

## Electronic Supplementary Information

### In Situ Synthesis and Assembly of Copper Oxide Nanocrystals on Copper Foil via Mild Hydrothermal Process

Yang Liu<sup>1</sup>, Ying Chu<sup>1\*</sup>, Meiye Li<sup>2</sup>, Lili Li<sup>1</sup>, Lihong Dong<sup>1</sup>

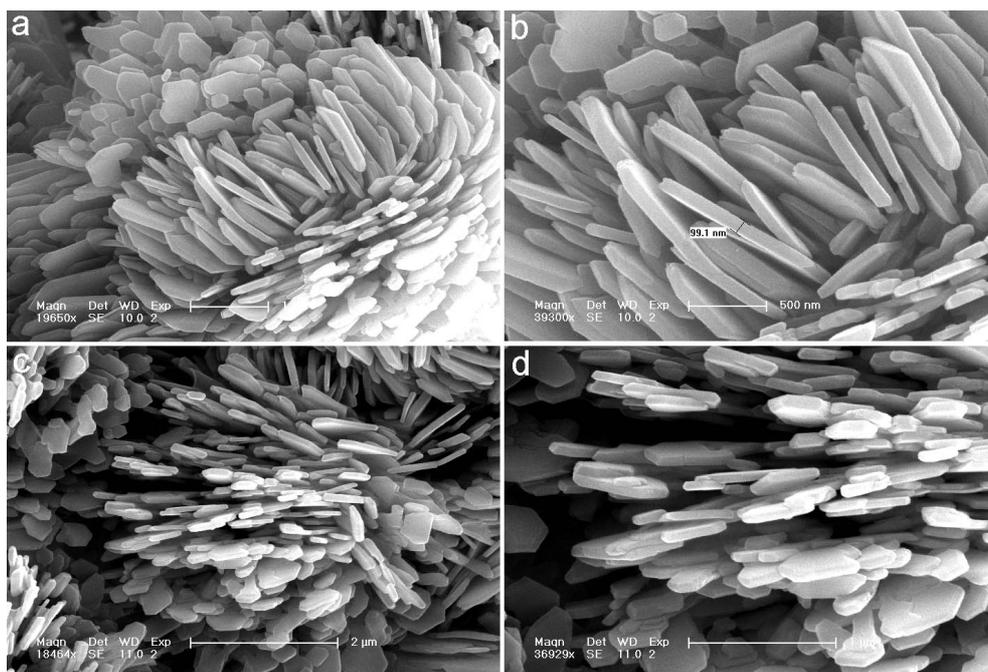
*1 Department of Chemistry, Northeast Normal University, Changchun, Jilin, 130024, P. R. China.*

*2 State Key Laboratory of Electroanalytical Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, P. R. China.*

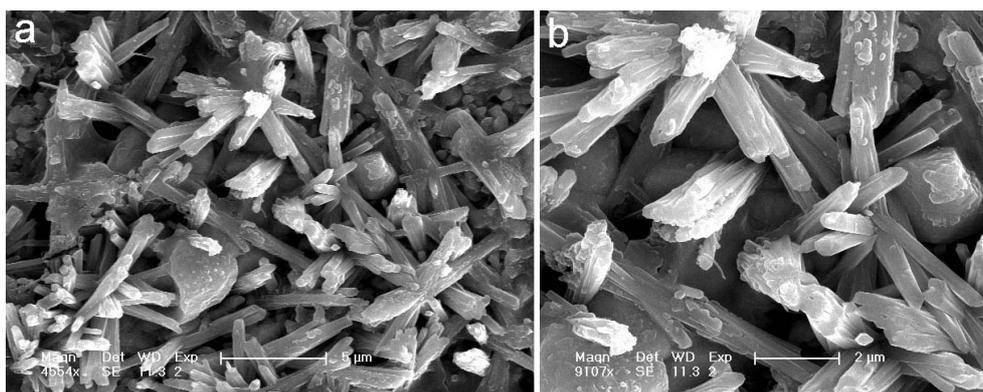
---

\* Corresponding author.

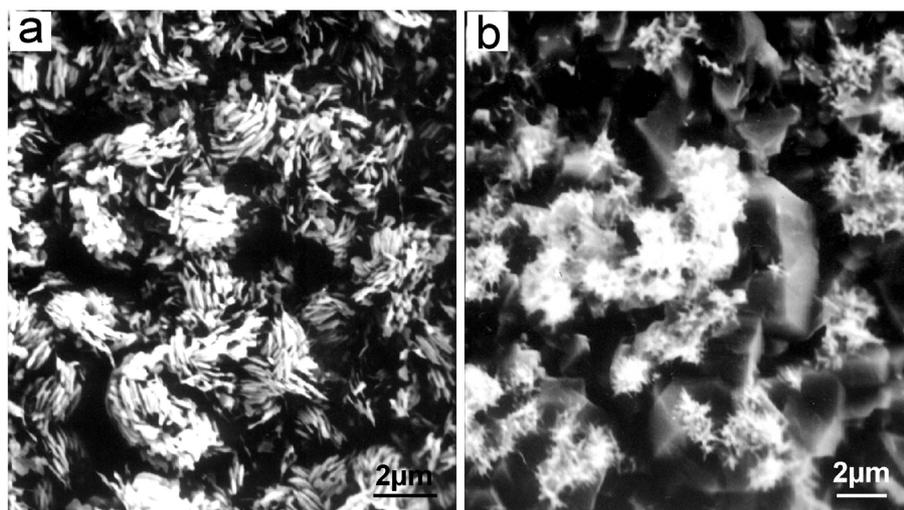
E-mail address: chuying@nenu.edu.cn.



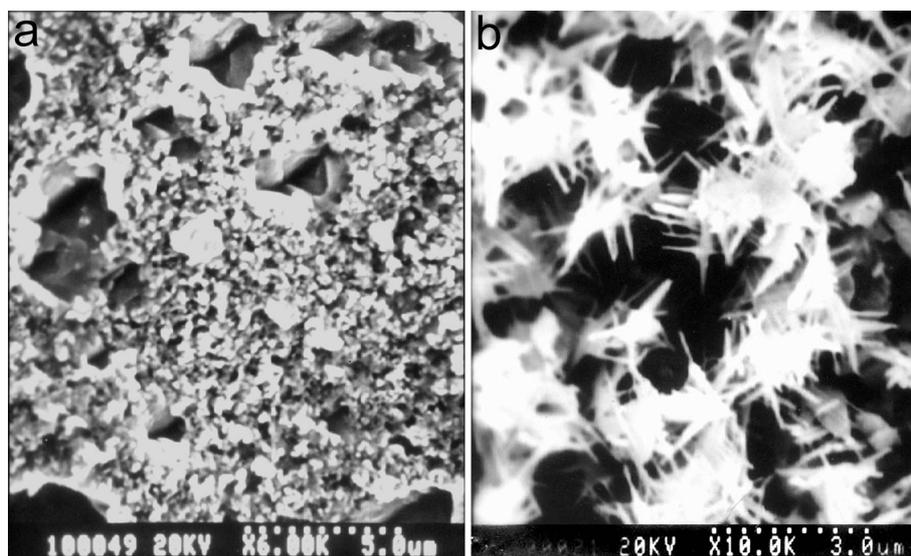
**ESI Fig. 1** Fine structures of chrysanthemum-like CuO nanoarchitectures. (a–b) compact assembling structures, (c–d) incompact assembling structures.



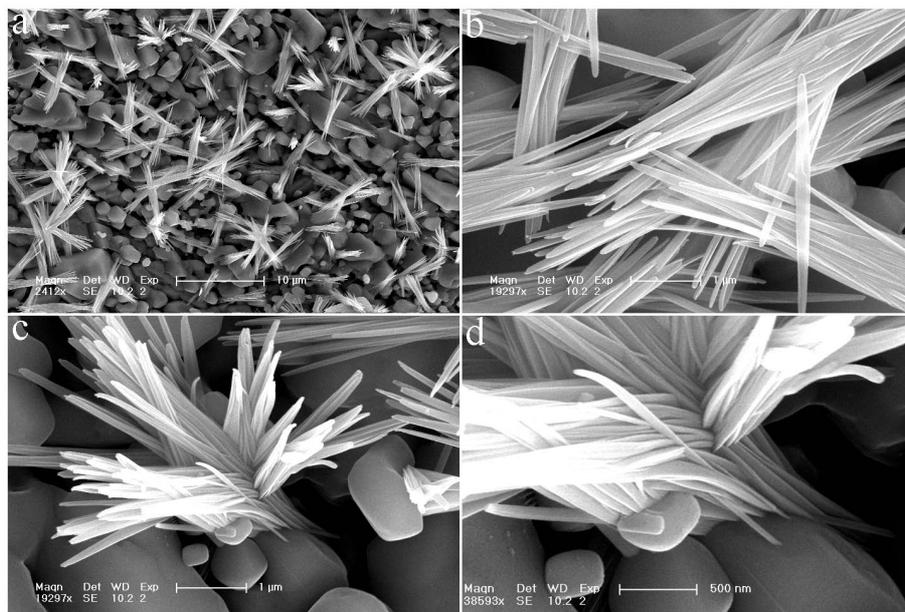
**ESI Fig. 2** FE-SEM images of CuO rods grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{APS}} = 0.15$  M,  $C_{\text{NaOH}} = 5$  M and without CTAB in solution (a) low-magnification; (b) high-magnification.



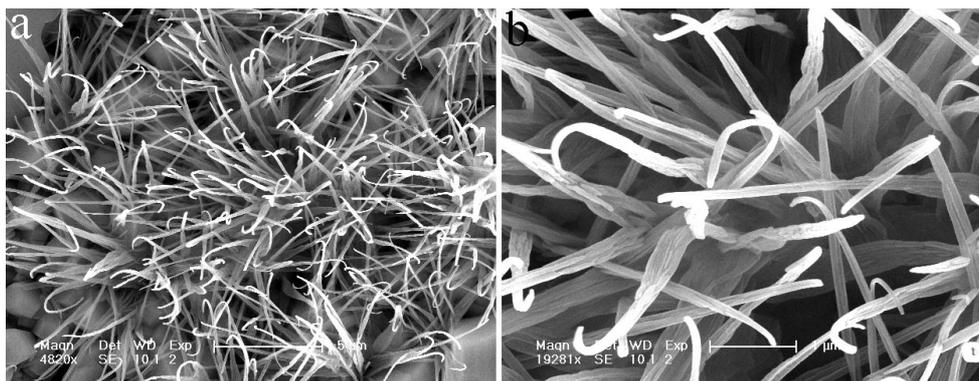
**ESI Fig. 3** The CuO nanostructures grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{APS}} = 0.15$  M,  $C_{\text{NaOH}} = 5$  M and (a)  $C_{\text{CTAB}} = 0.005$  M; (b)  $C_{\text{CTAB}} = 0.05$  M.



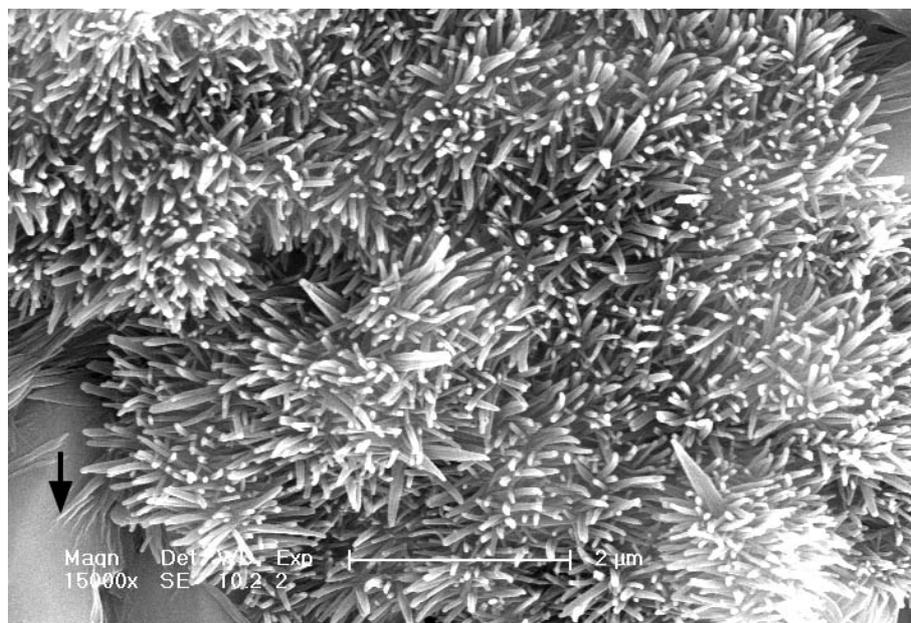
**ESI Fig. 4** The CuO nanostructures grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{CTAB}}=0.02$  M,  $C_{\text{APS}}=0.15$  M and (a)  $C_{\text{NaOH}}=1.6$  M, (b)  $C_{\text{NaOH}}=3.5$  M.



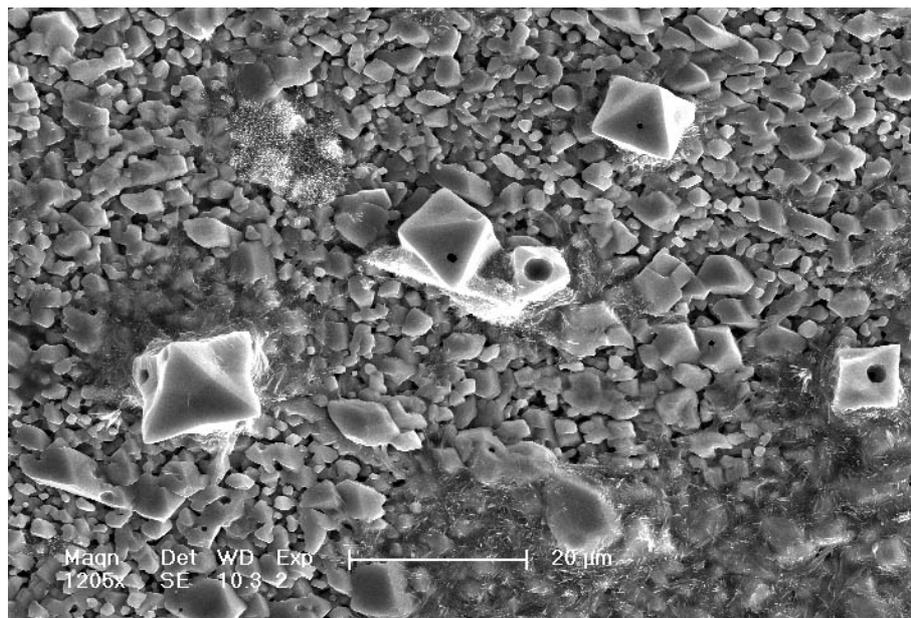
**ESI Fig. 5** FE-SEM images of haystack-like CuO nanostructures grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{SDS}} = 0.02$  M,  $C_{\text{APS}} = 0.25$  M and  $C_{\text{NaOH}} = 5$  M. (a) low-magnification, (b)-(d) high-magnification.



**ESI Fig. 6** FE-SEM images of CuO nanostructures grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{SDS}} = 0.02$  M,  $C_{\text{APS}} = 0.15$  M and  $C_{\text{NaOH}} = 3$  M. (a) low-magnification, (b) high-magnification.



**ESI Fig. 7** FE-SEM image of CuO nanorods array grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 140 °C with  $C_{\text{SDS}} = 0.02$  M,  $C_{\text{APS}} = 0.15$  M and  $C_{\text{NaOH}} = 5$  M.



**ESI Fig. 8** FE-SEM image of octahedral CuO microparticles with holes grown on copper substrate (1.5 cm × 1.5 cm × 0.2 mm) for 24 h at 160 °C with  $C_{\text{Tx-100}} = 0.05$  M,  $C_{\text{APS}} = 0.15$  M and  $C_{\text{NaOH}} = 5$  M.