Electrochemical Properties of Cellulose Nanofiber/GrapheneNanosheet/Polyaniline Composite Film

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A flexible cellulose nanofibers(CNF)/Graphenenanosheet (GNS)/polyaniline (PANI) composite film was deposited and prepared via vacuum filtration, and then the effect of GNS on the electrochemical properties of the film was studied. Morphology of the CNF/GNS/PANI film was characterized with Fourier transform infrared spectroscopy (FT-IR), Raman spectroscopy (Raman), and field emission scanning electron microscopy (FE-SEM). Moreover, with the increase of GNS content, the electrochemical properties were more evident in the first place but less evident after the GNS content reached 6 wt %. The minimum charge transfer resistance of the composite film was 1.16 Ω . The specific capacitance reached 342.87 F/g at a current density of 1 A/g. At 5 A/g, 78.92% of the capacitance was maintained after 1000 charge-discharge cycles.

Keywords:cellulose nanofiber, Graphenenanosheet ,Polyaniline , Flexible , Supercapacitor

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