

Electronic Supplementary Material

Porous TiO₂ photoelectrodes via laser cladding– electrochemical dealloying: photoelectric and photocatalytic performance

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Table S1 summarizes the key parameters obtained from nonlinear least-squares fitting of the electrochemical impedance spectroscopy data for the three porous TiO₂ photoanodes (porous TiO₂@Cu₅₈Ti₄₂, porous TiO₂@Cu₆₈Ti₃₂, and porous TiO₂@Cu₇₇Ti₂₃) using the equivalent circuit model shown in Fig. 3(d). It includes:

- 1) Circuit element values: e.g., solution resistance R_s , charge-transfer resistance R_{ct} , constant-phase element (CPE) parameters (Y_0, n), and Warburg impedance parameters.
- 2) Fitting errors: reported as relative error percentages (%), reflecting the precision and confidence level of each fitted parameter.
- 3) Goodness-of-fit indicators: including the chi-squared value (χ^2) and the sum of squared residuals, which provide an overall assessment of the fitting quality.

The data in this table offer a complete quantitative foundation for the fitting results presented in Fig. 3 (Nyquist and Bode plots) and serve as core supporting data for evaluating interfacial kinetics and charge-transport properties.

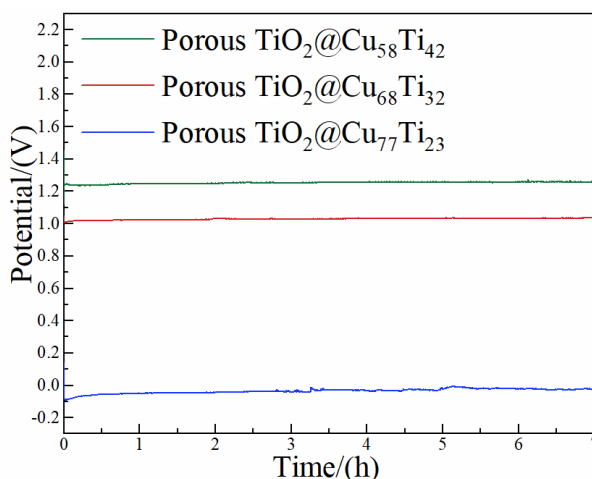


Fig. S1 Time–potential curves of dealloying for different precursor components.

Table S1 Key equivalent circuit parameters, errors, and goodness-of-fit indicators for all samples

Sample	Parameters								
	χ^2	Sum of squares	R_s ($\Omega \cdot \text{cm}^2$)	R_{ct} ($\Omega \cdot \text{cm}^2$)	CPE1-T ($\text{s}^n \cdot \Omega^{-1} \cdot \text{cm}^{-2}$)	CPE1-P (n)	W1-R ($\Omega \cdot \text{cm}^2$)	W1-T (s)	W1-P (p)
Porous TiO ₂ @Cu ₇₇ Ti ₂₃	3.7386×10^{-4}	0.01159	8.411 ± 0.912%	7.919 ± 1.233%	$(1.386 \pm 12.2\%) \times 10^{-6}$	0.968 ± 1.17%	42.05 ± 3.49%	0.3759 ± 6.46%	0.650 ± 1.02%
Porous TiO ₂ @Cu ₆₈ Ti ₃₂	9.9810×10^{-5}	0.0028945	7.865 ± 0.620%	10.11 ± 0.763%	$(7.185 \pm 6.88\%) \times 10^{-7}$	0.9997 ± 0.626%	9.419 ± 5.01%	0.01808 ± 9.46%	0.322 ± 1.35%
Porous TiO ₂ @Cu ₅₈ Ti ₄₂	7.8135×10^{-5}	0.0021096	7.601 ± 0.623%	11.29 ± 0.971%	$(6.079 \pm 6.92\%) \times 10^{-7}$	1.006 ± 0.628%	8.301 ± 8.58%	0.00728 ± 18.9%	0.267 ± 1.61%