

## Electronic Supplementary Information

### Plasmonic Gold Nanoparticles-Decorated BiVO<sub>4</sub>/ZnO Nanowire Heterostructure Photoanodes for Efficient Water Oxidation

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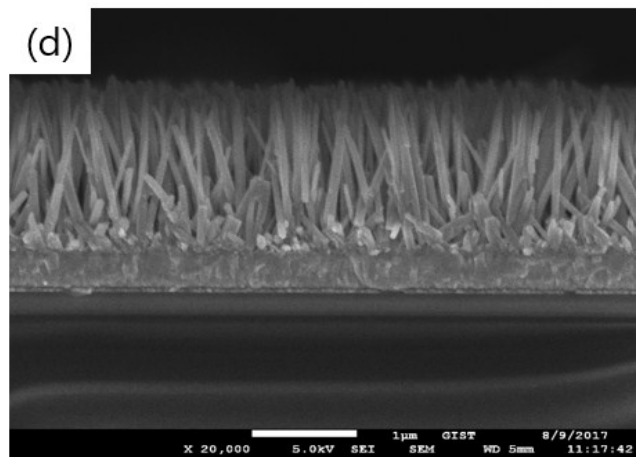
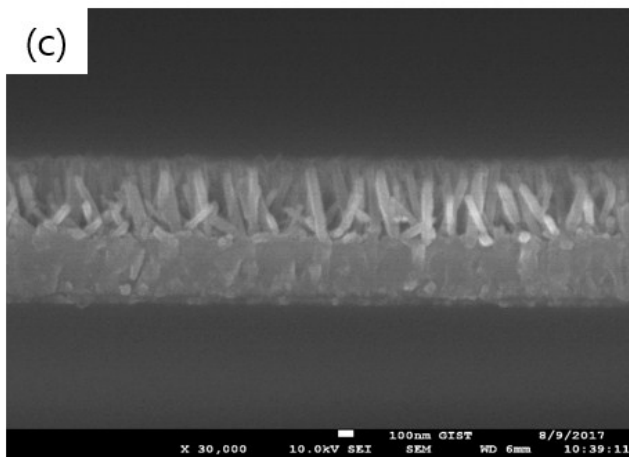
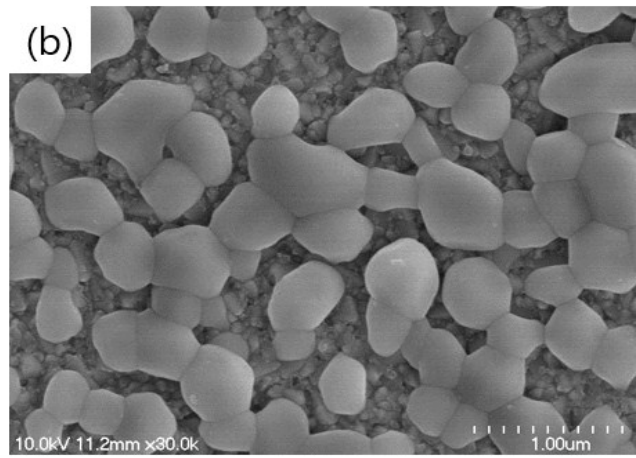
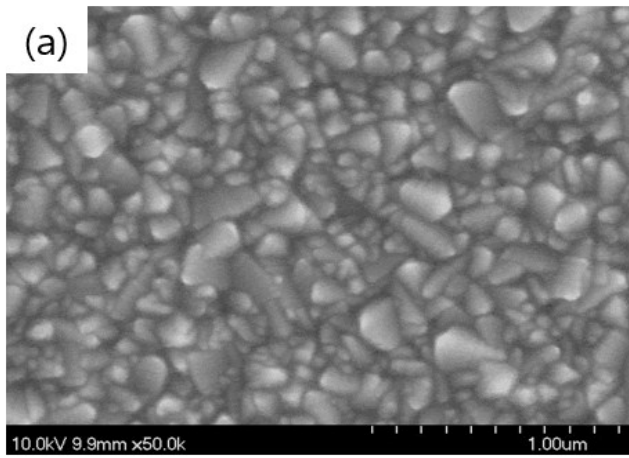


Fig. S1 The top-view and cross-sectional SEM images of (a) FTO, (b)  $\text{BiVO}_4/\text{FTO}$ , (c)  $\sim 0.5 \mu\text{m}$  ZnO NWs/FTO and (d)  $\sim 1.5 \mu\text{m}$  ZnO NWs/FTO

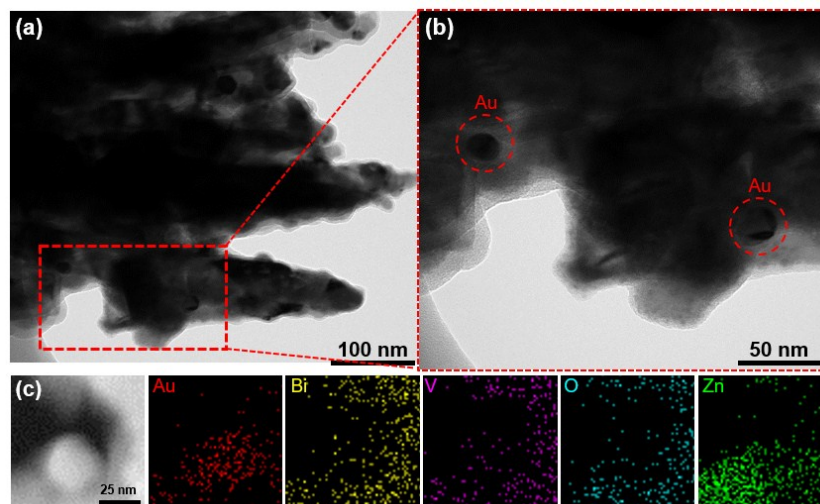


Fig. S2 TEM images and elemental mapping of Au/BiVO<sub>4</sub>/ZnO

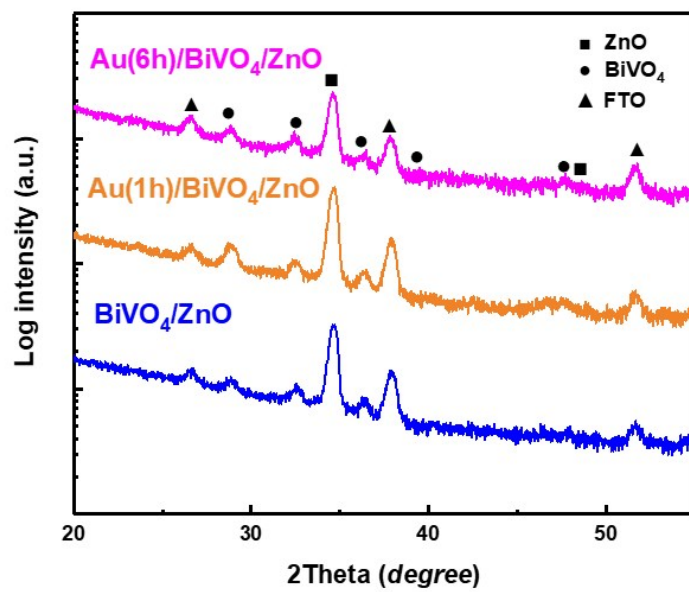


Fig. S3 X-ray diffraction patterns of BiVO<sub>4</sub>/ZnO NWs and Au(1h, 6h)/BiVO<sub>4</sub>/ZnO NWs

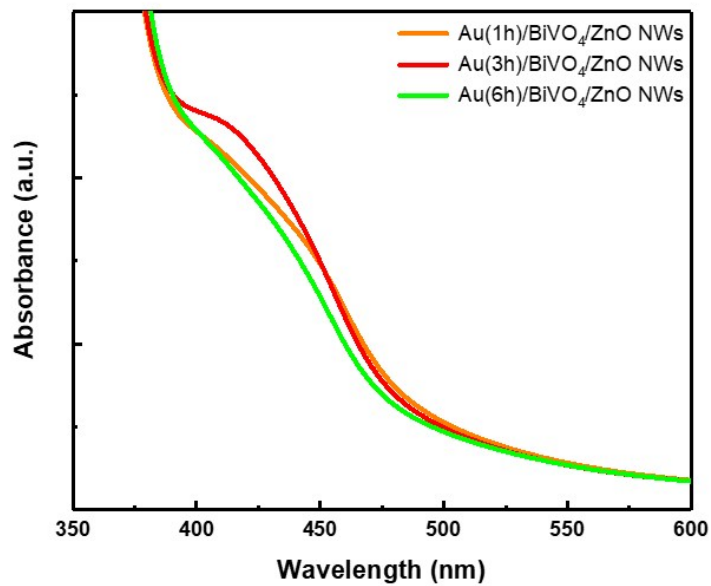


Fig. S4 Absorption spectra of BiVO<sub>4</sub>/ZnO NWs and Au/BiVO<sub>4</sub>/ZnO NWs with different NPs loading time

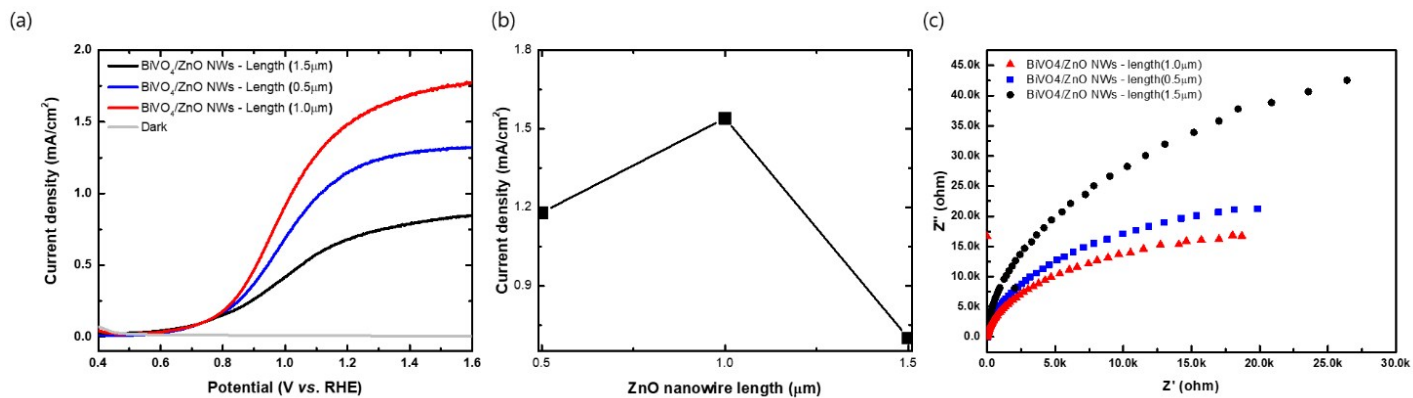


Fig. S5 (a) and (b) Photocurrent density-voltage curves, (c) electrochemical impedance spectroscopy (EIS) results of various length (~0.5, 1.0 and 1.5 μm) of ZnO NWs coated with BiVO<sub>4</sub>

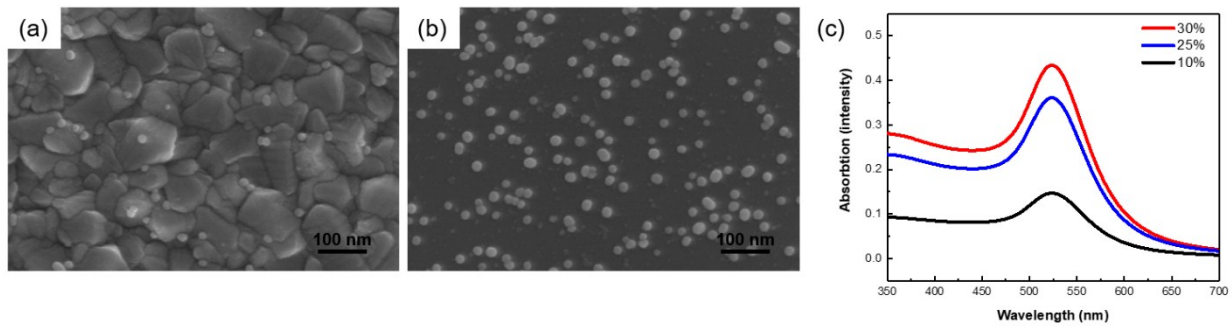


Fig. S6 (a) Au NPs on FTO glass and (b) Au NPs on Si substrate top-view SEM images, and (c) Absorption spectra of diluted Au NPs solution (10, 25, 35 v/v%)

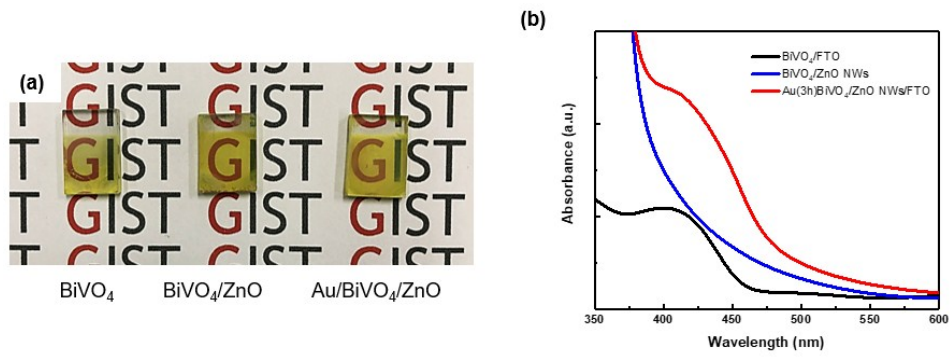


Fig.S7 (a) Optical image and (b) absorption spectra of BiVO<sub>4</sub>/FTO, BiVO<sub>4</sub>/ZnO NWs and Au/BiVO<sub>4</sub>/ZnO NWs, respectively



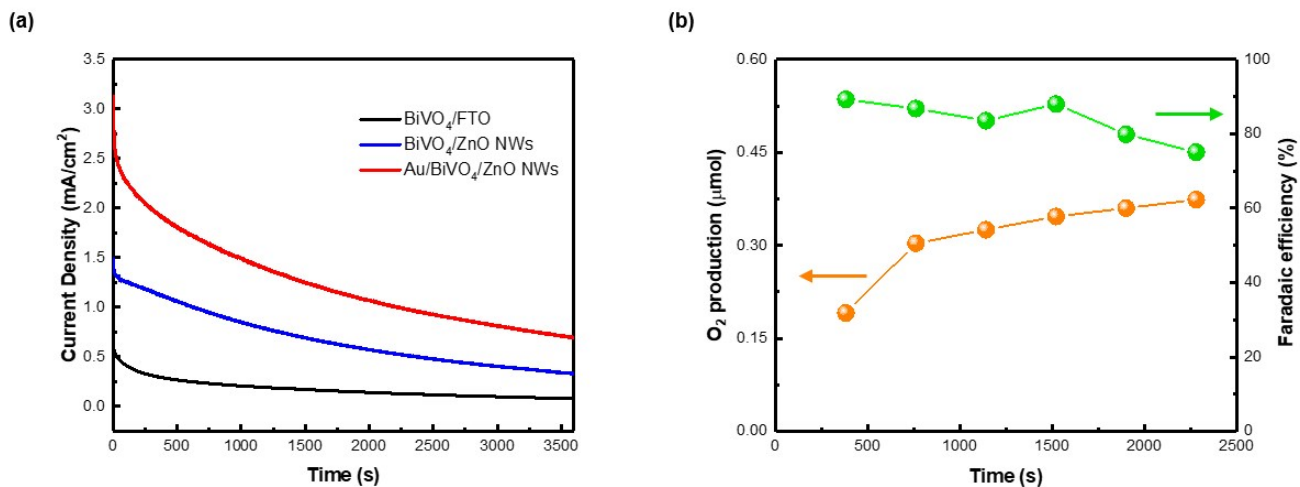


Fig. S8 (a) Photocurrent stability measurement of BiVO<sub>4</sub>/FTO, BiVO<sub>4</sub>/ZnO NWs, and Au/BiVO<sub>4</sub>/ZnO NWs photoanodes at an applied potential of 1.23 V vs. RHE and (b) O<sub>2</sub> production (left y-axis) and faradaic efficiency (right y-axis) of Au/BiVO<sub>4</sub>/ZnO NWs photoanode measured at 1.3 V vs. RHE in 0.5 M phosphate buffer solution under simulated AM 1.5G illumination.