Electronic Supplementary Material

Highly Effective Photocatalytic Performance of {001}-TiO_2/MoS_2/RGO Hybrid Heterostructures for the Reduction of *Rh B*

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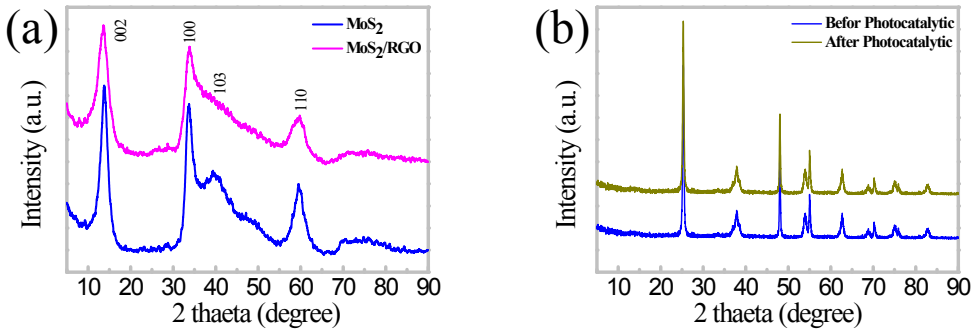

Fig. S1 X-ray powder diffraction (XRD) patterns for MoS_2 and MoS_2/RGO (a) and {001}-TiO_2/MoS_2/RGO before and after photocatalysis (b)

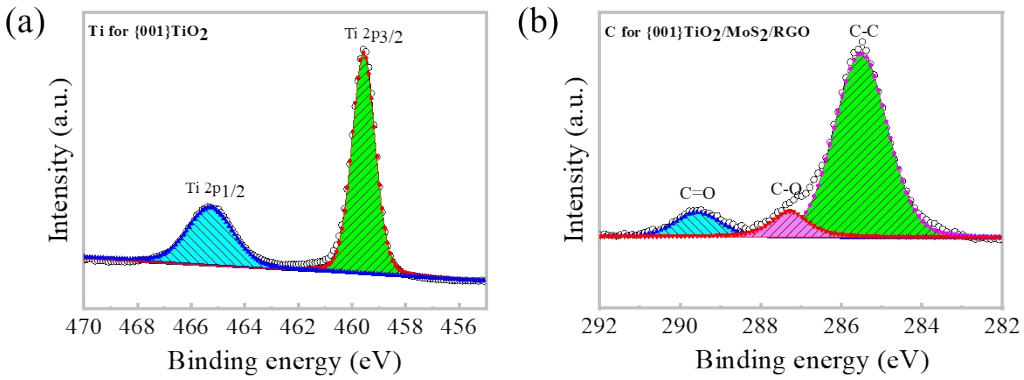

Fig. S2 XPS spectra for the samples; (a) Ti 2p spectra for {001}-TiO_2, (b) C 1s spectra for {001}-TiO_2/MoS_2/RGO.

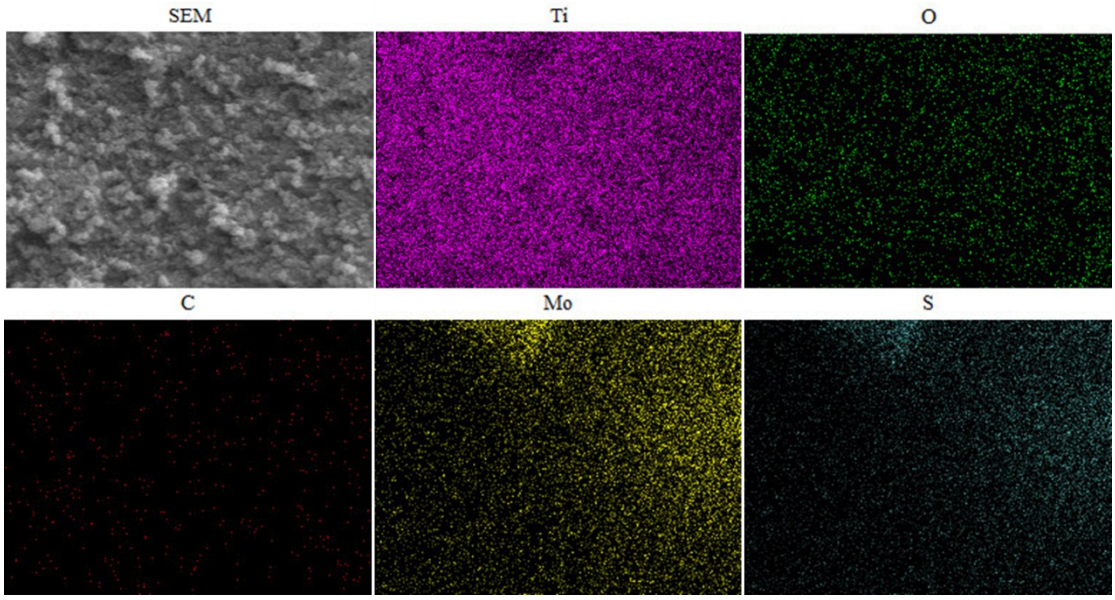

Fig. S3 Energy Dispersive Spectrometer (EDS) patterns for {001}-TiO_2/MoS_2/RGO.

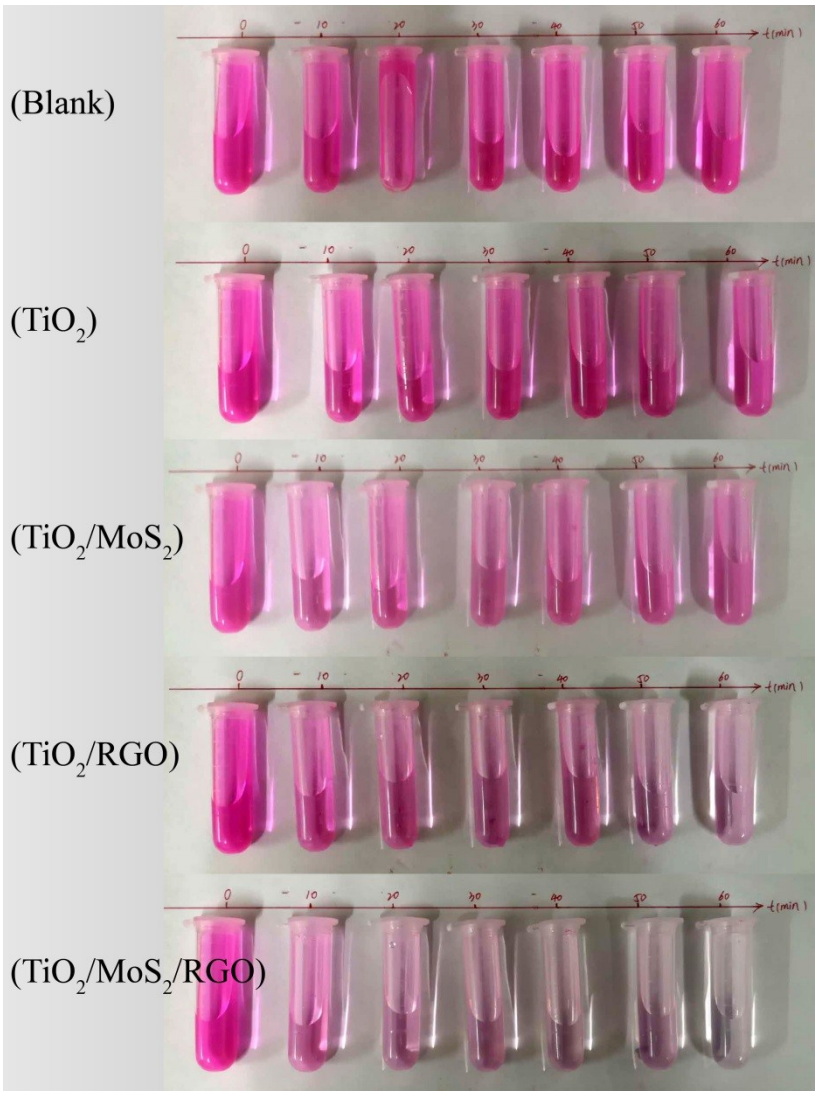

Fig. S4 The color change of *Rh B*-{001}-TiO_2/MoS_2/RGO mixture under visible light irradiation.

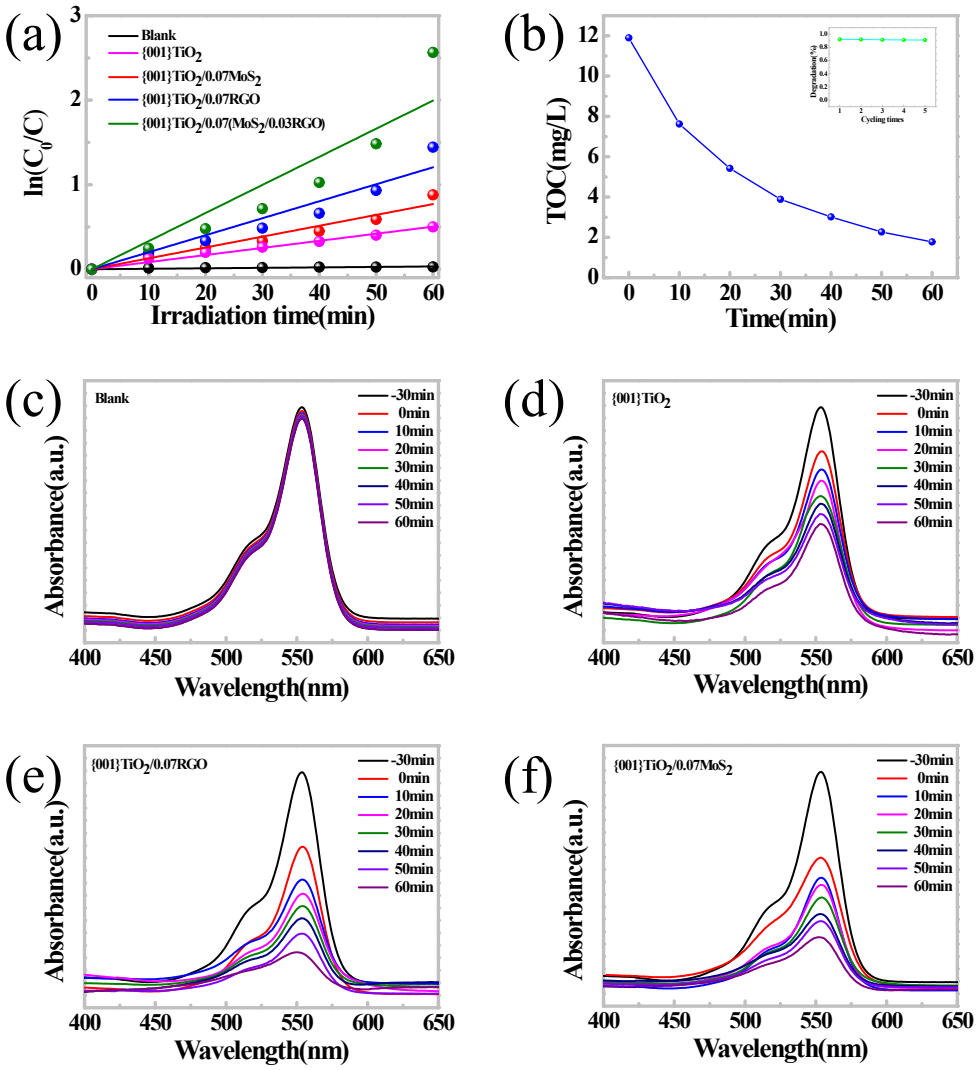

Fig. S5 (a) The apparent reaction rate constants K for the photodegradation of Rh B determined by the pseudo-first order model (solid fitting curves), (b) The TOC removal curve of *Rh B* photocatalytic degradation by {001}-TiO_2/MoS_2/RGO. (Inset shown the recycling runs of {001}-TiO_2/MoS_2/RGO for the degradation of Rh B under visible light irradiation), (c-f) UV-Visible spectra of Blank; {001}-TiO_2; {001}-TiO_2/RGO; {001}-TiO_2/0.07MoS_2.