BiVO₄ nano-leaves: Mild synthesis and improved photocatalytic activity for O₂ production under visible light irradiation

Zhiqiang Wang, Wenjun Luo, Shicheng Yan, Jianyong Feng, Zongyan Zhao, Yisi Zhu, Zhaosheng Li and Zhigang Zou

a Ecomaterials and Renewable Energy Research Center (ERERC), Department of Physics, Nanjing University, Nanjing 210093, P.R. China.

b Department of Materials Science and Engineering, Nanjing University, Nanjing 210093, P.R. China

c National Laboratory of Solid State Microstructures, Nanjing University, Nanjing 210093, P.R. China

Fig. S1 XRD patterns of sample S-3 synthesized by varied stirring time of the intermediate colloid formation processes. (a) Stirred for 1 h. (b) Stirred for 2 h. (c) Stirred for 3 h. (d) Stirred for 4 h.
**Fig. S2** XRD patterns of sample S-4 synthesized by varied stirring time of the intermediate colloid formation processes. (a) Stirred for 1 h. (b) Stirred for 2 h. (c) Stirred for 3 h. (d) Stirred for 4 h. (e) Stirred for 5 h.

**Fig. S3** Photocatalytic O$_2$ evolution activity of nano-leaves (sample S-2) annealed at various temperature for 10 hour. The activities were tested under visible light irradiation ($\lambda>$420 nm) from aqueous AgNO$_3$ solution (0.05 M, 270 mL) over 0.1 g of photocatalysts.
Fig. S4 XRD patterns of the sample S-2 after annealing at 400 °C.

Fig. S5 SEM images of the sample S-2 after annealing at 400 °C.
Fig. S6 X-ray photoelectron spectroscopy (XPS) elemental spectra of Bi and V in the powder samples, and the fitting positions of the peaks. (a) Annealed BiVO$_4$ nano-leaves (sample S-2). (b) BiVO$_4$ nano-leaves (sample S-2). (c) The sample synthesized from solid state reaction. (d) The micro-rod (sample S-4). (e) The Cubic-like blocks (sample S-6).