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Fabrication of carbon sphere film as a supercapacitor electrode

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In this work, carbon sphere films at different growth temperature of 180, 200 and 220℃ were synthesized by 10 hrs hydrothermal process from glucose to apply for supercapacitor electrode. The carbon sphere films were washed and filled by DI water for several times. Finally, they were kept it in an oven at 80℃ to dry. Crystal structure and film morphology were analyzed by X-ray diffraction, scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Supercapacitor performance were studied by cyclic voltammetry (CV), charge-discharge (CD) and electrochemical impedance spectroscopy (EIS). The specific capacitance of carbon sphere electrode grown at 180, 200and 220℃ are about 12.6, 3.3 and 2.9 F/g, respectively. The highest specific capacitance was achieved at 180℃. The dependence of growth temperature on film specific capacitance will be discussed in detail later.
Keywords: carbon sphere, supercapacitor, glucose, charge/discharge

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