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Fig. S1 EDS spectrum of (a) Ti/SnO₂-Sb, (b) Ti/SnO₂-Sb-Zn, (c) Ti/SnO₂-Sb-Cu, (d) Ti/SnO₂-Sb-Cu-Zn

Fig. S2 Elemental distribution of Zn in Ti/SnO₂-Sb-Zn



Fig. S3 Elemental distribution of Cu in Ti/SnO₂-Sb-Cu



Fig. S4 Elemental distribution of Zn and Cu in Ti/SnO₂-Sb-Cu-Zn



Fig. S5 Cu 2p electron orbit high-resolution spectrum and deconvolution results



Electrode	q*(mC/cm ²)	$Rs/(\Omega \cdot cm^2)$	Cdl/(mF·cm ²)	$Rct/(k\Omega \cdot cm^2)$
Ti/SnO ₂ -Sb	10.88	4.48	0.42	19.78
Ti/SnO ₂ -Sb-Cu-Zn	36.00	4.55	1.79	1.28

Table S1 The electrochemical parameters of the two electrodes

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