

Controlled Synthesis and Visible-Light-Driven Photocatalytic Activity of BiOBr Particles for Ultrafast Degradation of Pollutants

Xiaohui Ji ^{1,2}, Chen Li ^{1,2}, Junhai Liu ^{1,2}, Tianlei Zhang ^{1,2}, Yue Yang ³, Ruijin Yu ³ and Xuegang Luo ^{1,4,*}

- ¹ School of Environment and Resource, Southwest University of Science and Technology, Mianyang 621010, China; snut_xiaohuiji@163.com (X.J.); leechen_317@126.com (C.L.); iamliujunhai@126.com (J.L.); ztianlei88@163.com (T.Z.)
² Shaanxi Province Key Laboratory of Catalysis, School of Chemistry and Environmental Science, Shaanxi University of Technology, Hanzhong 723001, China
³ College of Chemistry & Pharmacy, Northwest A&F University, Yangling 712100, China; rrysdyx@163.com (Y.Y.); yuruijin@nwsuaf.edu.cn (R.Y.)
⁴ School of Life Science and Engineering, Southwest University of Science and Technology, Mianyang 621010, China
* Correspondence: lxg@swust.edu.cn

Table S1. Specific surface area of BiOBr particles synthesized by different reaction conditions.

Preparation condition	Surface area (m ² /g)
EG	5.265
EG : EtOH = 2:1	8.021
EG : EtOH = 1:1	7.387
EG : EtOH = 1:2	10.048
EG : H ₂ O = 2:1	14.011
EG : H ₂ O = 1:1	14.611
EG : H ₂ O = 1:2	7.534
H ₂ O	5.844

Table S2. Specific surface area of BiOBr particles synthesized by different sintering temperatures.

Sintering temperature	Surface area (m ² /g)
303 K	14.611
473 K	10.081

573 K	11.607
673 K	11.735
773 K	5.132

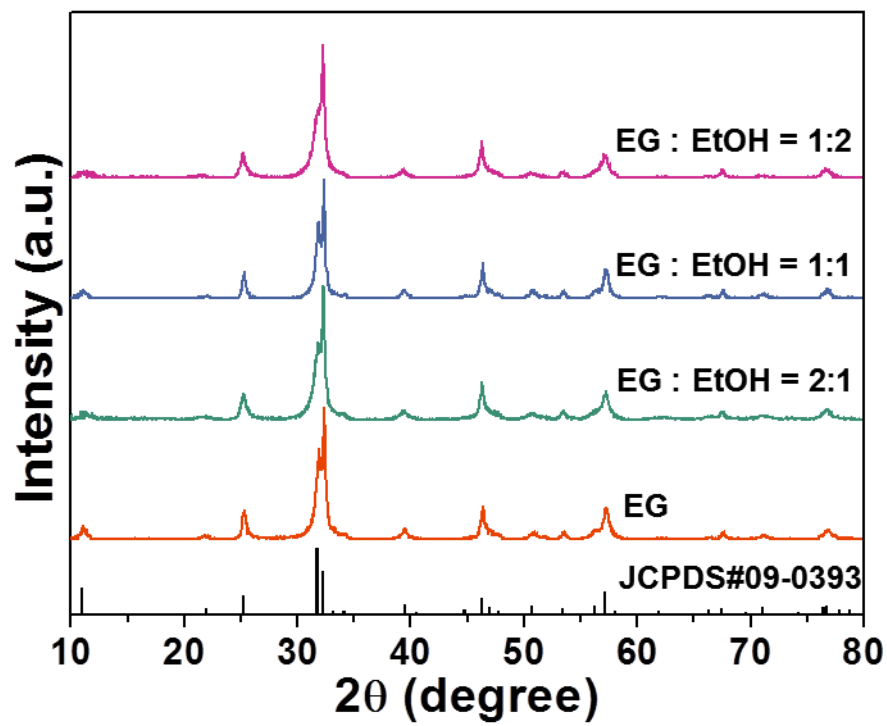


Figure S1. XRD patterns of BiOBr particles synthesized by using different ratios of EG and EtOH.

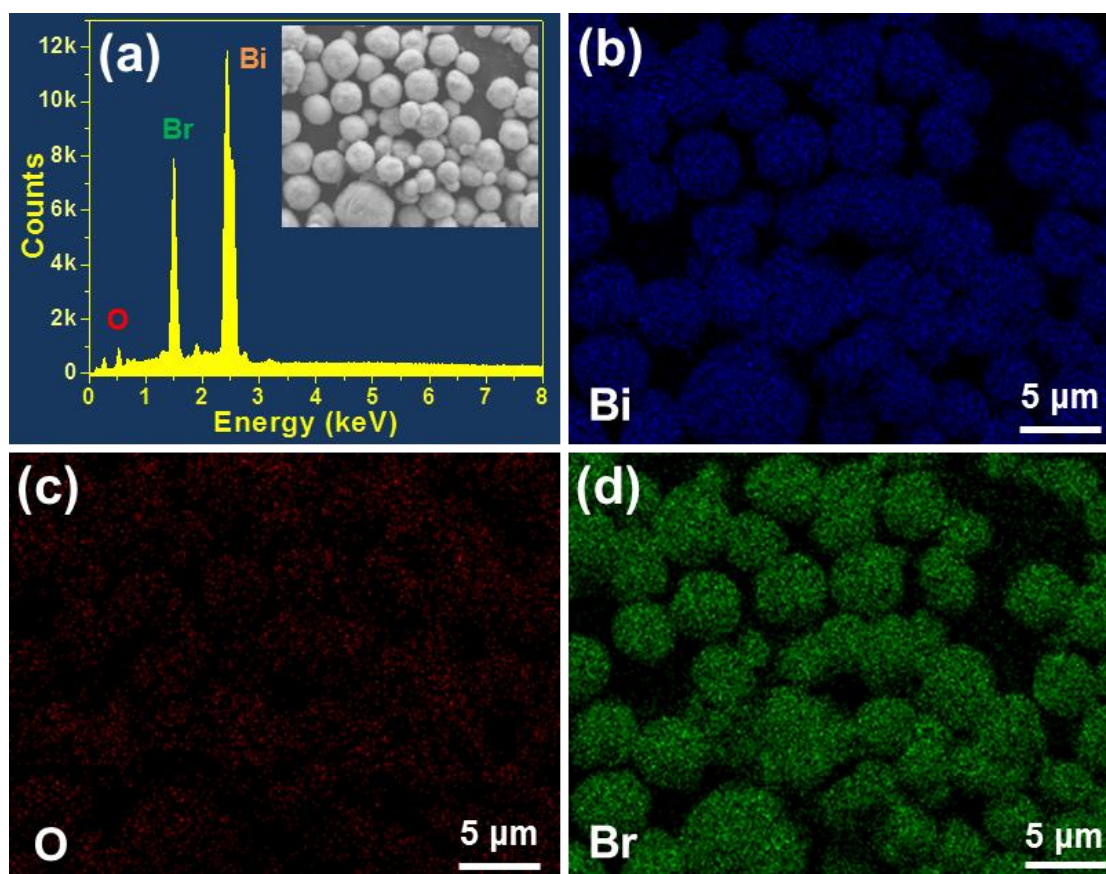


Figure S2. (a) EDS spectrum and (b)-(d) Elemental mapping results of BiOBr particles. Inset of (a) shows the FE-SEM image for EDS measurement.

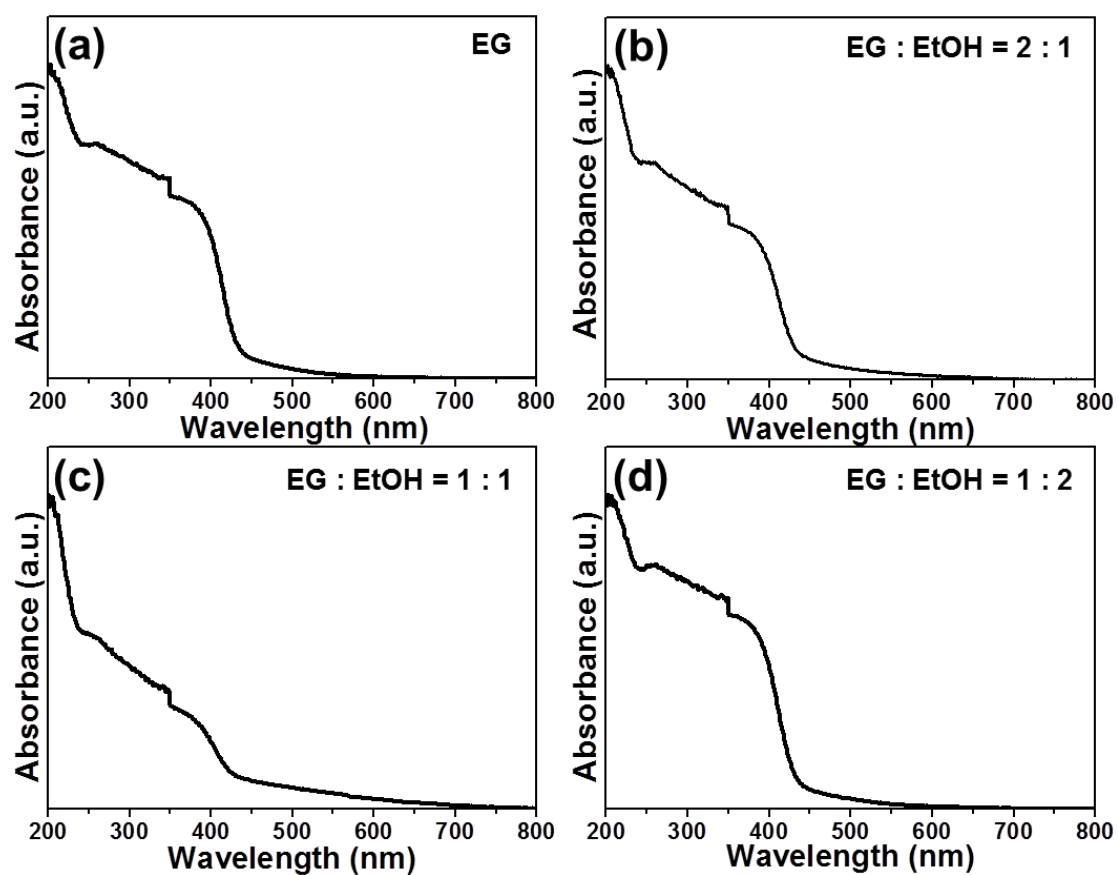


Figure S3. UV-vis absorption spectra of BiOBr compounds synthesized by using different solvents of (a) EG, (b) EG:EtOH = 2:1, (c) EG:EtOH = 1:1 and (d) EG:EtOH = 1:2.

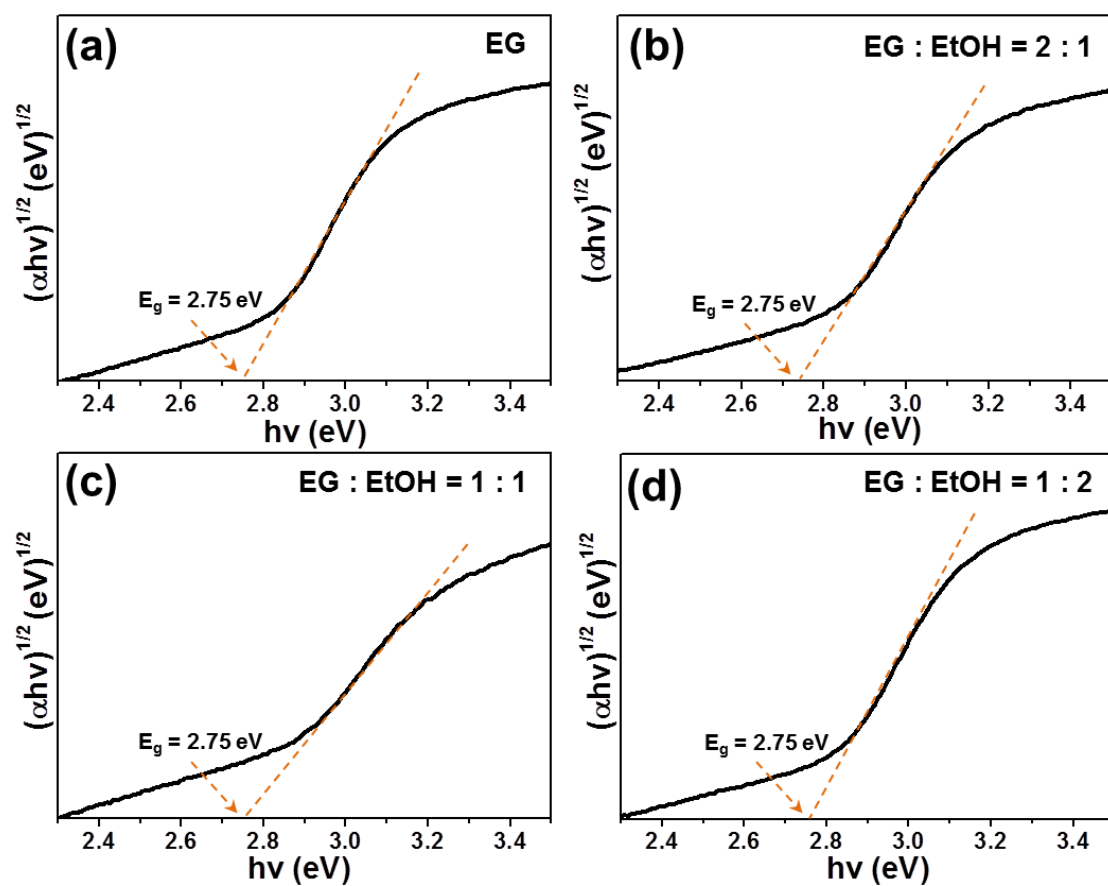


Figure S4. Calculated E_g values of BiOBr compounds, which were synthesized by using different solvents of (a) EG, (b) EG:EtOH = 2:1, (c) EG:EtOH = 1:1 and (d) EG:EtOH = 1:2, based on Kubelka-Munk function.

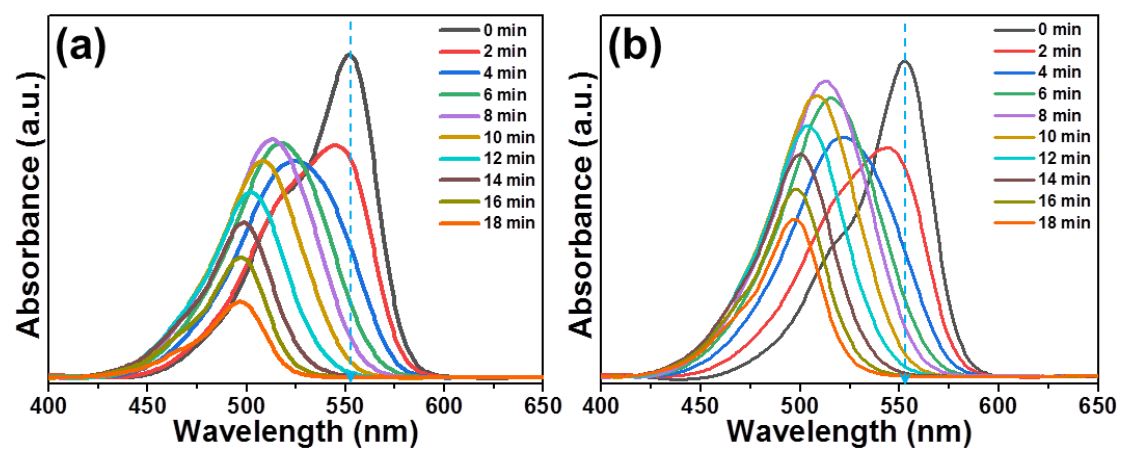


Figure S5. UV-vis absorption spectra of RhB photodegradation in the presence of BiOBr particles prepared by diverse solvents of (a) EG:EtOH = 2:1 and (b) EG:EtOH = 1:1.

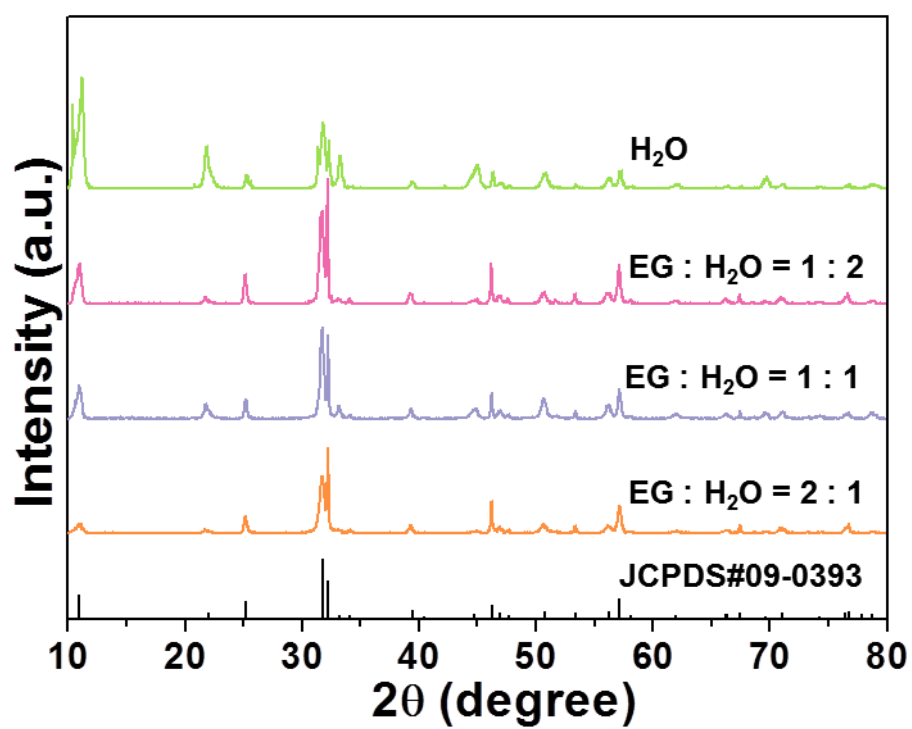


Figure S6. XRD patterns of BiOBr particles synthesized by using different ratios of EG and H_2O .

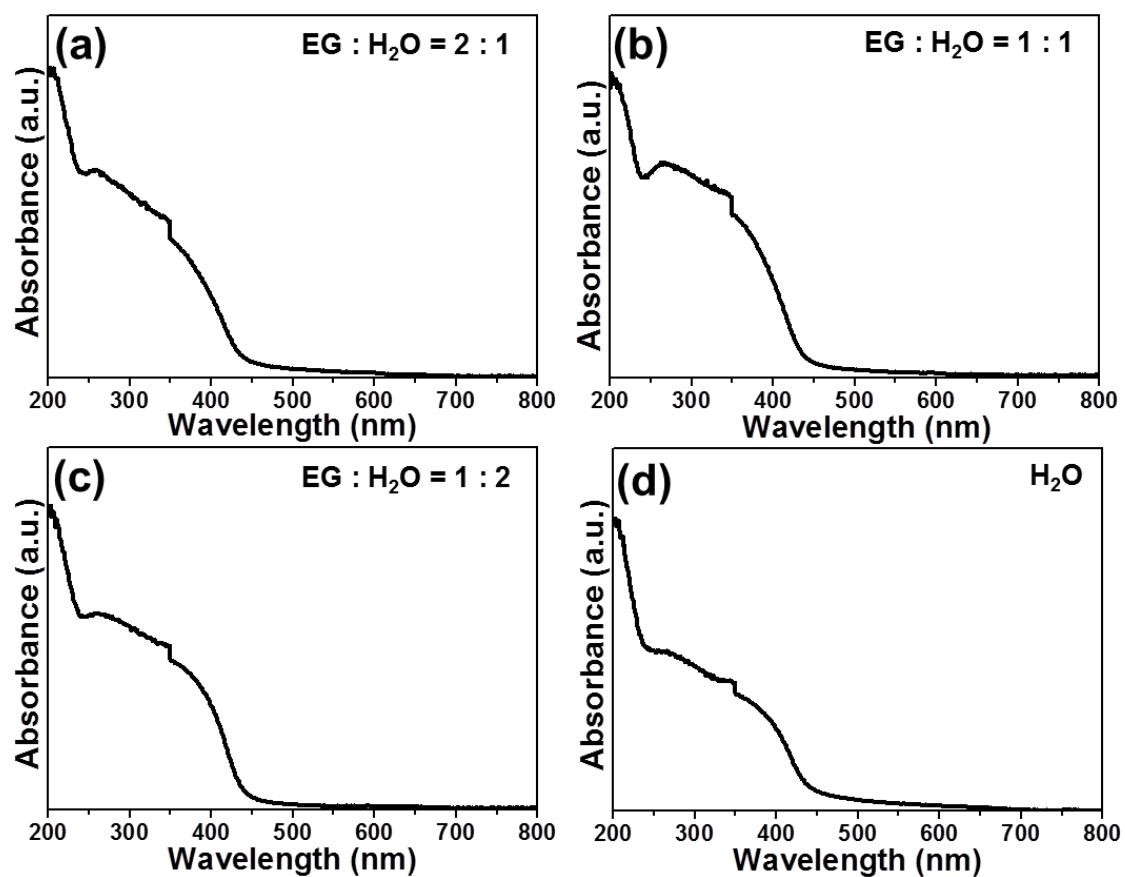


Figure S7. UV-vis absorption spectra of BiOBr compounds synthesized by using different solvents of (a) EG:H₂O = 2:1, (b) EG: H₂O = 1:1, (c) EG: H₂O = 1:2 and (d) H₂O.

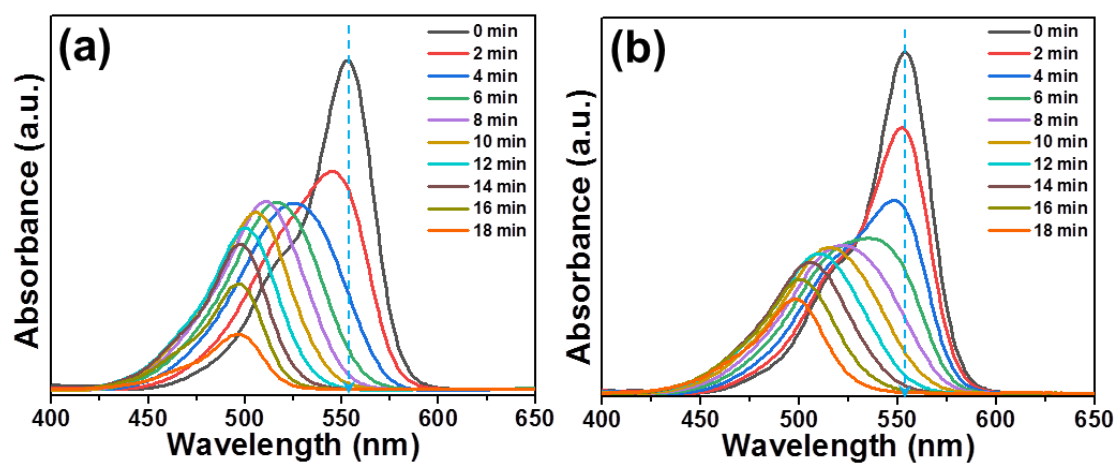


Figure S8. UV-vis absorption spectra of RhB photodegradation in the presence of BiOBr particles prepared by diverse solvents of (a) EG:H₂O = 1:1 and (b) EG:H₂O = 1:2.

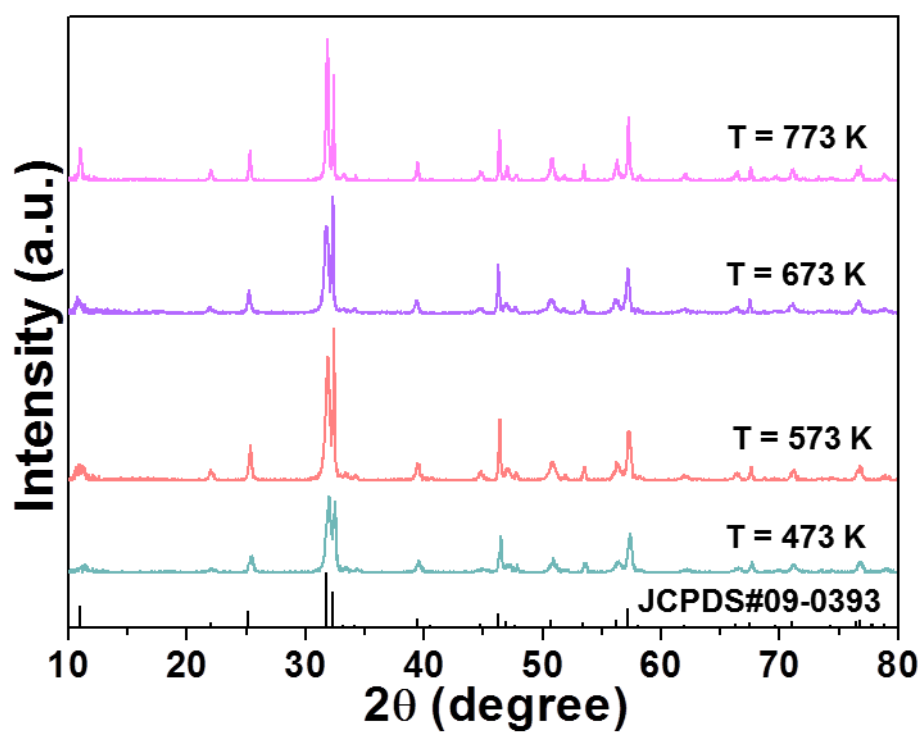


Figure S9. XRD patterns of BiOBr particles under various heat treatment temperatures.

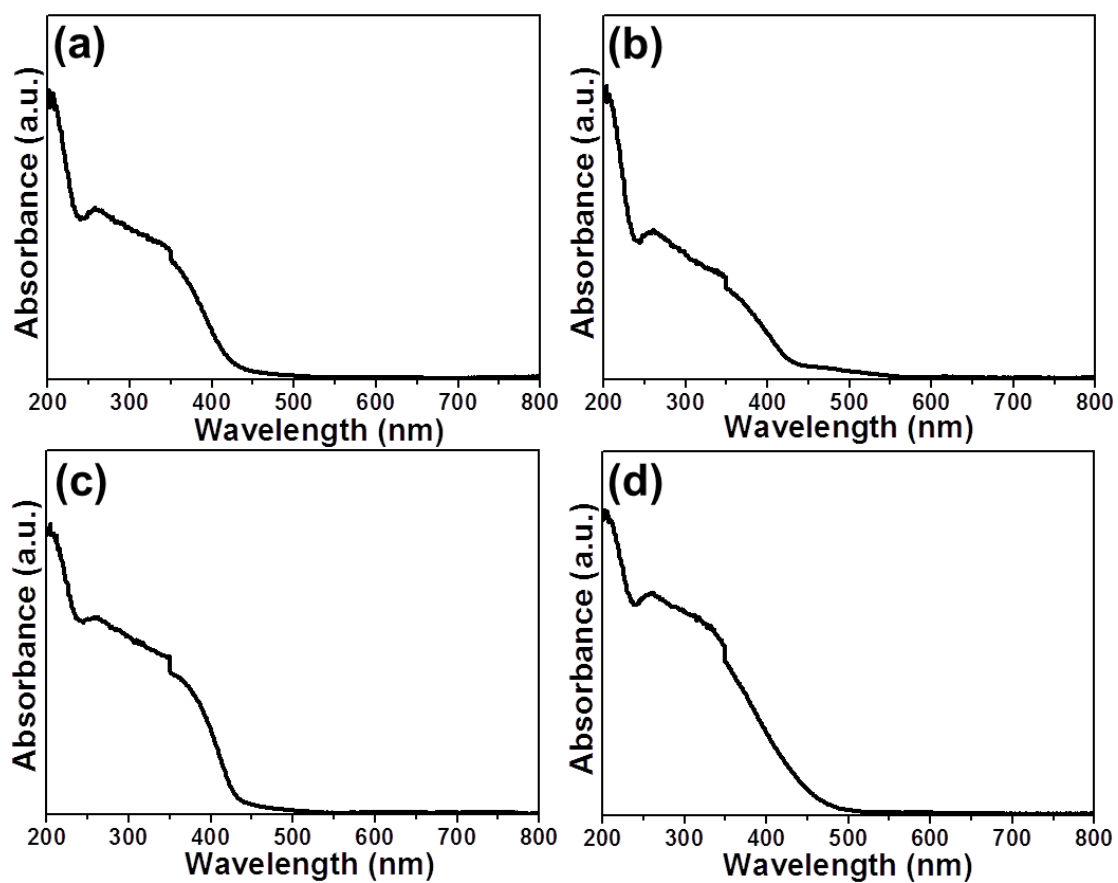


Figure S10. UV-vis absorption spectra of BiOBr particles prepared by various heat treatment temperatures of (a) $T = 473$ K, (b) $T = 573$ K, (c) $T = 673$ K and (d) $T = 773$ K.

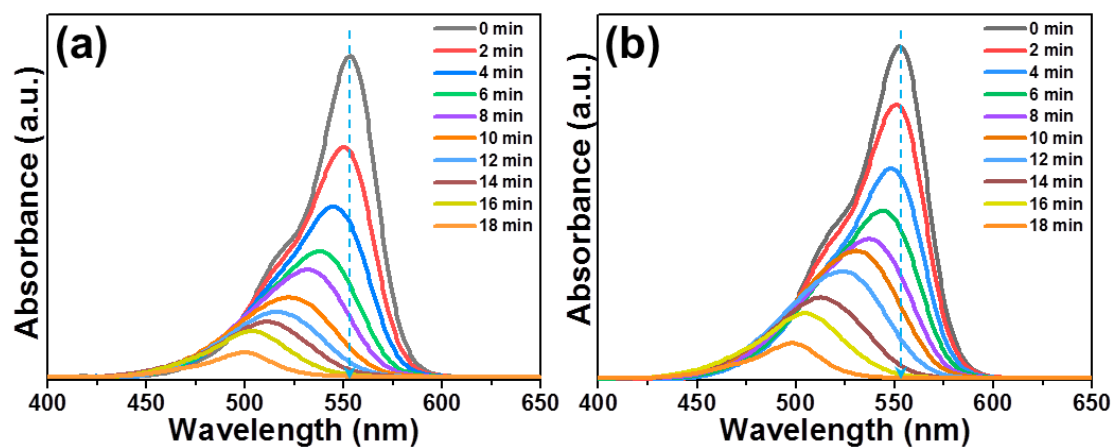


Figure S11. UV-vis absorption spectra of RhB photodegradation in the presence of BiOBr particles synthesized by diverse heating temperatures of (a) $T = 573$ K and (b) $T = 673$ K.

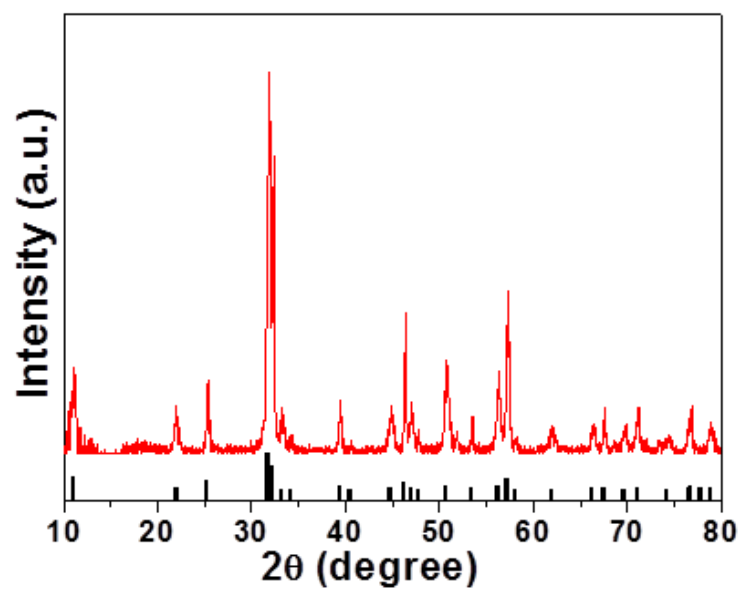


Figure S12. XRD pattern of BiOBr particles after the photodegradation process.