Electronic Supplementary Information

Hierarchical CuO nanoflowers: water-required synthesis and their application as nonenzymatic glucose biosensor

*Shaodong Sun, Xiaozhe Zhang, Yuexia Sun, Shengchun Yang, Xiaoping Song, and Zhimao Yang**

School of Science, State Key Laboratory for Mechanical Behavior of Materials, MOE Key Laboratory for Non-Equilibrium Synthesis and Modulation of Condensed Matter, Xi'an Jiaotong University, Xi'an 710049, ShaanXi, People's Republic of China.

E-mail: zmyang@mail.xjtu.edu.cn (Z. M. Yang), or sdsun@mail.xjtu.edu.cn (S. D. Sun).

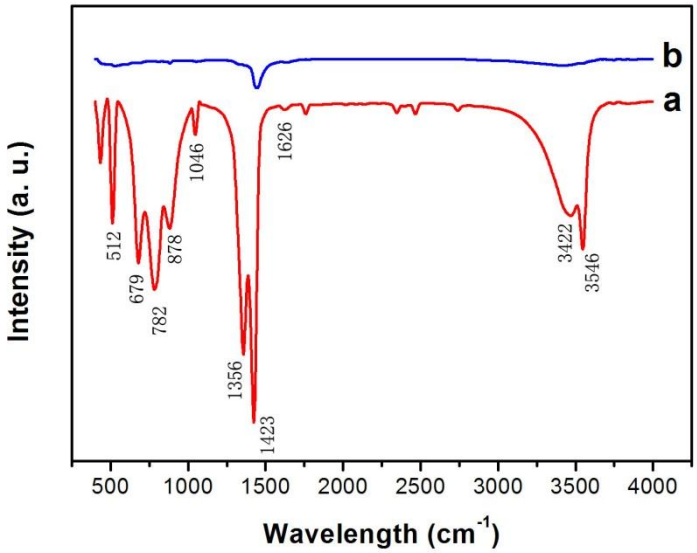

Fig. S1 FTIR spectra of (a) $Cu_2(OH)_3NO_3$ nanoflowers and (b) CuO nanoflowers.

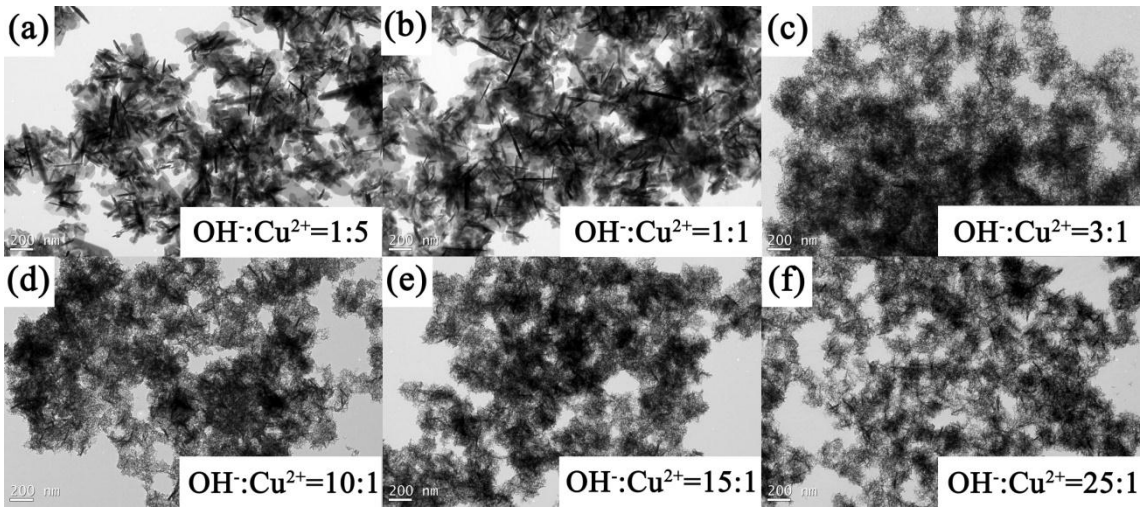

Fig. S2 Different CuO nanostructures obtianed by adjusting the molar ration between OH^- and Cu^{2+}. (a) 1:5; (b) 1:1; (c) 10:1; (d) 15:1; (e) 25:1.

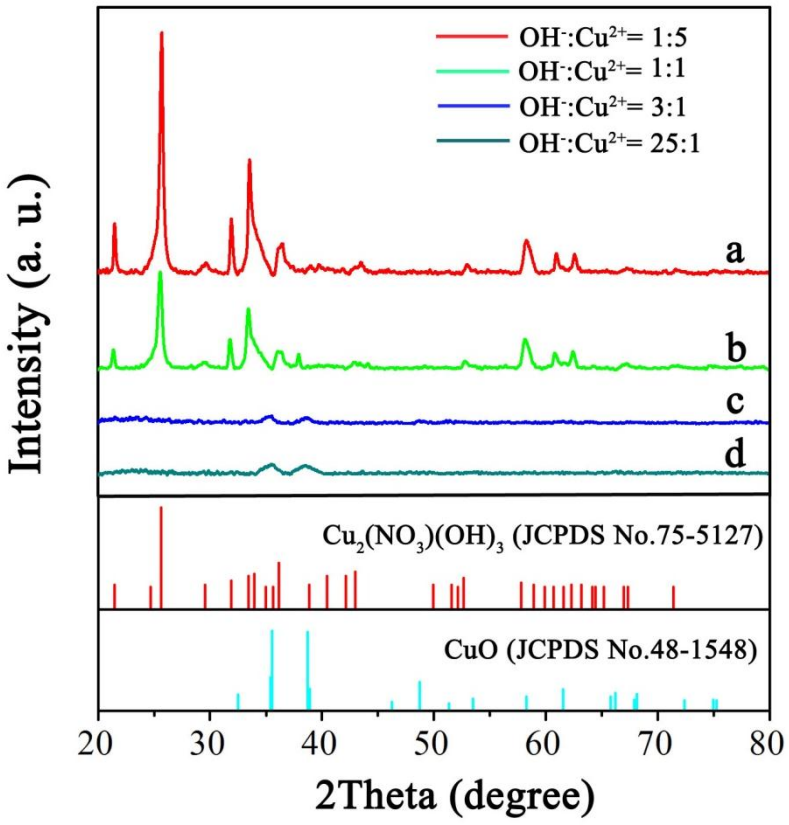

Fig. S3 XRD patterns of the different CuO nanostructures as shown in Figure S2.

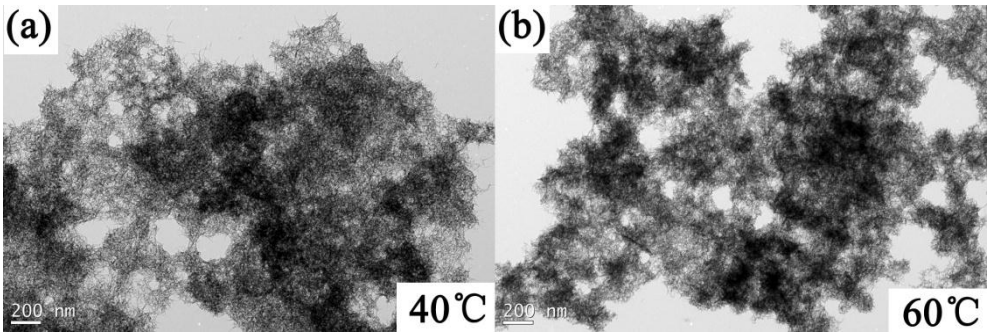

Fig. S4 Different CuO nanostructures obtianed at different reaction temperature. (a) 40 °C; (b) 60 °C.

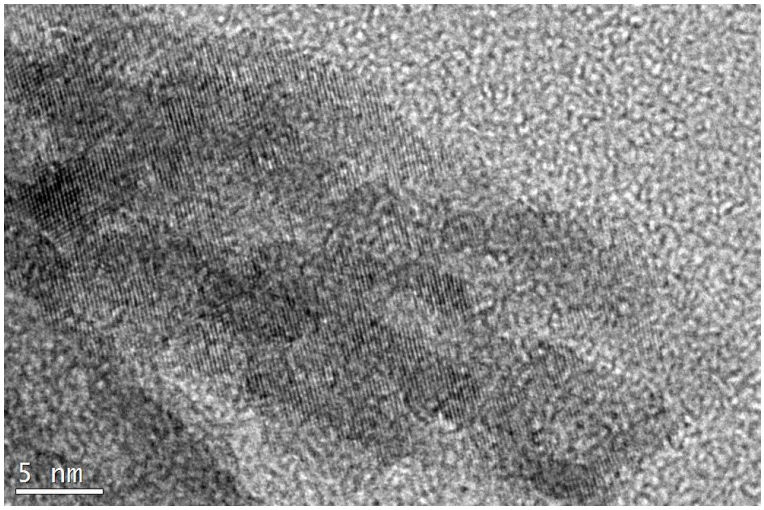

Fig. S5 HRTEM image of a nanoleaf obtained at higher water amount.

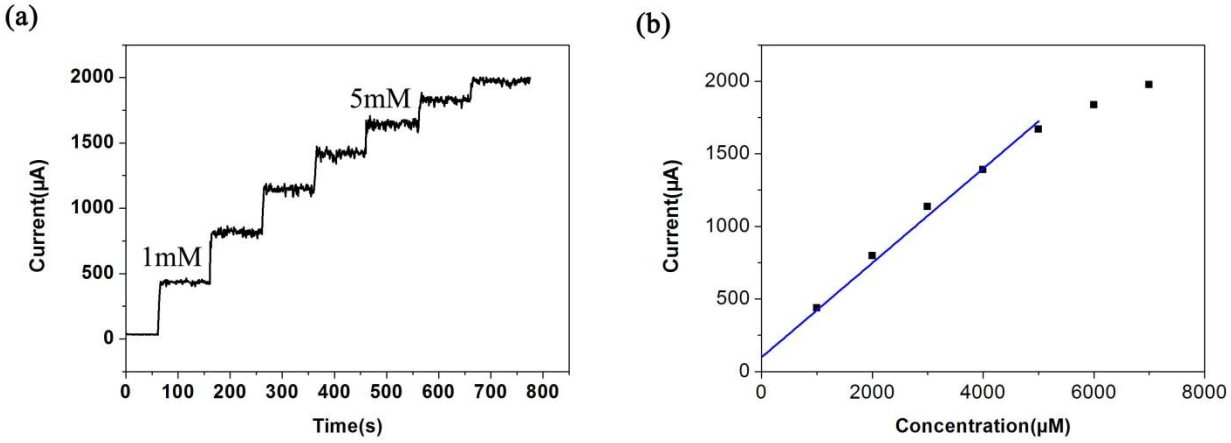

Fig. S6 (a) Amperometric response of CuO nanoleaves/Nafion/GCE with successive addition of different glucose to 0.1 M KOH at 0.50 V *vs.* Ag/AgCl; (b) Current–glucose concentration calibration curve obtained for the CuO nanoleaves/Nafion/GCE.

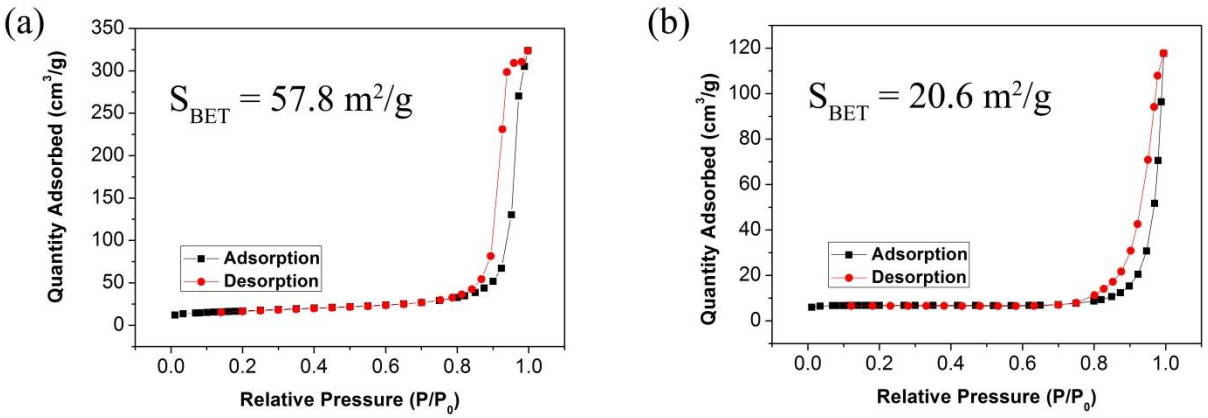

Fig. S7 Typical nitrogen gas adsorption-desorption isotherms of the CuO nanostructures: (a) the hierarchical CuO nanoflowers; (b) the CuO nanoleaves.

Table S1. Comparison of the key performance characteristics of some of existing catalysts for enzyme-free electrooxidation of glucose.

Type of electrodes	Potential (V)	Sensitivity (μA $mM^{-1}cm^{-2}$)	Linear range (up to, mM)	LOD (μM)	Ref
CuO/MWCNTs	0.7	2109	3	0.8	46
CuO nanoparticles	0.55	1397	2.3	0.5	47
CuO nanoleaf/MCNTs	0.35	664.3	0.9	5.7	48
CuO nanorods/graphite	0.6	371.4	8	4.0	49
CuO nanospheres	0.6	404.5	2.6	1.0	50
CuO fibers	0.4	431	2.5	0.8	51
CuO nanobelts	0.6	582	-	< 1.0	52
CuO nanoleaves (Fig. 6f)	0.50	1657	-	-	Current work (see Fig. S6)
Hierarchical CuO nanoflowers (Fig. 3)	0.50	2657	5	1.71	Current work