

Electrochemical Energy Storage Properties of RGO-EDTA-CuS Composite Prepared by Solvothermal Method

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CuS nanospheres decorated the surface of reduced graphene oxide (RGO)-Ethylenediamine tetraacetic acid (EDTA) was successfully prepared by solvothermal method, where CuSO₄·5H₂O as copper precursor and thiourea as a sulfur source. Thiourea plays important roles in the growth of CuS nanospheres, besides it acts as a reducing agent for GO. The size and morphology of the CuS nanospheres decorated on the surface of RGO-EDTA adjusted by changing the temperature of the reaction condition. The composite was characterized by Fourier transform infrared spectroscopy, thermogravimetric analysis, scanning electron microscopy, and X-ray diffraction spectroscopy. The capacitive performance of the composite was examined by cyclic voltammetry, galvanostatic charge/discharge and electrochemical impedance spectroscopy tests. The specific capacitance of the composite was 1062 F/g at scan rate 2 mV/sec, in 6 M KOH electrolyte.