High performance super-capacitive behaviour of deposited manganese oxide/nickel oxide binary electrode system

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Abstract

The chrono-potentiometry technique was used to deposit MnO$_2$-NiO binary metal oxide film on a stainless steel substrate at room temperature. During the electrodeposition process, the concentration of nickel acetate is varied in the fixed 0.01 M manganese acetate solution. The products were characterised by X-ray diffraction (XRD), energy dispersive X-ray spectroscopy (EDX) and field emission scanning electron microscopy (FESEM). Their capacitive behaviour was studied by cyclic voltammetry, galvanostatic charge-discharge, and electrochemical impedance spectroscopy (EIS) measurements.