

Electrochemical Properties of Electrodeposited MnO₂ Nanoparticles

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ABSTRACT

The present study shows the electrodeposition of MnO₂ from KMnO₄ solution and its electrochemical studies. XRD analysis shows the electrodeposited MnO₂ has nano-sized particle of 18 nm. The electrochemical properties have been investigated using the cyclic voltammetry, galvanostatic charge/discharge and impedance techniques. The electrodeposited MnO₂ shows good electrochemical behavior with high specific capacitance value of ca. 306 F g⁻¹. Moreover, it shows high capacitance stability of 90% over 1000 charge/discharge cycles. Impedance result shows low solution resistance and charge transfer resistance, an indication of the conductive nature for the electrodeposited film.

KEYWORDS: Cyclic Voltammetry, Electrochemical, Electrodeposition, MnO₂

DOI: [10.4028/www.scientific.net/AMR.1113.550](https://doi.org/10.4028/www.scientific.net/AMR.1113.550)