

Supplementary Information

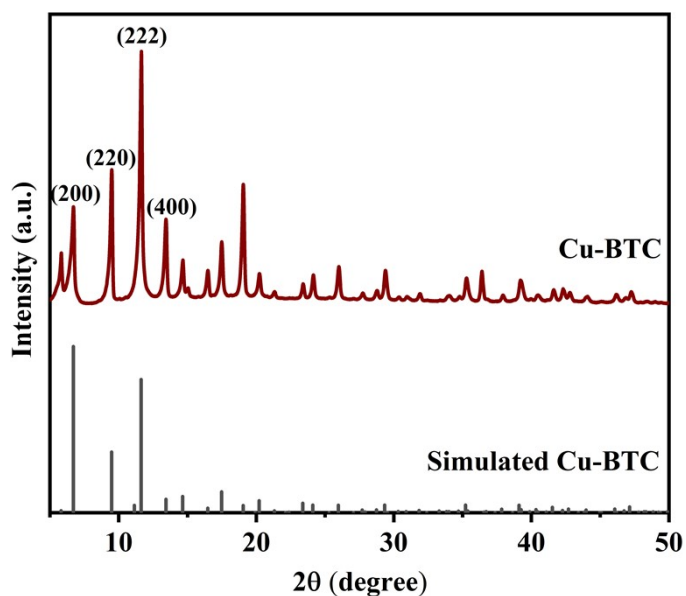


Fig. S1. XRD pattern of Cu-BTC.

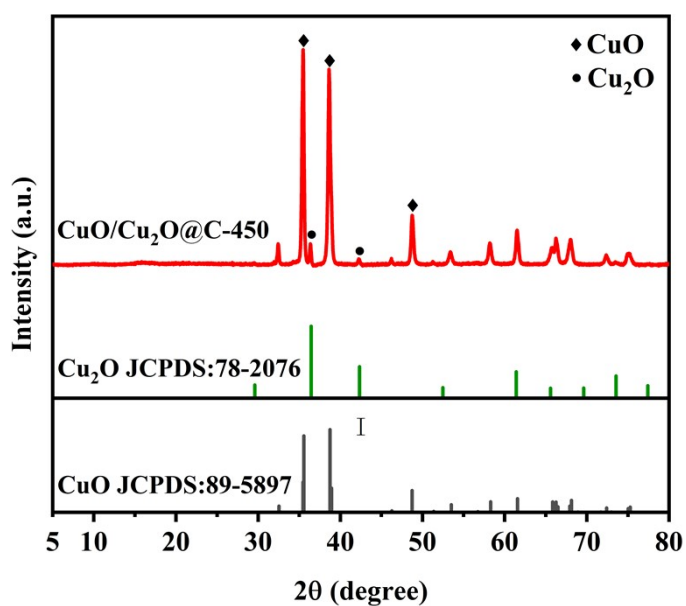


Fig. S2. XRD pattern of CuO/Cu₂O@C-450.

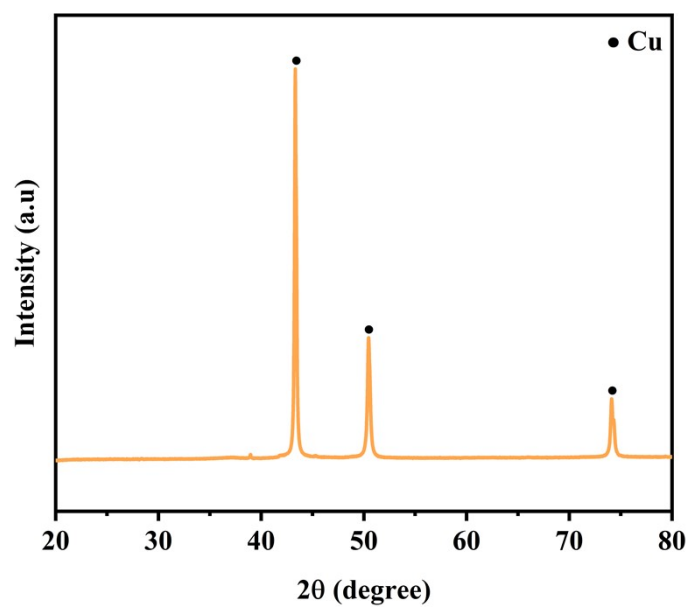


Fig. S3. XRD pattern of Cu@C-450.

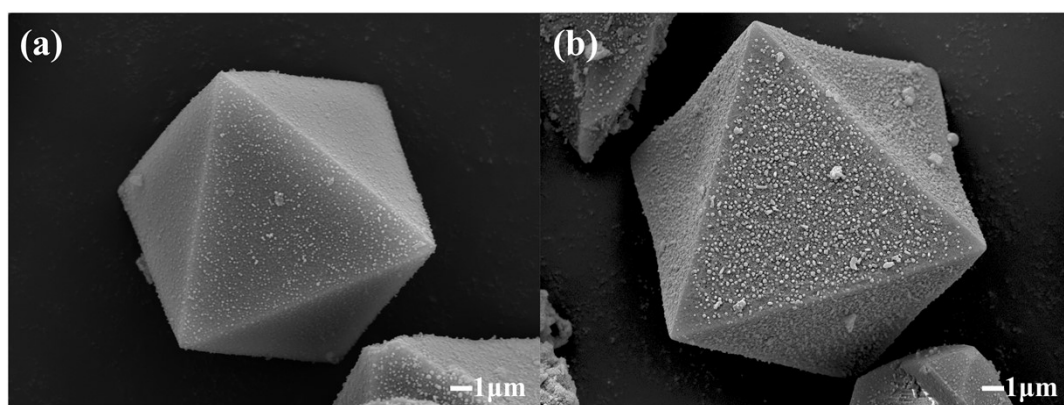


Fig. S4. SEM images of (a) Cu@C-450 5000 $\times$ (b) Cu/Cu₂O@C-450 5000 $\times$.

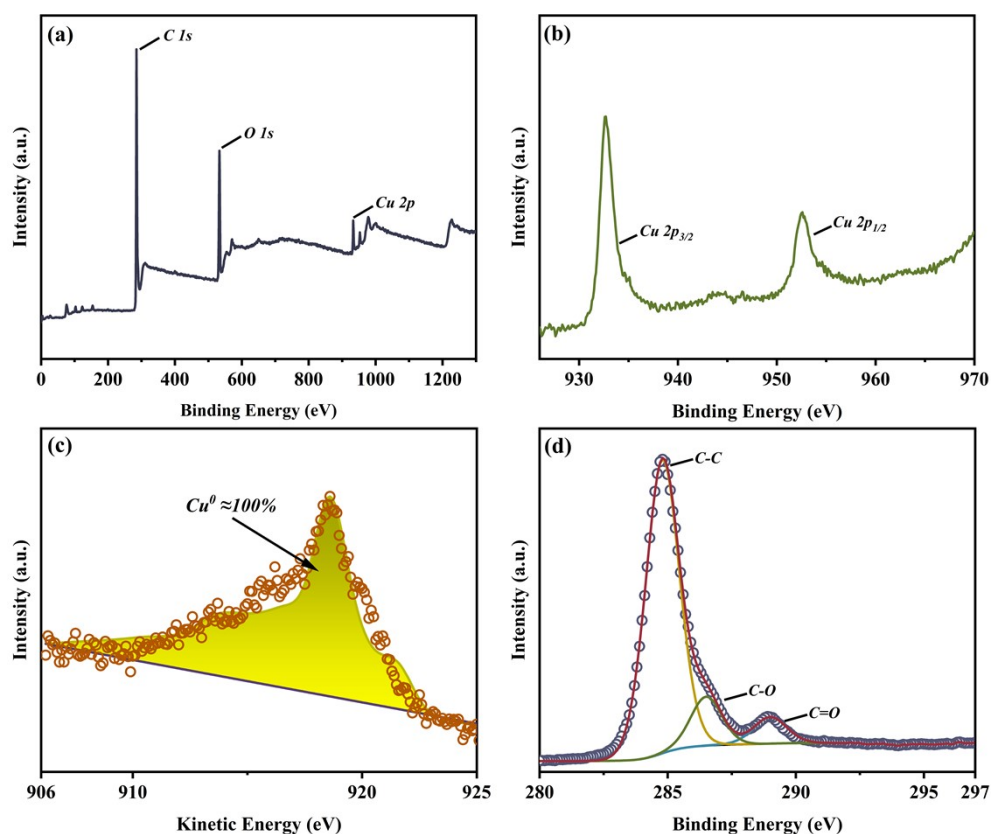


Fig. S5 XPS spectra of Cu@C-450 (a) full survey, (b) Cu 2p, (c) Cu LMM, (d) C 1s.

Table S1. Comparison of crystalline phase content between fresh catalyst and catalyst after 8 cycles.

Catalyst	* Phase composition (wt.%)	
	Cu ⁰	Cu ₂ O
Cu/Cu ₂ O@C-450	50.17	49.83
Cu/Cu ₂ O@C-450 ^a	86.66	13.34

*: Crystalline phase mass fractions obtained from XRD analysis fitted by Maud software.

a: After 8 cycles of use.

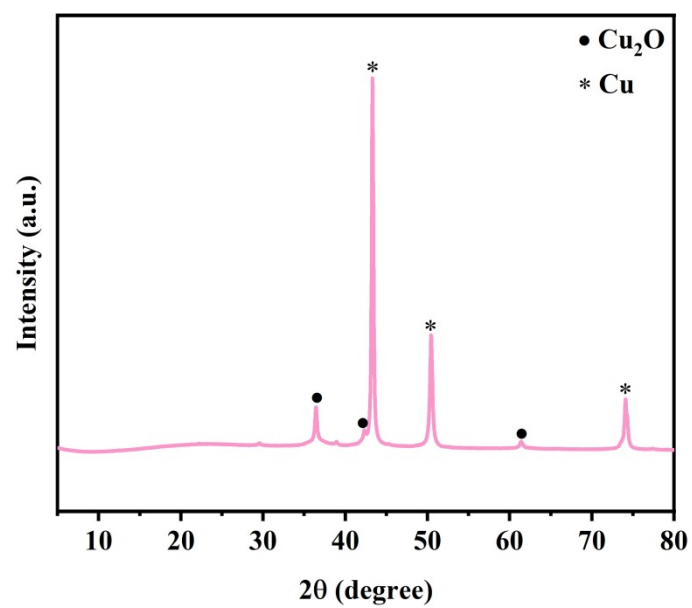


Fig. S6. XRD pattern of $\text{Cu}/\text{Cu}_2\text{O}@C\text{-}450$ after 8 cycles.