

## Supporting Information

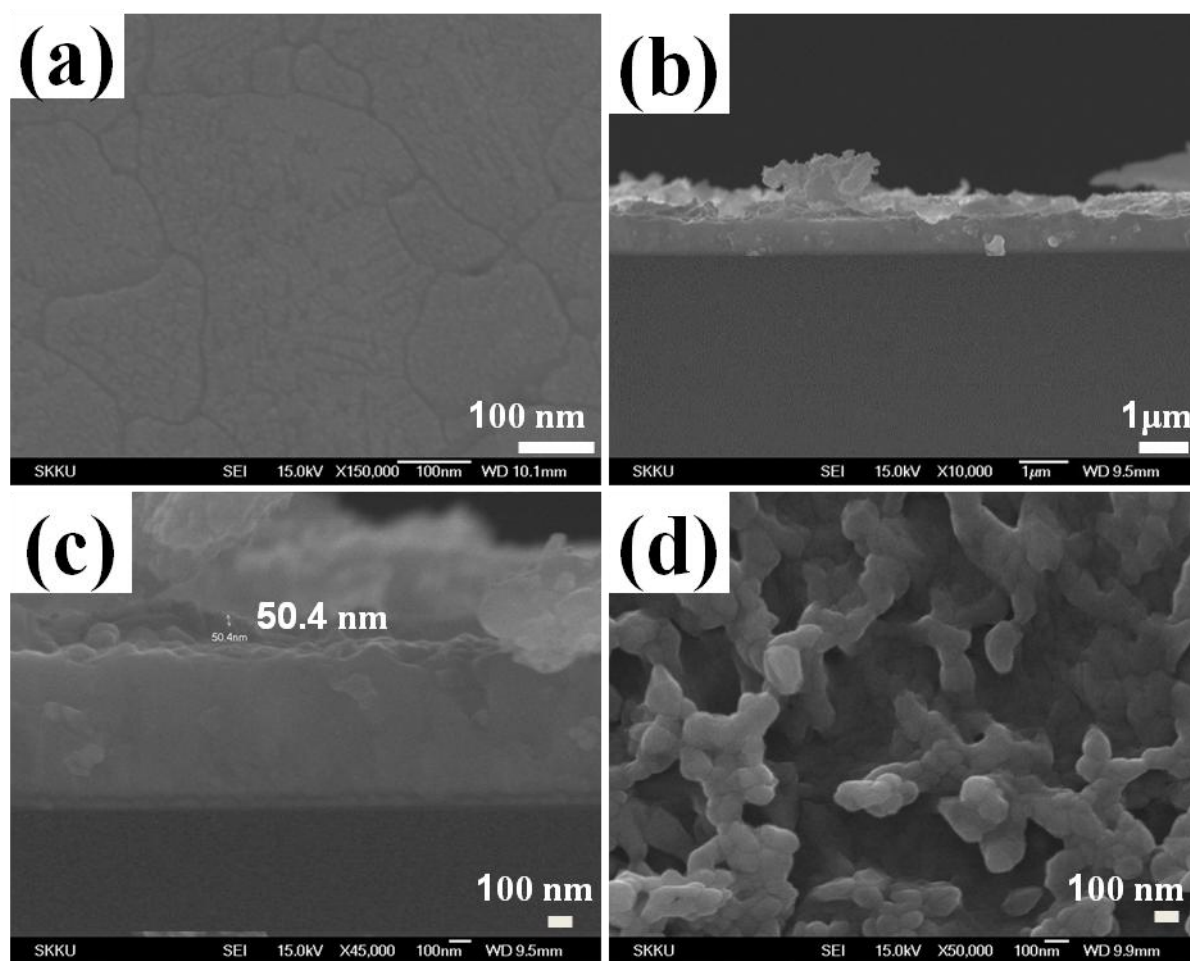
# Photoelectrochemical cells with surface embedded Mo-doped BiVO<sub>4</sub> into tungsten trioxide bilayer photoanode

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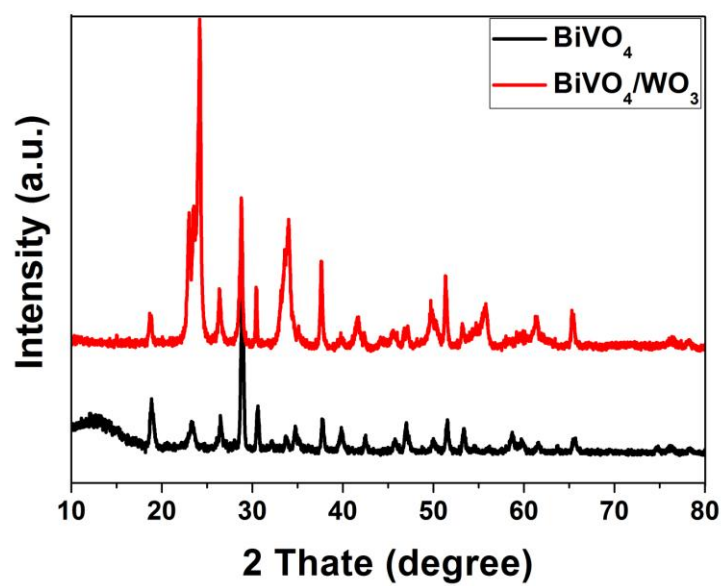
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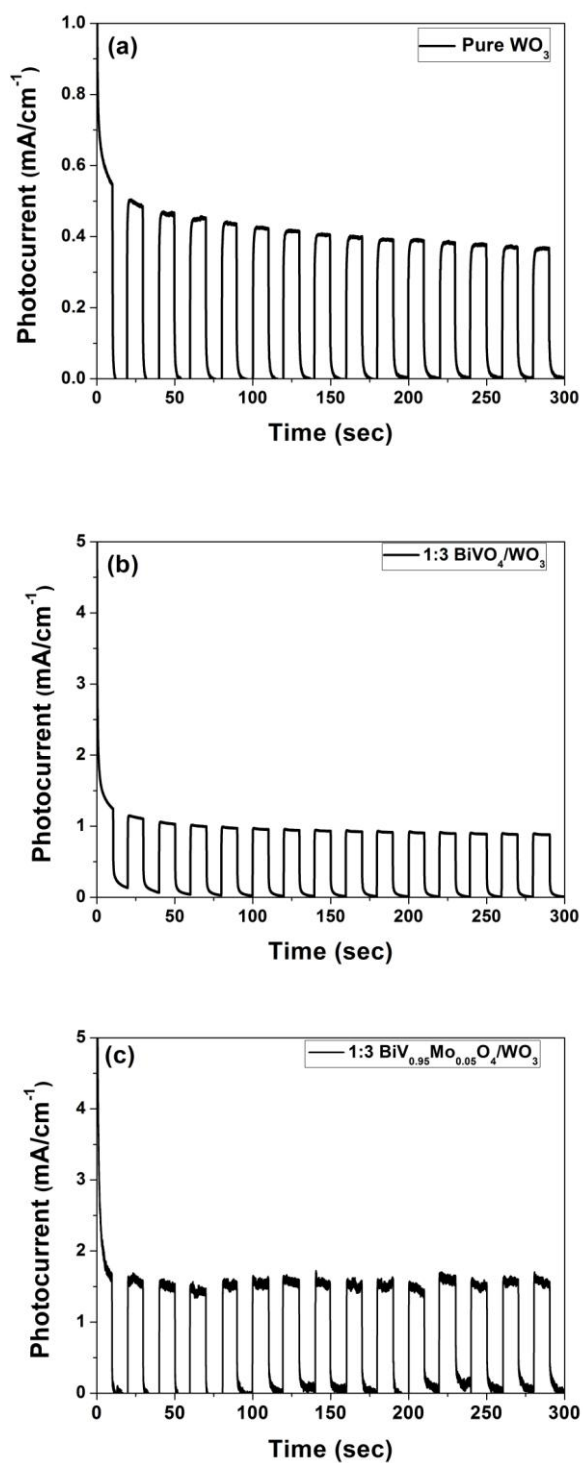
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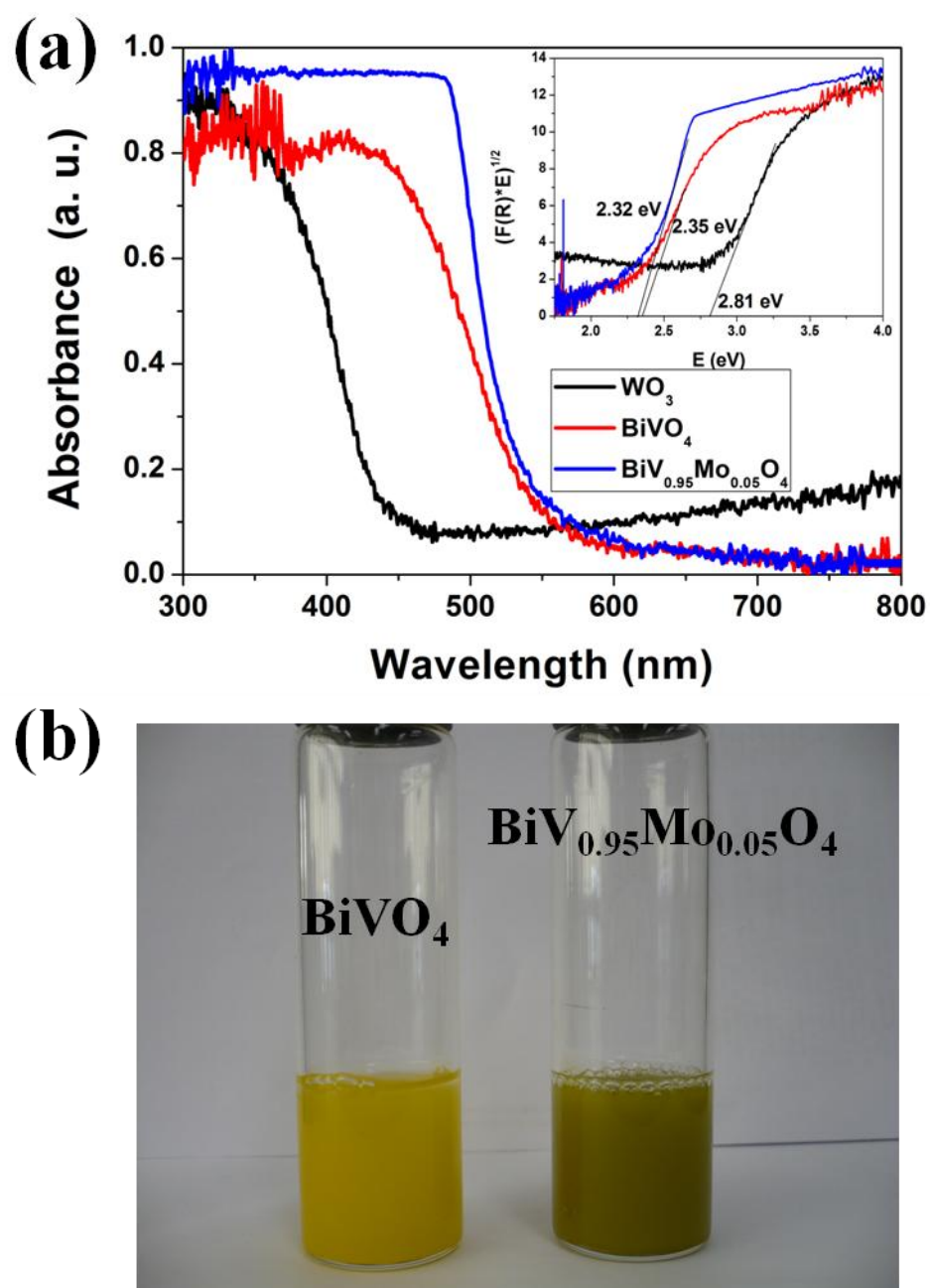
**Figure S1.** FE-SEM image of (a) high modification of WO<sub>3</sub> photoanode, (b) and (c) 1 layered BiV<sub>0.95</sub>Mo<sub>0.05</sub>O<sub>4</sub>/WO<sub>3</sub> photoanode, and (d) BiVO<sub>4</sub>/WO<sub>3</sub> photoanode.



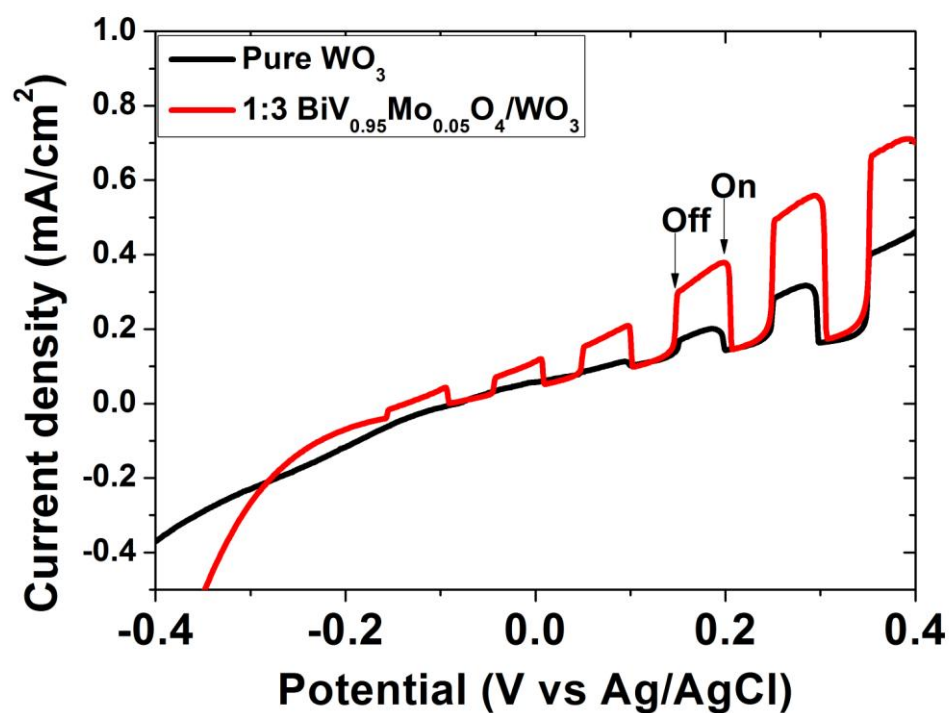
**Figure S2.** XRD patterns of pure  $\text{BiVO}_4$  and  $\text{BiVO}_4/\text{WO}_3$  photoanode.



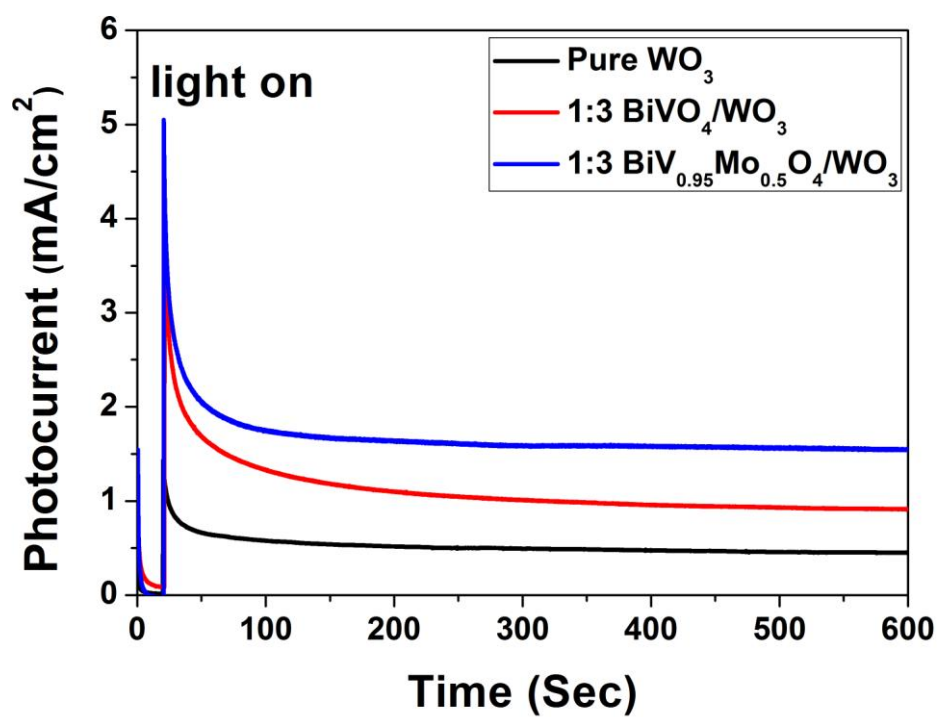
**Figure S3.** Photocurrent intensity at 0.6 V of pure WO<sub>3</sub>, 1:3 BiVO<sub>4</sub>/WO<sub>3</sub>, 1:3 BiV<sub>0.95</sub>Mo<sub>0.05</sub>O<sub>4</sub>/WO<sub>3</sub> photoanodes with irradiation of 300 seconds.



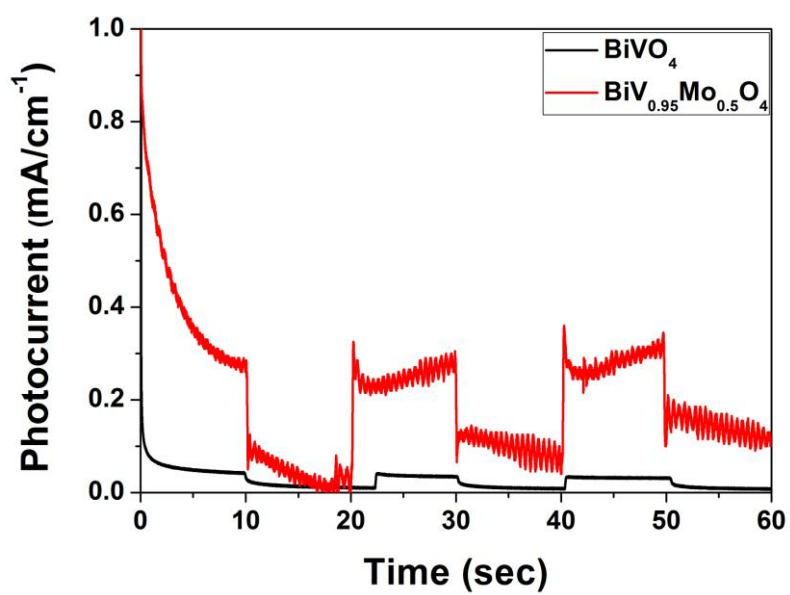
**Figure S4.** (a) UV-vis absorption spectra of  $\text{WO}_3$ ,  $\text{BiVO}_4$  and  $\text{BiV}_{0.95}\text{Mo}_{0.05}\text{O}_4$ . The inset shows the optical band gap ( $E_g$ ) of them calculated from Tauc's formula. (b) Photographs of  $\text{BiVO}_4$  and  $\text{BiV}_{0.95}\text{Mo}_{0.05}\text{O}_4$  suspension in PEG solution.



**Figure S6.** Voltage-photocurrent functions of pure  $\text{WO}_3$  and 1:3  $\text{BiV}_{0.95}\text{Mo}_{0.05}\text{O}_4/\text{WO}_3$  photoanodes at potential region between -0.4 and 0.4 V.



**Figure S6.** Results of Chronoamperometry under closed circuit conditions at applied potential of 0.6 V.



**Figure S7.** Photocurrent intensity at 0.6 V of BiVO<sub>4</sub> and BiV<sub>0.95</sub>Mo<sub>0.05</sub>O<sub>4</sub> photoanodes.