

Supporting Information

Synthesis, characterization, and visible-light photocatalytic activity of BiOI hierarchical flower-like microspheres

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S1. Preparation of BiOI nanoplates

In a typical procedure, a 20 ml aqueous solution containing 0.04 g KI was added dropwise to 0.1 g Bi(NO₃)₃·5H₂O dissolved in 20 ml ethanol. The mixture was stirred intensively for 20 min and then transferred into a 60 ml Teflon-lined autoclave. The autoclave was heated at 160 °C for 30 h. And then the final product was collected by filtration, washed with deionized water for several times and dried at 60 °C. The BiOI nanoplate is designated as BiOI-p.

S2. Preparation of N doped TiO₂ photocatalysts

N doped TiO₂ photocatalyst was prepared by means of solid-state reaction

method using urea as a nitrogen source [1]. P25 TiO₂ (1.0 g) was finely milled with urea (2.0 g) and the mixture was heated at 400 °C for 2 h. After cooling to the room temperature, the N doped TiO₂ photocatalyst was obtained.

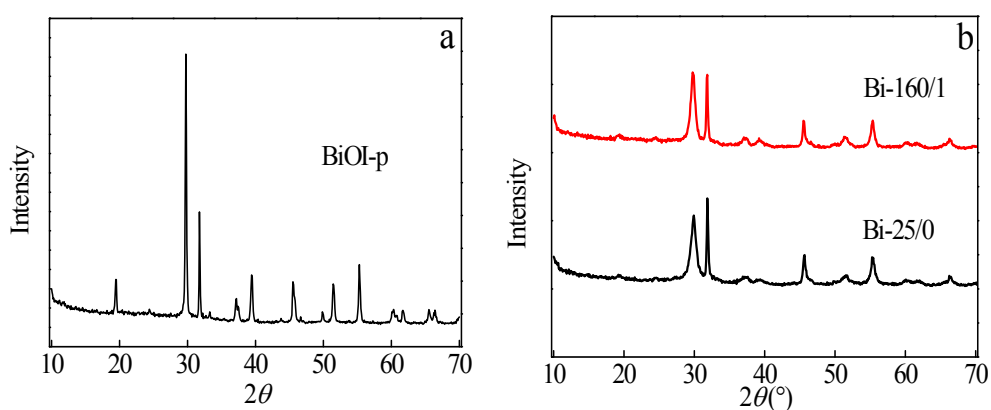


Fig. S1 XRD patterns of (a) as-synthesized BiOI nanoplate and (b) BiOI samples.

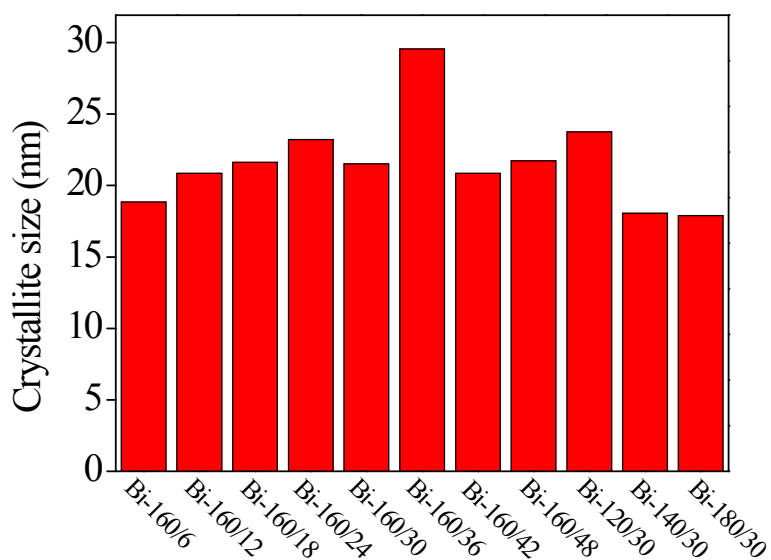


Fig. S2 Average crystallite sizes of the BiOI samples calculated from the (012) peaks of the XRD patterns using the Scherrer formula

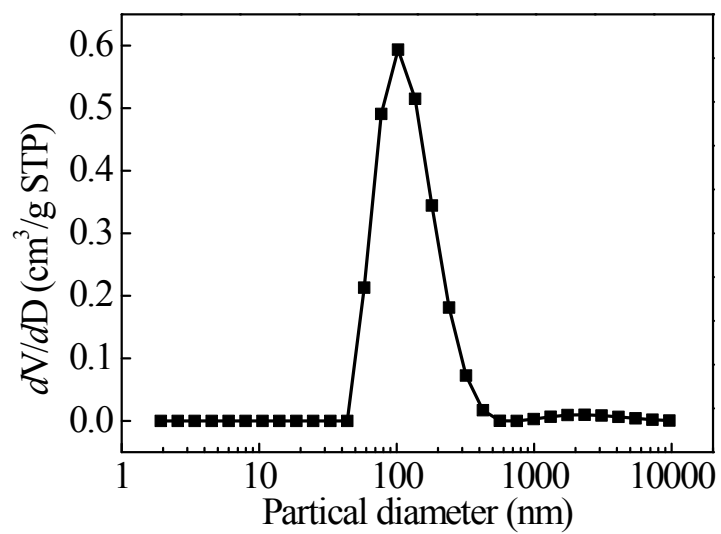


Fig. S3 Size distribution of the tetrabutylammonium iodide solution (0.0038 g/L) measured by DLS.

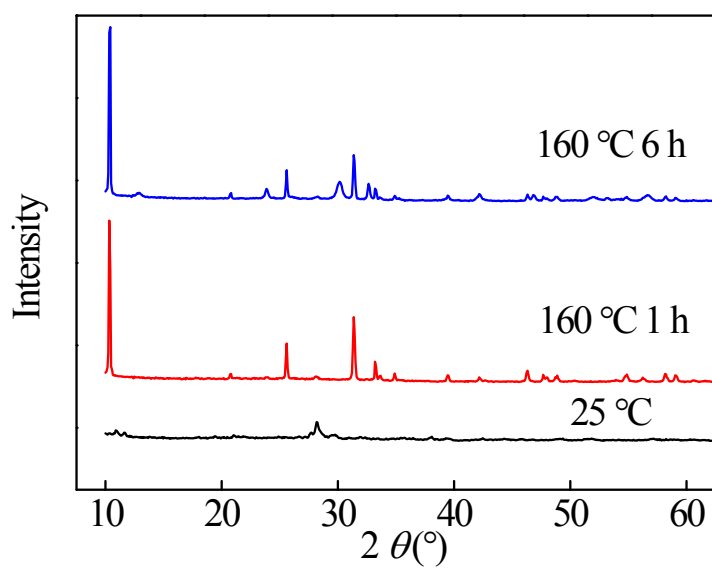


Fig. S4 XRD patterns of the as-synthesized BiONO_3 .

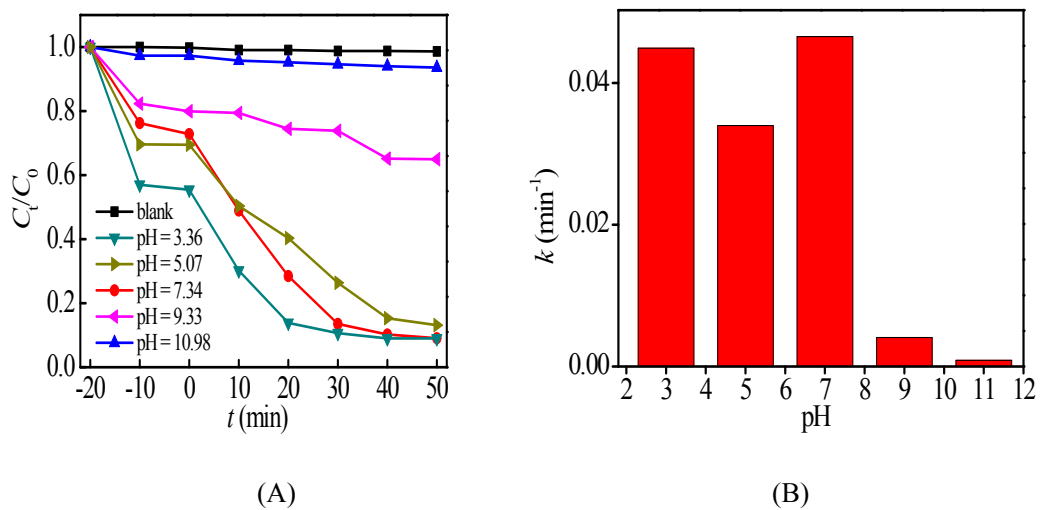


Fig. S5 (A) Photodegradation and (B) apparent first-order rate constants of RhB on Bi-160/30 at different pH.

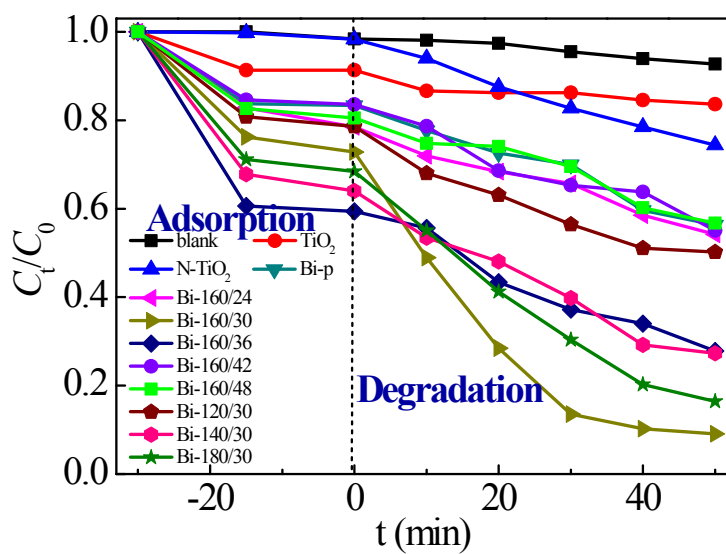


Fig. S6 Photodegradation of RhB over different BiOI samples.

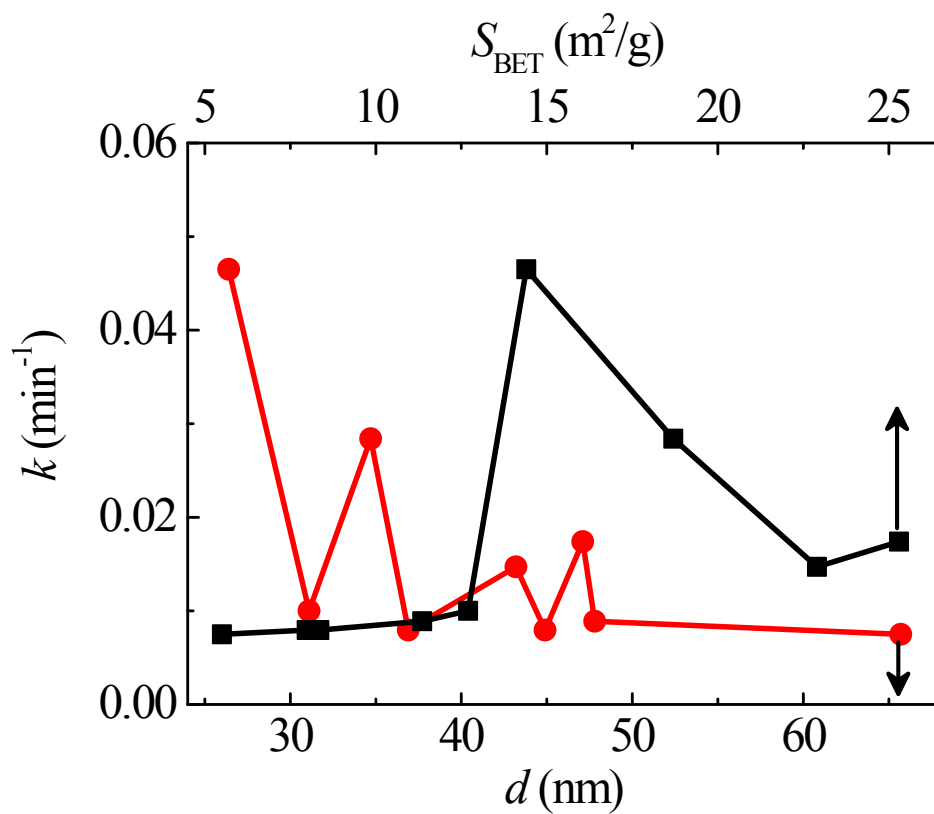


Fig. S7 Variation of rate constant (k) with S_{BET} and nanosheet thickness (d).

Reference

- [1] D. Mitoraj, H. Kisch, *Angew. Chem., Int. Ed.*, 2008, **47**, 9975.