

Calcium-Based Nanosized Mixed Metal Oxides For Supercapacitor Application

Gomaa A.M. Ali^{a, b}, Osama A.G. Wahb^{a, c}, Ali M. Hassan^c, Osama A. Fouad^d, Kwok Feng Chong^a

^aFaculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, 26300 Gambang, Kuantan, Pahang, Malaysia

^bChemistry Department, Faculty of Science, Al-Azhar University, Assiut 71524, Egypt

^cChemistry Department, Faculty of Science, Al-Azhar University, Nasr City 11884, Egypt

^dCentral Metallurgical Research & Development Institute, P.O. Box 87, Helwan 11421, Cairo, Egypt

ABSTRACT

The nanosized mixed metal oxides ($\text{Ca}_3\text{Co}_2\text{O}_6$, CaMnO_3 and Ca_2CuO_3) have been synthesized and their electrochemical performance as supercapacitor electrodes have been evaluated. All of them show good pseudocapacitance in KOH electrolyte with specific capacitance of 563, 384 and 275 F g^{-1} for $\text{Ca}_3\text{Co}_2\text{O}_6$, CaMnO_3 and Ca_2CuO_3 , respectively. The charge kinetics of $\text{Ca}_3\text{Co}_2\text{O}_6$ is further evaluated by electrochemical impedance spectroscopy and the results show the low resistivity of $\text{Ca}_3\text{Co}_2\text{O}_6$ and its charge kinetic shows little variation after long continuous cycling. The present study signifies the successful application of nanosized mixed metal oxides as supercapacitor electrode.

KEYWORDS: C. Impedance; Calcium-based mixed metal oxides; Pseudocapacitance; Electrochemistry; Supercapacitor

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