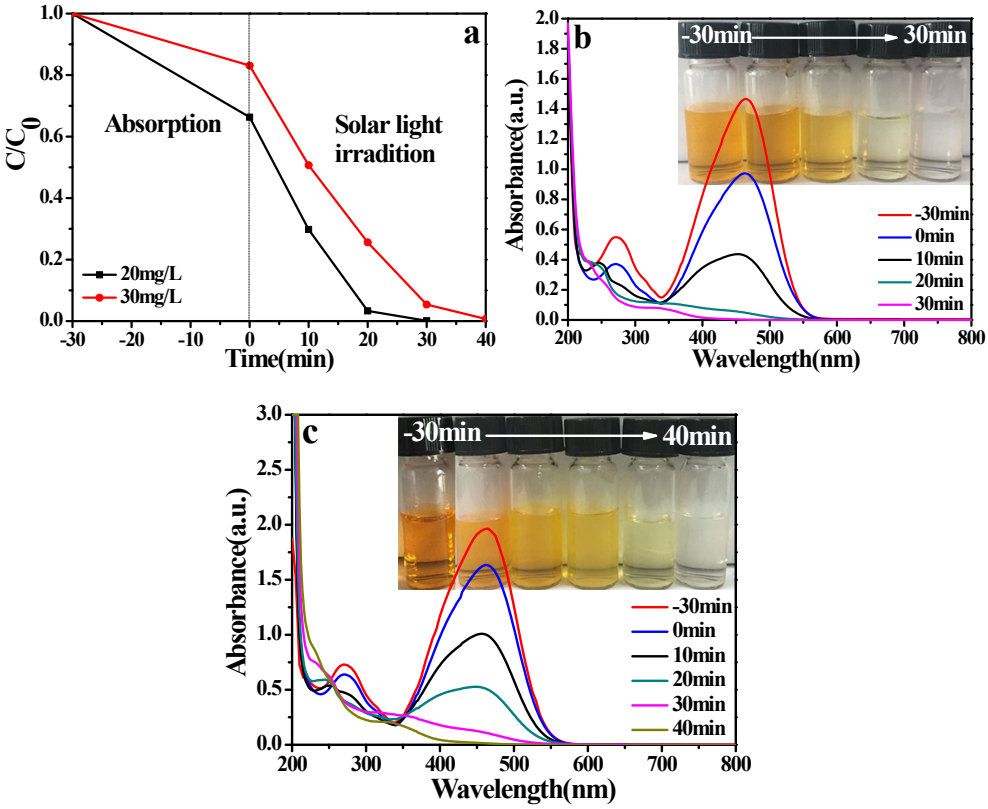

Fig. S2 (a) The degradation curve of different concentration of MO solution using DS2 as photocatalyst under solar light irradiation, (b and c) the UV-Vis absorption spectra of MO using DS2 as photocatalyst.

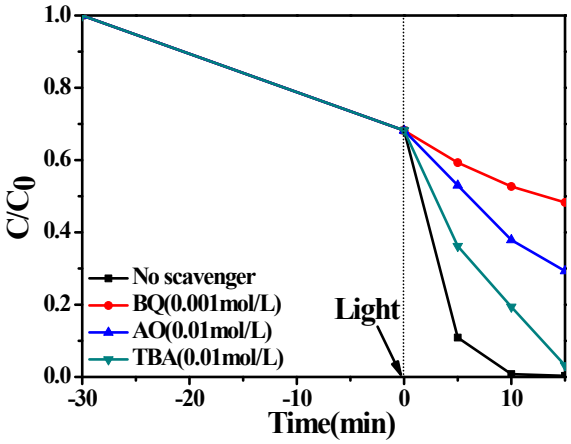

Fig. S3 Plots of photogenerated carriers trapping for photocatalytic degradation of RhB (20mg/L) under visible light irradiation over DS2 sample.

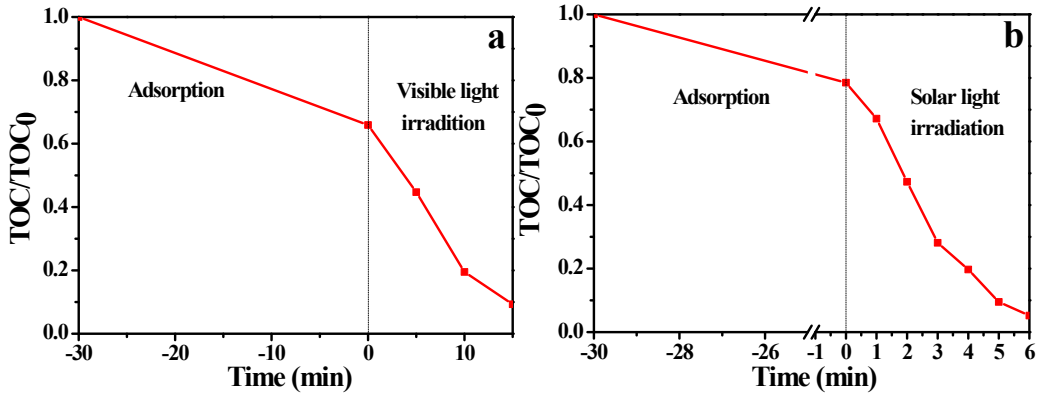

Fig. S4 TOC removal efficiency of RhB (20mg/L) using DS2 as photocatalyst under visible (a) and solar (b) light irradiation.

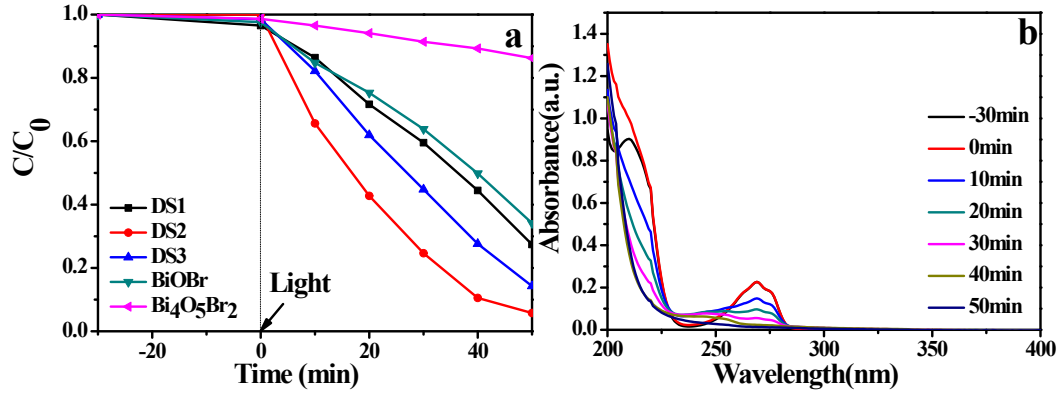

Fig. S5 The Photocatalytic degradation curve of phenol (10mg/L) by different photocatalysts (a), and UV–Vis absorption spectra of phenol (10mg/L) (b) using DS2 as photocatalyst under solar light irradiation.