Controlled synthesis of bismuth-containing compounds (α, β and δ-Bi_2O_3, $Bi_5O_7NO_3$ and $Bi_6O_6(OH)_2(NO_3)_4 \cdot 2H_2O$) and their photocatalytic performance

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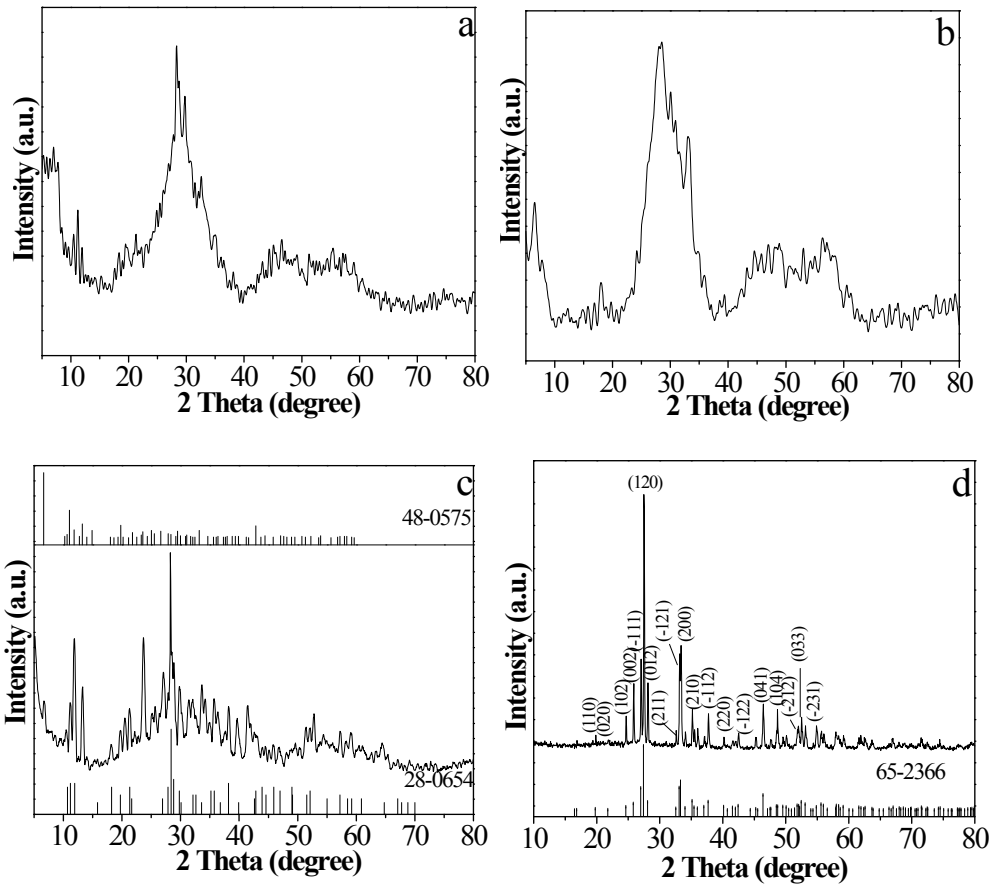

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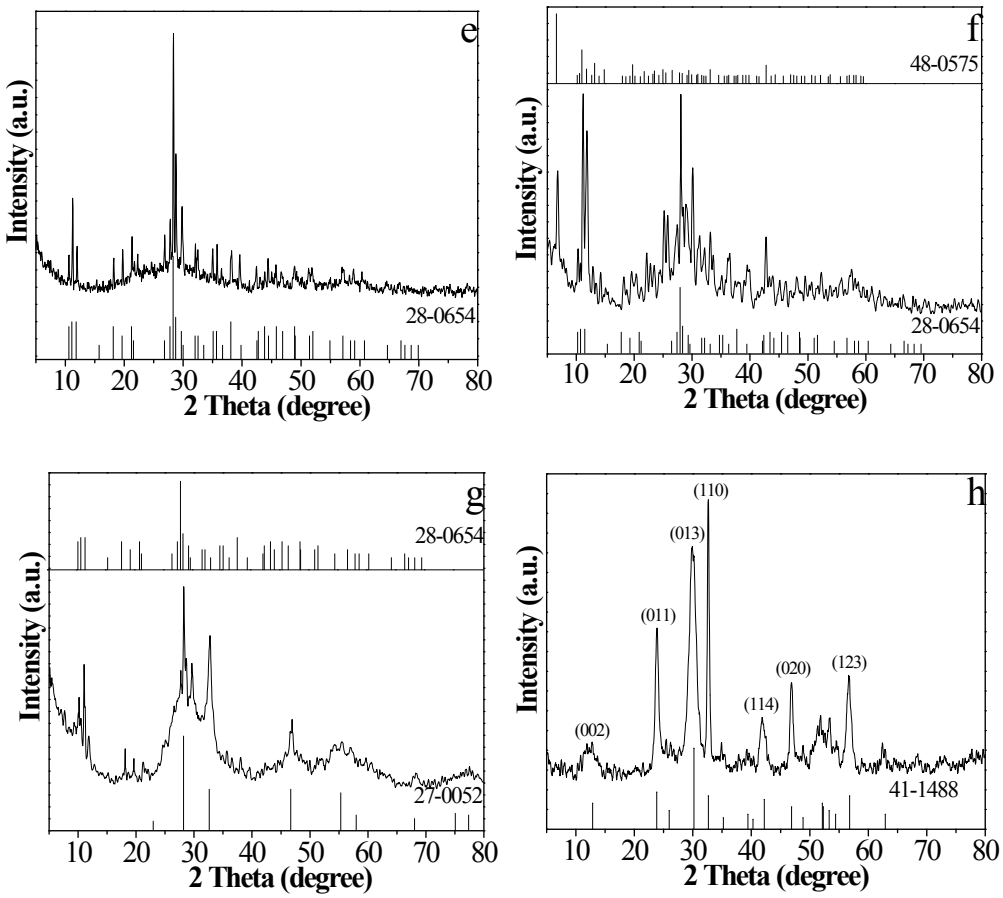


Fig. S1. XRD patterns of the samples in the presence of (a) $NH_3 \cdot H_2O$ (pH ≈ 9), (b) HMT (pH ≈ 6), (c) NaOH (pH < 7) and (d) NaOH (pH > 13) in pure water (a-d); (e) $NH_3 \cdot H_2O$ and (f) NaOH in EM-H_2O solution (pH ≈ 6) ; (g) NaOH (pH < 7) and (h) $NH_3 \cdot H_2O$ (pH ≈ 9) in EG-H_2O solution.

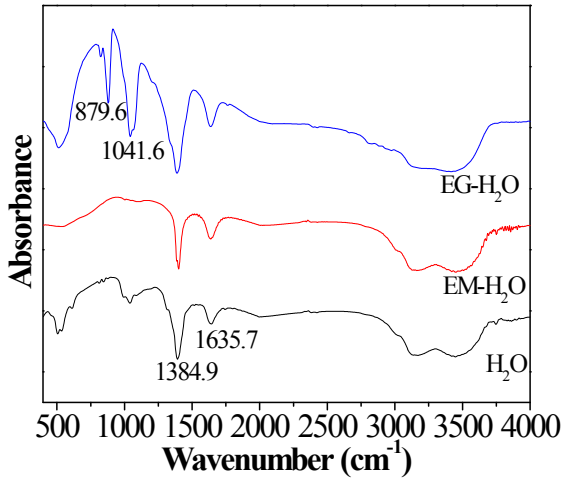


Fig. S2. FTIR spectra of the precursors obtained in EG-H_2O, EM-H_2O and pure water solution in the presence of $NH_3 \cdot H_2O$.

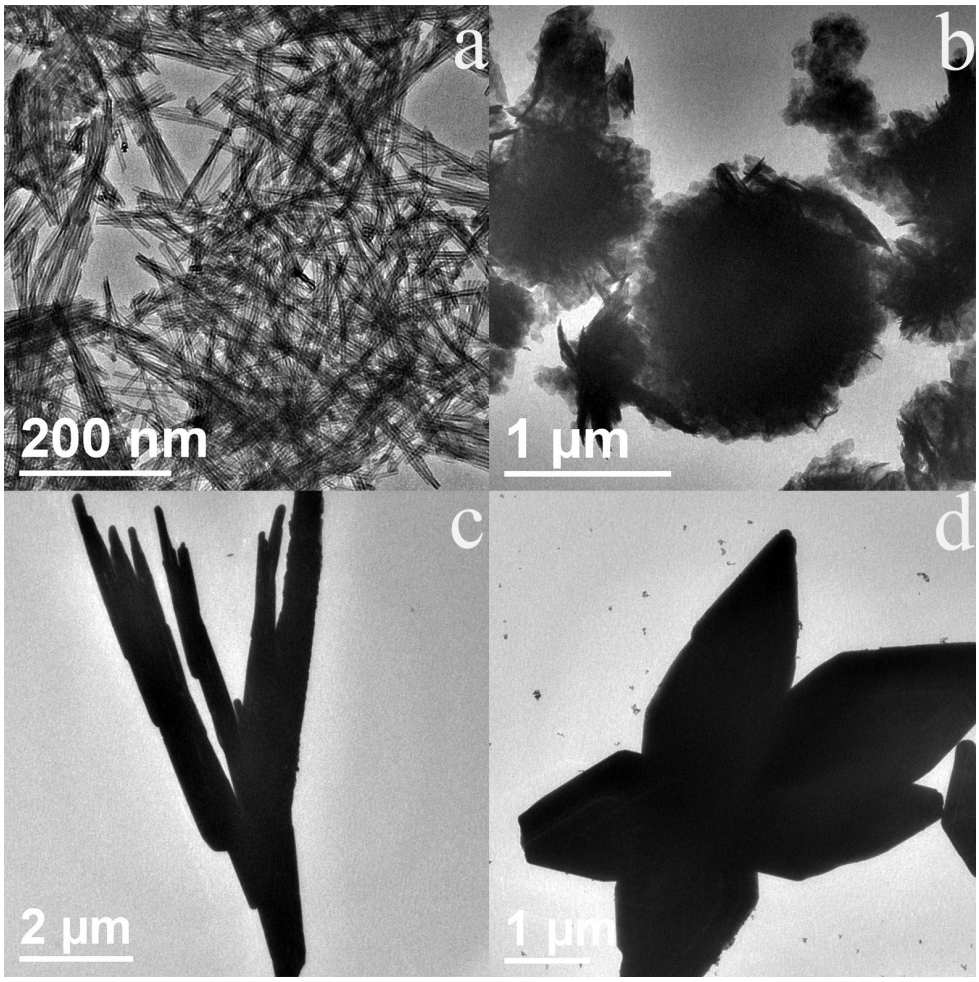
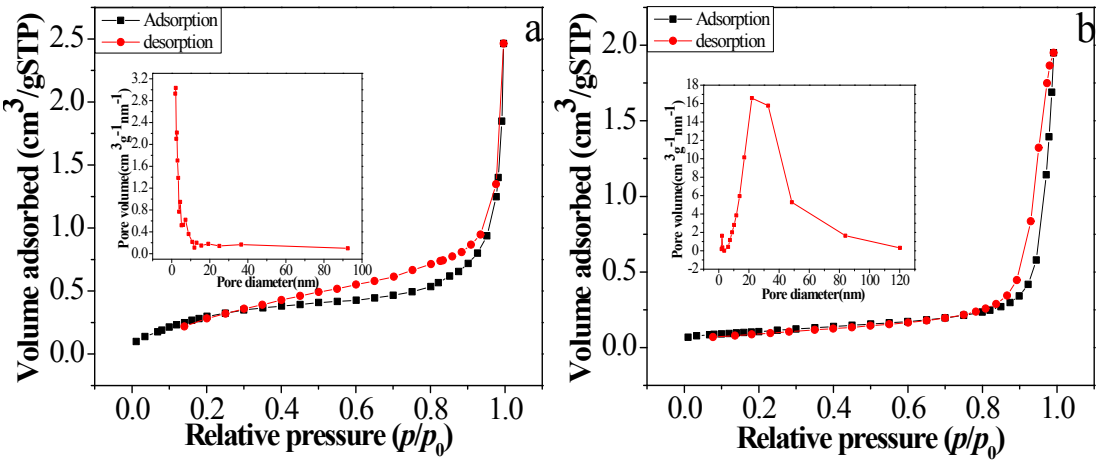


Fig. S3. TEM images of the samples prepared in the presence of various bases and solvent: (a) $NH_3 \cdot H_2O$ (pH ≈ 9) in water; (b) $NH_3 \cdot H_2O$ (pH ≈ 9) in EG-H_2O solution; NaOH (pH > 13) in (c) water and (d) EM-H_2O solution.



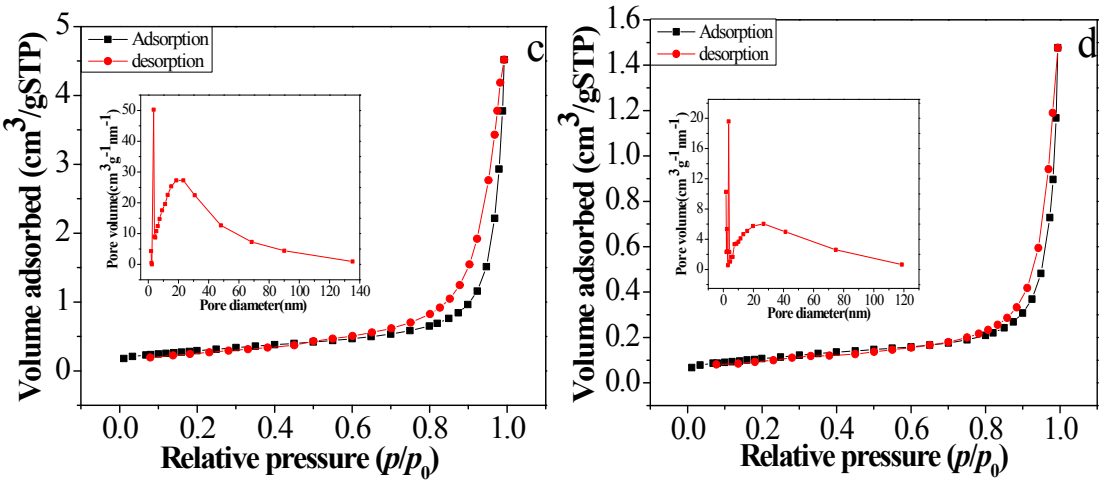


Fig. S4. Typical nitrogen adsorption-desorption isotherms of various samples: (a) dendritic α-Bi_2O_3, (b) β-Bi_2O_3, (c) δ-Bi_2O_3 and (d) $Bi_5O_7NO_3$; the insets show the corresponding pore-size distribution.

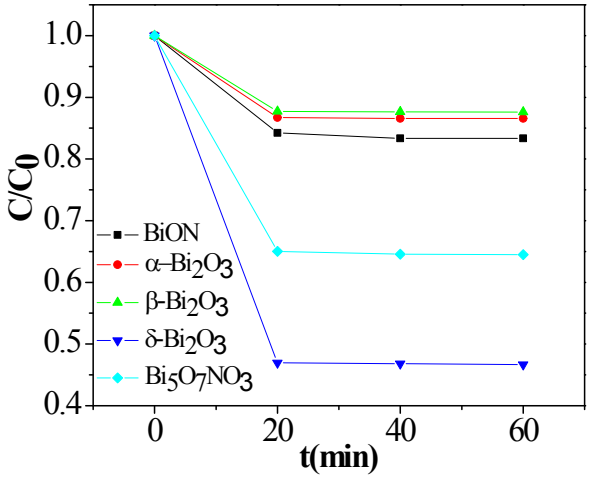


Fig. S5. Adsorption performance of RhB in the dark over the as-prepared Bi_2O_3 and bismuth nitrates samples.

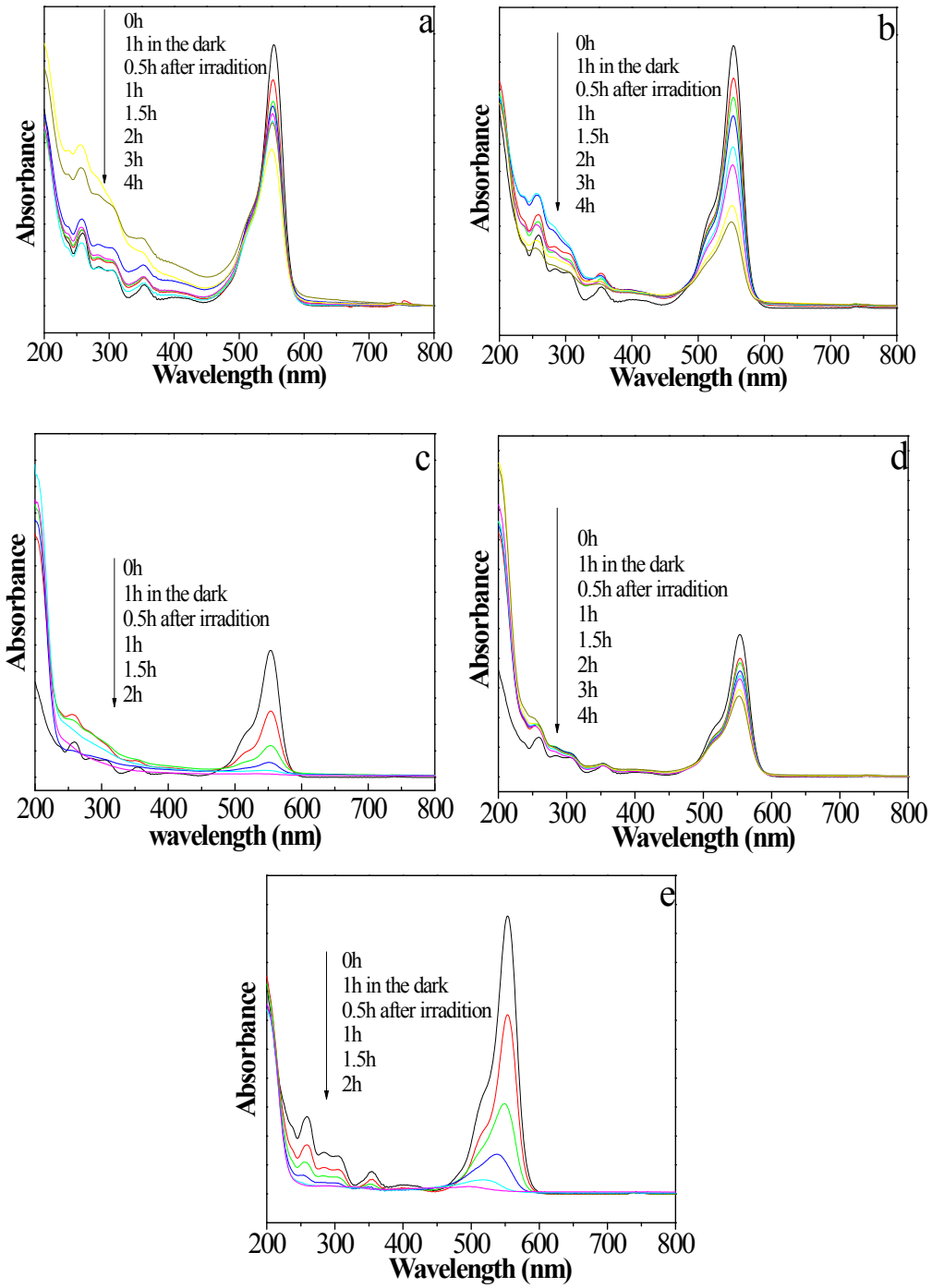


Fig. S6. UV-Vis spectral changes of RhB over the as-prepared Bi_2O_3 and bismuth nitrates catalysts under visible-light irradiation: (a) α-Bi_2O_3, (b) β-Bi_2O_3, (c) δ-Bi_2O_3, (d) BiON and (e) $Bi_5O_7NO_3$.

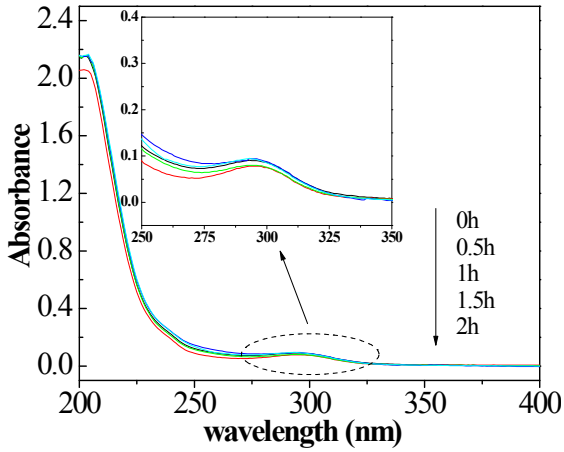


Fig. S7. UV-Vis spectral changes of salicylic acid over the as-prepared δ-Bi_2O_3 nanosheets under visible-light irradiation.

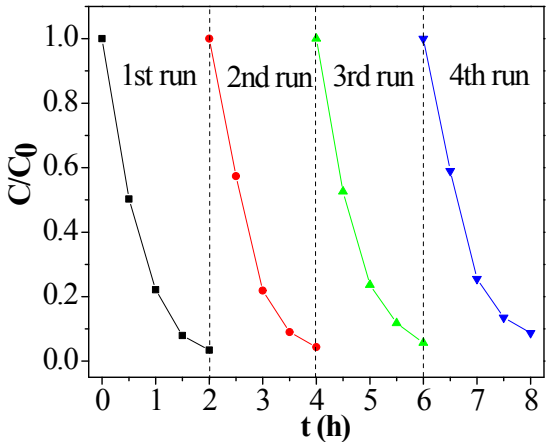


Fig. S8. Recycling test of the as-prepared $Bi_5O_7NO_3$ nanoplates for RhB photo-degradation under visible light irradiation.

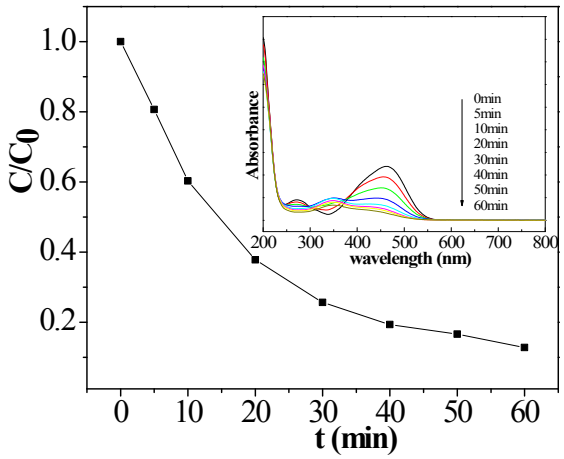


Fig. S9. Degradation efficiency of MO with initial concentration of 10 mg L^{-1} over the as-

prepared BiON (20 mg) under UV light irradiation, the inset showing the UV-Vis spectral changes of MO over the BiON catalyst.