

Development of nano structured Electrode and Electrolyte materials for supercapacitor Applications

Abstract

Due to increasing energy demand in our day today life, energy conversion and storage have become the prime conservative of the world. In energy storage devices, Super capacitors play an important role in the energy storage devices. Supercapacitors (SC) are commonly divided into three main varieties, viz., electric double layer capacitors (EDLC), pseudocapacitors (PCs) and hybrid capacitors (HCs). In Supercapacitors, Electrode is a major research topic with maximum performance. Metal oxide-based electrodes have drawbacks like low specific capacitance values, structural stability, corrosion, poor cyclic stability and life span. Here we are focused to develop carbon based materials for anode, solid electrolyte and transition metal oxide added with CNT mixed metal oxide based cathodes to improve the performance of super capacitor. After successful preparation of metal oxide electrodes, all possible experimental techniques such as structural, functional, morphological, electrical and electrochemical, spectroscopic studies will be done. Using the various prepared metal oxides, the proposed super capacitor (symmetric and Asymmetric) will be fabricated, and the electrochemical properties of fabricated super capacitor will be analysed.