

Supplementary information

Bimetallic Cu-Bi catalysts for efficient electroreduction of CO₂ to formate

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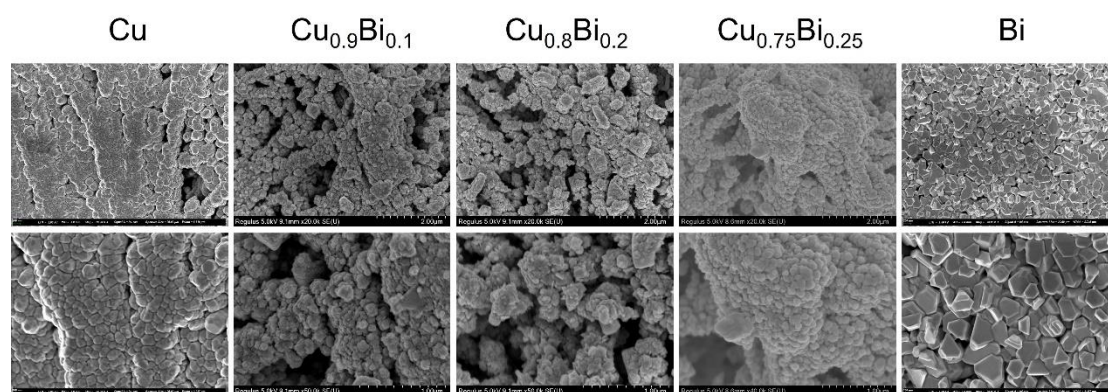


Fig. S1. SEM images of the prepared Cu, $\text{Cu}_{0.9}\text{Bi}_{0.1}$, $\text{Cu}_{0.8}\text{Bi}_{0.2}$, $\text{Cu}_{0.75}\text{Bi}_{0.25}$, and Bi.

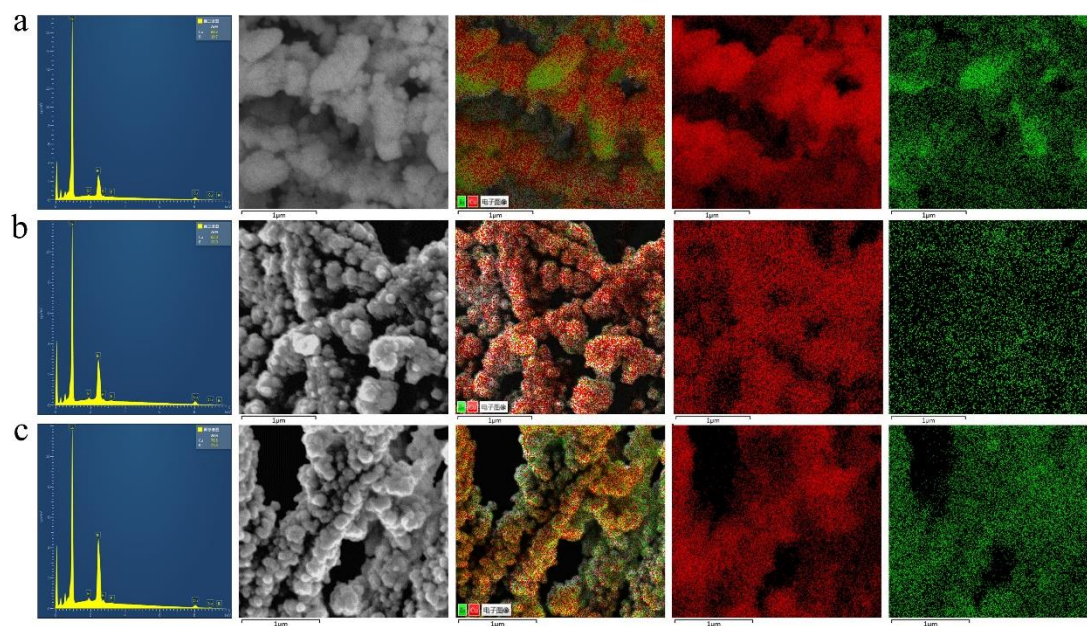


Fig. S2. EDX spectrum and EDX elemental mapping results in SEM of a. $\text{Cu}_{0.9}\text{Bi}_{0.1}$.
b. $\text{Cu}_{0.8}\text{Bi}_{0.2}$. c. $\text{Cu}_{0.75}\text{Bi}_{0.25}$.

	SEM-EDX	XPS
	Atomic %	Atomic %
Cu	81	82
Bi	19	18

Fig. S3. The molar concentration of Cu and Bi in the $\text{Cu}_{0.8}\text{Bi}_{0.2}$ obtained by SEM-EDX and XPS analyses.

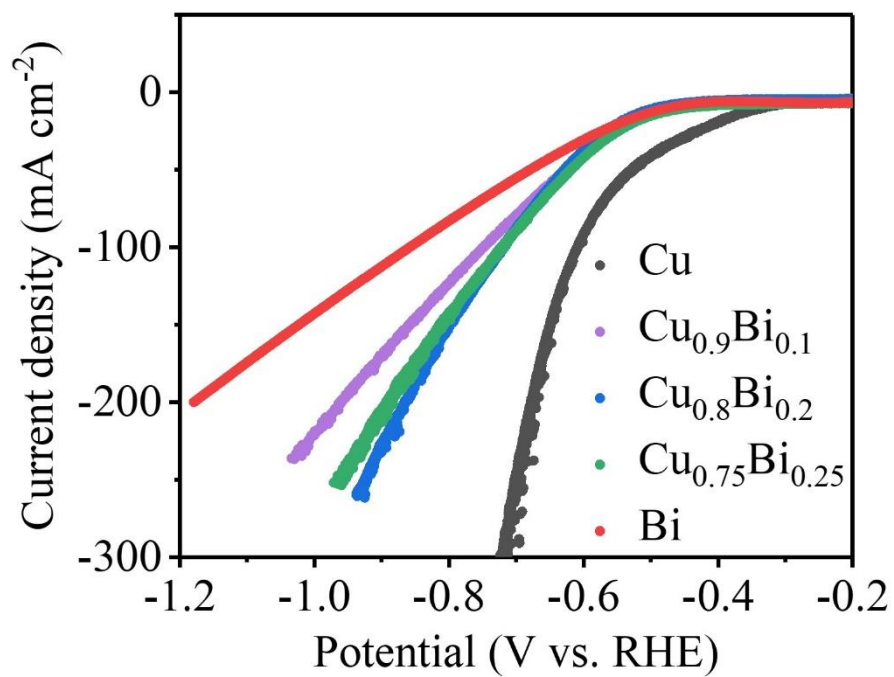


Fig. S4. Linear sweep voltammetry (LSV) curves of the Cu_{1-x}Bi_x ($x=0.1, 0.2, 0.25$), Cu, and Bi catalysts in 1 M KOH electrolyte.

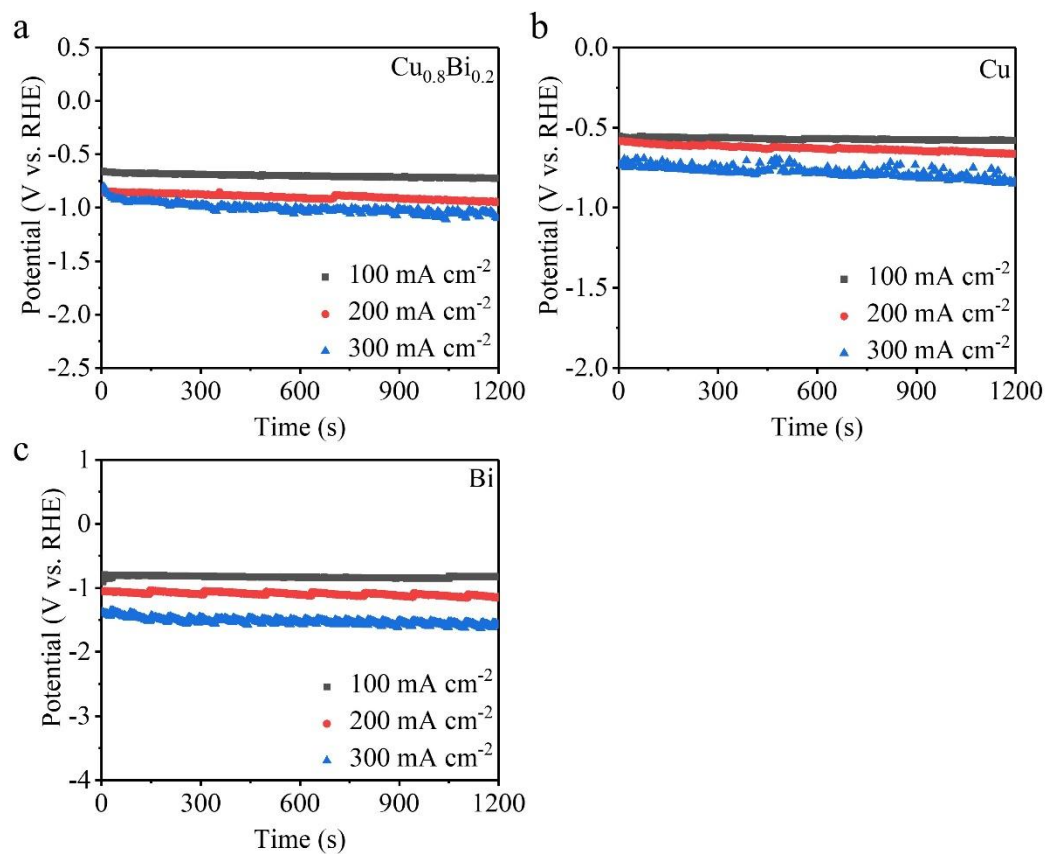


Fig. S5. The CO₂-reduction chronopotentiometry curve of the a. Cu_{0.8}Bi_{0.2}, b. Cu, and c. Bi catalysts in 1 M KOH electrolyte at 100, 200, 300 mA cm⁻².

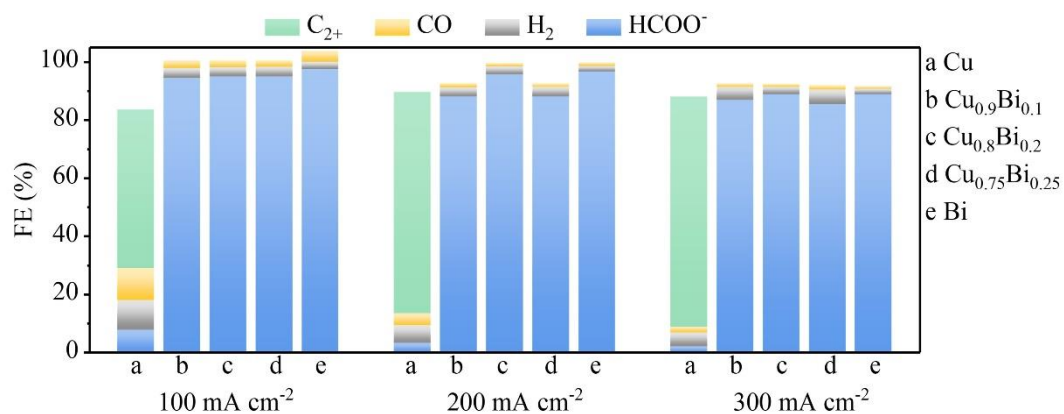


Fig. S6. The $HCOO^-$, H_2 , CO, and C_{2+} FEs under different current densities of $Cu_{1-x}Bi_x$ ($x=0.1, 0.2, 0.25$), Cu, and Bi catalysts in 1 M KOH electrolyte.

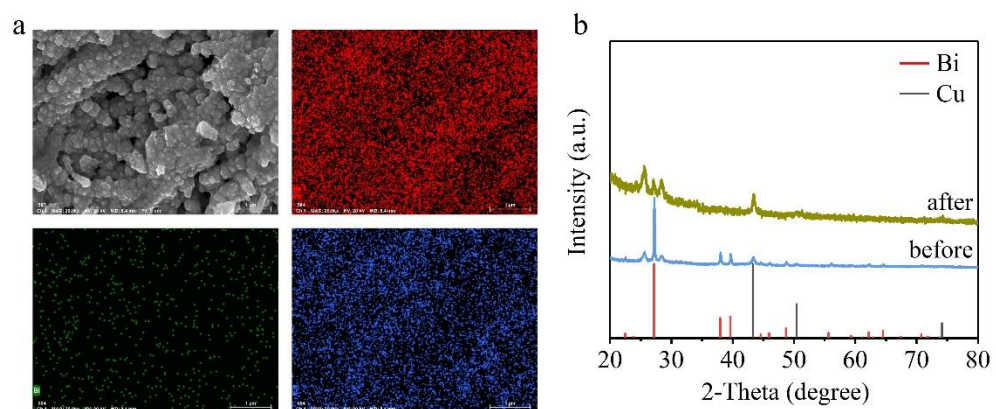


Fig. S7. a. SEM-EDX elemental mapping results. b. XRD data of the $\text{Cu}_{0.8}\text{Bi}_{0.2}$ catalyst over 24 h of reaction.