Electronic Supplementary Material (ESI) for RSC Advances.

Mixed valence copper oxide composites derived from metal-organic frameworks for efficient visible light fuel denitrification

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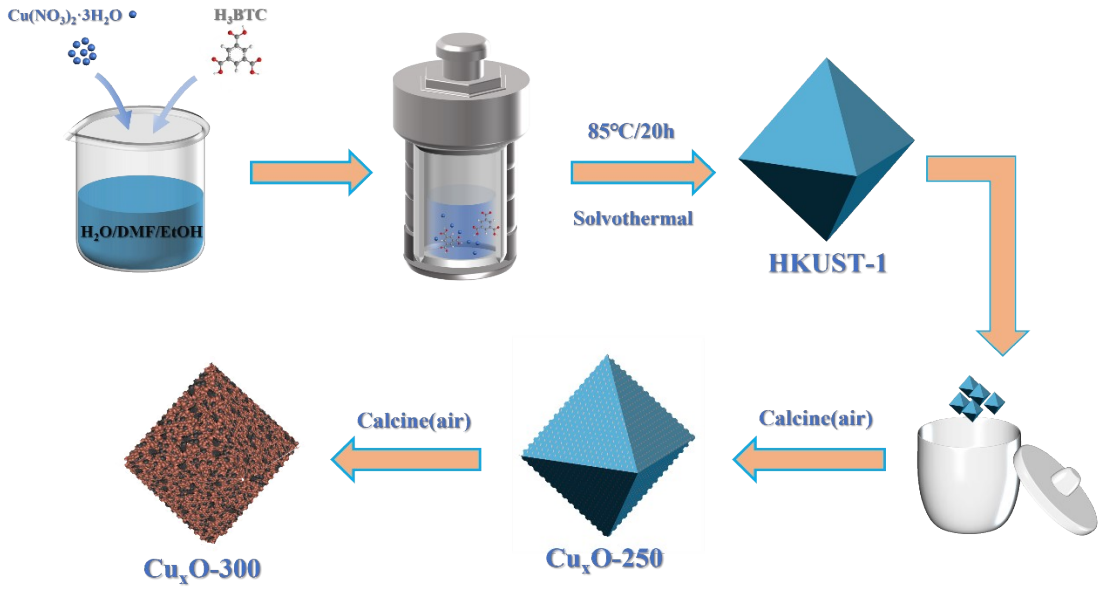

Fig. S1 Flow diagram for the fabrication of Cu_xO.

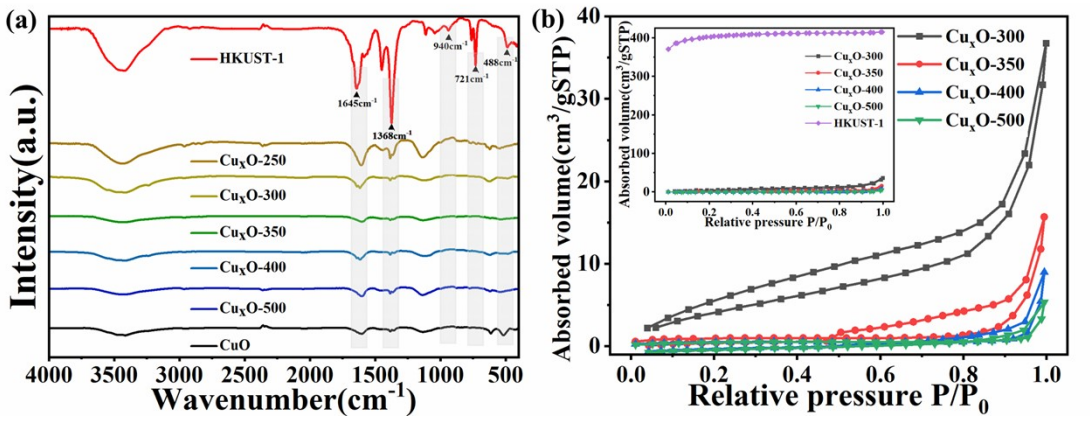

Fig. S2 (a) Fourier transform infrared reflectance spectra of samples and **(b)** N_2 adsorption-desorption isotherms of synthetic catalysts.

Table S1 BET specific surface area and pore volume of the synthesized catalyst.

Sample	BET surface area (m^2/g)	Pore volume (cm^3/g)
Cu_xO-300	17.68	0.154
Cu_xO-350	3.45	0.024
Cu_xO-400	1.91	0.013
Cu_xO-500	1.71	0.008
HKUST-1	1525.1	0.642

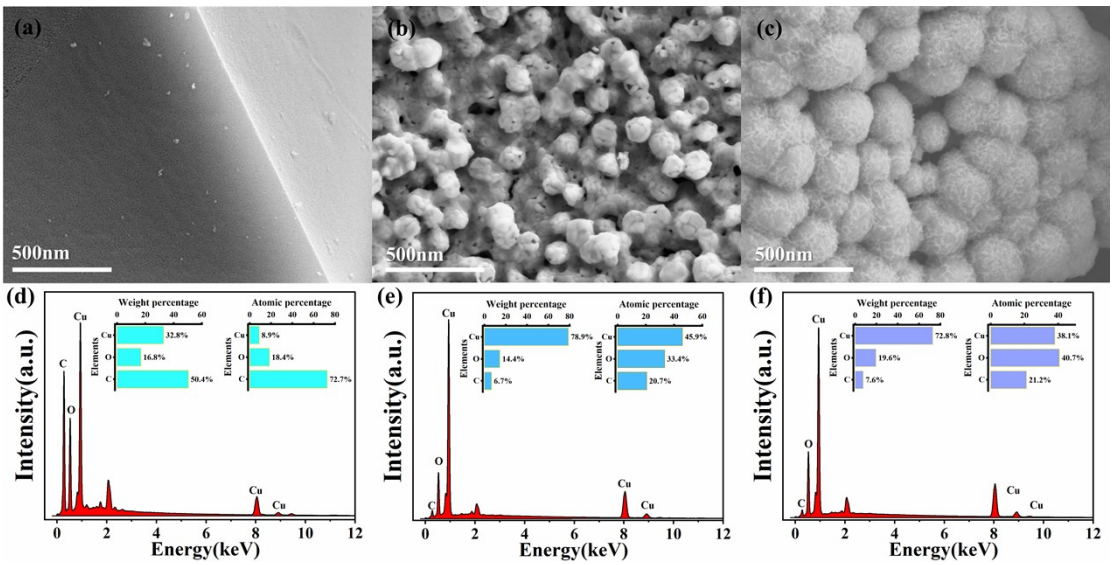

Fig. S3 (a-c) SEM image of Cu_xO-250, Cu_xO-300 and Cu_xO-500, **(d-f)** EDS of Cu_xO-250, Cu_xO-300 and Cu_xO-500

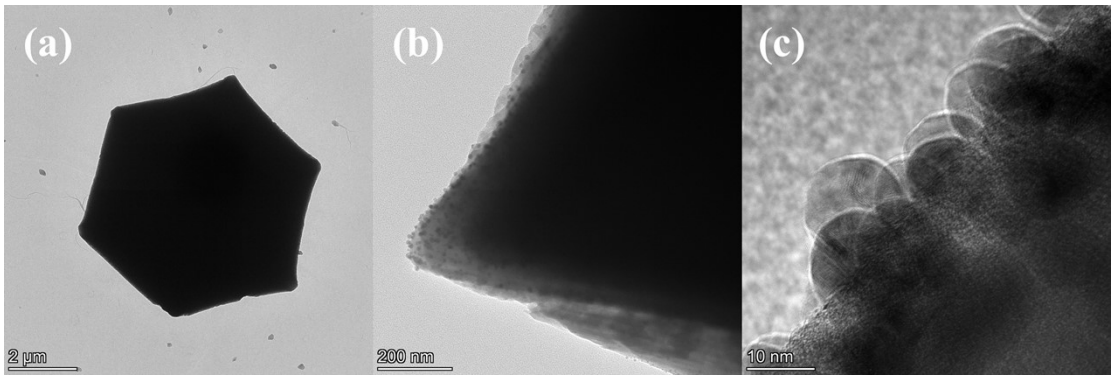

Fig. S4 (a-c) TEM image of HKUST-1.

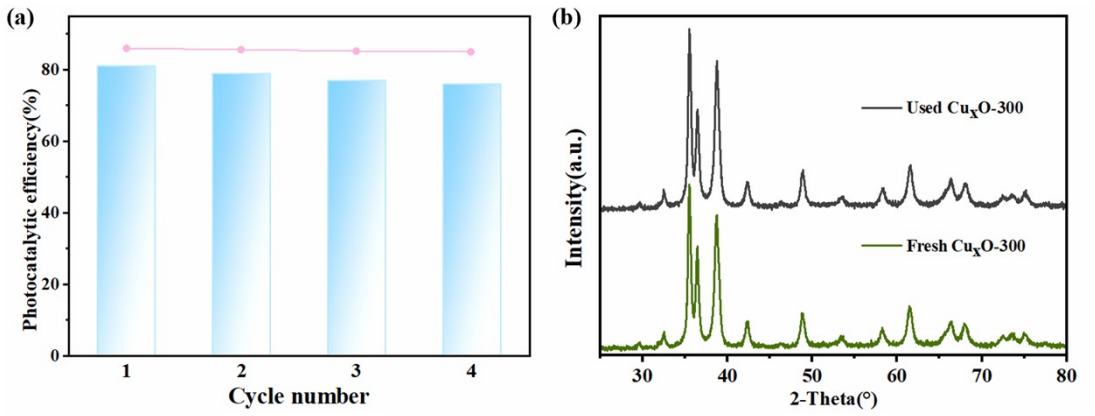

Fig. S5 (a) The cyclic experimental results of Cu_xO-300 and **(b)** The XRD patterns of Cu_xO-300 after four reaction cycles.

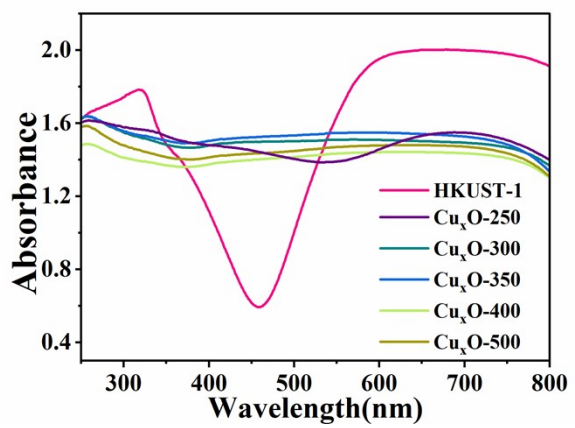

Fig. S6 UV–vis diffuse reflectance spectra of HKUST-1 and Cu_xO-T.

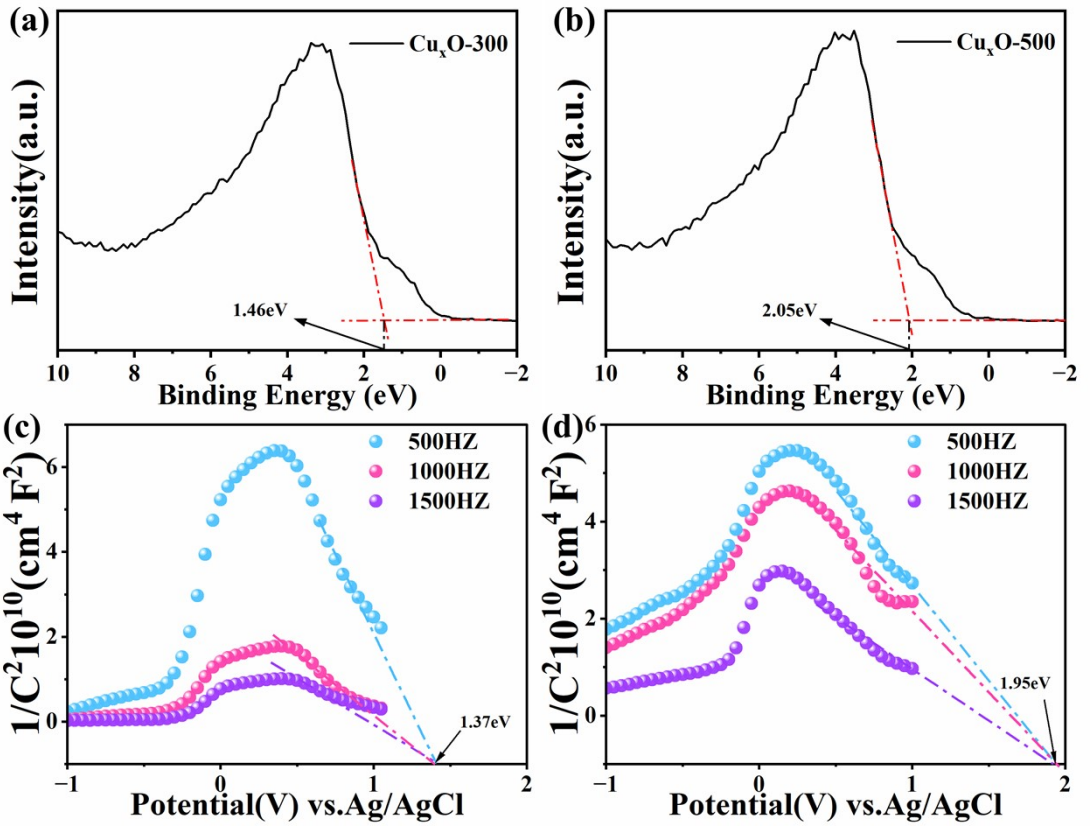

Fig. S7 (a, b) Valence band curves of Cu_xO-300 and Cu_xO-500; **(c, d)** Mott–Schottky plots of Cu_xO-300 and Cu_xO-500.

Table S2 Comparison between the photocatalytic activity of Cu_xO-300 and that of other reported catalysts for pyridine denitrogenation.

Photocatalysts	C pyridine (μg/g)	C cat. (mg/mL)	Light Source	Denitrogenation efficiency (%)	Ref.
Cu_xO	100	1.0	300W(λ＞420nm)	4.0h,81%	This work
$Pd/ZnIn_2S_4$	100	1.0	300W(λ＞420nm)	4.0h,80%	[R1]
TiO_2@MIL-101(Cr)	100	1.0	300W(λ＞420nm)	4.0h,70%	[R2]
Bi_2MoO_6/CdS	100	1.0	300W(λ＞420nm)	4.0h,81%	[R3]
CoCu-ZIF	100	1.0	300W(λ＞420nm)	4.0h,80%	[R4]

References

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