

Supporting Information

Enhanced Photoelectrochemical Water Splitting using Nanostructured Films: p-CuO Sensitized with Polyhedral n-Cu₂O Particles and CuS as Photocathode

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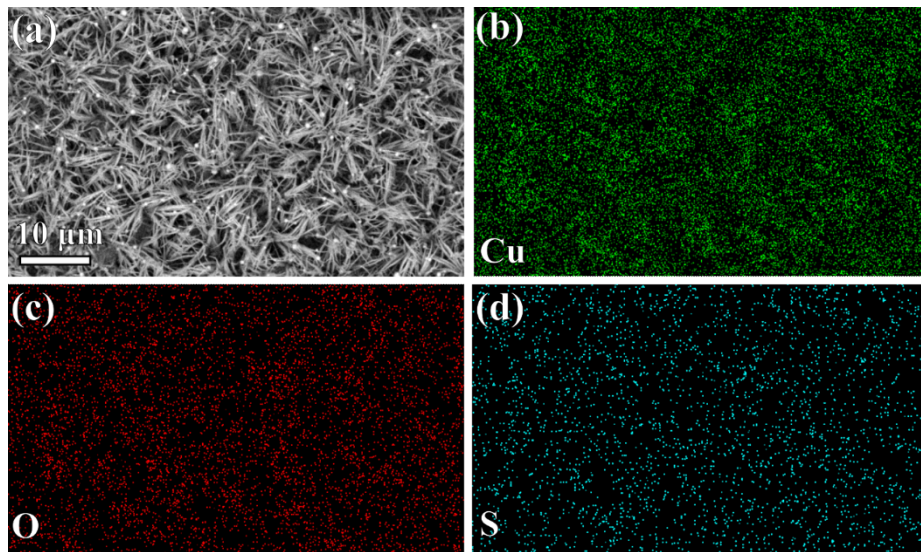


Figure S1. (a) SEM surface image and elemental EDX mappings of (b) Cu, (c) O and (d) S for the CuO/Cu₂O/CuS film.

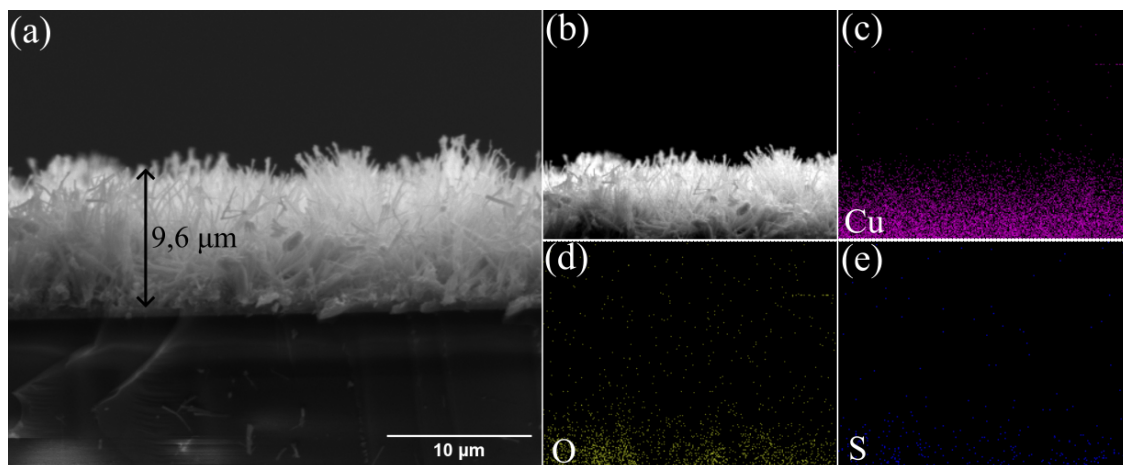


Figure S2. (a) SEM cross-section image and (b)-(e) Elemental mapping by EDX of CuO/Cu₂O/CuS film.

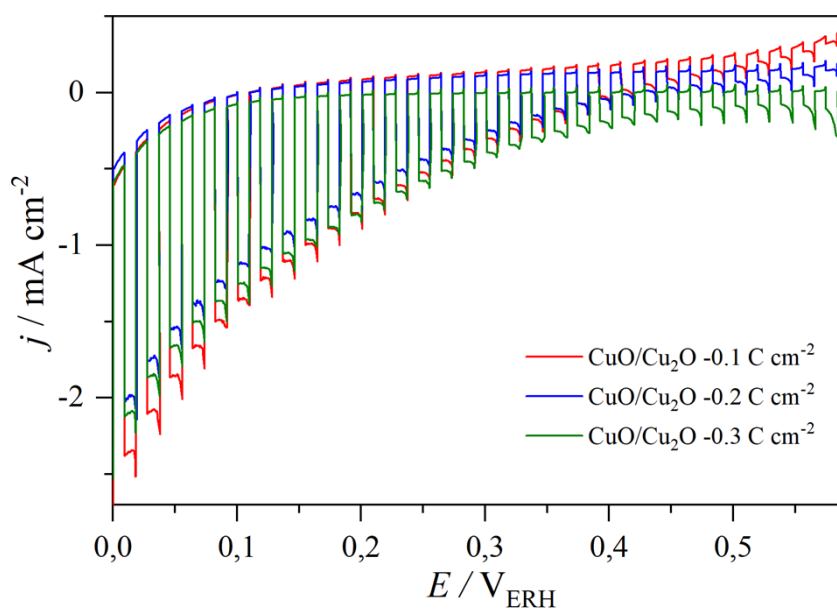


Figure S3 – Linear voltammograms at 10 mV s^{-1} under AM 1.5G pulsed illumination (100 mW cm^{-2}) for the $\text{CuO/Cu}_2\text{O}$ films obtained at different deposition charge densities of Cu_2O . Measurements carry out in $0.5 \text{ mol L}^{-1} \text{ Na}_2\text{SO}_4$ solution (pH 6).

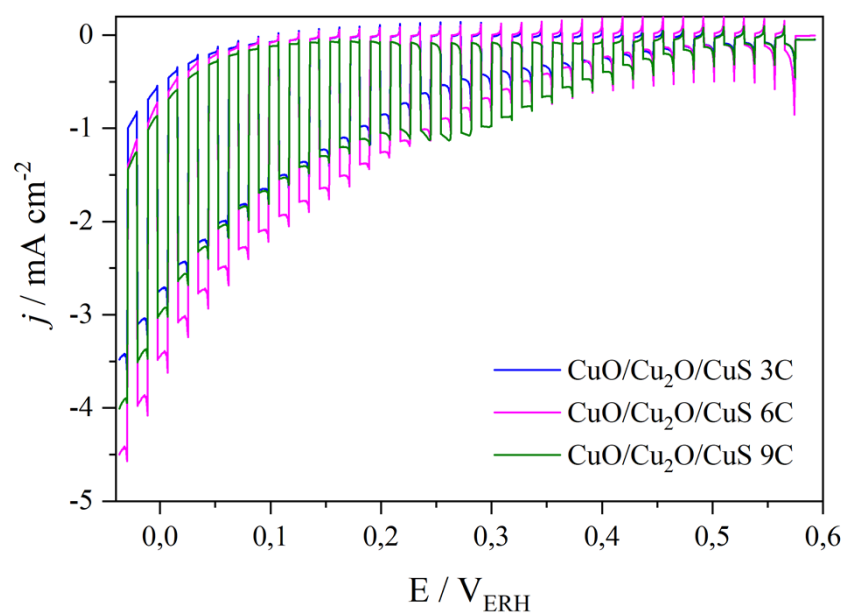


Figure S4 – Linear voltammograms at 10 mV s^{-1} under AM 1.5G pulsed illumination (100 mW cm^{-2}) for CuO/Cu₂O/CuS films obtained with different numbers of SILAR cycles. Measurements carry out in $0.5 \text{ mol L}^{-1} \text{ Na}_2\text{SO}_4$ solution (pH 6).

Table S1. Parameters obtained from the adjustment of the EIS data for the CuO, CuO/Cu₂O and CuO, CuO/Cu₂O/CuS films , using the equivalent circuit with one time constant in series (1TS) inserted in Figure 7.

Sample	R_s ($\Omega \text{ cm}^2$)	R_{ct} ($\Omega \text{ cm}^2$)	CPE		Chi ²
			CPE (T)	CPE (P)	
CuO	2.30	248.15	1.49×10^{-4}	0.69	9.22×10^{-5}
CuO/Cu ₂ O	3.38	187.80	1.11×10^{-4}	0.74	5.29×10^{-4}
CuO/Cu ₂ O/CuS	2.95	132.47	1.79×10^{-4}	0.74	1.28×10^{-4}

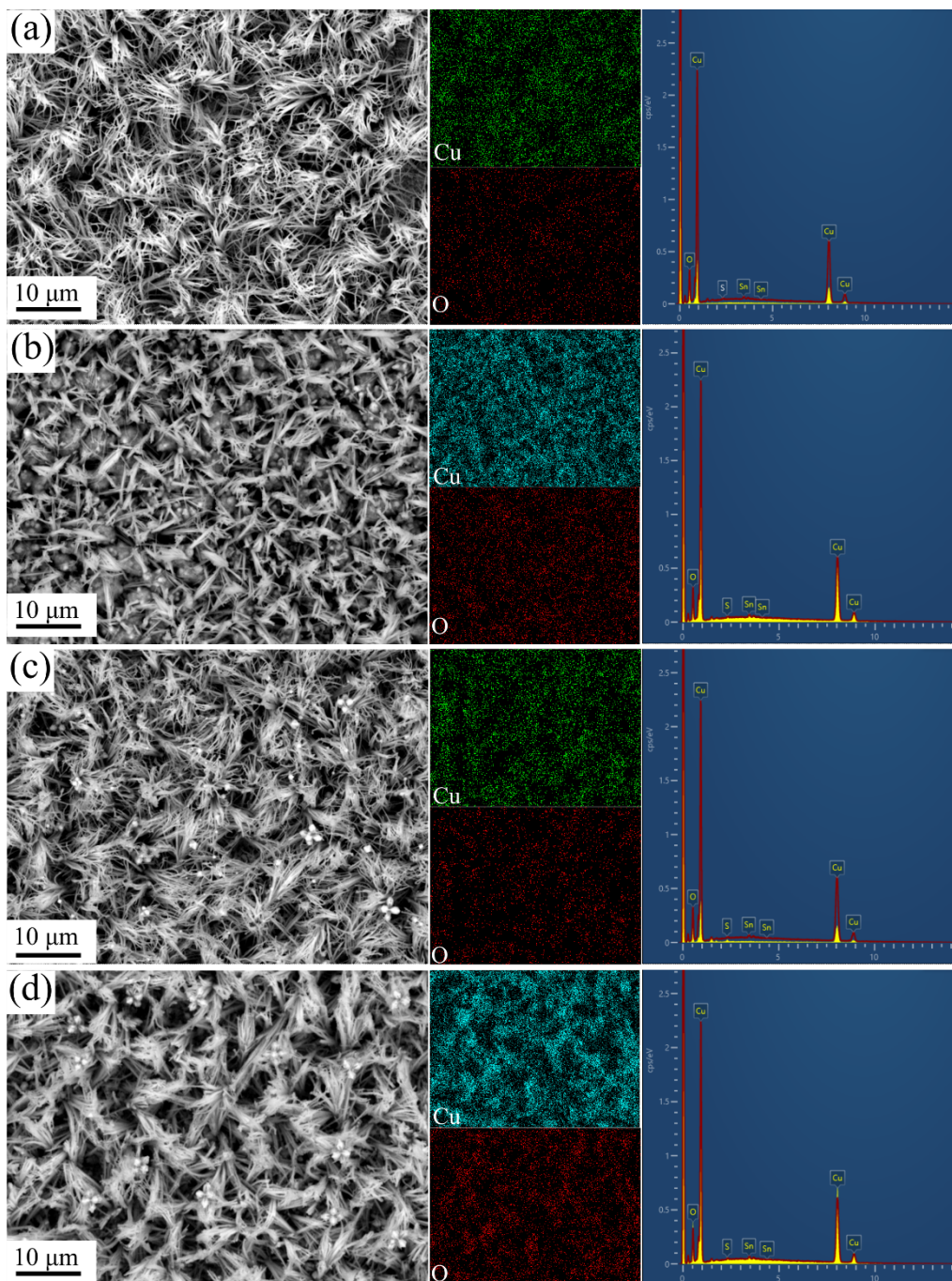


Figure S5. SEM surface images and EDX elemental mapping for bare CuO (a) before and (b) after the stability test. SEM surface images and EDX elemental mapping for CuO/Cu₂O/CuS (c) before and (d) after the stability test.