

**Supporting Information for**

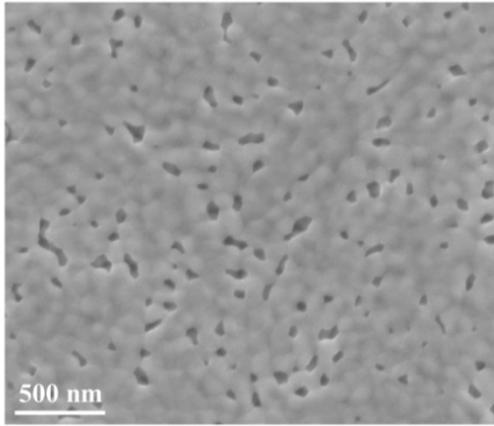
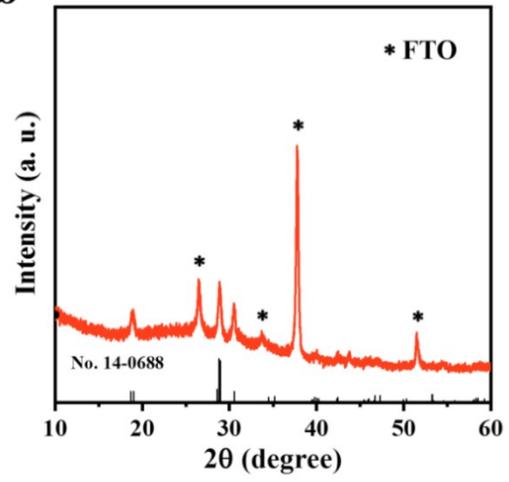
**Understanding the morphology evolution of 1D BiVO<sub>4</sub> nanoarrays  
from nanorod to nanocone with promoted photocatalytic  
performance**

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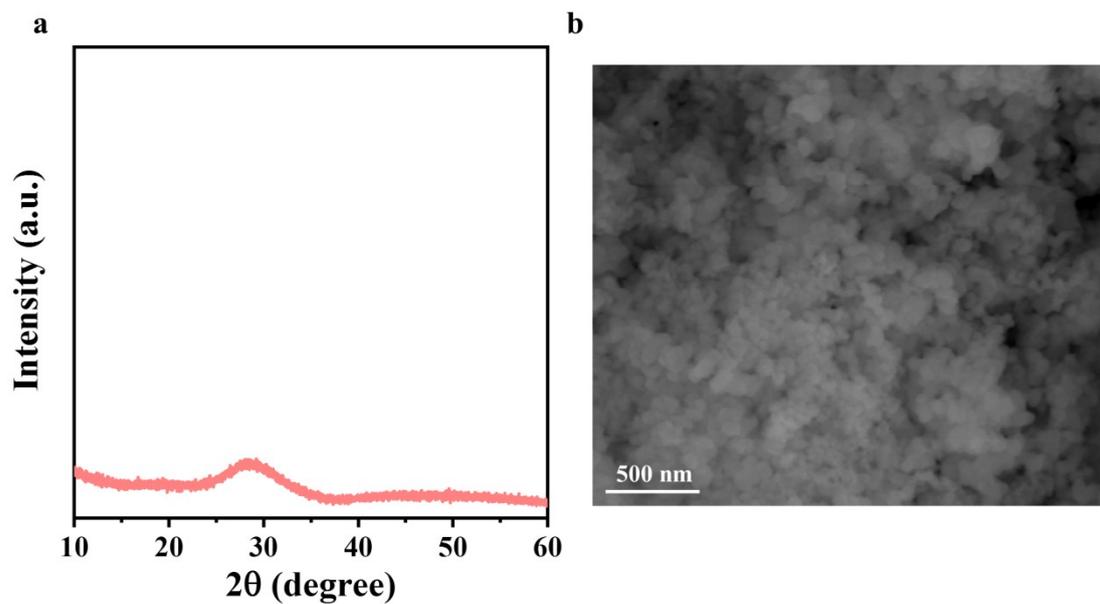
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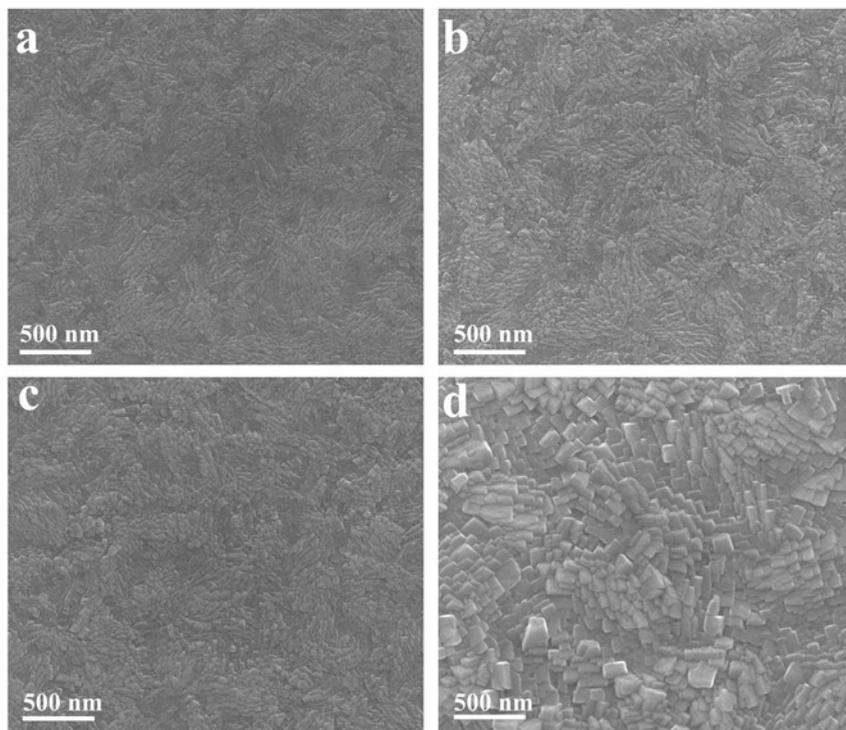
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**a****b**

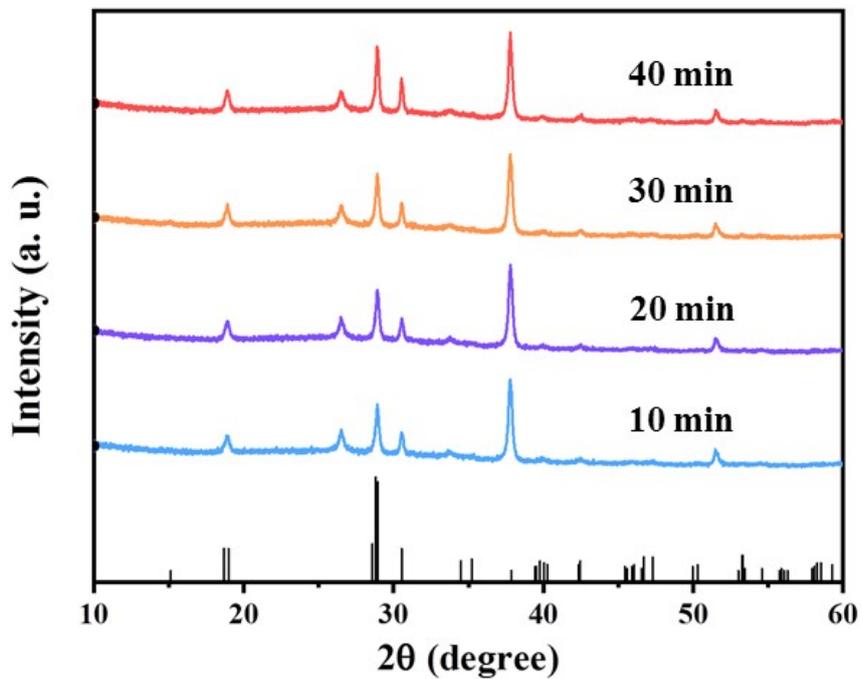
**Figure S1** SEM image (a) and XRD pattern (b) of the BiVO<sub>4</sub> seed layer.



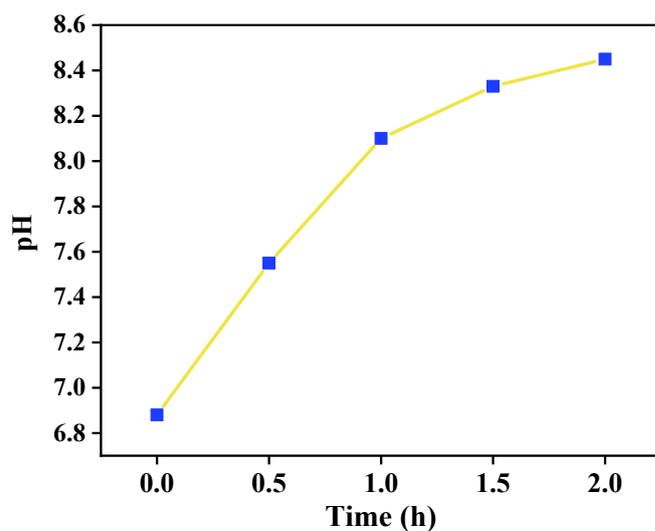
**Figure S2** XRD pattern (a) and SEM image (b) of the precipitate collected from the precursor suspension.



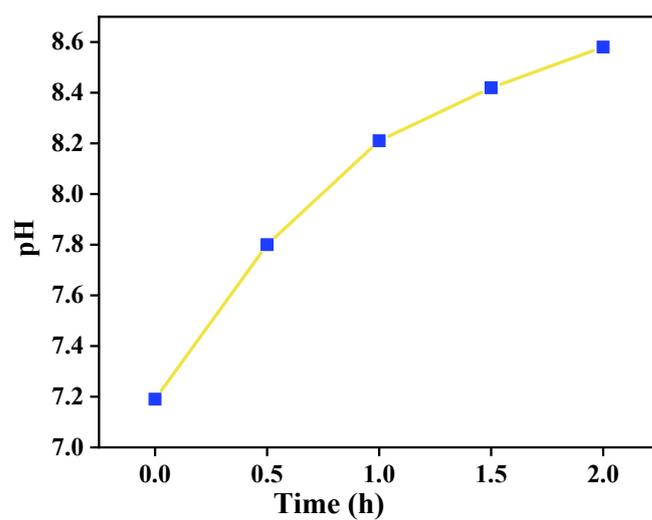
**Figure S3.** SEM images of the prepared samples in precursor clear solution after water bath treatment at 60 °C with different time: (a) 10 min, (b) 20 min, (c) 30 min, and (d) 40 min.



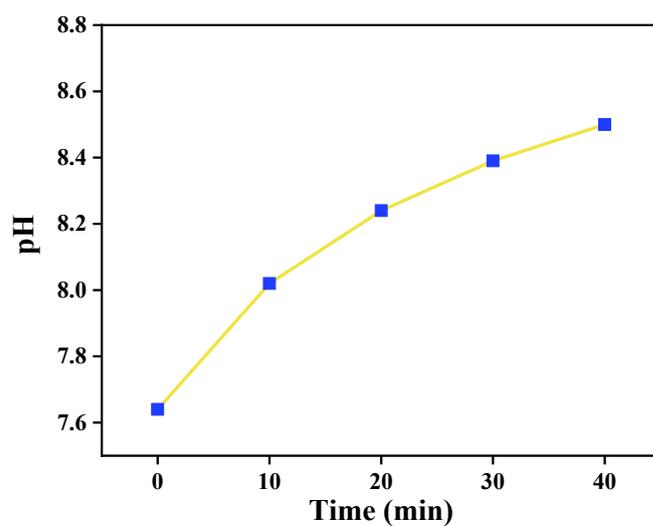
**Figure S4.** XRD patterns of the prepared samples in precursor clear solution after water bath treatment at 60 °C with different time: (a) 10 min, (b) 20 min, (c) 30 min, and (d) 40 min.



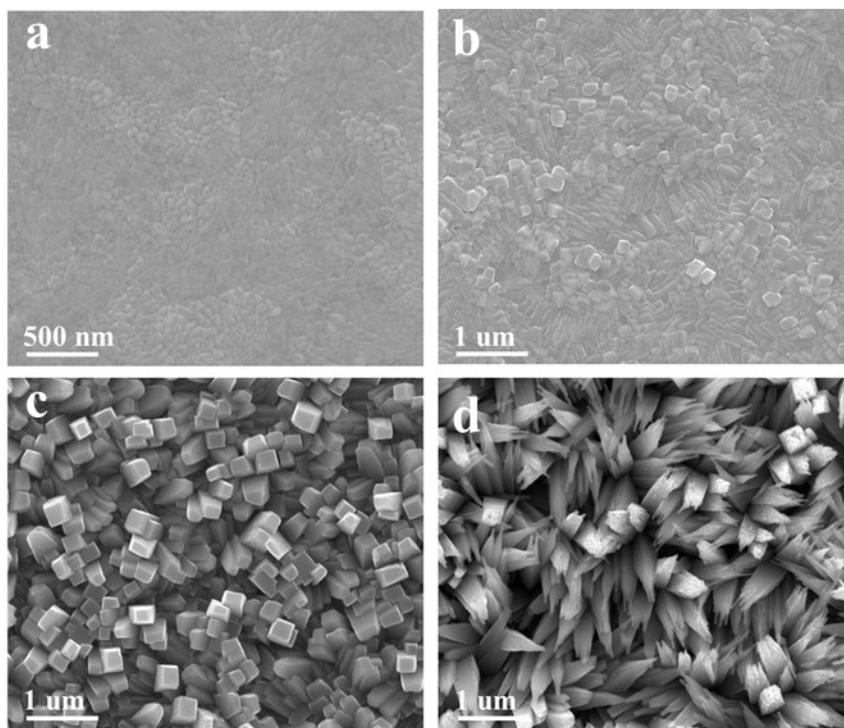
**Figure S5.** The measured pH values of the growth solution at various growth stages with 3.3 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 30 min, (b) 1 h, (c) 1.5 h, and (d) 2 h.



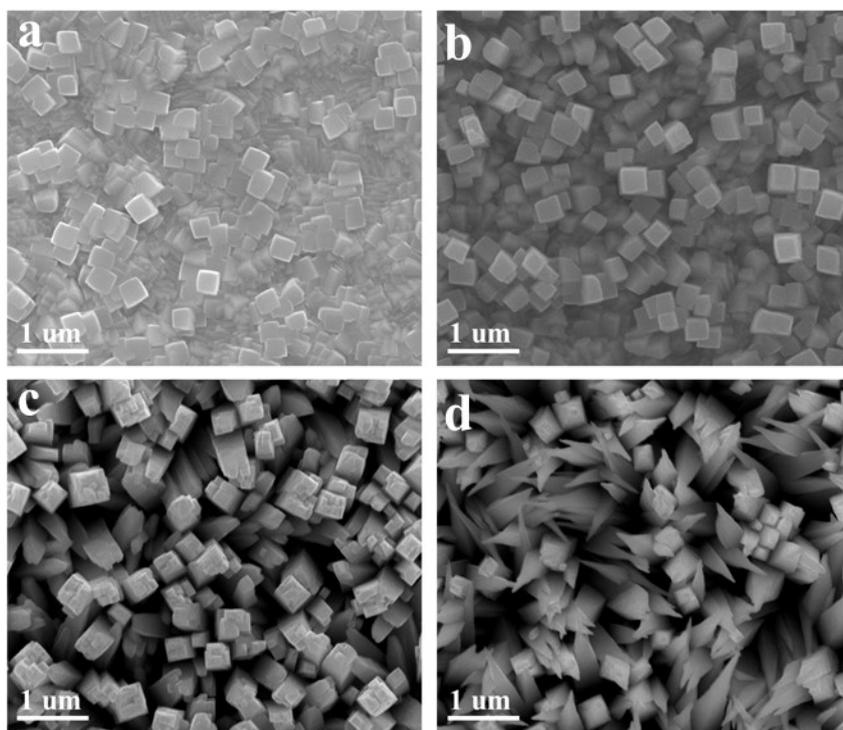
**Figure S6.** The measured pH values of the growth solution at various growth stages with 3.5 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 30 min, (b) 1 h, (c) 1.5 h, and (d) 2 h.



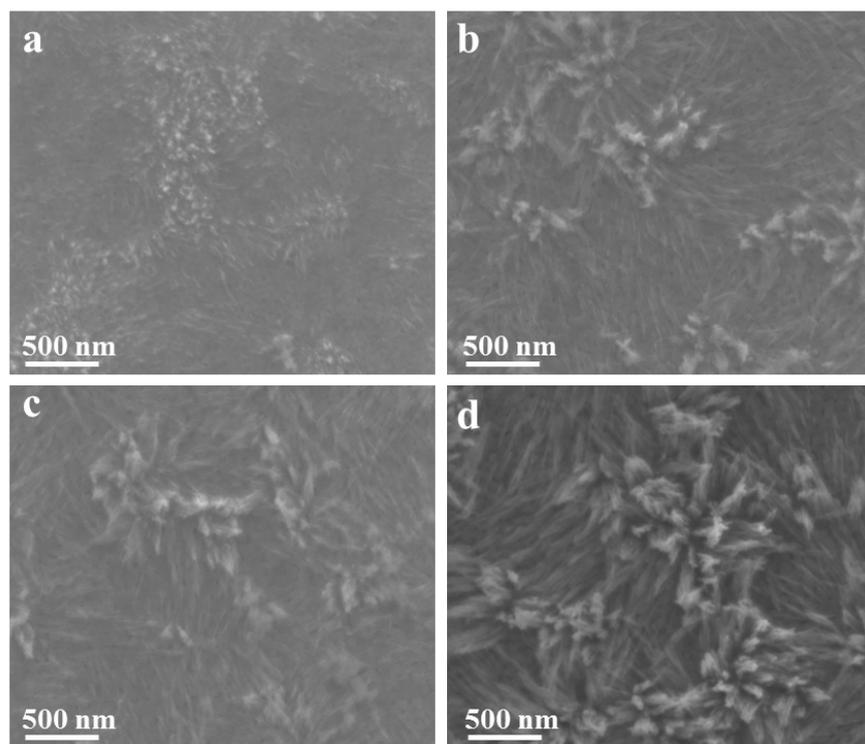
**Figure S7.** The measured pH values of the growth solution at various growth stages with 3.7 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 10 min, (b) 20 min, (c) 30 min, and (d) 40 min.



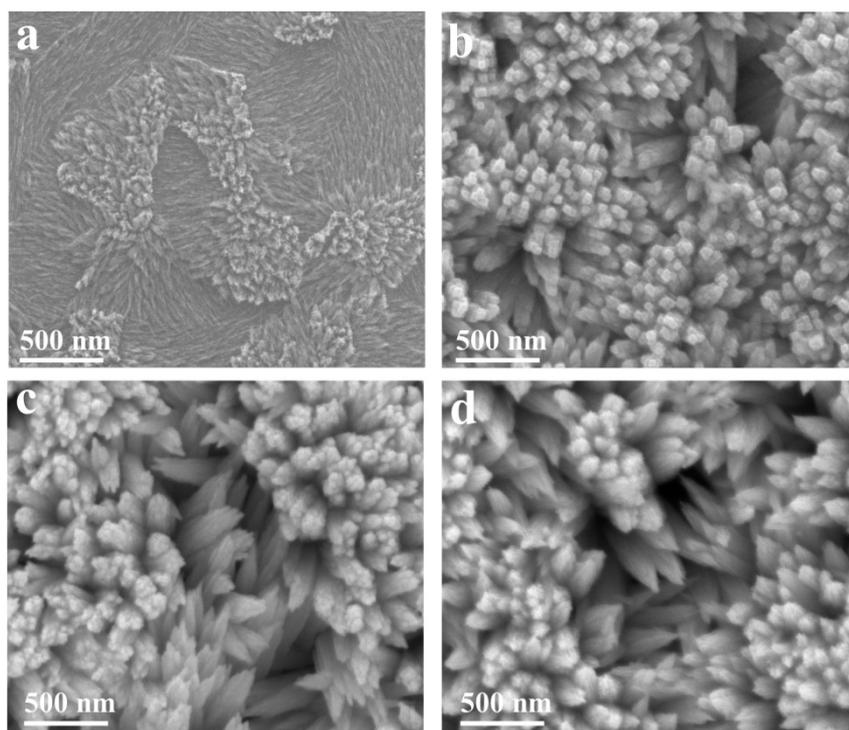
**Figure S8.** SEM images of BiVO<sub>4</sub> nanoarrays obtained at various growth stages with 3.3 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 30 min, (b) 1 h, (c) 1.5 h, and (d) 2 h.



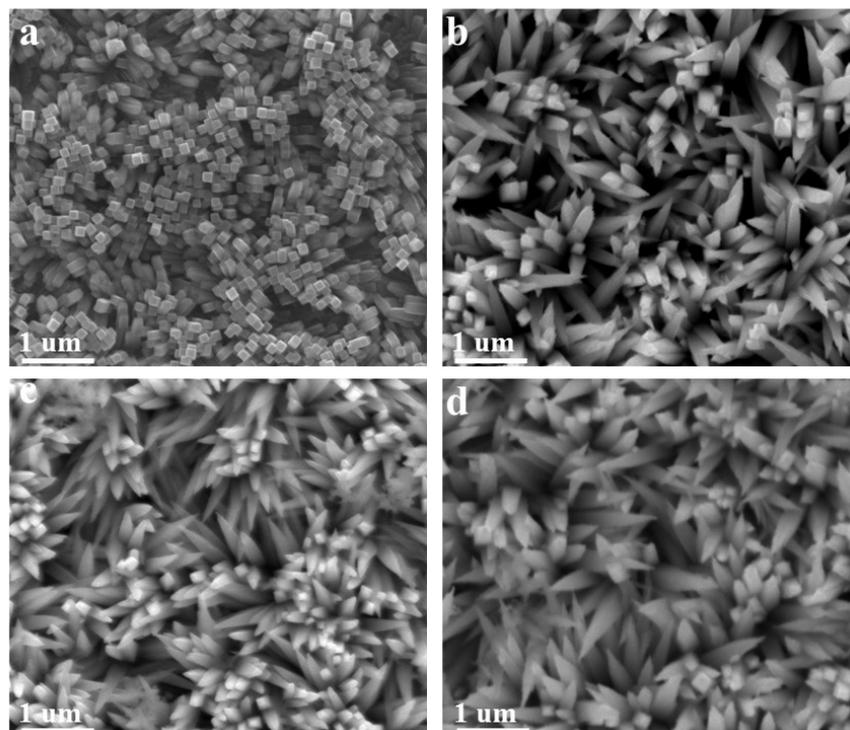
**Figure S9.** SEM images of BiVO<sub>4</sub> nanoarrays obtained at various growth stages with 3.5 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 30 min, (b) 1 h, (c) 1.5 h, and (d) 2 h.



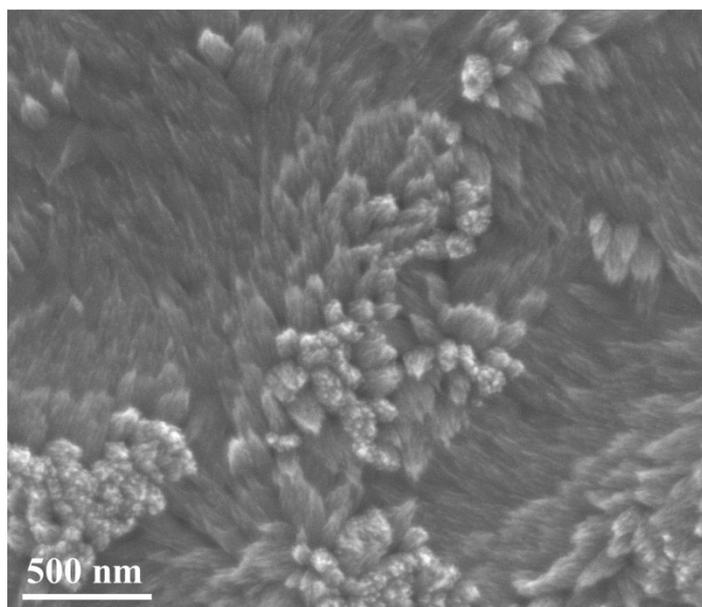
**Figure S10.** SEM images of BiVO<sub>4</sub> nanoarrays obtained at various growth stages with 3.8 g NaHCO<sub>3</sub> on 60 °C water treatment for (a) 10 min, (b) 20 min, (c) 30 min, and (d) 40 min.



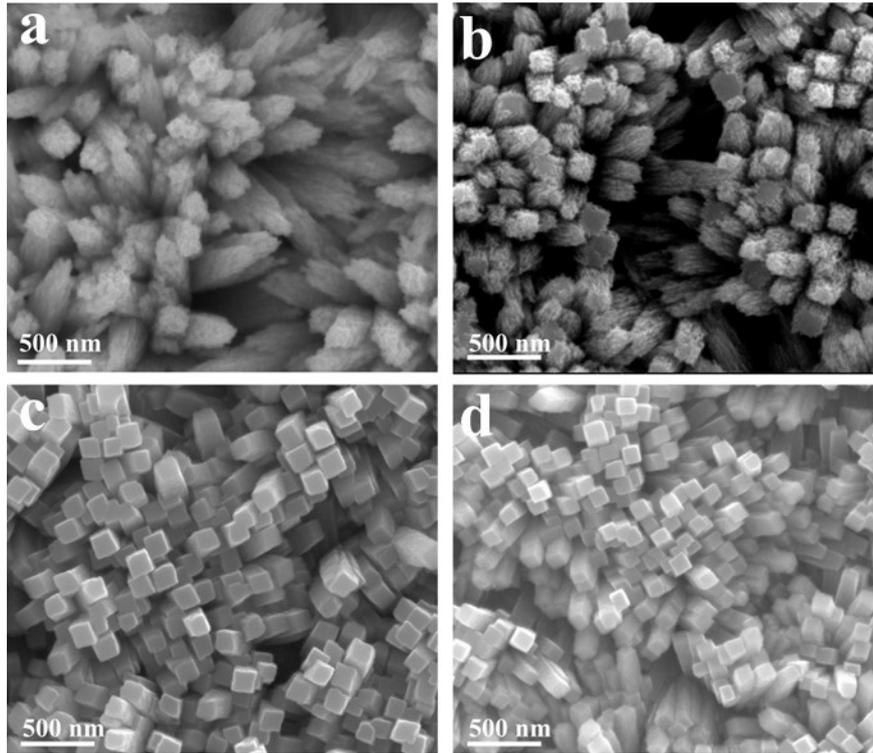
**Figure S11.** SEM images of BiVO<sub>4</sub> nanoarrays obtained at various growth stages with 3.7 g NaHCO<sub>3</sub> on 40 °C water treatment for (a) 1 h, (b) 2 h, (c) 4 h, and (d) 6 h.



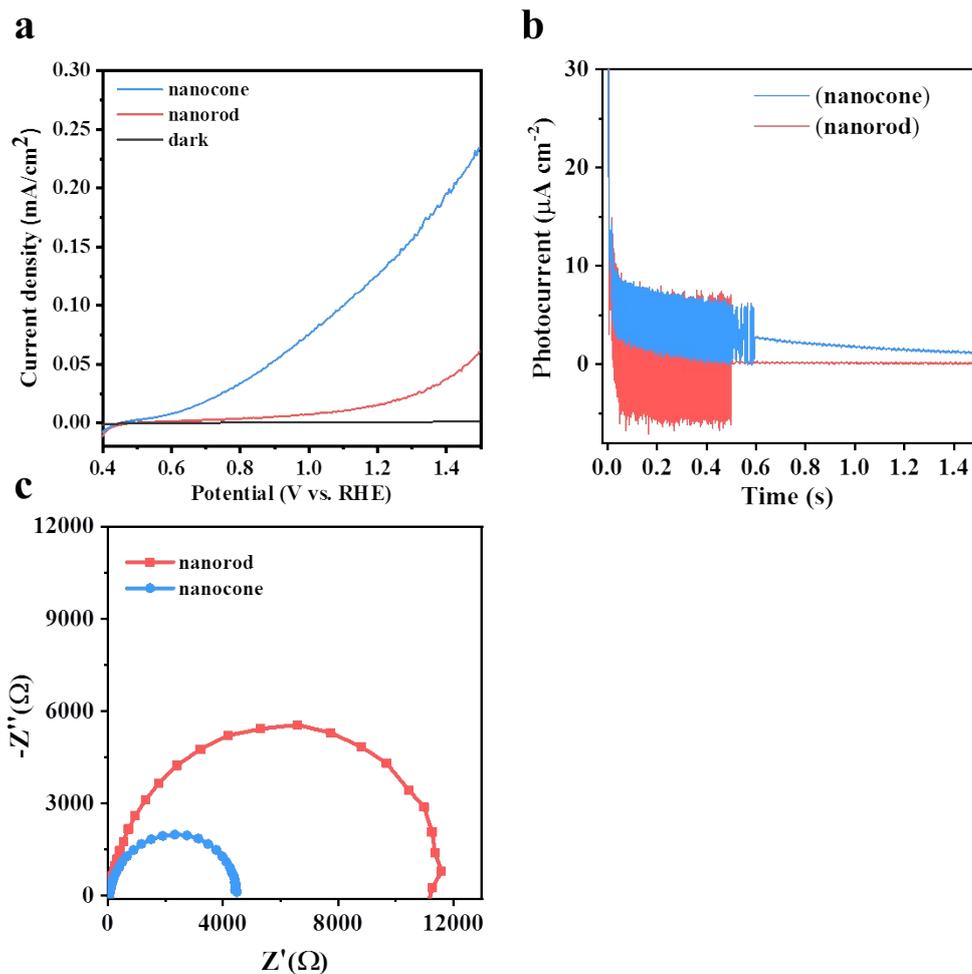
**Figure S12.** SEM images of BiVO<sub>4</sub> nanoarrays obtained at various growth stages with 3.7 g NaHCO<sub>3</sub> on 80 °C water treatment for (a) 10 min, (b) 20 min, (c) 30 min, and (d) 40 min.



**Figure S13.** SEM image of BiVO<sub>4</sub> nanoarrays in treated growth solution with 3.7 g NaHCO<sub>3</sub> on 60 °C water bath for 20 min.



**Figure S14.** SEM images of the prepared  $\text{BiVO}_4$  nanoarrays (a) nanocone and (c) nanorod. The corresponding samples: nanocone (b) and nanorod (d) after 10 min ultrasonic treatment.



**Figure S15.** (a) Transient photocurrent of BiVO<sub>4</sub> nanocone and nanorod nanoarrays. (b) Photoelectrochemical electrochemical impedance spectra (PEIS) measurements of BiVO<sub>4</sub> nanocone and nanorod nanoarrays. (c) Photocurrent density–potential curves of BiVO<sub>4</sub> nanocone and nanorod nanoarrays.

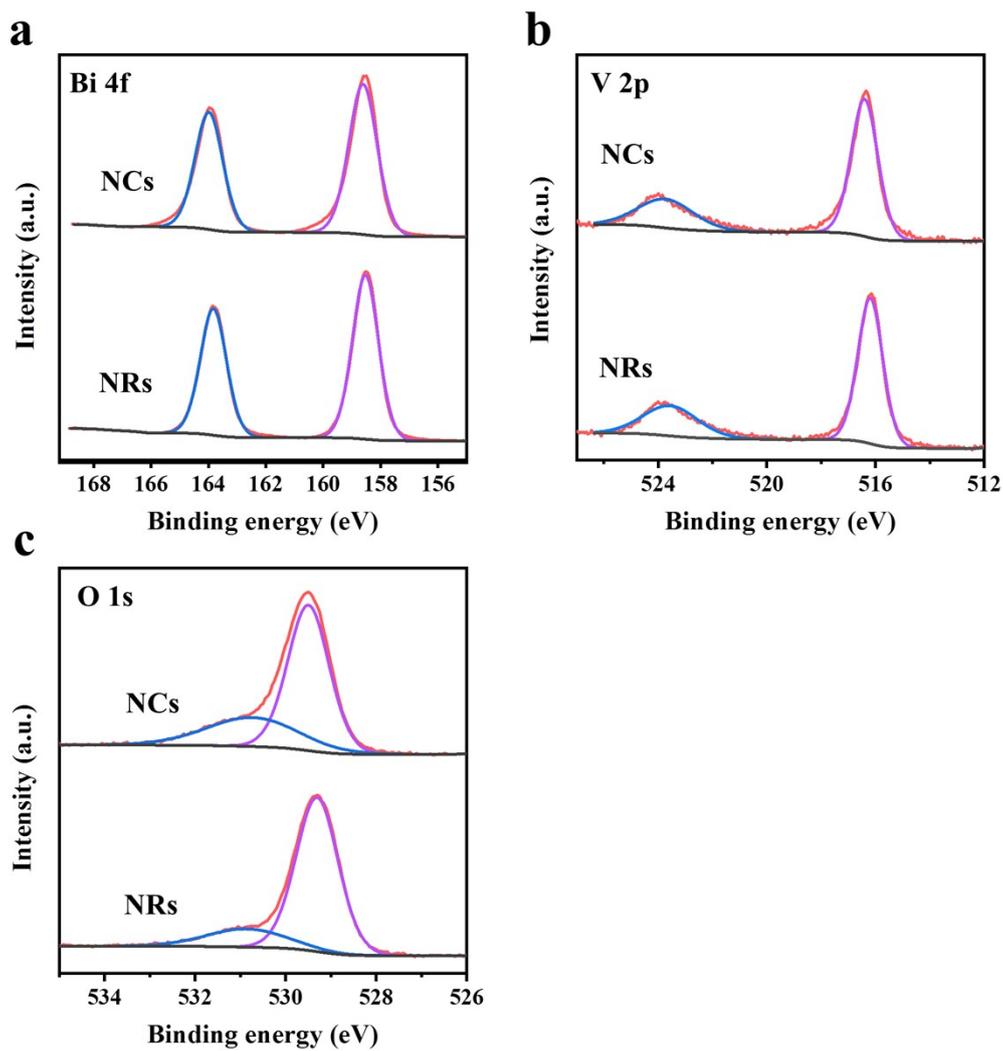


Figure S16. High-resolution XPS spectra of Bi 4f (a), V 2p (b) and O 1s (c) of NCs and NRs.