

Electronic Supplementary Information

Template-free and morphology-controlled hydrothermal growth of single-crystalline $\text{Bi}_{12}\text{TiO}_{20}$ with excellent simulated sunlight photocatalytic activity

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Fig. S1 XRD patterns of bulk $\text{Bi}_{12}\text{TiO}_{20}$ prepared by the solid state reaction method (SSR) with different molar ratios of Bi/Ti in the starting reactants: (a) $n_{\text{Bi:Ti}}=4:1$; (b) $n_{\text{Bi:Ti}}=8:1$; (c) $n_{\text{Bi:Ti}}=12:1$.

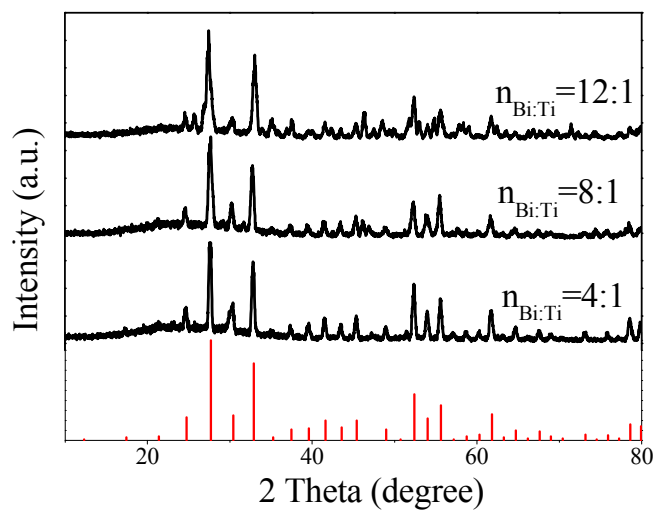


Fig. S2 The plots of $(ah\nu)^{1/2}$ vs. $h\nu$ for the band gap energies, corresponding to the $\text{Bi}_{12}\text{TiO}_{20}$ materials in different morphological structures: (a) the nanoflower; (b) the nanobelt; (c) the microtetrahedron.

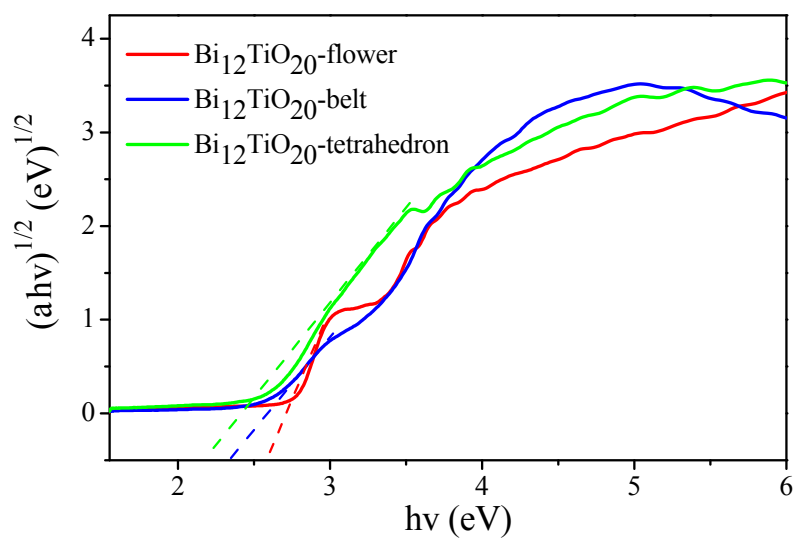


Fig. S3 XRD patterns of the $\text{Bi}_{12}\text{TiO}_{20}$ microcrystals prepared by a hydrothermal approach at 180 °C for 24 h with different concentrations of NO_3^- in the starting solution: (a) 0 mol L^{-1} ; (b) 0.5 mol L^{-1} ; (c) 1.5 mol L^{-1} .

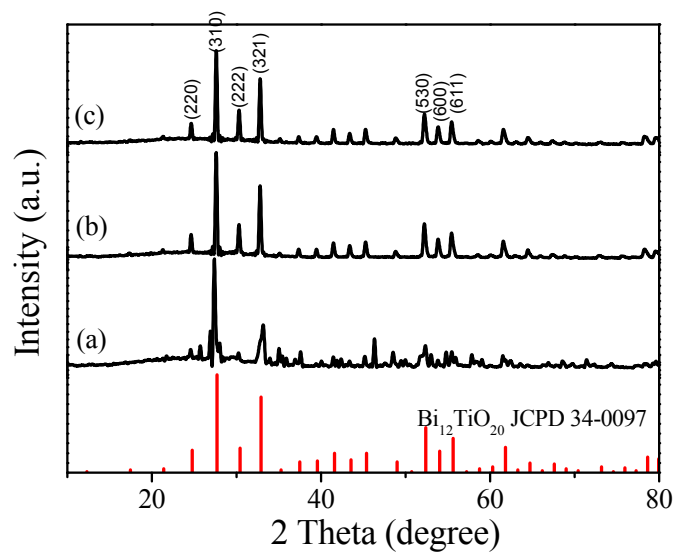


Fig. S4 SEM images of the $\text{Bi}_{12}\text{TiO}_{20}$ microcrystals prepared by a hydrothermal approach at different concentrations of NO_3^- in the starting solution: (a) 0.5 mol L^{-1} , (b) 1.5 mol L^{-1} , (c) EtOH + 0.5 mol L^{-1} , (d) EtOH + 1.5 mol L^{-1} .

