

Supplementary information

A dual Z-scheme heterojunction Cu-CuTCPP/Cu₂O/CoAl-LDH for photocatalytic

CO₂ reduction to C1 and C2 products

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Gas chromatography

The gas path is consisted of high purity Ar (99.999%), high purity H₂ (99.999%), and high purity air (99.999%). During the experiment, a mass flowmeter was used to control the gas flow, and steel pipe was applied to connect the gas path. GC-2014C gas chromatography of Shimadzu company was used to analyze the composition of the gas produced in the process of photocatalytic reduction of CO₂. Figure S1 displays the system flowchart. In the whole analysis process, high-purity Ar was used as the carrier gas, CO and CH₄ were detected in FID1, C₂ products such as C₂H₂, C₂H₄ and C₂H₆ were measured in FID2, and H₂ and O₂ in gas phase products were analyzed by TCD detector.

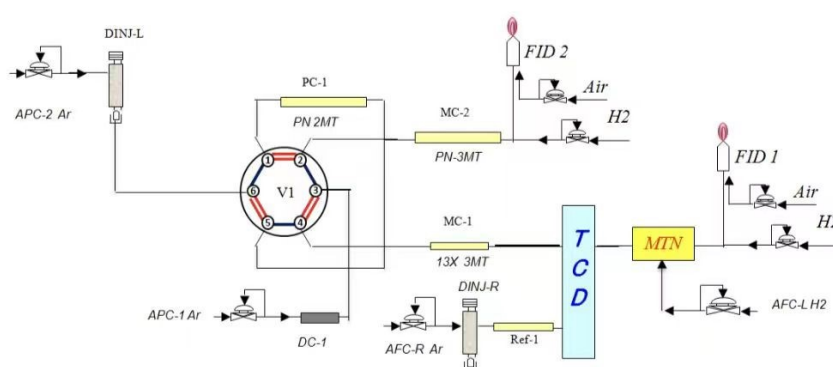


Fig. S1 The flow diagram of the online analysis system in photocatalytic reduction of CO₂.

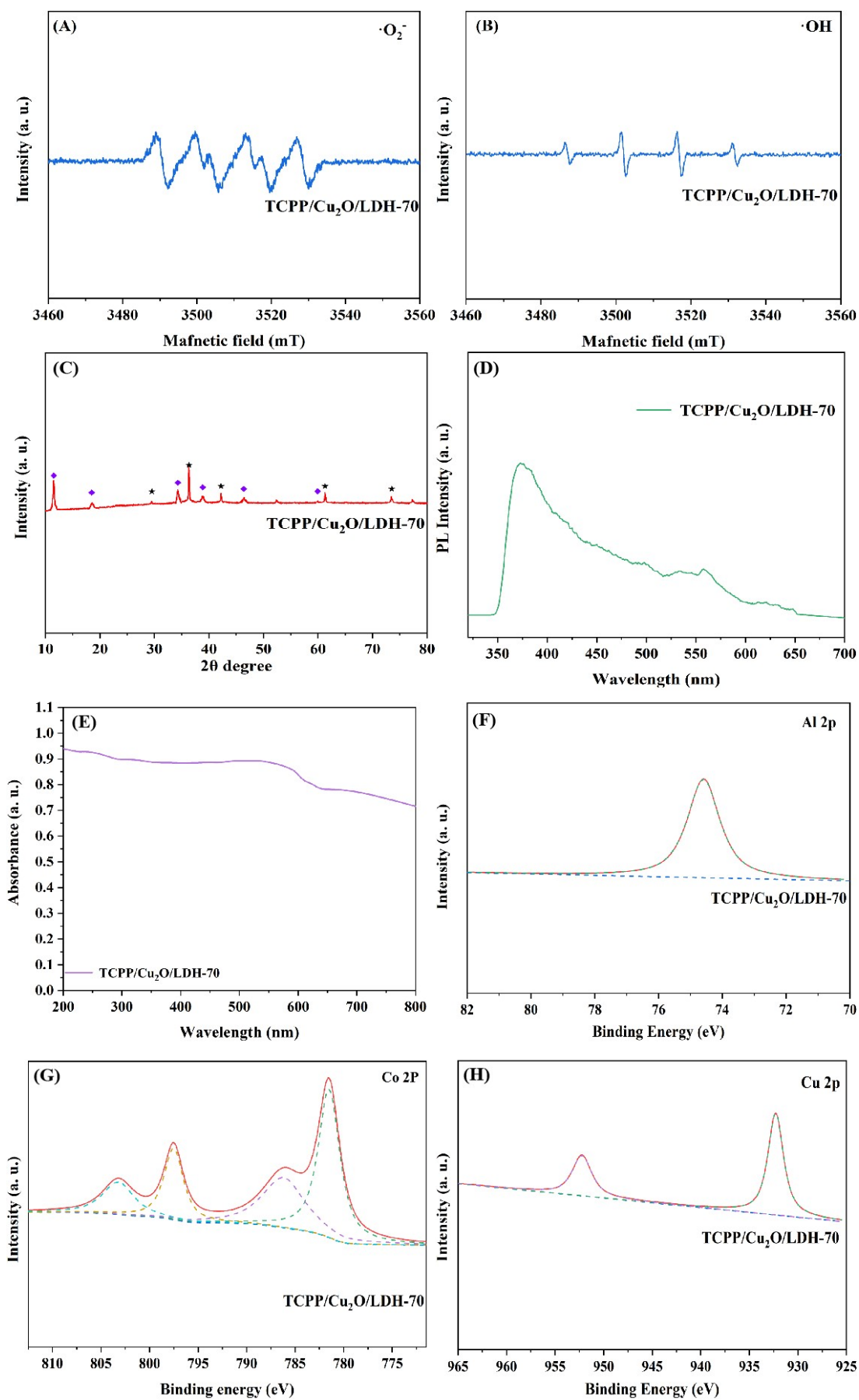


Fig. S2 EPR (A and B), XRD (C), PL (D), UV-vis DRS (E), and XPS (F, G, and H) plots of

TCPP/Cu₂O/CoAl-LDH-70 after cyclic testing.