

Electronic Supplementary Information for:

**Electrochemical Deposition and Photoelectrochemistry of
CuWO₄, a Promising Photoanode for Water Oxidation**

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Figure S1 (a) X-Ray photoelectron spectra of amorphous films for Cu(2p) showing peaks indicative of both Cu^+ (blue) and Cu^{2+} (red) and (b) W(4f) indicative of W^{6+} .

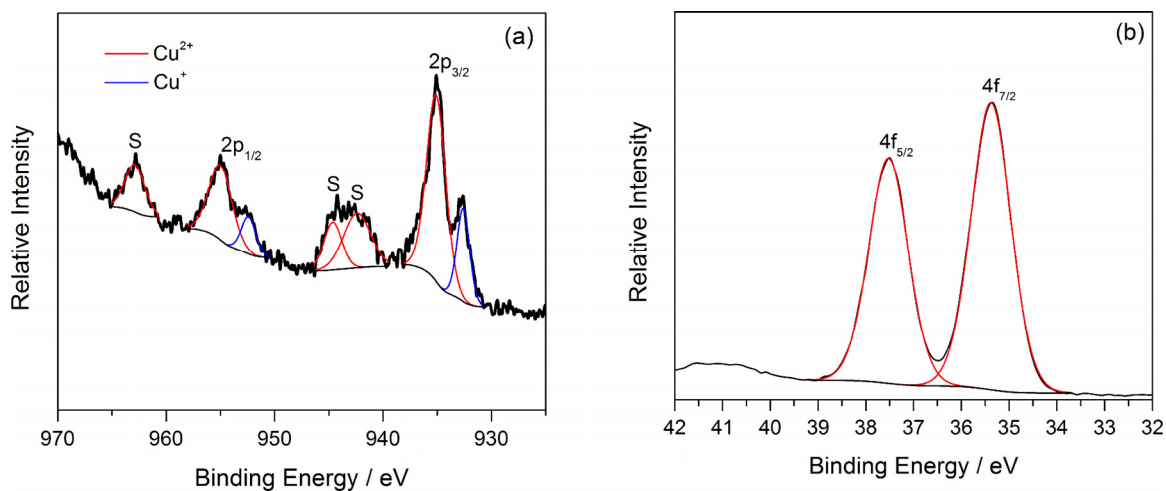


Figure S2 Heating scheme for the crystallization of CuWO_4 electrodes. The ramp rate was ~ 1.3 $^{\circ}\text{C}/\text{min}$ and the annealing temperature was kept at 500 $^{\circ}\text{C}$ for 2 h.

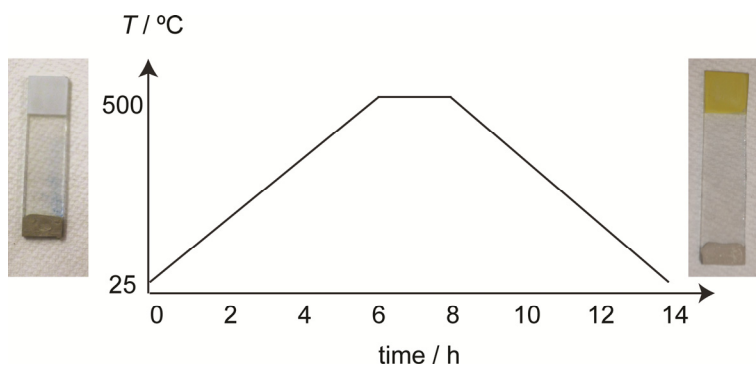


Figure S3 X-Ray photoelectron survey scan. The Cu(2p), O(1s), and W(4f) binding energies are noted in the figure.

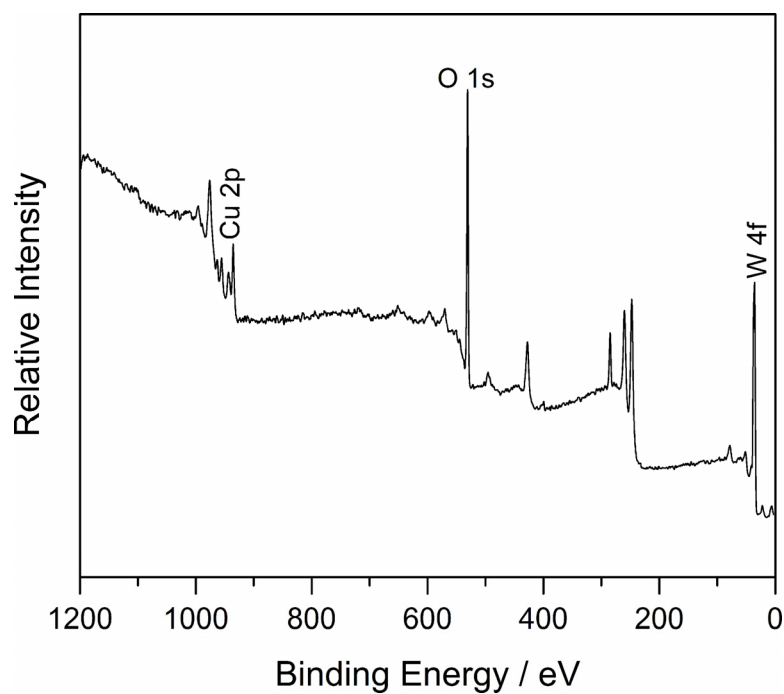


Figure S4 X-ray diffraction pattern of the as deposited film (blue) and after annealing at 400 °C for 2 hours (black).

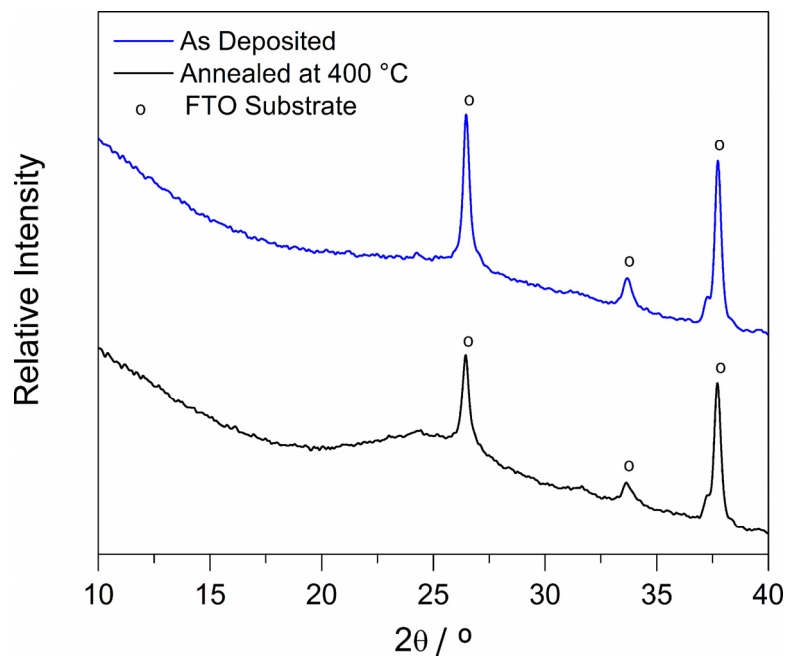


Figure S5 Bulk electrolysis experiment of CuWO_4 (black) and WO_3 (green) at 0.5V vs Ag/AgCl in a 0.1M phosphate buffer (pH 7). **Inset.** Decay of the WO_3 photoanode over the first hour of illumination.

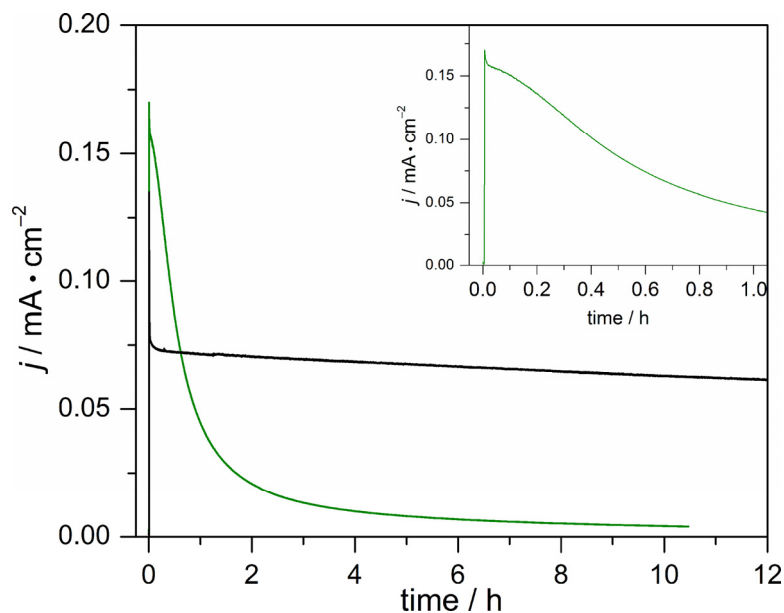


Figure S6 Bode plot for a CuWO_4 film constructed from the impedance data taken in 0.1 M potassium phosphate buffer (pH 7).

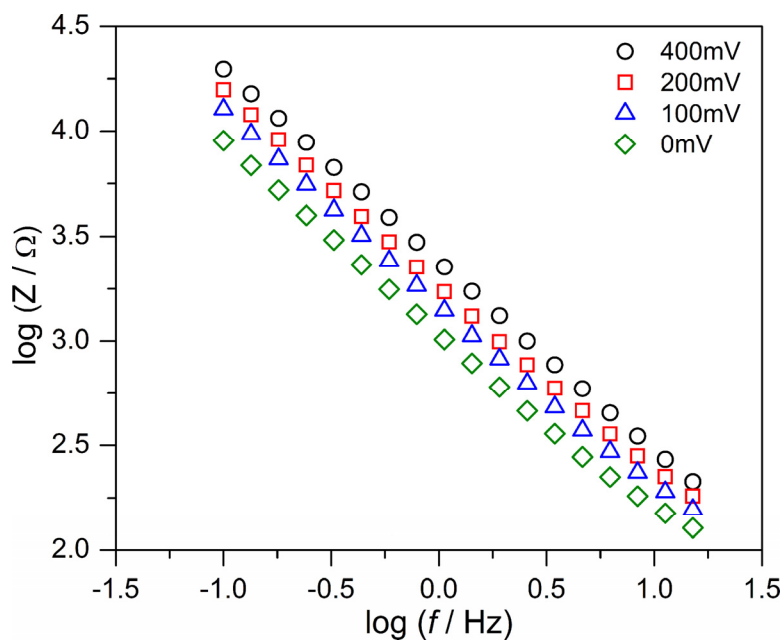


Figure S7 Spectral response of CuWO_4 and WO_3 in 0.1 M Na_2SO_4 with 10% MeOH and the quantitative absorption spectrum of a 2 μm thick CuWO_4 film.

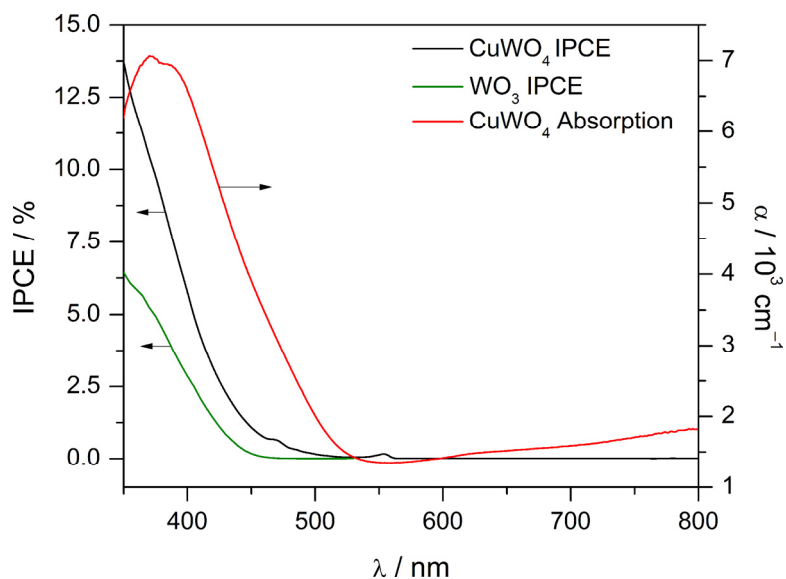


Figure S8 Electrochemical deposition control experiments in the same potential window (+0.3 to -0.5 V vs Ag/AgCl) for (a) 0.25M Cu^{2+} in a pH 1.1 solution of 70:30 H_2O :2-propanol and (b) 0.25M $\text{W}_2\text{O}_{11}^{2-}$ in a pH 1.1 solution of 70:30 H_2O :2-propanol.

