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Study on Preparation of Nanocarbon Fibers from Wheat-Straw Based on Electrostatic Spinning Method and its Application in Supercapacitor

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Wheat-straw carbon nanofiber electrode materials are prepared by means of electrospinning with waste wheat-straw, polyacrylonitrile(PAN) and N,N-dimethylformamide (DMF) as raw materials. After wheat-straw carbon nanofiber precursor is activated with potassium hydroxide, pre-oxidized and carbonizied, different mass ratios of polyacrylonitrile/wheat-straw carbon composition nanofiber electrode materials are obtained. The composition nanofibers with 10% wheat-straw carbon shows excellent electrochemical properties with high specific capacitance of 249.0 F/g at current density is 0.4 A/g and superior cycling stability, remaining a capacitance retention of 96.4% after 1000 cycles at the current density of 2A/g.

Keywords: Electrospinning method; wheat-straw; carbon nanofibers; electrochemical properties; specific capacitance

FULL TEXT