Electronic Supplementary Material (ESI) for Analyst.

Supplementary Information

of

Multi-Tailoring of a Modified MOF-Derived Cu_xO Electrochemical Transducer for Enhanced Hydrogen Peroxide Sensing

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Table S1. Comparison of the electrochemical performance of Cu_xO-based H_2O_2 sensors.

Figure S1. PXRD spectrum of the precursor CB@Cu-MOF.

Figure S2. Full XPS spectra of NC/Cu_xO-100, NC/Cu_xO-200, NC/Cu_xO-300 and NC/Cu_xO-400.

Figure S3. High resolution XPS spectra of O 1s of **(A)** NC/Cu_xO-100, **(B)** NC/Cu_xO-200, **(C)** NC/Cu_xO-300 and **(D)** NC/Cu_xO-400.

Figure S4. CVs of **(A)** NC/Cu_xO-100, **(B)** NC/Cu_xO-200, **(C)** NC/Cu_xO-400 at different concentration of H_2O_2.

Figure S5. (A) CVs of NC/Cu_xO-300 in 0.1 M PBS aqueous solution at different scan rates from 10 to 100 mV s^{-1}. **(B)** The calibration of the peak current *vs*. scan rate.

Table S1. Comparison of the electrochemical performance of Cu_xO-based H_2O_2 sensors.

Electrode material	Detection limit (μM)	Linear range (mM)	ref
Cu_2O	2.6	10-45	1
Cu_2O rGO_{pa}	21.7	30-12800	1
Cu_2O MCs	1.5	1.5-150	2
Octahedral Cu_2O	6.4	10-4900	3
Aggregate CuO	6	10-400	4
CuO/GCE	1.6	5-180	5
CuO@Cu_2O-NWs/PVA	0.35	1-10000	6
CuO nanorods	-	0.25-18.75	7
CuO nanoflowers	0.85	0.005-14.07	8
Grass-like CuO	5.5	0.010-0.9	9
NC/Cu_xO-300	0.26	0.02-1.79; 2.29-9.29	This work

Figure S1

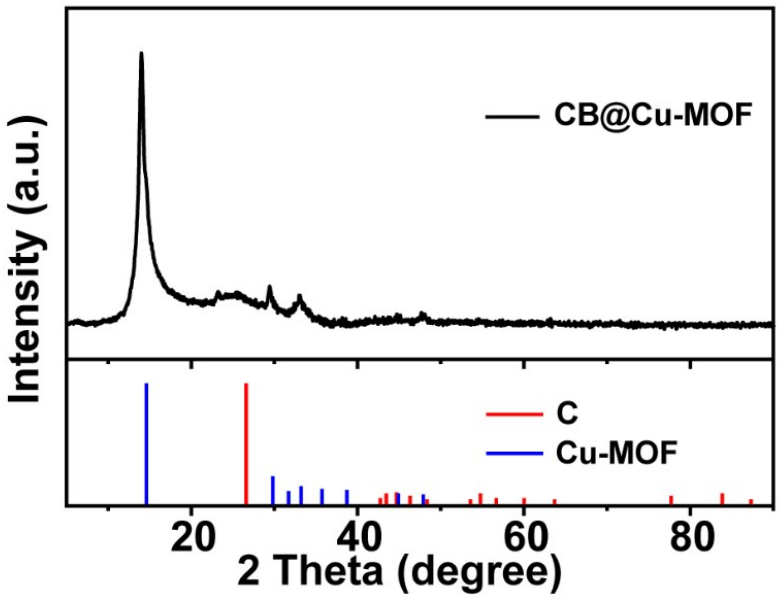


Figure S2

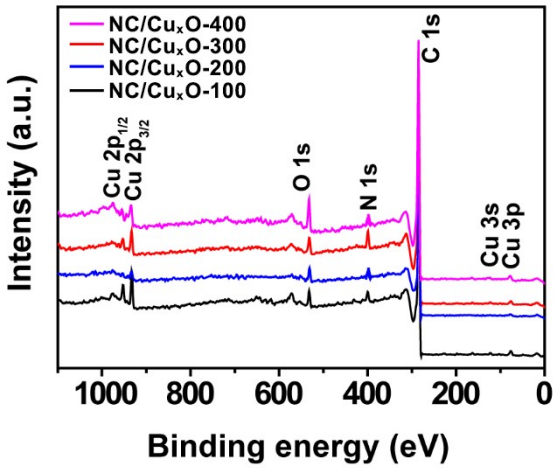

NC/CuxO-400
NC/CuxO-300
NC/CuxO-200
NC/CuxO-100
Cu 2p1/2
Cu 2p3/2
O 1s
N 1s
C 1s
Cu 3s
Cu 3p
Intensity (a.u.)
1000
800
600
400
200
0
Binding energy (eV)

Figure S3

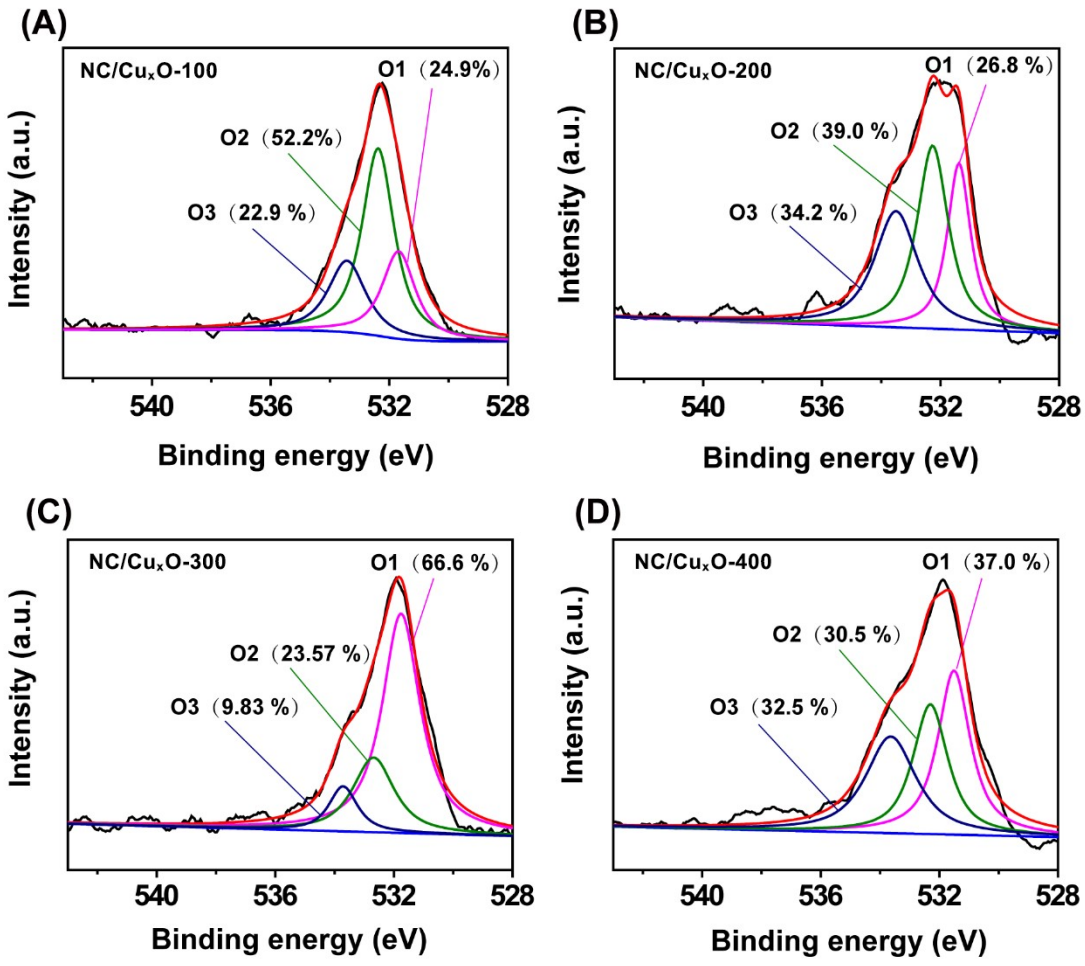

(A)
NC/CuxO-100
O1 (24.9%)
O2 (52.2%)
O3 (22.9 %)
(B)
NC/CuxO-200
O1 (26.8 %)
O2 (39.0 %)
O3 (34.2 %)
(C)
NC/CuxO-300
O1 (66.6 %)
O2 (23.57 %)
O3 (9.83 %)
(D)
NC/CuxO-400
O1 (37.0 %)
O2 (30.5 %)
O3 (32.5 %)
Intensity (a.u.)
540
536
532
528
Binding energy (eV)

Figure S4

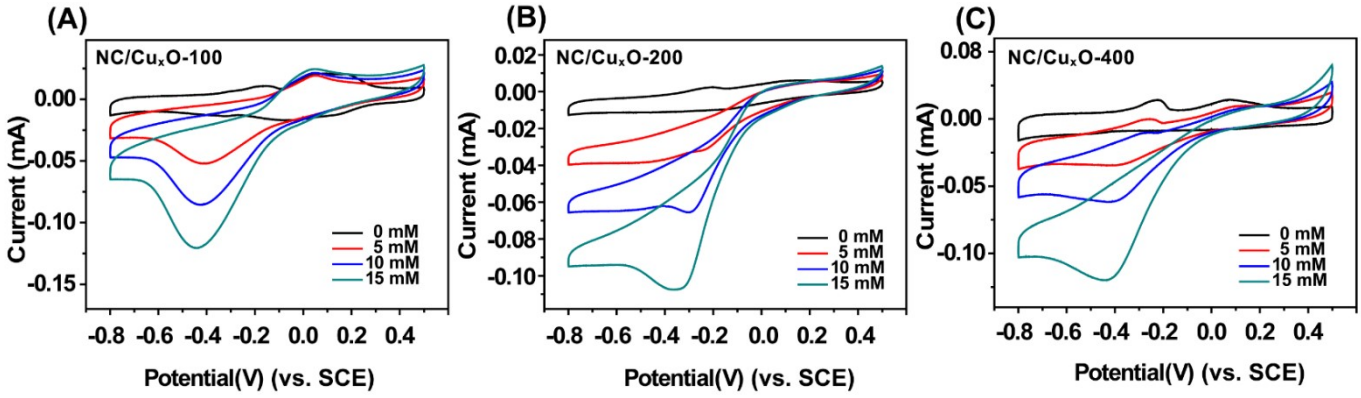
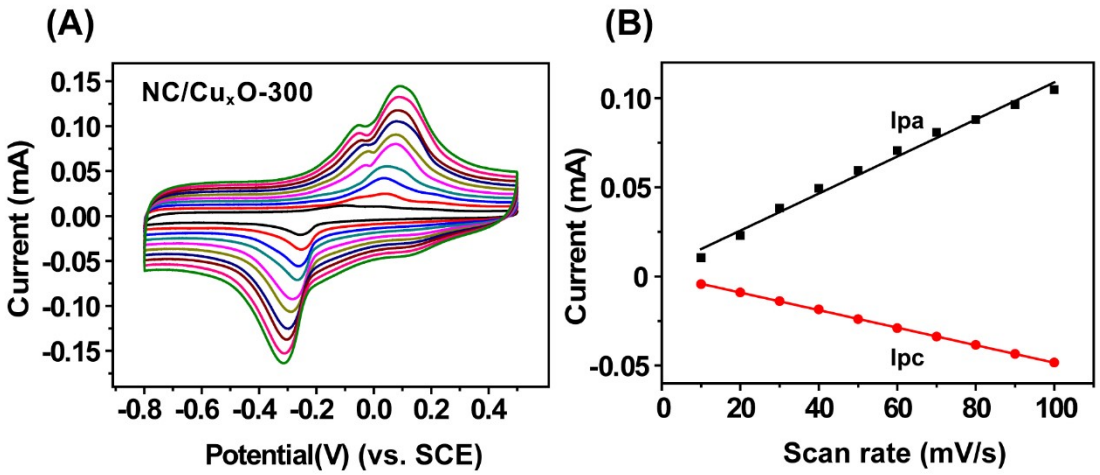


Figure S5



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