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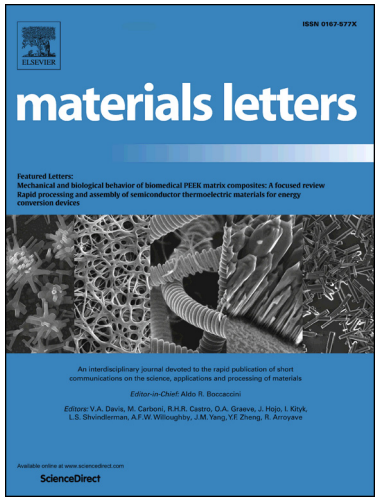

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Reversible and high-capacity SnO_2/carbon cloth composite electrode materials prepared by magnetron sputtering for Li-ion batteries

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Abstract: The flexible electrode material of SnO_2/carbon cloth (SnO_2/CC) is fabricated by RF magnetron sputtering method. As an anode material of lithium ion batteries, the SnO_2/CC electrode exhibits more excellent cycling stability and rate capability than that of the pure carbon cloth or SnO_2. The reversible capacity always maintain about 1.98mAh/cm^2 during 50 cycles, which is higher than that of the pure CC (about 1.61 mAh/cm^2) and SnO_2 (about 0.08 mAh/cm^2). After 100 cycles, the capacity of SnO_2/CC sample is 1.85 mAh/cm^2, still retaining 89.4% of the initial capacity. The good electrochemical properties of SnO_2/CC are mainly caused by the high surface area, porous structure and the intrinsic soft characteristics of CC, which can effectively accommodate the volume charge during charge and discharge process.

Keywords: SnO_2/carbon cloth; flexible electrodes; lithium ion batteries; sputtering; composite materials

1. Introduction

Lithium ion batteries (LIBs) have attracted tremendous attention due to their advantages of high