

Facile surfactant-assisted synthesis of BiVO_4 nanoparticulate films for solar water splitting

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Supplementary figures

1. SEM images

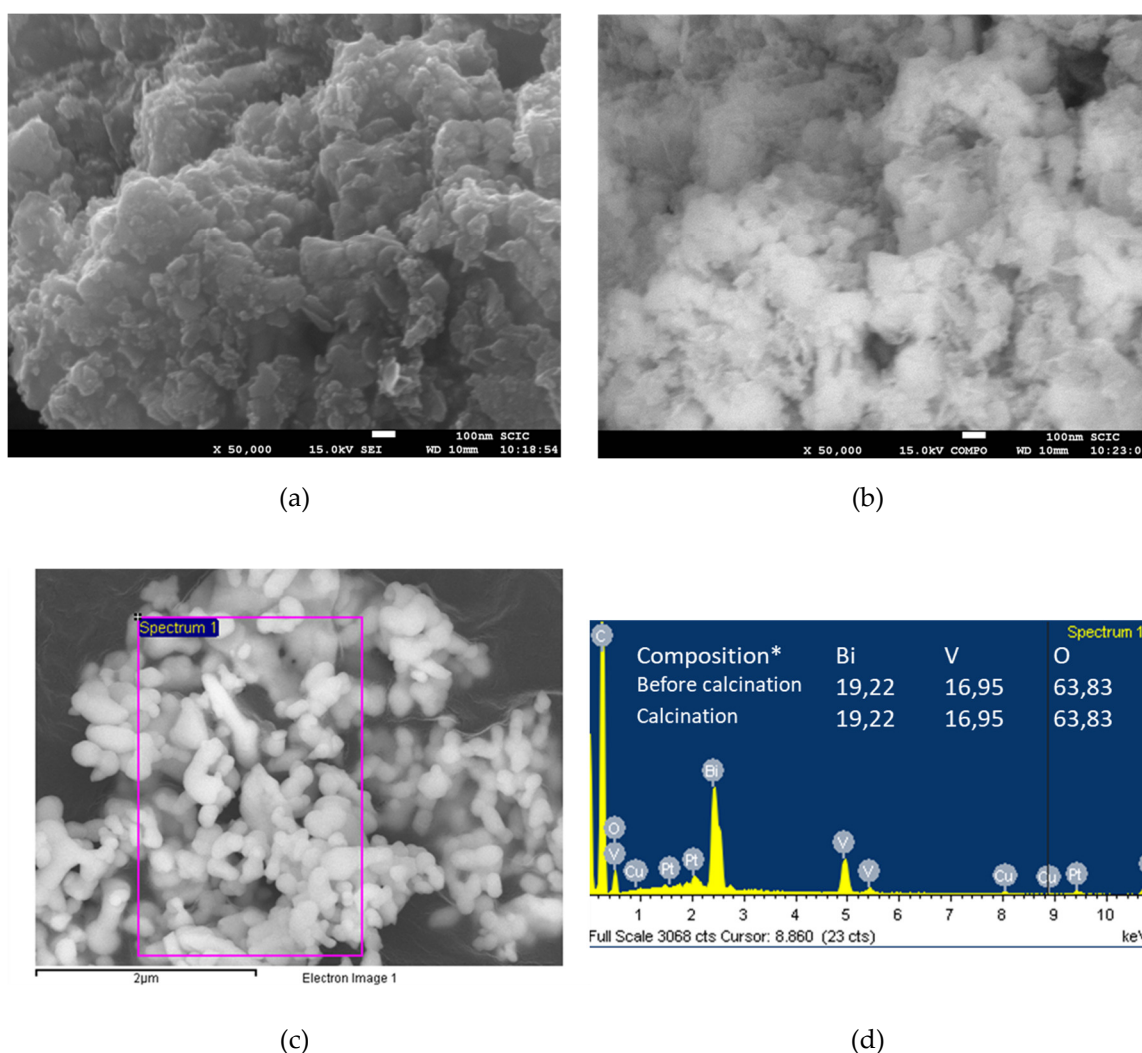


Figure S1. SEM images of BiVO_4 sample before calcination taken with (a) secondary electron detector (SEI) and (b) backscattered electron detector (COMPO); (c) COMPO micrograph from SDBS- BiVO_4 sample before calcination; (d) representative EDS spectrum of SDBS- BiVO_4 sample.

2. BET analysis

Table S1. BET analysis results of BiVO₄ calcinated (obtained by surfactant-assisted synthesis).

| Relative pressure (P/P ₀) | Adsorbed Vol. (V _A) (cm ³ /g STP) | [V _A (P ₀ /P-1)] ⁻¹ |
|---------------------------------------|---|--|
| 0.0597 | 1.5253 | 0.0416 |
| 0.0798 | 1.5857 | 0.0547 |
| 0.1197 | 1.6953 | 0.0802 |
| 0.1596 | 1.8019 | 0.1054 |
| 0.1988 | 1.9085 | 0.1300 |

3. Optical characterization

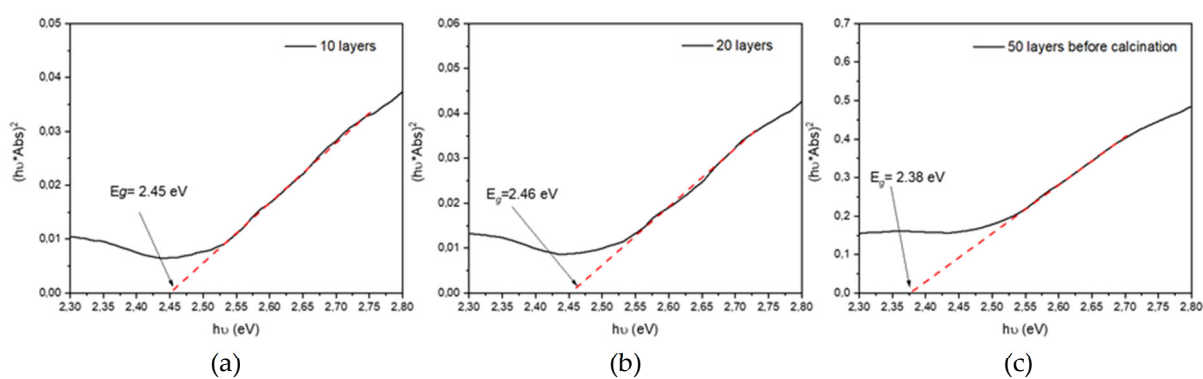


Figure S2. Tauc plots for bandgap determination: (a) 10 layers (b), 20 layers (c), 50 layers before calcination.

4. Photoelectrochemical characterization

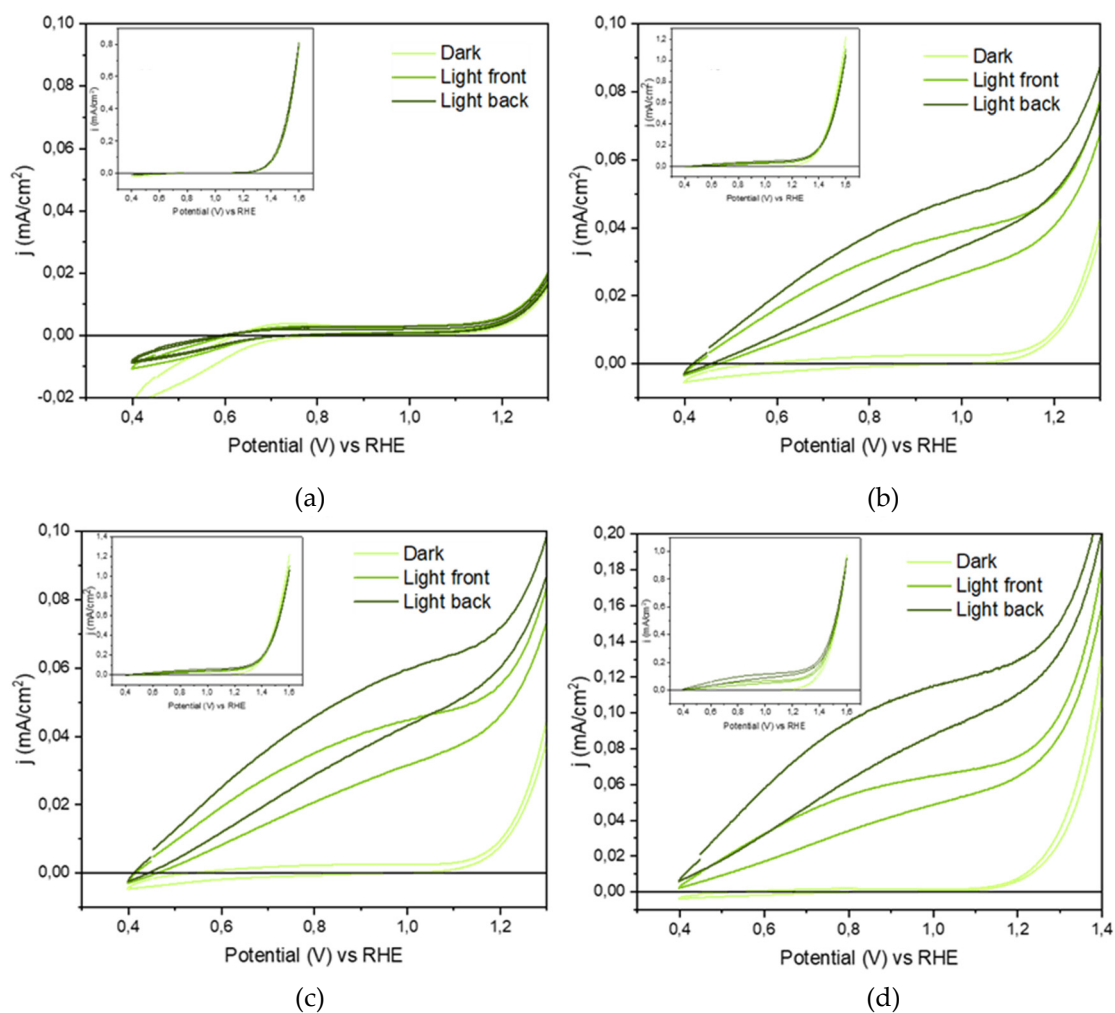


Figure S3. Cyclic voltammograms of BiVO_4 in 0.1 M KPi buffer containing 0.1 M sodium sulfite of (a) 50 layers before calcination and (b) 10 layers, (c) 20 layers, and (d) 50 layers, after calcination.

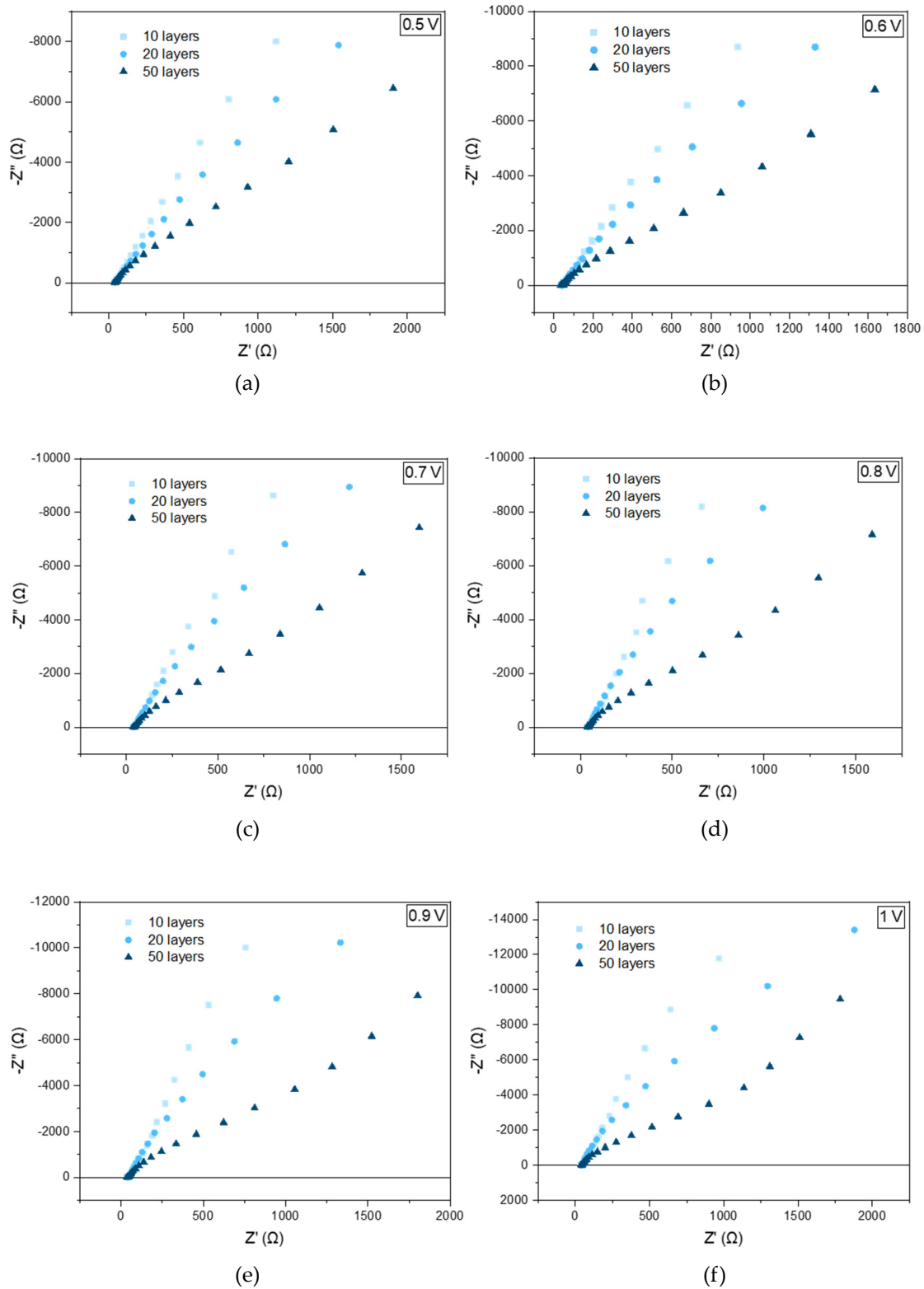


Figure S4. Nyquist plots of BiVO₄ photoanodes with different thicknesses at different applied potentials: (a) 0.5 V vs RHE, (b) 0.6 V vs RHE, (c) 0.7 V vs RHE, (d) 0.8 V vs RHE, (e) 0.9 V vs RHE, (f) 1 V vs. RHE.

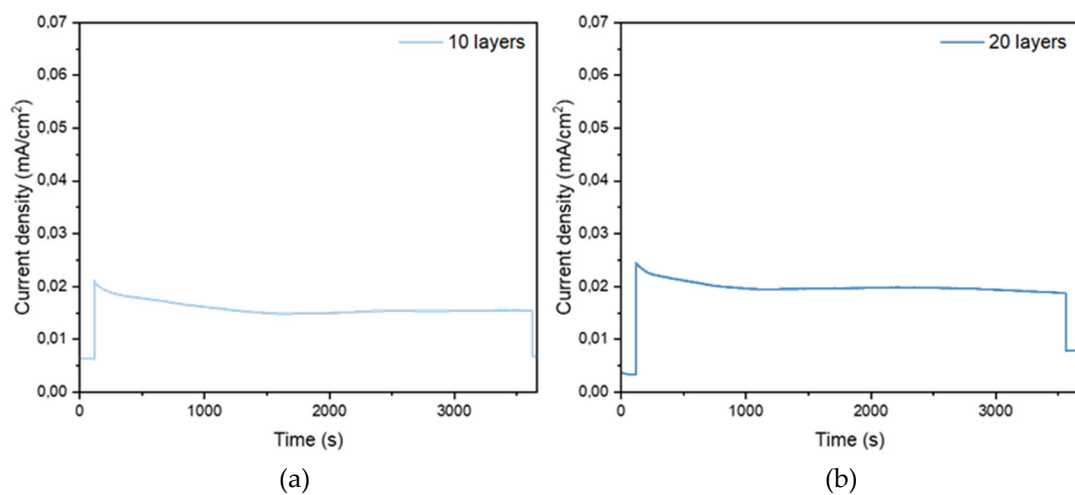


Figure S5. Chronoamperometries under illumination at 1.23 V vs RHE of BiVO₄ films formed by: (a) 10 layers and (b) 20 layers.