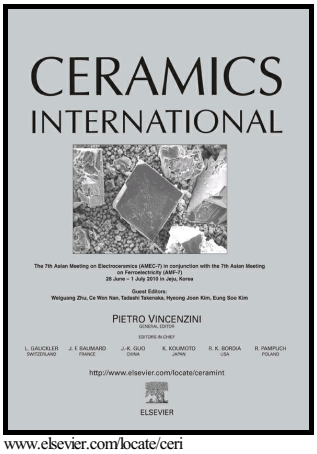

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Abstract

MnO is considered one of the most promising anode materials, but how to design and improve its structure is still of importance. In this paper, novel composites structure of carbon coated MnO anchored on reduced graphene oxides sheets (C@MRGO) are fabricated by a two-step hydrothermal and following heat treatment process. The prepared C@MRGO exhibits a superior performance of 1178, and 665 mAh g^{-1} at 100 and 1000 mA g^{-1}, respectively. Comparison study finds that this novel structure greatly improved the conversion reaction and adsorption capacity of MnO particles. Further study shows that two different carbons both promote the lithium storage process from a different perspective. Typically, graphene greatly improves conductivity and controls the crystallization and growth of MnO particles, while carbon coating could provide a good elastic restricted body to effectively keep the integrity of the SEI film, inhibited volume expansion and make the conversion reaction reversible. In addition, carbon coating adsorbs much Li^+ to achieve higher capacity, due to the nature adsorption properties of carbon materials. The design of using different carbon to enhance MnO electrode is believed to bring inspiration to the