

*Electronic Supplementary Information for*

Non-Centrosymmetric Bi<sub>2</sub>O<sub>2</sub>(OH)(NO<sub>3</sub>) as a Desirable [Bi<sub>2</sub>O<sub>2</sub>]<sup>2+</sup>  
Layered Photocatalyst: Strong Intrinsic Polarity, {001} Active  
Exposing Facets and Rational Band Structure Co-Benefiting for  
Robust Photooxidating Capability

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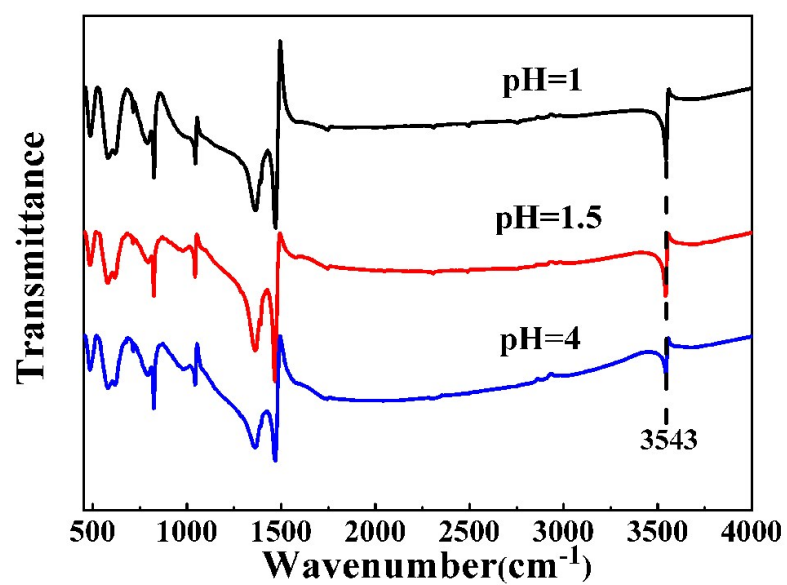
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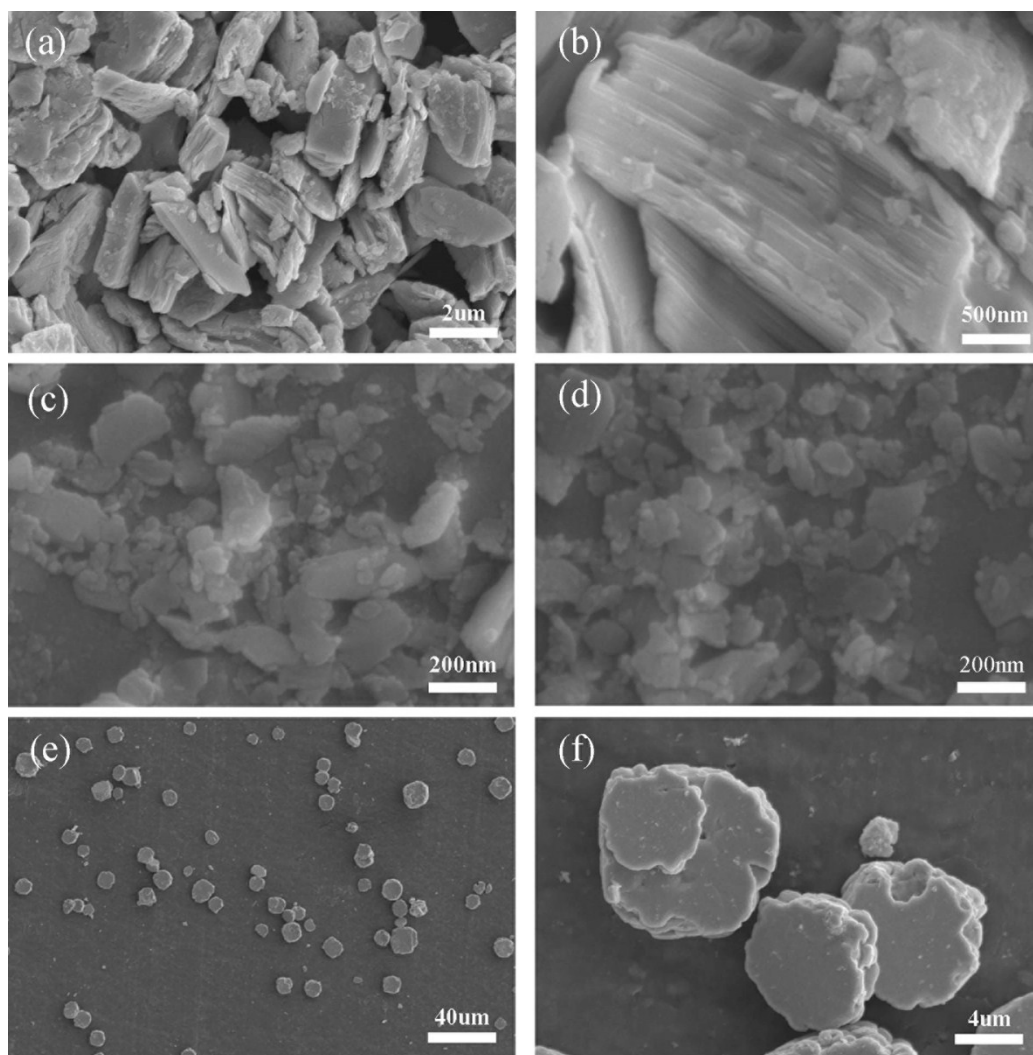
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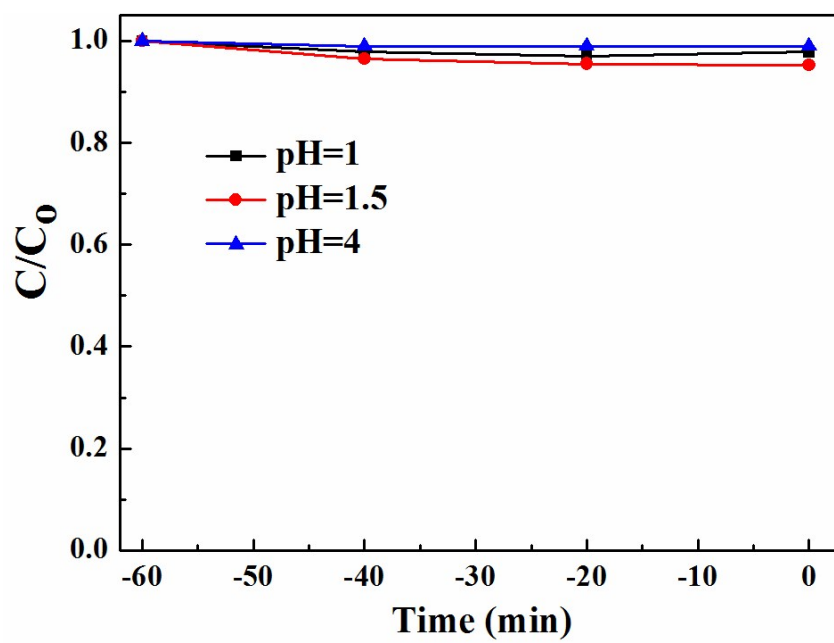
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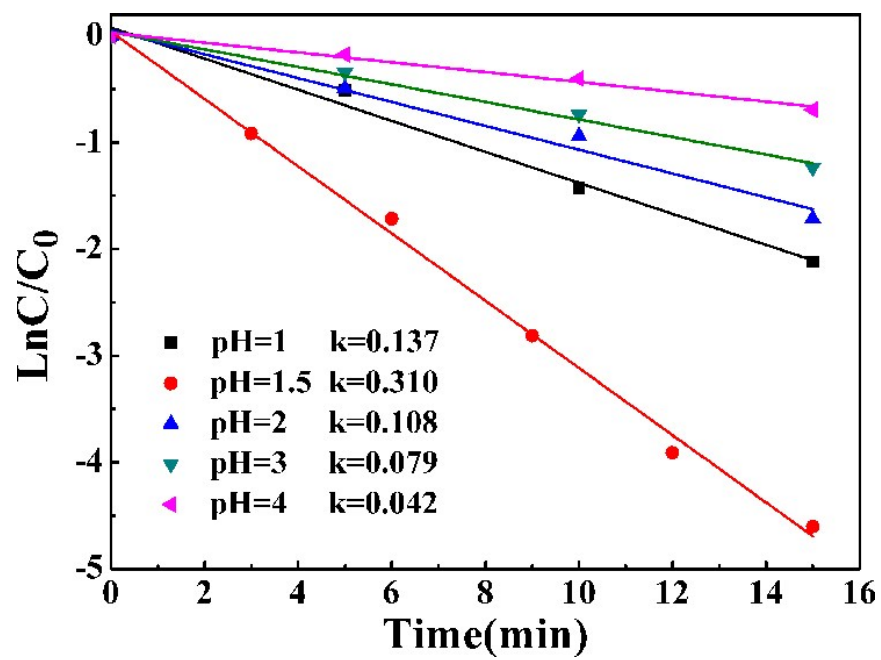
**Fig S1.** FT-IR spectra of  $\text{Bi}_2\text{O}_2(\text{OH})(\text{NO}_3)$  samples obtained at pH 1, 1.5 and 4.



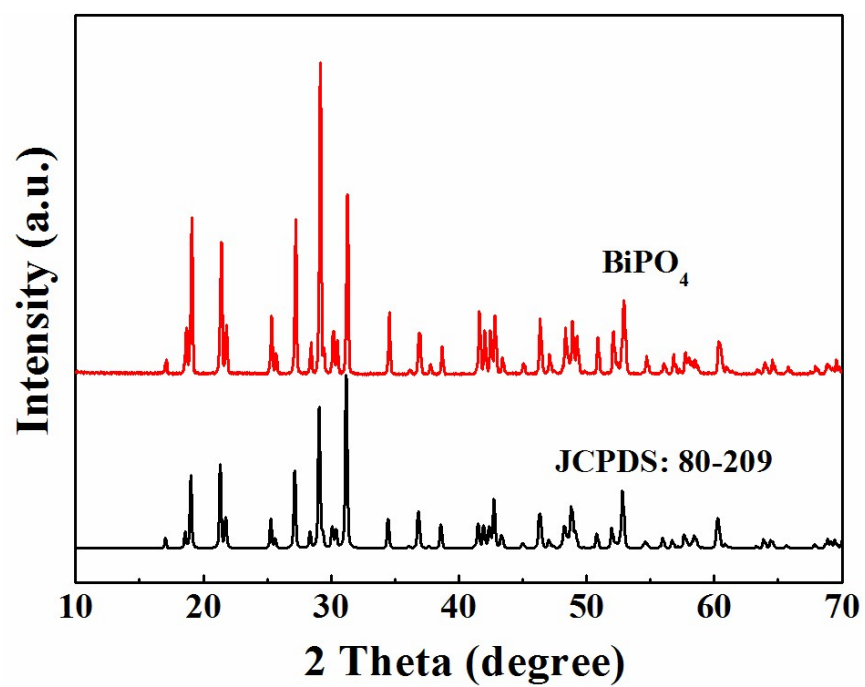
**Fig. S2** SEM images of as-prepared samples obtained at different pH values: (a, b) pH=1, (c, d) pH=1.5 and (e, f) pH=4.



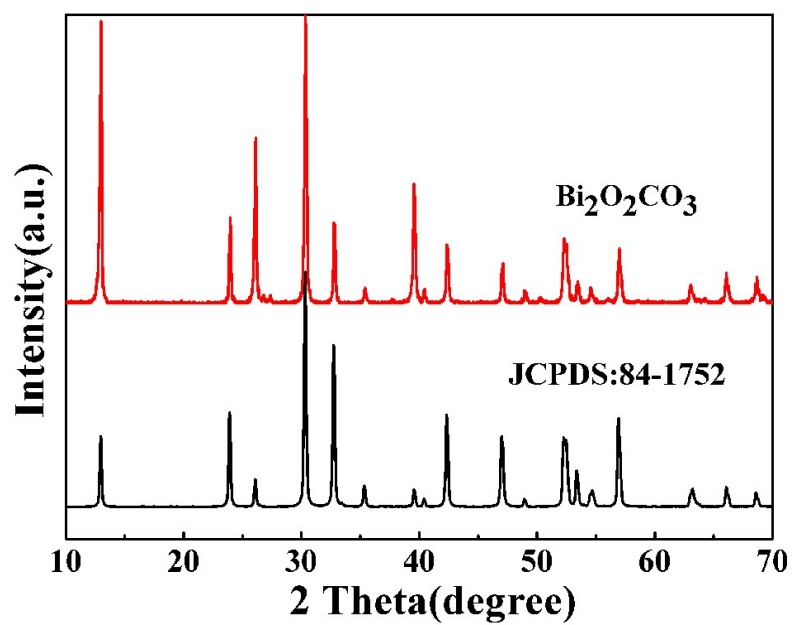
**Fig. S3** Adsorption on RhB of the pure BION samples in darkness.



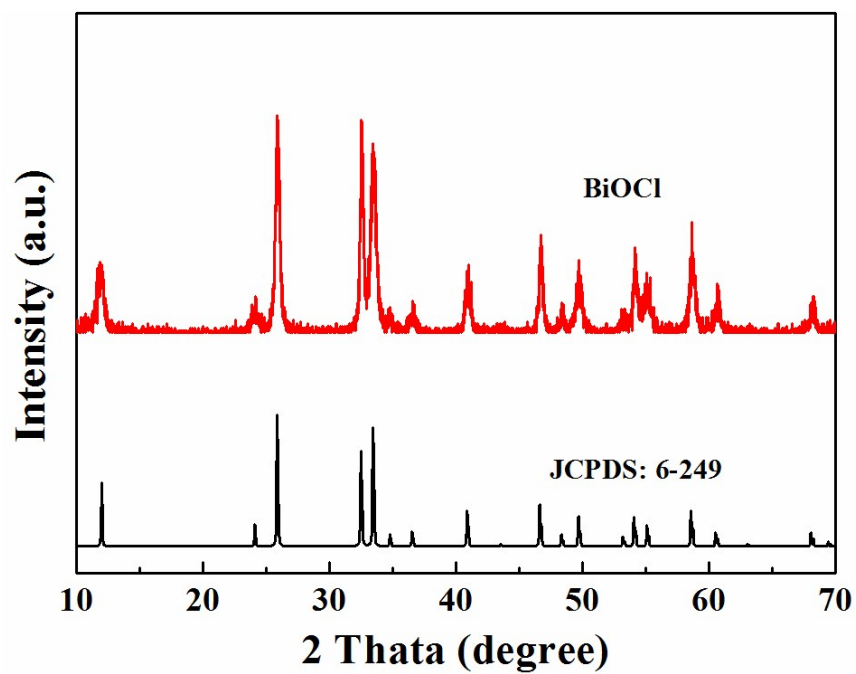
**Fig. S4** Pseudo-first-order kinetic curves of BION prepared at different pH values.



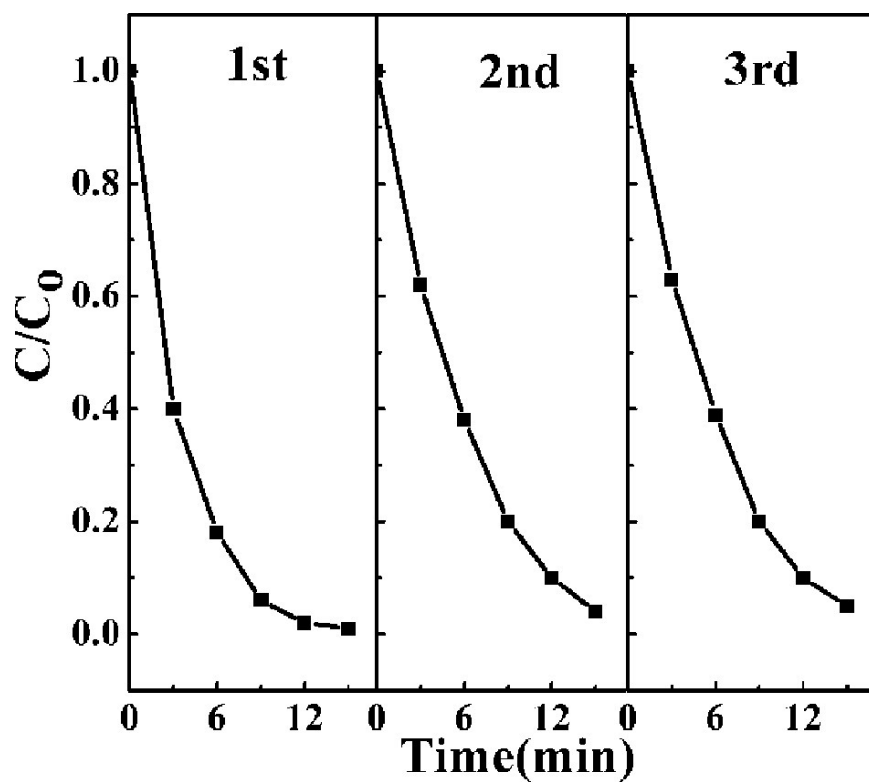
**Fig. S5** XRD pattern of as-prepared monoclinic  $\text{BiPO}_4$ .



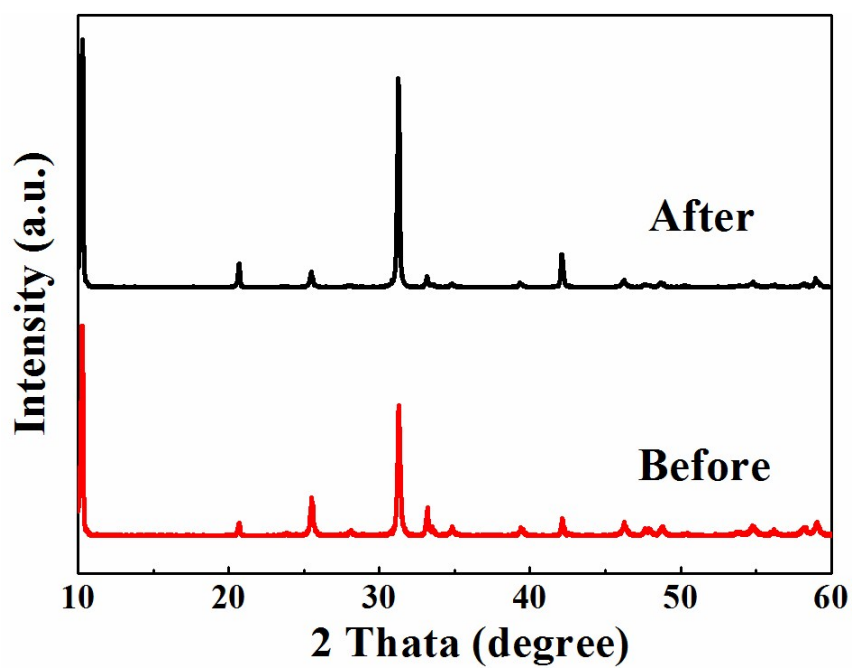
**Fig. S6** XRD pattern of as-synthesized  $\text{Bi}_2\text{O}_2\text{CO}_3$ .



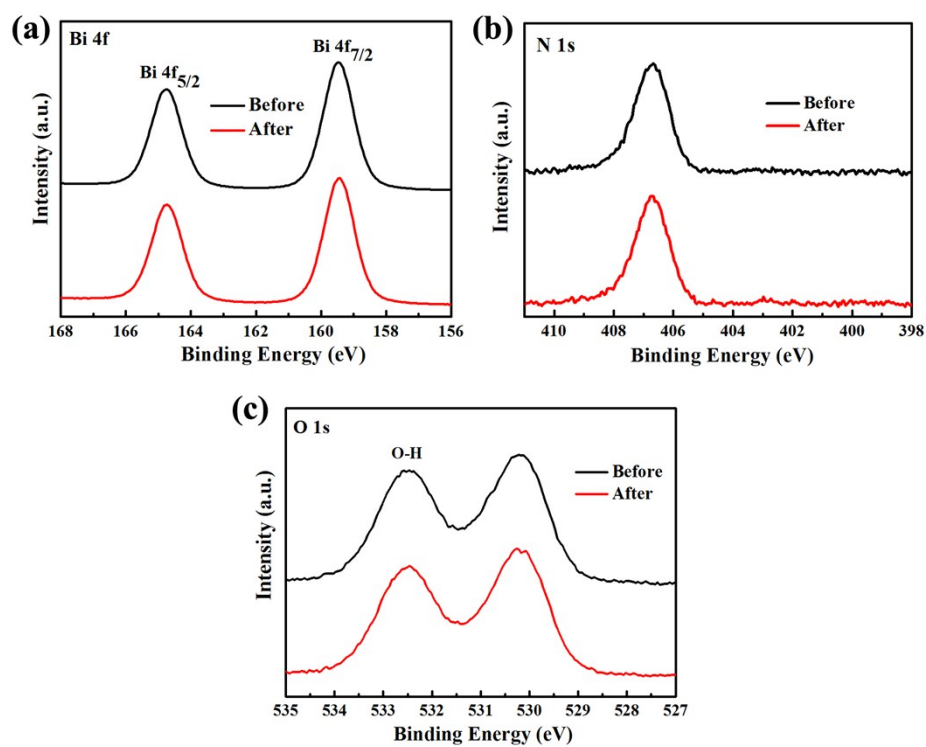
**Fig. S7** XRD pattern of as-synthesized BiOCl.



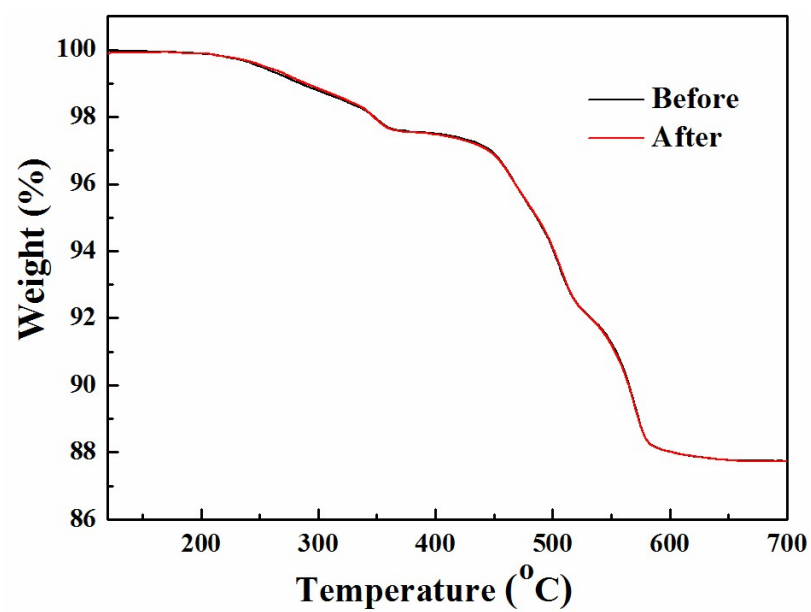
**Fig. S8** Cycling experiments for degradation of RhB.



**Fig. S9** XRD patterns of BION before and after photoreaction.



**Fig. S10** XPS data of BION before and after photoreaction.



**Fig. S11** TG curves of BION before and after photoreaction.