

Electronic Supplementary Material (ESI) for RSC Advances.

## Atmospheric-pressure Microplasma as Anode for Rapid and Simple Electrochemical Deposition of Copper and Cuprous Oxide Nanostructures

Yuexiang Lu,<sup>\*a,b</sup> Zhonghua Ren,<sup>a,b</sup> Hang Yuan,<sup>a,b</sup> Zhe Wang,<sup>a,b</sup> Bo Yu<sup>\*a,b</sup> and Jing Chen<sup>a,b</sup>

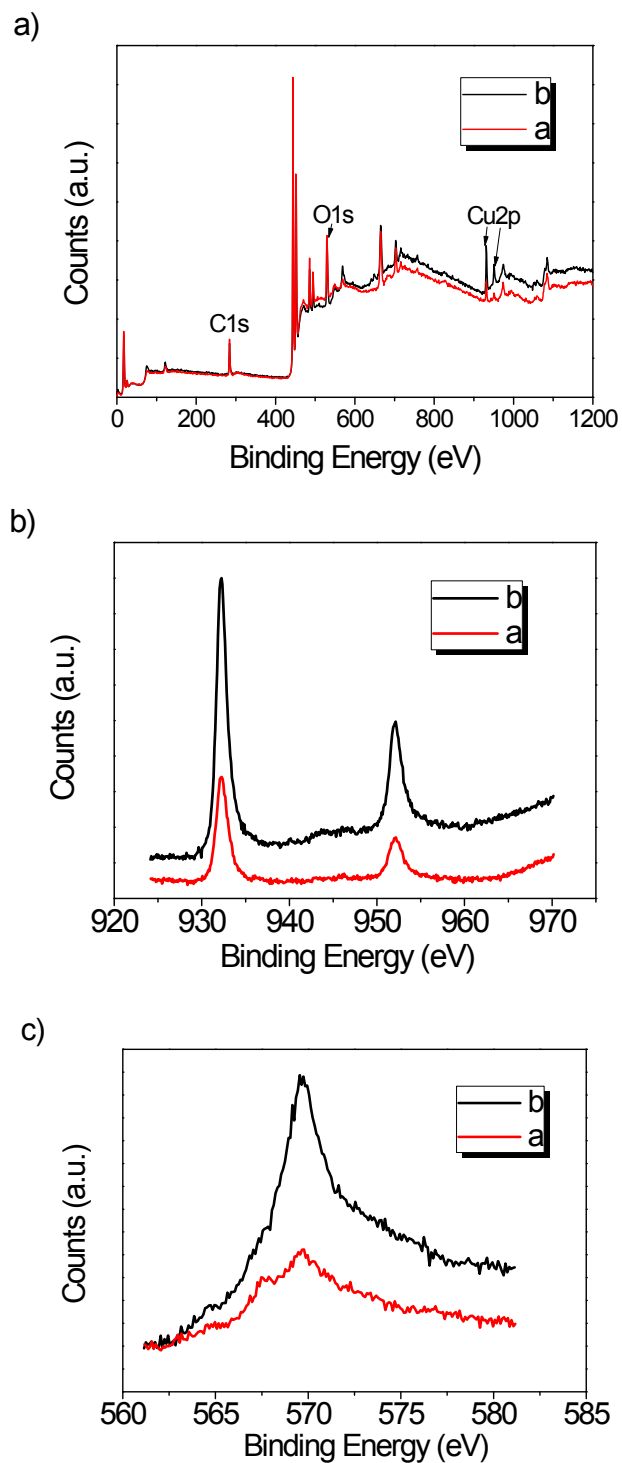
<sup>a</sup>*Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing 100084, China.*

<sup>b</sup>*Beijing Key Lab of Radioactive Waste Treatment, Tsinghua University, Beijing 100084, China.*

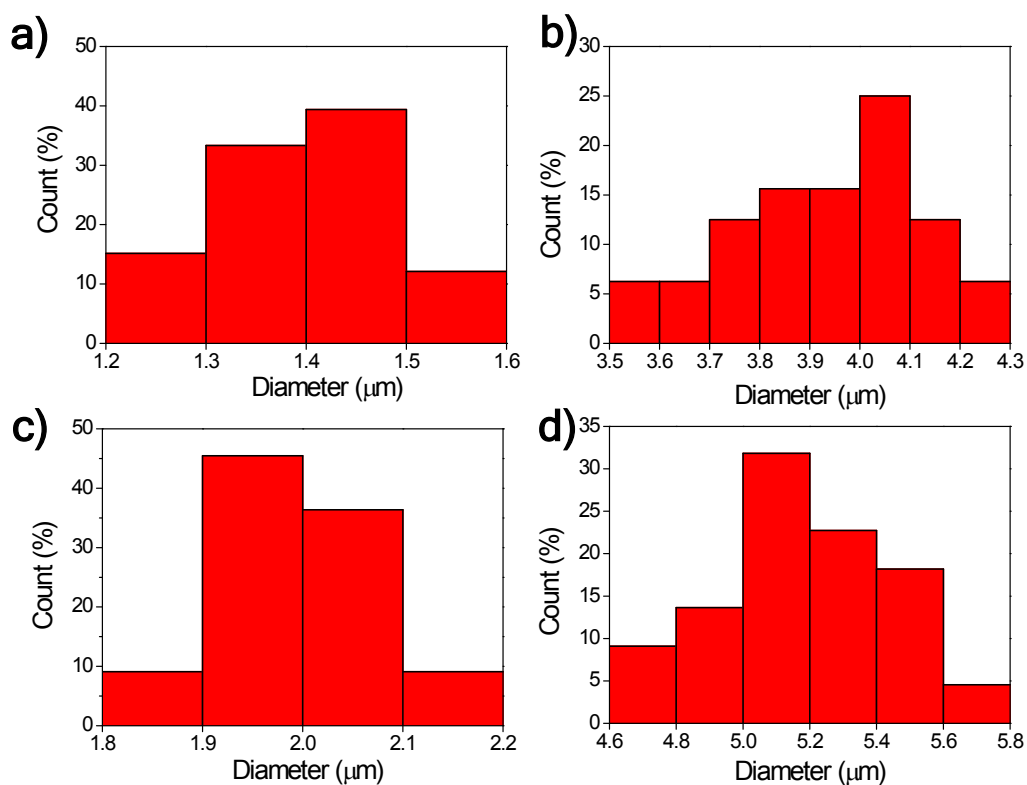
*\*Email: [luyuexiang@mail.tsinghua.edu.cn](mailto:luyuexiang@mail.tsinghua.edu.cn); [cassy\\_yu@tsinghua.edu.cn](mailto:cassy_yu@tsinghua.edu.cn).*

### Table of Contents

XPS data of Cu and Cu <sub>2</sub> O nanoparticles.....	S2
Size distribution of Cu and Cu <sub>2</sub> O nanoparticles.....	S3



**Figure S1.** XPS data of nanoparticles deposited on ITO cathodes at different conditions. a) Survey spectra, b) Cu 2p, c) Cu LMM Auger spectra. a. 25 °C, 1 M CuSO<sub>4</sub> and b. 70 °C, 100 mM CuSO<sub>4</sub>. The discharge current is 6 mA and discharge time is 120s.



**Figure S2.** Size distribution of nanoparticles deposited on ITO cathodes at different conditions. 25°C, 1 M  $\text{CuSO}_4$  with discharge time of a) 5 s and b) 120s. 70°C, 100 mM  $\text{CuSO}_4$  with discharge time of c) 5 s and d) 120s. The discharge current is 6 mA.