

Aerosol synthesized porous carbon nanosheet modified with titanium oxide for supercapacitor electrode materials

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One of the key challenges in developing a new high-tech electronics industry is the performance of energy supplies or storage devices. The high energy power density is important for power supply devices to meet the requisition condition in high functional electronic devices. Given this, supercapacitors have received much attention because they are placed between traditional capacitor and high-capacity batteries. The main challenge of supercapacitors is how to increase the specific energy density. Porous carbon with high surface area and excellent conductivity is the main electrode material of supercapacitors. In this study, porous carbon nanosheet (PCN) was synthesized by spray pyrolysis and coated with titania. Using the resulting carbon, we prepared the electrode for supercapacitor and evaluated the electrochemical properties. Although the PCN carbon has the surface area smaller than commercial ACP carbon, its specific capacitance was larger. This is because the porous nanosheet carbon synthesized has the larger effective surface area participating in the absorption of ions. Titania has been coated on PCN and ACP surfaces to increase charging capacity.