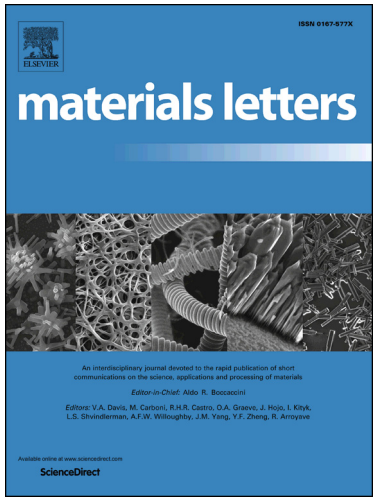

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One-step combustion method for pomegranate Si/Ni compostie anode

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Abstract

Silicon is considered as a promising candidate for next-generation lithium-ion battery anodes due to its high theoretical capacity and low charge potential. However, large volume change during Li-ion insertion and extraction hinders its practical application. In this work, we develop a facile approach to fabricate pomegranate Si/Ni composite to solve the aforementioned problem. The pomegranate composites are linked together by Ni nanofoams，which can be directly converted into electrode by simple mechanical compression without the use of current collector, conductive agent, and binder. The pomegranate Si/Ni composite exhibits good cycling stability after 1000 cycles and a high reversible capacity of 0.84 mAh. This combustion method is a facile and economical approach, which provides a new idea for the commercial application of Si anode materials.

Keywords: Silicon, Porous materials, Nanocomposites, Combustion method, Lithium ion battery

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1.Introduction

During the past decade, Silicon is an attractive anode material for next-generation lithium-ion