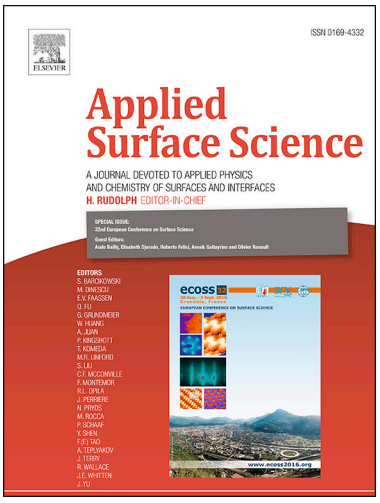

Full Length Article

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3D interconnected honeycomb-like and high rate performance porous carbons from petroleum asphalt for supercapacitors

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Abstract

In this paper, 3D interconnected honeycomb-like hierarchical porous carbons (HPCs) are prepared from petroleum asphalt via in-situ KOH activation in a molten salt medium. As symmetry two electrodes for supercapacitors, HPCs with high specific surface area of 2227 m^2 g^{-1} show high rate performance, i.e. 265 F g^{-1} at 0.05 A g^{-1}, 221 F g^{-1} at 20 A g^{-1}, and superior cycle stability with 91.1% capacitance retention at 5 A g^{-1} after 10000 cycles in 6 M KOH electrolyte. This facile strategy to prepare massive HPCs from cheap petroleum asphalt can provide high performance electrode materials for energy storage devices.

Keywords: hierarchical porous carbon; petroleum asphalt; molten salt medium; supercapacitors

Introduction

The increasing consumption of fossil fuels has caused serious concerns about the fast depletion of existing fossil fuel reserves and the associated alarming greenhouse gas emissions and pollutions. It is urgent to find renewable environmental friendly

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