

DEVELOPMENT OF NANO-STRUCTURED CERAMIC MATERIALS FOR APPLICATION IN ELECTROCHEMICAL SUPERCAPACITORS

Electrochemical supercapacitors are prominent power sources of today, which store and release energy by reversible adsorption and desorption of ions at the interfaces between electrode materials and electrolytes. Nano-structured ceramic materials are assumed to be promising candidates of electrode materials for super capacitors, because of electrical conductivity, electroactive sites, thermal stability, flexibility, specific capacitance, and cycling stability. In this work, we will examine the use of ceramic nanostructures to construct electrode materials for supercapacitors. Synthesized materials will be analyzed by X-ray diffraction (XRD), Scanning electron microscope (SEM), Fourier transform infrared (FT-IR) spectroscopy, Energy dispersive X-ray analysis (EDAX) and High-resolution transmission electron microscopy (HR-TEM). The electrochemical properties of the electrode materials will be studied by cyclic voltammetry(CV), galvanostatic charge/discharge and electrochemical impedance spectroscopy.

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