

Sonochemical Synthesis of Cellulose Nanofibres And PANi based Electrode Material for Supercapacitors

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Abstract-With the everyday "flying development" in the economy, it has become difficult to meet the increasing energy demand through clean and efficient energy storage devices. The energy storage devices like Li-ion batteries, fuel cells and supercapacitors can prove as "magnificent stars" in this field. So, Here in this paper, ultrasound assisted synthesis of electrodes for one such device, 'Supercapacitor' has been discussed. Cellulose, abundant in nature, can be attractively doped with PANi (poly aniline) as active material for high performance supercapacitors. Polyaniline (PANi), a conducting polymer can be used to provide high specific capacitance, high flexibility in combination with high strengths resulting due to cellulose nanofibrils synthesisable at low costs. The following paper also discusses the easy synthesis of Cellulose Nanofibres (from cotton fibres) and PANi using sonochemical methods and the fabrication of electrode from this composite to be put into use in supercapacitors. The paper concludes with the discussion of the advantages of cellulose-PANi based supercapacitors over classical energy storage devices with either low specific capacitance or low energy density besides their low natural abundance, high costs and low conductivity and how this easy composite can be further doped with other conducting polymers to obtain still higher values of specific capacitance upto 4271 F g^{-1} and more.