Preparation of Hierarchical Porous Carbon Based on Corn-Straw Carbon Nanofiber as an Efficient Electrode Material for Supercapacitors

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Pure PAN and corn-straw carbon mixed nanofibers were prepared by electrospinning. Using a novel method of KOH solid-state activation of nanofibers got hierarchical porous carbon material. The surface area and total pore volume of HPC were $2192.73 \text{ m}^2 \cdot \text{g}^{-1}$ and $1.08 \text{ cm}^3 \cdot \text{g}^{-1}$, and with an excellent specific capacitance of $376.5 \text{ F} \cdot \text{g}^{-1}$ at a current density of $0.5 \text{ A} \cdot \text{g}^{-1}$, remaining a capacitance retention of 94.18% after 5000 cycles at the current density of $2 \text{ A} \cdot \text{g}^{-1}$. This new material has excellent electrochemical performance and can be used as an electrode material for supercapacitors.

Keywords: Electrospinning method; hierarchical porous carbon; electrode materials; capacitive performance

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