Short Communication

Flower-like CuS/reduced Graphene Oxide Composite as Anode Materials for Lithium Ion Batteries

Hongdong Liu^{1,2}, Lei Zhang^{3,*}, Haibo Ruan^{2,*}

¹ Faculty of Materials and Energy, Southwest University, Chongqing 400715, P.R. China

² Research institute for new materials technology, Chongqing University of Arts and Sciences, Chongqing 402160, PR China

³ College of life science, Chongqing Normal University, Chongqing 401331, PR China

*E-mail: leizhang0215@126.com, rhbcqu@aliyun.com

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We developed a liquid phase method to synthesize flower-like CuS/reduced graphene oxide (rGO) composite for lithium ion batteries. The as-obtained products were characterized by XRD, Raman spectra, FESEM and TEM. The CuS nanoflowers are uniformly distributed onto the surface of rGO or wrapped in the rGO. The electrochemical performance of CuS/rGO composite was measured by galvanostatic charge/discharge cycling, cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). The results show that CuS/rGO composite presents superior lithium ion batteries with large reversible capacity and good cycle performance. The first discharge and charge capacities are 1236 and 658 mAh g⁻¹, respectively. After 50 cycles, the reversible discharge capacity is still maintained at 399 mAh g⁻¹. The excellent electrochemical performance is ascribed to the unique architecture of CuS nanoflowers/rGO composite. The rGO sheets effectively prevent the agglomeration of CuS nanoflowers and act as an excellent conductive agent to provide a highway for electron transport. In turn, The CuS nanoflowers grown on rGO effectively keep the neighboring graphene sheets separated.

Keywords: CuS, graphene, anode materials, lithium ion batteries

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