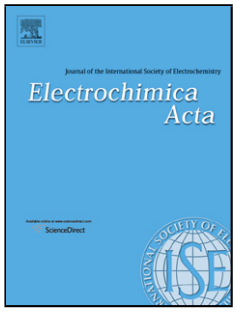

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Effects of the functional groups on the electrochemical properties of ordered porous carbon for supercapacitors

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Abstract

Ordered porous carbon with pore size of 80 nm (C80) were treated in concentrated nitric acid to investigate the effect of the functional groups on the electrochemical properties in supercapacitors. The optimum oxidation time for C80 with good supercapacitive performance in acidic and basic electrolytes was determined. The increase of nitrogen and oxygen groups in the surface results in the improvement of wettability. Though the decreased specific surface area, a remarkable increase in the specific capacitance was observed in the as-modified C80 due to the introduction of the nitrogen and oxygen functional groups. The modification of C80 via oxidation approach demonstrates an effective way to improve the wettability and electrochemical properties.

Keywords: Porous carbon; supercapacitor; surface chemistry; wettability; surface modification