

Electronic Supplementary Information

## Nanoporous Copper Oxide Ribbons Assembly of Free-Standing Nanoneedles as Biosensors for Glucose

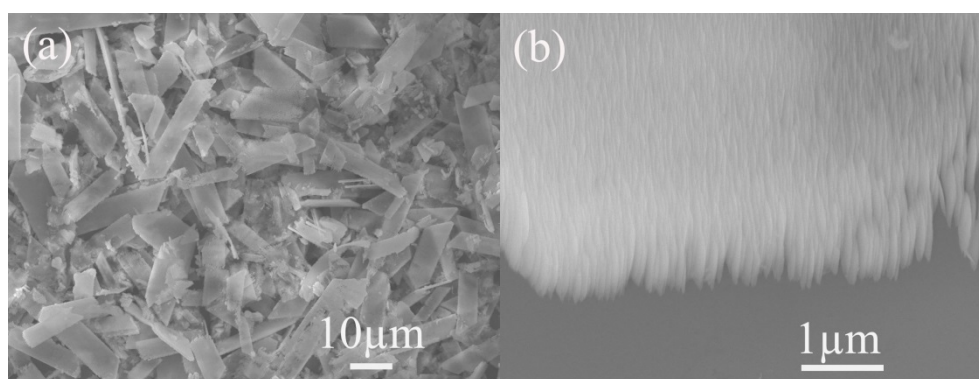
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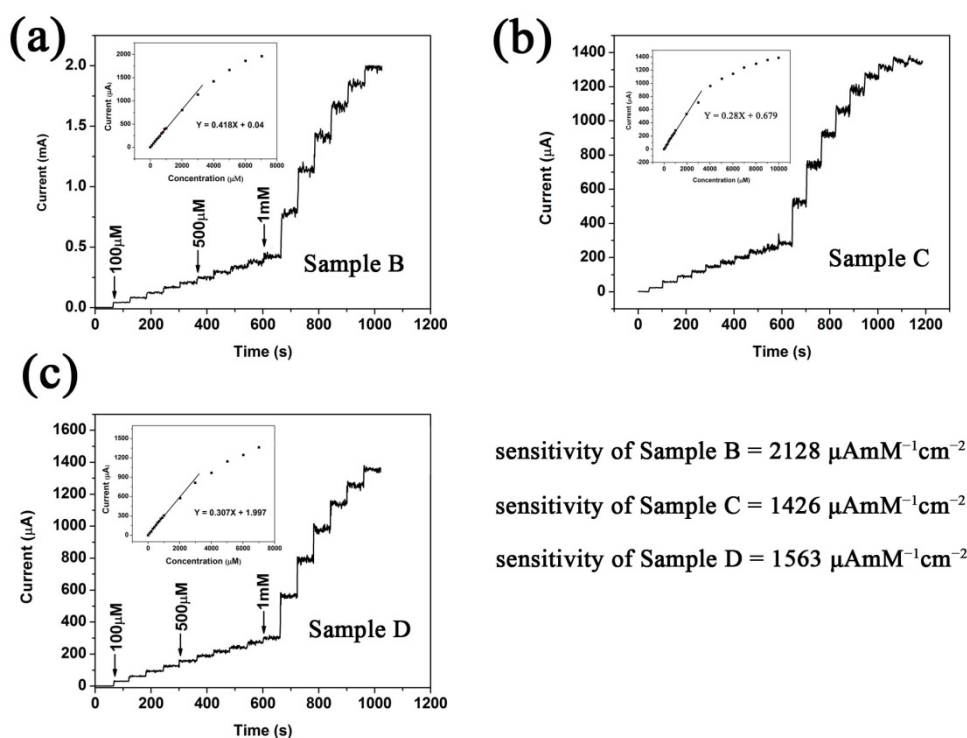
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**Table S1** Sample denotations and their corresponding detailed experimental conditions

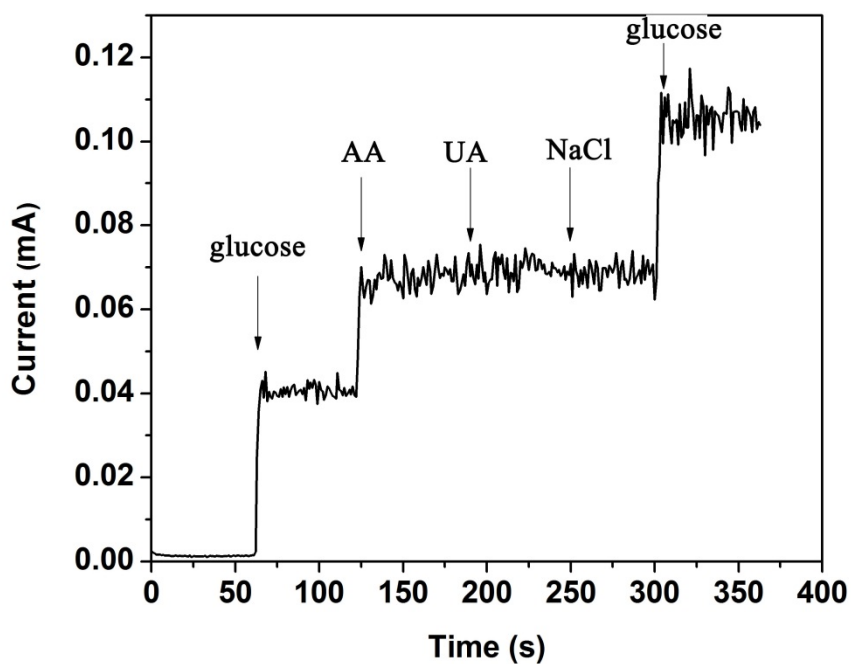
Sample	Molar CuSO <sub>4</sub>	of Volume between water and ethanol	ratio	Concentration of NaOH	Reaction temperature	Reaction time
A	0.12 mmol	1:6		2 mol/L	80 °C	10 min
B	0.12 mmol	1:3		2 mol/L	80 °C	10 min
C	0.12 mmol	1:1		2 mol/L	80 °C	10 min
D	0.12 mmol	2:1		2 mol/L	80 °C	10 min



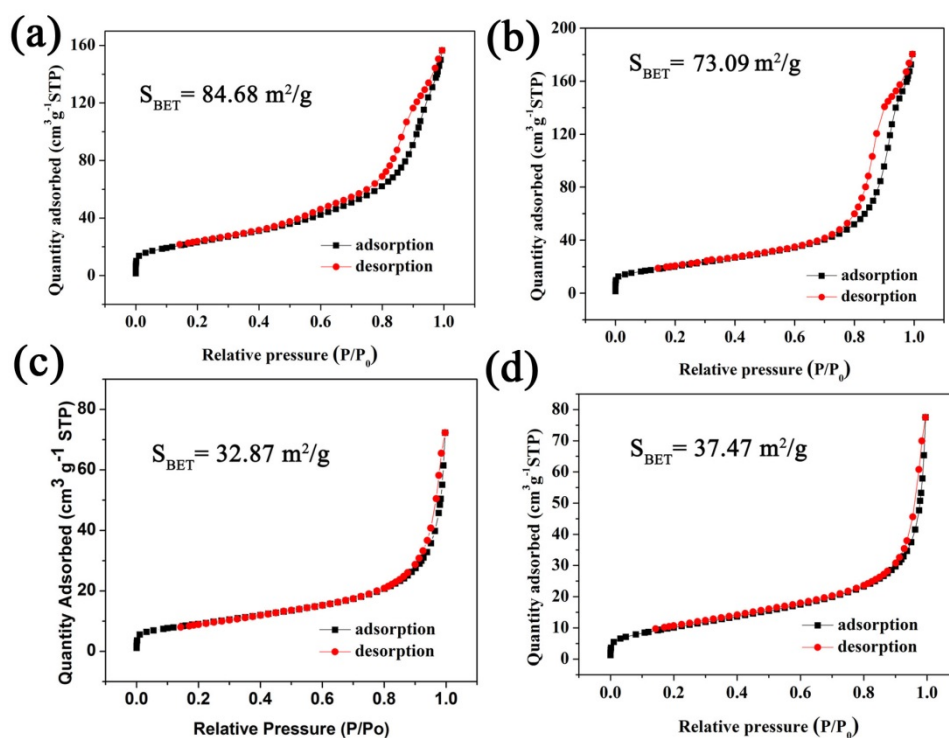
**Figure S1** FESEM images of the Cu<sub>3</sub>(OH)<sub>4</sub>(SO<sub>4</sub>) precursors. (a) Low-magnification; (b) High-magnification.



**Figure S2** (a) Amperometric response of the as-prepared Sample B (a), Sample C (b) and Sample D (c) with successive addition of glucose to the 0.1 M KOH solution at regular intervals. The applied potential was +0.55 V (vs. Ag/AgCl (sat'd KCl) reference), and the insets are the corresponding current–glucose concentration calibration curve.



**Figure S3** Anti-interference property of CuO/NFs/GCE to the stepwise addition of 1 mM AA, 1 mM UA, and 1 mM NaCl, followed by the successive addition of 1 mM glucose solutions.



**Figure S4** Nitrogen adsorption–desorption isotherms of the as-prepared CuO nanostructures. (a) Sample A; (b) Sample B; (c) Sample C; (d) Sample D.

**Table S2.** Comparison of the key performance characteristics of some of existing catalysts for enzyme-free electrooxidation of glucose.

Type of electrodes	Potential (V)	Sensitivity ( $\mu\text{A mM}^{-1}\text{cm}^{-2}$ )	Linear range (up to, mM)	LOD ( $\mu\text{M}$ )	Ref
CuO/MWCNTs	0.7	2109	3	0.8	1
CuO nanoparticles	0.55	1397	2.3	0.5	2
CuO nanoleaf/MCNTs	0.35	664.3	0.9	5.7	3
CuO nanorods/graphite	0.6	371.4	8	4.0	4
CuO nanospheres	0.6	404.5	2.6	1.0	5
CuO fibers	0.4	431	2.5	0.8	6
CuO nanobelts	0.6	582	-	< 1.0	7
<b>Hierarchical nanoneedle-aggregated CuO ribbons</b>	<b>0.55</b>	<b>2241</b>	<b>4</b>	<b>0.05</b>	<b>Current work</b>

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