Electronic Supplement information

UV-light-assisted green preparation of Bi/BiOBr/RGO composites with oxygen vacancies toward enhanced photocatalytic removal of organic dye

Wen Jia,[a, b] Dong Peng,[a] Zijuan Feng,[a, b] Xue Wu,[b] Yi Liu,[b] Xuxu Zheng[b] and Xiaoya Yuan [*a, b]

[a] China-Spain Collaborative Research Center for Advanced Materials, Chongqing Jiaotong University, Chongqing 400074, China

[b] College of Materials Science and Engineering, Chongqing Jiaotong University, Chongqing 400074, China

***Corresponding author:**

China-Spain Collaborative Research Center for Advanced Materials, College of Materials Science and Engineering, Chongqing Jiaotong University, Chongqing 400074, China

Tel.: +86-23-62789154; Fax: +86-23-62789154.

E-mail address: yuanxy@cqjtu.edu.cn(X.Y Yuan)

To be published in New Journal of Chemistry

1. Experimental Section

Preparation of the photocatalyst

Synthesis of BiOBr: 2 mmol of $Bi(NO_3)_3\ 5H_2O$ was dissolved in 45 mL of distilled water, and magnetically stirred at 10 min., and also stirred at 10 min. Then, another 45 mL of distilled water containing 2 mmol KBr was added drop wise into the above solution, and the mixed solutions was further stirred for 30 min. The reaction solution was transferred into a 100 mL Teflon-lined autoclave and maintained at 160℃ for 12 h. After cooling to room temperature, the resulted precipitates were collected and washed by deionized water and ethanol, respectively, then finally dried at 60℃ for 12 h. And the sample was named as BiOBr.

Synthesis of Bi/BiOBr: 0.1 g of BiOBr was added into 50 mL of ethanol and the mixture solution was exposed to UV-light for 20, 40 and 60 min while stirring, respectively. Afterwards, the precipitate was collected and washed successively by deionized water and ethanol, finally dried at 60℃ for 12 h. The resulting samples were marked as Bi/BiOBr-20，Bi/BiOBr-40 and Bi/BiOBr-60.

2. Results and discussion

2.1. Characterization of Bi/BiOBr composites

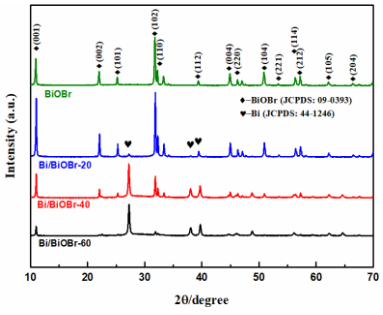

Fig. S1 XRD patterns of BiOBr, Bi/BiOBr-20, Bi/BiOBr-40 and Bi/BiOBr-60 composites.

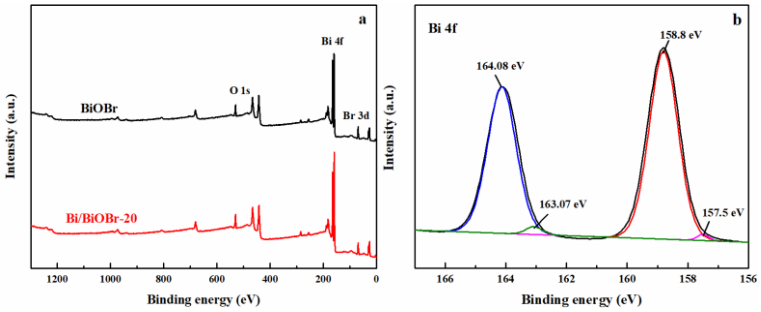

Fig. S2 XPS spectra of BiOBr and Bi/BiOBr-20 photocatalyst survey pattern (a); Bi 4f (b).

Table. S1 The chemical contents (%) of BiOBr/RGO and Bi/BiOBr/RGO.

Name	BiOBr/RGO	Bi/BiOBr/RGO-40
O 1s	23.09	19.53
C 1s	20.74	14.66
Bi 4f	20.30	22.73
Br 3d	35.86	43.08