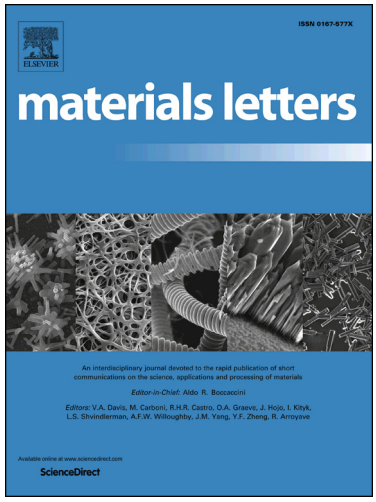

Mn_3O_4 nanosheets decorated on flexible carbon fabric for high-performance supercapacitors electrode

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Mn_3O_4 nanosheets decorated on flexible carbon fabric for high-performance supercapacitors electrode

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Abstract

In this paper, we report a novel high-performance Mn_3O_4@carbon fabric nanosheets (Mn_3O_4@CF-NS) electrode material synthesized by a facile one-step hydrothermal (HT) method. In this hierarchical design, flexible carbon fabric is coated with interlinked Mn_3O_4 nanosheets, which produces a highly porous reticular oxide/hydroxide/carbon composite structure. The flexible supercapacitors electrode of unique architecture exhibits excellent specific capacitance of 941 F g^{-1} at a current density of 1 $mAcm^{-2}$, with the advantages of light weight, and long-term cycling stability by retaining 89.7 % after 5000 charge–discharge cycles at a constant current density of 5 $mAcm^{-2}$. Such unique architecture offers outstanding pseudocapacitive performance with low cost and could be a promising material for flexible supercapacitors applications.

Keywords:

Carbon materials; Mn_3O_4 nanosheets; flexible carbon fabric; porous materials; energy storage; supercapacitor