

Synthesis of flower-like CuS hollow microspheres based on nanoflakes self-assemble and their microwave absorption properties

Biao Zhao ^a, Gang Shao ^{a, *}, Bingbing Fan ^a, Wanyu Zhao ^a, Yajun Xie ^a, Rui Zhang ^{a, b, *}

^a School of Materials Science and Engineering, Zhengzhou University, Zhengzhou, Henan 450001, PR China

^b Zhengzhou Aeronautical Institute of Industry Management, Zhengzhou, Henan 450046, PR China

* Corresponding Author.

Dr. Gang Shao

E-mail address: gang_shao@zzu.edu.cn

Prof. Rui Zhang

Tel: +86-371-60632007

Fax: +86-371-60632600

E-mail address: zhangray@zzia.edu.cn

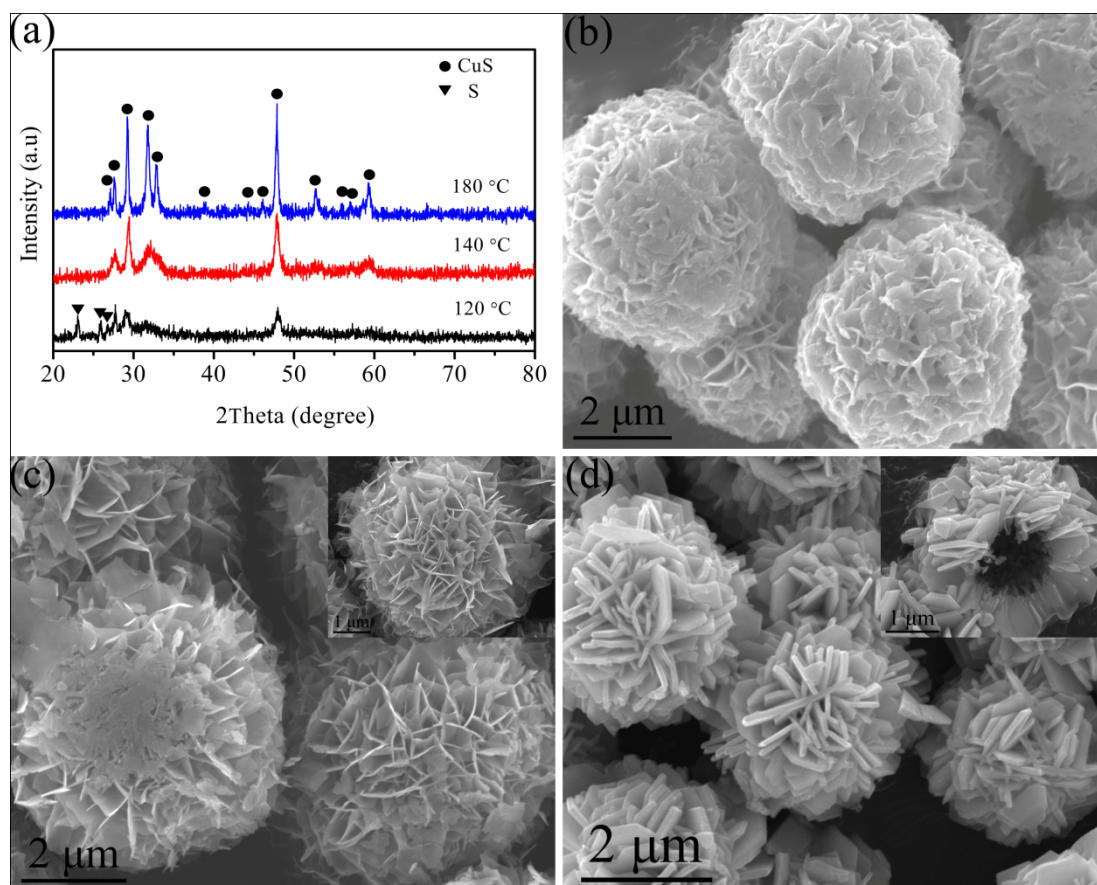


Fig. S1 (a) XRD patterns of the samples prepared at different temperatures (120°C, 140°C, 180°C); SEM images of the products obtained at different temperatures: (b) 120°C, (c) 140°C and (d) 180°C. The inset of (d) is the enlarge FETEM image of hollow CuS spheres prepared at 180°C.

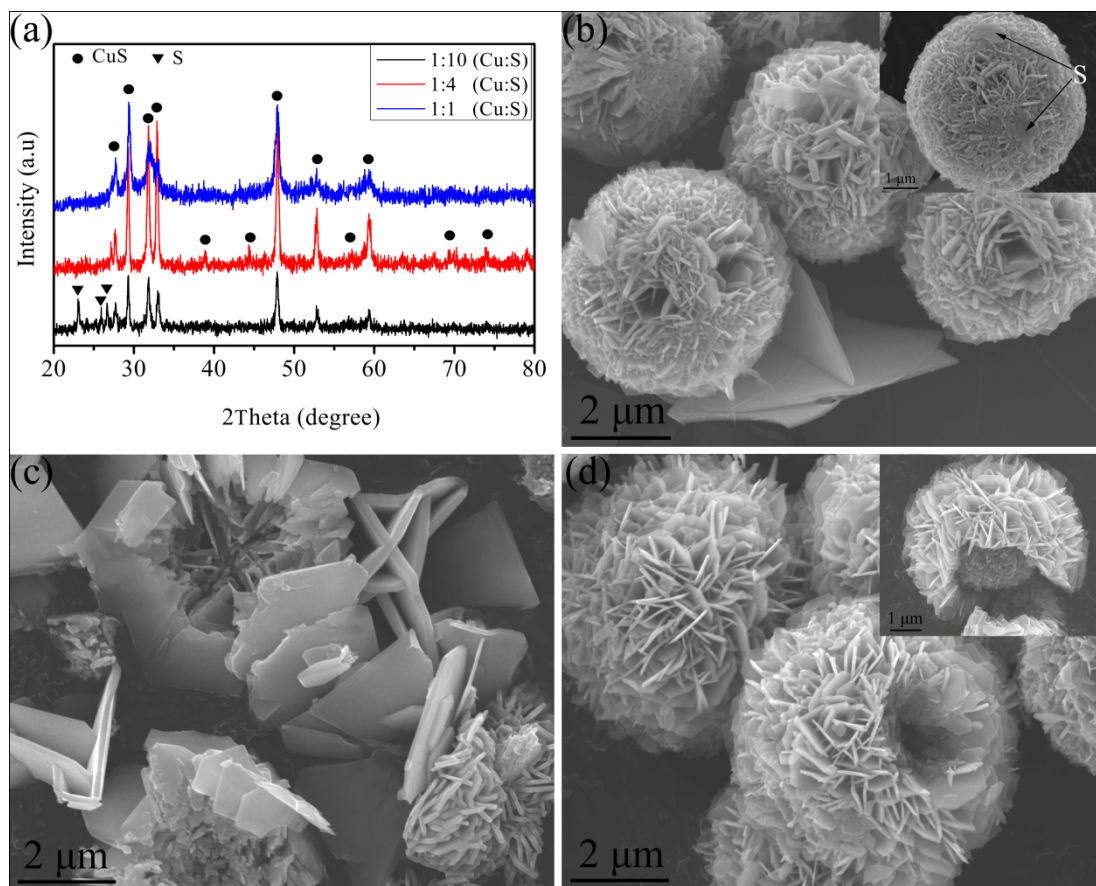


Fig. S2 (a) XRD patterns of the samples prepared at different molar ratios of $\text{CuSO}_4\text{:S}$ (1:6, 1:4, 1:1); SEM images of the CuS products obtained using different molar ratios of $\text{CuSO}_4\text{:S}$: (b) 1:6; (b) 1:4; (c) 1:1. The inset of (b) and (d) is the enlarge FESEM image of CuS microspheres prepared at molar ratio (1:6) and (1:1) of $\text{CuSO}_4\text{:S}$, respectively.

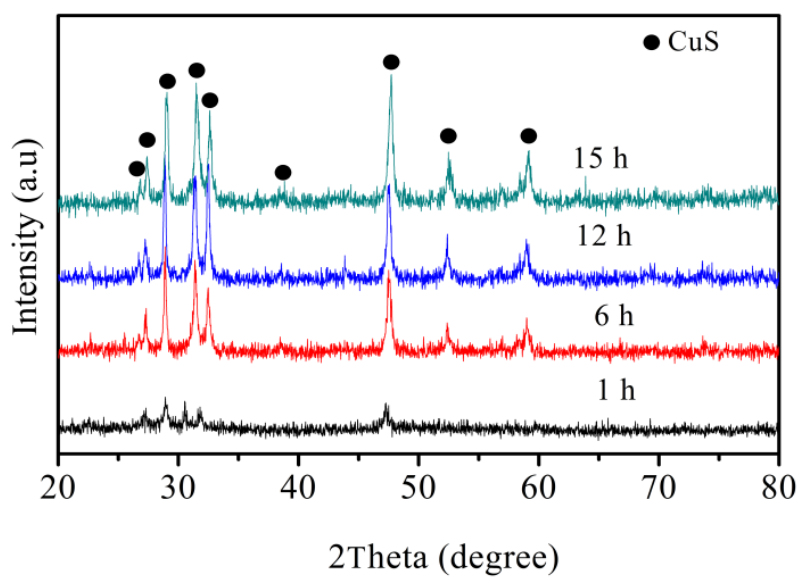


Fig. S3 XRD patterns of the products obtained at 160°C under different reaction times: (a) 1 h, (b) 6 h, (c) 12 h, and (d) 15 h.

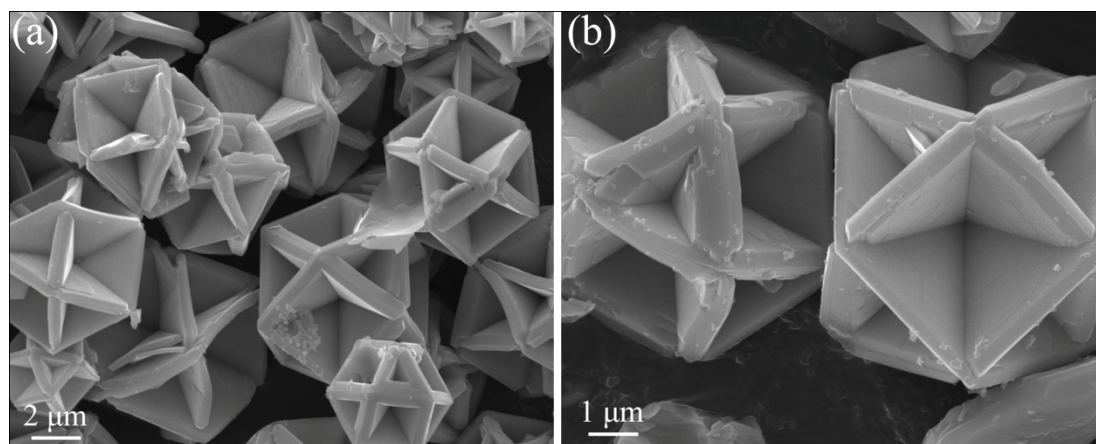


Fig. S4 (a) Low magnification and (b) high magnification SEM images of CuS products prepared without adding CTAB

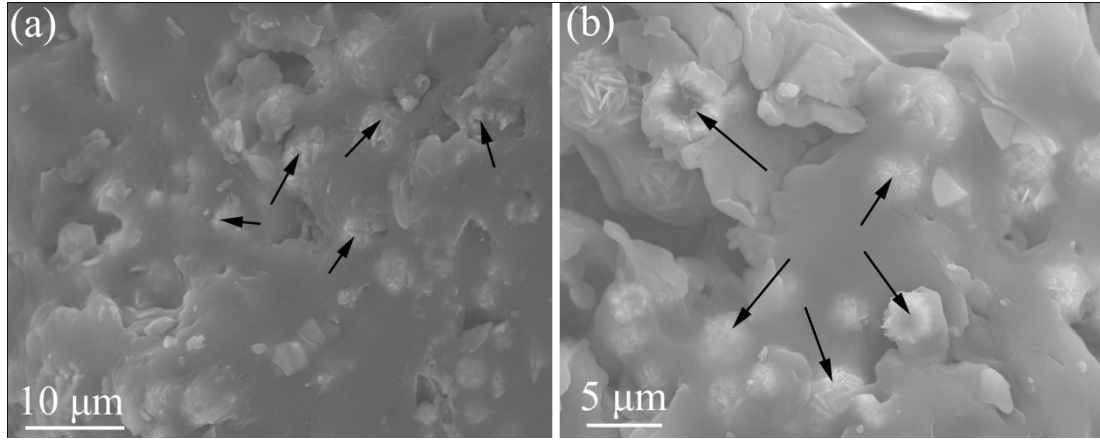


Fig. S5 (a) Low magnification and (b) high magnification SEM micrographs of the fractured surface of the CuS paraffin-composite with the hollow CuS flowers with 30wt.% loading.

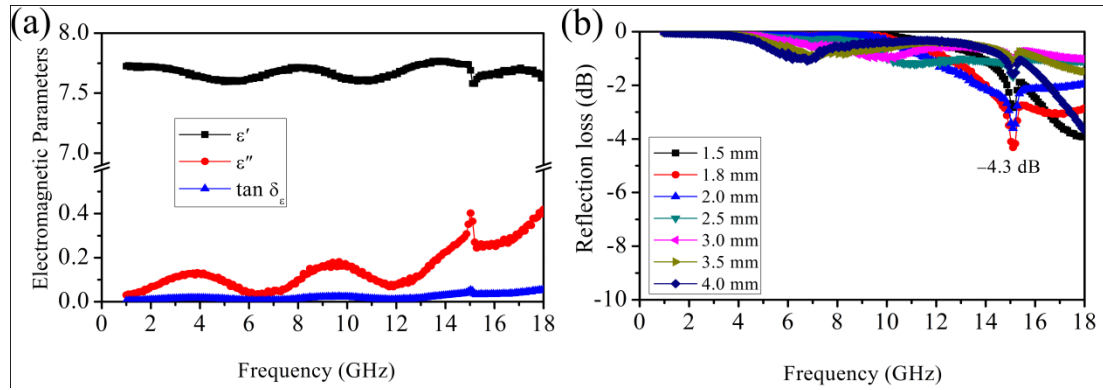


Fig. S6 (a) Electromagnetic parameters and (b) reflection loss of dense CuS spheres prepared at 120 °C.