A Green Synthesis of Mn₃O₄/graphene Nanocomposite as Anode Material for Lithium-Ion Batteries

Ning-Jing Song^{1,*}, Canliang Ma^{2,*}

¹ College of Chemistry and Chemical Engineering, Jinzhong University, Jinzhong, 030619, PR China

² Key Laboratory of Materials for Energy Conversion and Storage of Shanxi

Province, Institute of Molecular Science, Shanxi University, Taiyuan 030006, PR China

*E-mail: macanliang@sxu.edu.cn

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A green and gentle synthesis method of Mn₃O₄/graphene nanocomposite is supplied to achieve a high property anode material for Li-ion batteries. The synthesis process of Mn₃O₄/graphene nanocomposites consists of two parts: one is the formation of Mn₃O₄ nanoparticles by hydrothermal reaction; the other is the reduction of graphene oxide to graphene by Vitamin C in hot bath, companied with the combination of graphene and Mn₃O₄. During the preparation process, all raw materials and by-products are non-toxic, meanwhile, the methods are green, gentle and energy saving. The resulting materials are characterized by XRD, SEM and TG. The composite materials deliver a stable reversible capacity of 500 mA h g⁻¹ at a current density of 100 mA g⁻¹ even after 100 cycles. The reversible capacity of the samples coated by crumpled graphene is higher than pure Mn₃O₄ nanoparticles. This research supplies a new effective strategy to fabricate metal oxide/graphene nanocomposites with high electrochemical performances anode materials through a real environmental friendly method.

Keywords: Mn₃O₄/graphene nanocomposite, green synthesis method, lithium-ion batteries, anode material

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