Studies on Preparation and Performances of Carbon Aerogel Electrodes for Supercapacitor

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In this work, the preparation of a carbon aerogel and its electrochemical performance have been studied. Carbon aerogel was prepared by the polycondensation of resorcinol (R) with formaldehyde (F), and sodium carbonate was added as a catalyst (C). Physical properties of carbon aerogel were characterized by infrared spectrometer (IR), X-ray diffraction (XRD), and scanning electron microscopy (SEM). It was found that carbon aerogel is an amorphous material with pearly network structure, and it consists of one or two diffuse X-ray peaks. The results of cyclic voltammetry indicated that the specific capacitance of carbon aerogel electrode in 6 M KOH electrolyte was approximately 105 F/g. Through the galvanostatic charge/discharge measurement, it was found that the electrode is stable in KOH electrode, the maximum capacitance of the supercapacitor with carbon aerogel is as the electrode active material was 28 F/g.