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Fabrication of Super Capacitors Using Jack Fruit Latex as the Binder of Activated Coconut Charcoal

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Capacitors are electrical storage systems. In conventional electrostatic capacitor dielectric is sandwiched between two metal electrodes and application of voltage, build separated charges on electrode surface. Orders of magnitude increase charge and energy densities have been achieved in so called super capacitors, where ionic separation results formation of excessively large surface area double-layers. Here the electrodes are separated by a non-conducting ion permeable membrane. Materials like activated charcoal and graphite are the frequently used electrode materials and normally the electrode is fabricated using powdered material and a binder. In this study jack fruit latex was used as the binder of activated coconut charcoal. Jack fruit latex was mixed with coconut charcoal in a suitable ratio to obtain a charcoal paste. Prepared coconut charcoal paste was used to fabricate capacitor electrodes. X-ray diffraction spectroscopy, Fourier transform infrared spectroscopy data was obtained to characterize the composite. Cyclic Voltammetry plots were used to calculate specific capacity. In this study KSCN was used as the electrolyte. Since the jack fruit latex binder is insoluble in aqueous solution durability of the capacitor is high.

Key words: coconut charcoal, binder, jack fruit latex, super capacitor