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Facile preparation of reduced graphene oxide/copper sulfide composite as electrode materials for supercapacitors with high energy density

Tingkai Zhao^{1,*}, Wenbo Yang^{1,*}, Xin Zhao², Xiarong Peng¹, Jingtian Hu¹, Chen Tang¹, Tiehu Li¹

¹ State Key Laboratory of Solidification Processing, Shaanxi Engineering Laboratory for Graphene New Carbon Materials and Applications, School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an 710072, China.

² Queen Mary University of London Engineering School, NPU, Northwestern Polytechnical University, Xi'an 710072, China.

Abstract: Recently, copper sulfide (CuS) quite arouses researchers' interest due to its high theoretical capacity and excellent electroconductivity. However, poor cycling stability seriously limited the application in supercapacitors. In addition to the improvement of cycling performance, it is also a challenge to develop electrode materials with energy density. Herein, RGO/CuS composite is prepared successfully by solvothermal reaction methods. By the observation using FESEM and TEM, CuS microstructure displays regular and tiny nanoparticles, which are supported by RGO sheets. After the electrochemical measurements, RGO/CuS composite exhibits a maximum specific capacitance of $946 \text{ F} \cdot \text{g}^{-1}$ at $10 \text{ mV} \cdot \text{s}^{-1}$ and $906 \text{ F} \cdot \text{g}^{-1}$ at $1 \text{ A} \cdot \text{g}^{-1}$, respectively. The excellent cycling stability is also achieved and it maintains 89% retention after 5000 cycles at

* Correspondence and requests for materials should be addressed to T.K.Z. (email: ztk-xjtu@163.com)

These authors contributed equally to this work.

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