Solvothermal Synthesized γ -Fe₂O₃/graphite Composite for Supercapacitor

Miao Wang¹, Suzhen Cheng¹, Guoju Dang^{1,3}, Fanqi Min^{1,3}, Haiyan Li¹, Quansheng Zhang^{1,*}, Jingying Xie^{2,3,*}

¹ Department of Chemical Engineering, Shanghai Institute of Technology, Shanghai 200235, China

² Shanghai Institute of Space Power Sources, Shanghai 200245, China

³ Shanghai Power & Energy Storage Battery System Engineering Tech. Co. Ltd., Shanghai 200240, China

*E-mail: zhangquansheng@sit.edu.cn, jyxie@mail.sim.ac.cn

doi: 10.20964/2017.07.75

Received: 4 April 2017 / Accepted: 17 May 2017 / Published: 12 June 2017

This article described a facile solvothermal synthesis method for γ -Fe₂O₃/graphite composite preparation with liquid phase exfoliated graphite (Gp), Fe³⁺ (FeCl₃•6H₂O), and NaOH precipitants. The γ -Fe₂O₃/graphite composite was characterized by X-ray powder diffraction (XRD), Scanning and transmission electron microscopy (SEM and TEM), Energy dispersive spectroscopy (EDS) and Thermogravimetric (TG) analysis. The electrochemical properties of γ -Fe₂O₃/graphite composite as electrode materials for supercapacitor were investigated by cyclic voltammetry and galvanostatic charge-discharge tests. The results showed that specific capacity of γ -Fe₂O₃/graphite composite is 520 F g⁻¹ at 3 A g⁻¹ in 1M KOH aqueous electrolyte and capacity retention is 91.3% after 1000 charge-discharge cycles.

Keywords: γ -Fe₂O₃, Graphite, Solvothermal synthesis, Supercapacitor

[FULL TEXT](#)

© 2017 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).