

Supplementary Materials

A Facile Method for the Preparation of Colored $\text{Bi}_4\text{Ti}_3\text{O}_{12-x}$ Nanosheets with Enhanced Visible Light Photocatalytic Hydrogen Evolution Activity

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Synthesis of $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ Nanosheets

$\text{Bi}_4\text{Ti}_3\text{O}_{12}$ nanosheets were prepared via sol-gel synthesis and subsequent hydrothermal processing. First, according to the composition of $\text{Bi}_4\text{Ti}_3\text{O}_{12}$, solutions A and B were obtained by dissolving 0.02 mol $\text{Bi}(\text{NO}_3)_3 \cdot 5\text{H}_2\text{O}$ in 15 ml acetic acid and 0.15 mol $\text{Ti}(\text{C}_4\text{H}_9\text{O})_4$ in 15 ml ethylene glycol monomethylether under stirring at room temperature, respectively. All reagents were of analytical grade. Solution B was slowly added into solution A dropwise, and the mixture was vigorously stirred for 2 h, resulting in a homogeneous sol. The sol was stabilized when its concentration was adjusted to 0.1 M by adding 10 ml acetic acid and 10 ml ethylene glycol monomethylether, before being heated to 80 °C for 24 h to produce dry gel. The gel was added to 75 ml of a 3 M NaOH solution to form a suspension, poured into a Teflon-lined, stainless-steel autoclave (volume of 100 ml) with a filling capacity of 80%, and subjected to hydrothermal treatment at 160 °C for 16 h unless otherwise stated. Finally, the synthesized product was cooled down, filtered, washed with distilled water, and dried at room temperature.

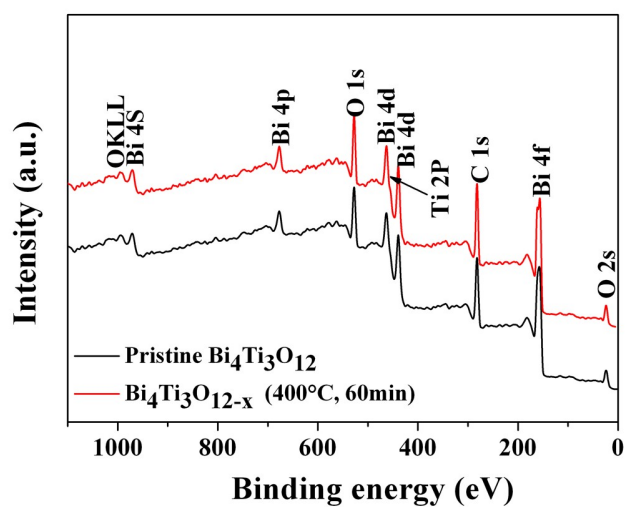


Figure S1. XPS survey spectra for (a) pristine $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ and (b) $\text{Bi}_4\text{Ti}_3\text{O}_{12-x}$ (350 °C, 60 min).

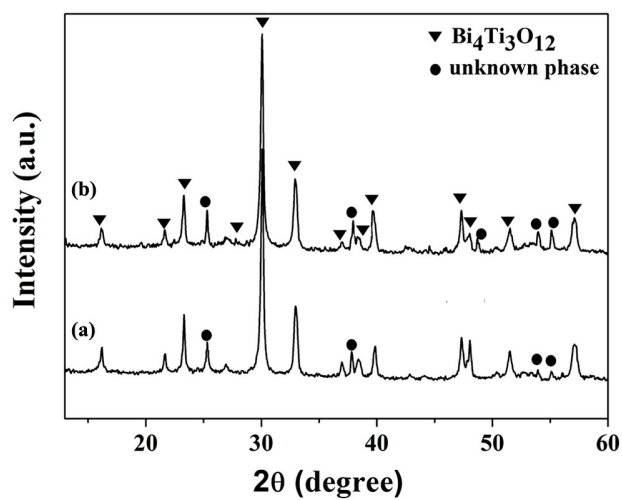


Figure S2. X-ray diffraction patterns of (a) $\text{Bi}_4\text{Ti}_3\text{O}_{12-x}$ (350 °C, 120 min) and (b) $\text{Bi}_4\text{Ti}_3\text{O}_{12-x}$ (400 °C, 80 min).