

Electrosynthesised metal (Ni, Fe, Co) oxide films on single-walled carbon nanotube platforms and their supercapacitance in acidic and neutral pH media

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ABSTRACT

Supercapacitive properties of Single-walled carbon nanotubes/metal oxides nanocomposites (SWCNT-MO where M=Ni, Fe, Co) have been described. The SWCNT-MO nanocomposites was confirmed with SEM, EDX and XPS techniques. Supercapacitive properties of the modified electrodes in H₂SO₄ and Na₂SO₄ electrolytes was investigated using cyclic voltammetry (CV), galvanostatic constant current charge-discharge (CD) and the electrochemical impedance spectroscopy (EIS) techniques. SWCNT-NiO nanocomposite modified electrodes gave better supercapacitive performance with a specific capacitance of 186 mFcm⁻² (or 928 Fg⁻¹). This value compared quite favourably and even higher than values hitherto reported in several literature.