

Supporting Information

Synthesis of TiO₂ with controllable ratio of anatase to rutile

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Table S1. The pH of various suspensions after the redox reactions between TiCl₃ and GO.

$R_{\text{TiCl}_3/\text{GO}}$	5	16	25	39	61	77
pH	1.02	0.96	0.87	0.75	0.62	0.50

Table S2. Brunauer–Emmett–Teller (BET) specific surface areas of different TiO₂ samples.

Samples	Commercial anatase	TiO ₂ (100 %A)	TiO ₂ (82% A,18%R)	TiO ₂ (55% A,45%R)	TiO ₂ (39% A,61%R)	TiO ₂ (12% A,88%R)	TiO ₂ (100% R)	TiO ₂ prepared without GO
BET Surface area (m ² /g)	149	81	52	48	32	28	20	11

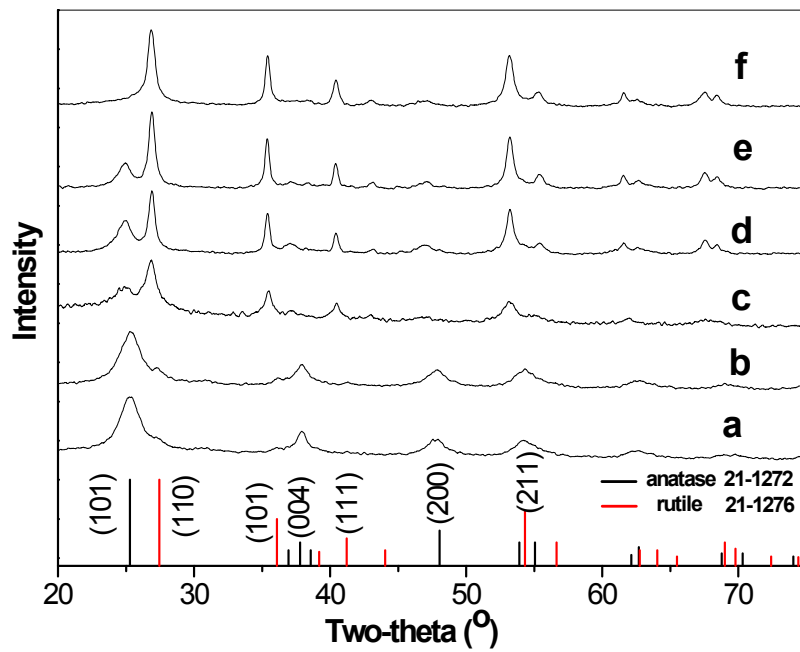


Fig. S1 XRD patterns of the TiO₂-rGO composite prepared in this work. The mass ratios of $R_{\text{TiCl}_3/\text{GO}}$ used in the preparation of the samples were (a) 5, (b) 16, (c) 25, (d) 39, (e) 61, and (f) 77, respectively.

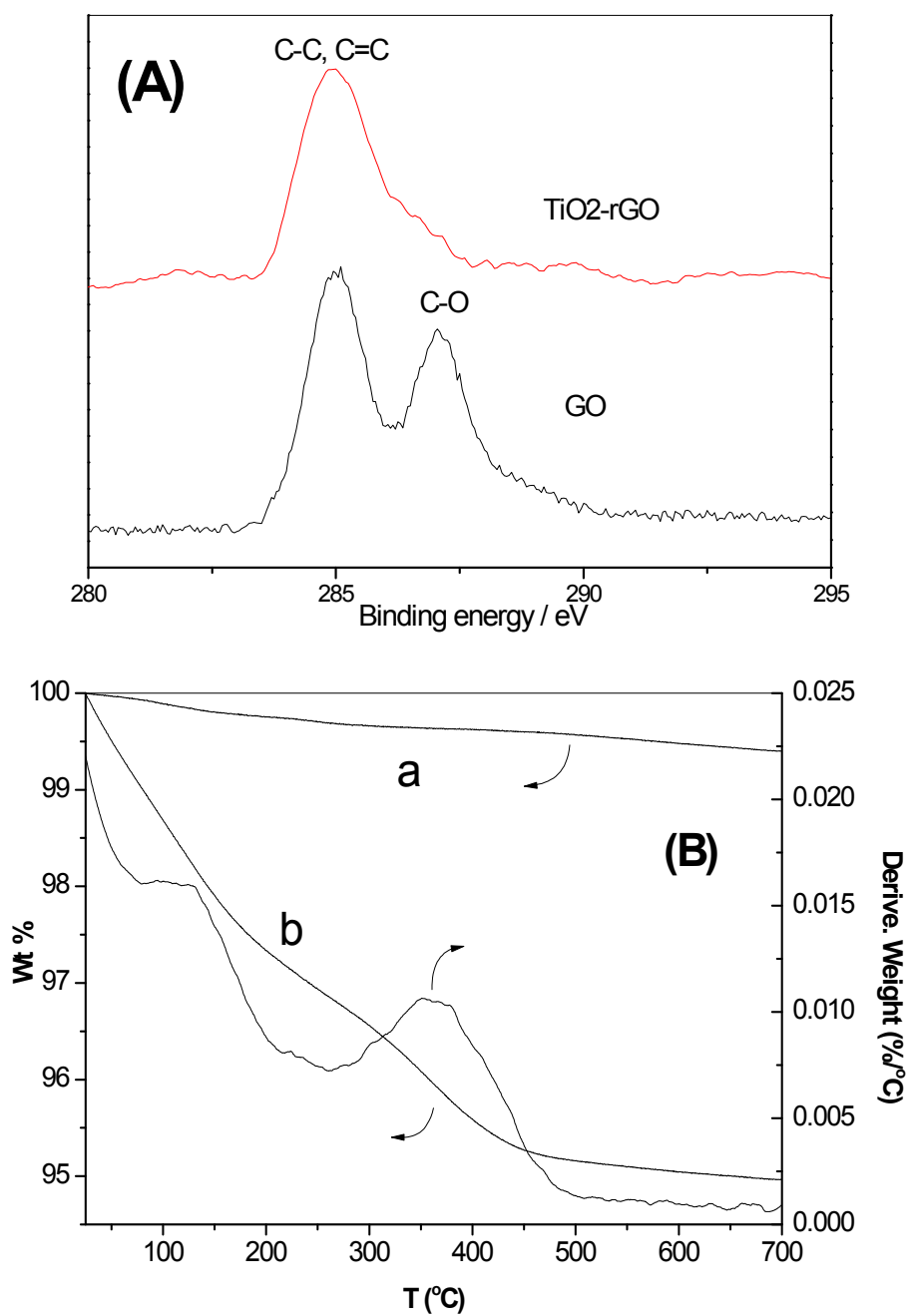


Fig. S2 (A) XPS spectra of GO and TiO₂-rGO composite prepared with $R_{\text{TiCl}_3/\text{GO}} = 77$. (B) TGA data of samples (a) TiO₂ (100%R) and (b) TiO₂-rGO prepared with $R_{\text{TiCl}_3/\text{GO}} = 7$, together with its DrTGA curve.

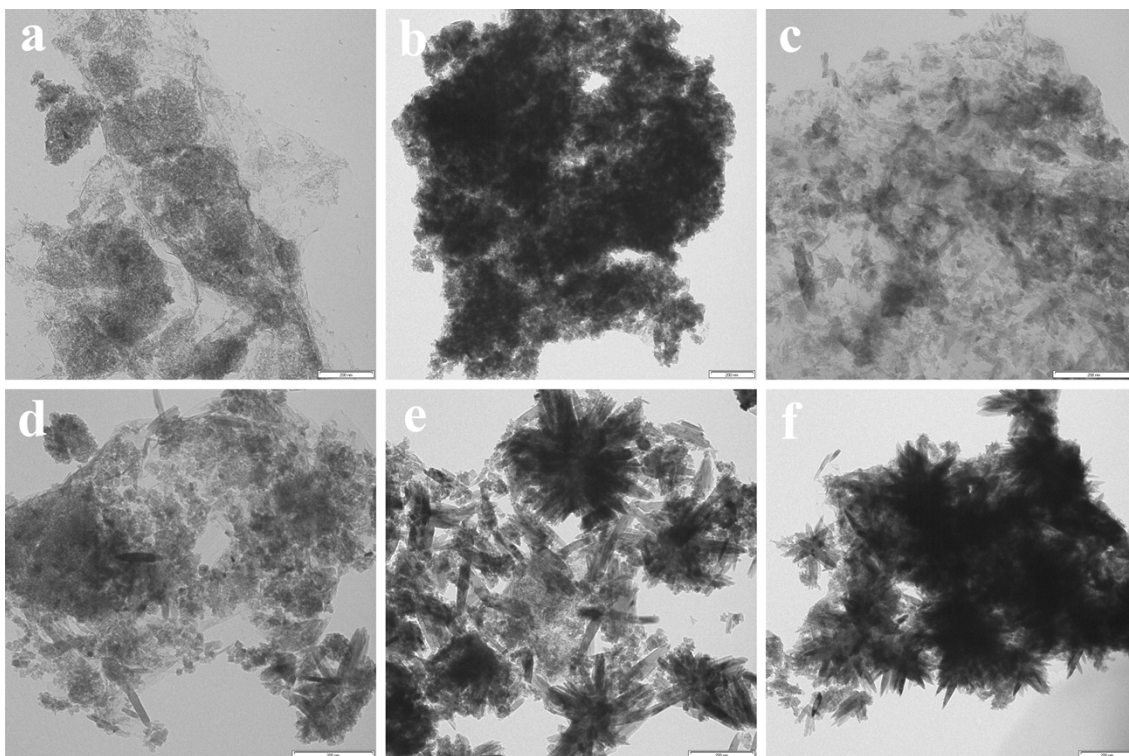


Fig. S3 TEM images of various TiO_2 samples before calcination. The mass ratios of $R_{\text{TiCl}_3/\text{GO}}$ used in the preparation of the samples were (a) 5, (b) 16, (c) 25, (d) 39, (e) 61, and (f) 77, respectively. The scale bars are all 100 nm.

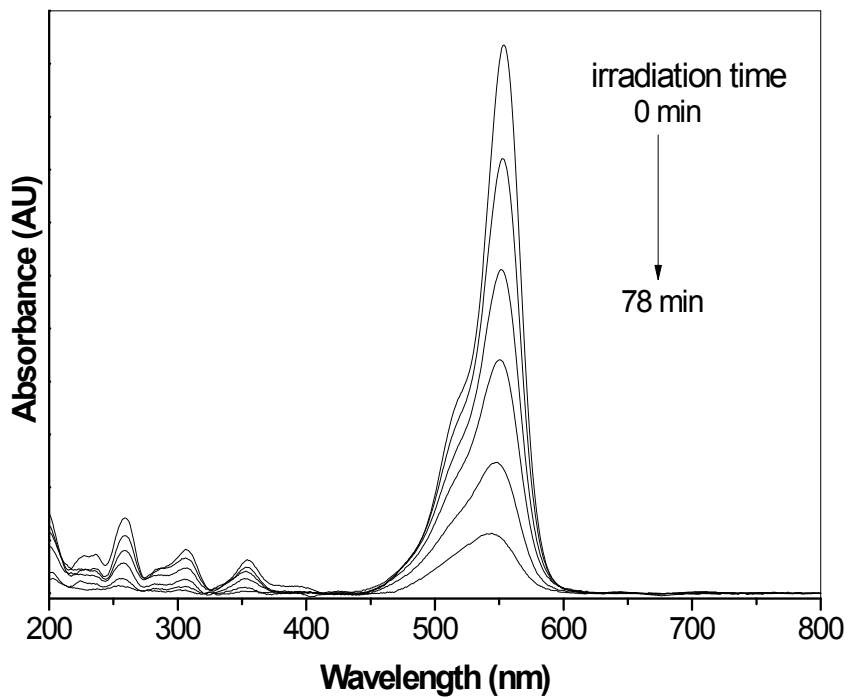


Fig. S4 UV absorption spectra of RhB at different UV irradiation times in the presence of sample $\text{TiO}_2(55\%\text{A},45\%\text{R})$.

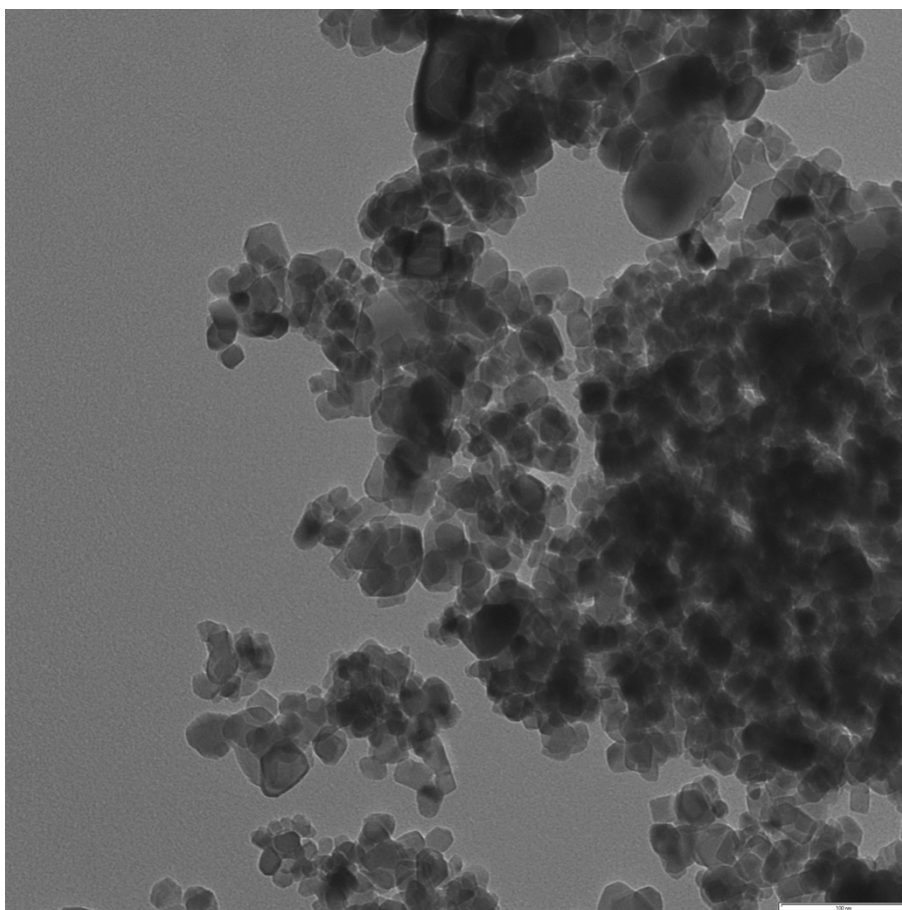


Fig. S5 TEM images of commercial P25.