Electronic Supplementary Material (ESI) for RSC Advances.

Self-Fluorinated $Bi_3Ti_2O_8F$ Formed by Cross-linked Nanosheet as a Superior Dye-Sensitized Photocatalyst

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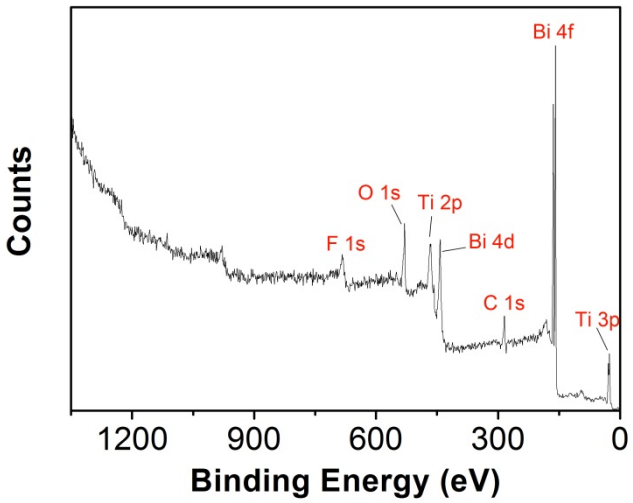

Fig. S1 XPS spectrum of the BTOF powders.

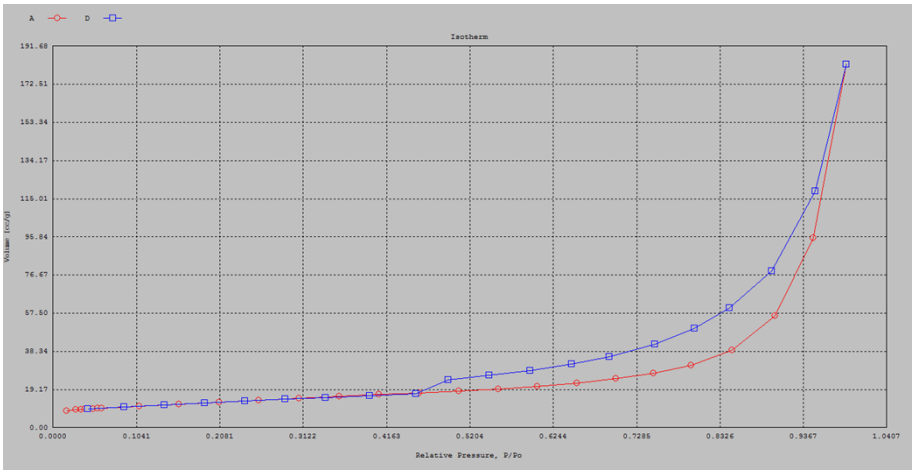

Fig. S2 Nitrogen adsorption/desorption isotherms for the prepared BTOF sample at 77K.

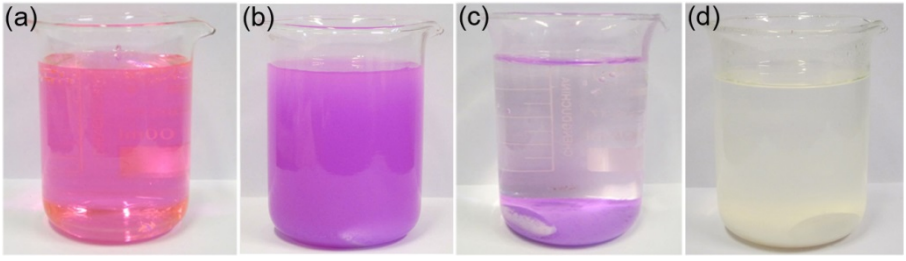

Fig. S3 (a) RhB solution of 10 μM; (b) RhB-BTOF suspension; (c) Seperation of RhB adsorbed on BTOF from water by precipitation; (d) Recycled BTOF powders through UV irradation.

Obvious color change of RhB solution from orange red to bluish red was observed when the BTOF powders were added; The seperation of BTOF powders from water by precipitation is much quicker than P25 for the much larger size of BTOF (about 500 nm) particles than P25 (20～40 nm). The photocatalytic activity of BTOF can be refreshed by UV irradation after long-term use.

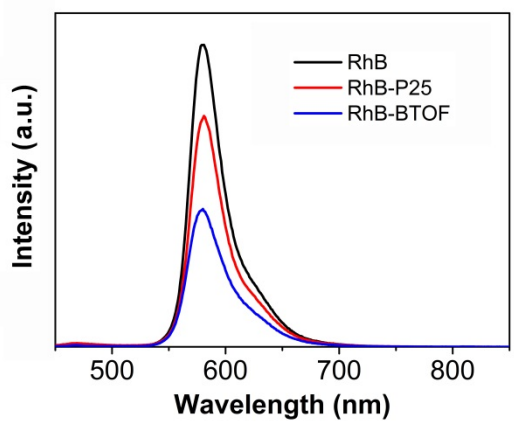

Fig. S4 PL spectra of RhB solution, RhB-P25 suspension, RhB-BTOF suspension.

The fluorescence emission peak of RhB centers at 589 nm. The emission intensity decreases rapidly when adsorbed on BTOF, and is much weaker than adsorbed on P25. Adsorption on BTOF may facilitate the seperation of electron-hole and weaken the recombination luminescence.