

Fabrication of High-Performance Sodium-Ion Batteries Based on Polyaniline-derived N-doped Mesoporous Carbon as Anode Material

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Abstract

N-doped mesoporous carbon with high N content was prepared from in situ polymerized mesoporous silica-supported polyaniline (PANI) and was explored as a low-cost anode for sodium ion batteries. The N-doped samples possessed an enhanced electronic conductivity, rich defects, and improved Na⁺ adsorption capability, realizing the superior capacity of 573 mA h g⁻¹ at 0.1 A g⁻¹ and retaining 530 mA h g⁻¹ even after 100 cycles. As a consequence, N-doped mesoporous carbon shows great prospect for the application of sodium-ion battery anode material. Sodium-ion batteries based on polyaniline-derived N-doped mesoporous carbon can also be the prototype of an electric vehicle industry in the country.

Keywords : N-doped mesoporous carbon, Sodium-ion batteries, Polyaniline, Anode

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