

Fabrication of Hierarchical Porous Hollow Carbon Spheres with Few-layer Graphene Framework and High Electrochemical Activity for Supercapacitor

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Abstract

Porous amorphous carbons with large number of defects and dangling bonds indicate great potential application in energy storage due to high specific surface area and strong adsorption properties, but poor conductivity and pore connection limit their practical application. Here few-layer graphene framework with high electrical conductivity is embedded and meanwhile hierarchical porous structure is constructed in amorphous hollow carbon spheres (HCSs) by catalysis of Fe clusters of angstrom scale, which are loaded in the interior of crosslinked polystyrene via a novel method. These unique HCSs effectively integrate the inherent properties from two-dimensional sp²-hybridized carbon, porous amorphous carbon, hierarchical pore structure and thin shell, leading to high specific capacitance up to 561 F g⁻¹ at a current density

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