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Fabrication of MnO nanowires implanted in graphene as an advanced anode material for sodium-ion batteries

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Abstract: MnO nanowires/graphene (MnO/GR) composite is prepared through a simple two-step route, which including a hydrothermal and a subsequent calcination process. Morphology and structure characterizations indicate the successful incorporation of MnO nanowires with GR sheets. The electrochemical performance of the composite as an anode material for sodium-ion batteries (SIBs) was investigated. The results show that the composite could deliver good cycling performance of 191 mAh g⁻¹ at the current density of 50 mA g⁻¹ after 100 cycles together with excellent rate performance by taking the advantages of GR. This work offers promise for the potential application of MnO/GR as an anode for SIBs.

Keywords: MnO nanowires; Graphene; Sodium-ion batteries; Composite materials; Energy storage and conversion

1. Introduction

With the increasingly severe environmental pollution and energy shortage, there has been attracted

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