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Hierarchically arranged strontium oxide nanospheres - impregnated carbon cloth for high performance supercapacitor electrodes

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Abstract

The present work reports a simple method to form SrO nanostructures onto the cotton cloth carbon surface to improve the performance of electric double layer capacitor (EDLC) characteristics. The SrO-ACC (activated carbon cloth) is synthesized by a simple adsorption technique and in this study, pure and SrO-ACC electrodes were prepared without using any binders. The morphology of the as-prepared carbon electrodes were characterized by HR-SEM. The surface area, pore volume, and pore size distribution were measured by using nitrogen adsorption/desorption isotherms at 77 K. The capacitance of pure and SrO-ACC electrodes were measured by cyclic voltammetry in a standard electrochemical three-electrode cell, which contains platinum counter electrode and a standard Ag/AgCl reference electrode in **1 M H₂SO₄** electrolyte. The obtained results pointed out that pure and SrO-ACC shows a good electrochemical property and the specific capacitance in the range of 174 - 400 F/g at the scan rate of 2-3 mV/s.

Keywords: Activated waste carbon cloth; Porous materials; SrO; H₃PO₄ activation; Electric double layer capacitor.

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