Short Communication

Synthesis of Fe₃O₄ Nanorings/Amine-Functionalized Reduced Graphene Oxide Composites as Supercapacitor Electrode Materials in Neutral Electrolyte

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Fe₃O₄ supported on nitrogen-doped graphene was prepared by a facial one-pot hydrothermal method. The cyclic voltammetry, constant current charge and discharge, AC impedance and cycle times were tested in 1.0 mol/L Na₂SO₄ aqueous solution. The results of electrochemical measurements show that the Fe₃O₄ nanorings (NRs)/amine modified reduced grapheme oxide (NH₂-RGO) composites have high capacitance, good conductivity, excellent ion diffusion behavior and strong stability. In neutral electrolyte, the specific capacitance measured under the current condition of 1.0 A/g was as high as 145 F/g, and the capacitance retention after the 1000-cycle constant-current charge-discharge test was 99.7%. Therefore, Fe₃O₄ NRs/NH₂-RGO composites have a good prospect as supercapacitor electrodes.

Keywords: Fe₃O₄ Nanorings, Supercapacitor, Graphene, Electrode material

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