

MnO/Carbon fibers prepared by an electrospinning method and their properties used as anodes for lithium ion batteries

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Abstract: In this paper, MnO-carbon hybrid nanofibers are fabricated via an electrospinning method, while polyvinyl alcohol (PVA) and manganese acetylacetonate are used as raw materials. Composition, phase structure, and morphology of the products obtained under different sintering temperatures are studied with modern analytical instruments, and the electrochemical properties of the MnO/C fibers used as the lithium ion battery anode are also studied by continuous charge/discharge procedures. The results demonstrate that sintering temperature has an important influence on the performance of the obtained composites, and there is an optimum value for synthesizing MnO/C composites. Material synthesized under 600 °C can exhibit an ideal fiber appearance with MnO particles embedded into the material and deliver the highest capacity among all samples. The formation mechanism of the materials is also analyzed in detail in this paper.

Keywords: MnO, fiber, anode, lithium ion battery

1 Introduction

Lithium ion batteries (LIBs) play vital roles in electronic communication products and energy storage power stations, as well as the electrical vehicle (EV) field. As core components, electrode materials are proposed as critical factors in designing LIB products, and great considerations have been paid to their performance improvement [1-5]. However, great challenges still exist in

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