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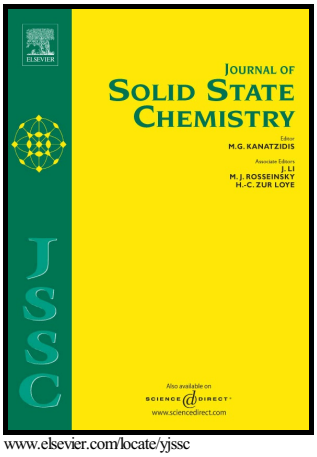

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Biomass-derived nitrogen and oxygen co-doped hierarchical porous carbon for high performance symmetric supercapacitor

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Abstract

Carbon-based supercapacitor is one of the most promising energy conversion devices due to its ultrahigh power density and superior cycling durability, but most of carbon materials for high performance supercapacitor may involve high cost, sophisticated chemical procedures or tedious fabrication processes. Herein, a reproducible biomass-derived porous carbon with efficient ion-accessible surface and high content of heteroatoms has been successfully prepared by a simple high-temperature pyrolysis process. The facile chemical activation enables the as-synthesized materials own a hierarchical porous structure with an ideal pore size distribution and high contents of nitrogen (0.99 at.%) and oxygen (8.99 at.%), which is conducive to the high-efficiency transfer of electrolyte ions and enhancement in electrical conductivity of the materials. The as-fabricated hierarchical porous carbon materials deliver excellent specific capacitance of 287.1 F g^{-1} at 1 A g^{-1} and admirable cycling