Electrochemical Performance Of rGO-$Mn_3(PO_4)_2$ hybrid Materials for Supercapacitor Applications.

L.F. Mabena

Electrochemical energy storage (EES) devices such as supercapacitors (SCs) have emerged as promising solution for renewable energy storage technologies [1]. SCs are energy storage devices characterised by their fast charge-discharge cycles and long cyclability. Carbon-based nanostructured materials due to their intrinsic proprieties have gained much application in SCs. Various synthetic methods have been established to improve the electrode materials performance for supercapacitor applications. Carbon nanomaterial are being intensively hybridized with Pseudocapacitive transition metal for high performing electrode devices development due to their several oxidation states that allows energy storage via Faradic and non-Faradic reactions [2]. Therefore, Manganese-based electrodes materials which are characterized by their high theorical specific capacitance (~1370 F/g) , low cost and abundance in nature have been extensively explored as active electrode materials and for hybridization with carbon nanomaterials [3]. This work presents, the electrochemical performance investigation of microwave-assisted synthesis of manganese phosphate supported on reduced graphene oxide (rGO/$Mn_3(PO_4)_2$) hybrid materials and its morphological characterization for supercapacitor applications.

REFERENCES

1) L.F. Mabena, N.G. Chauke
2) C.G. Brink
3) D.M.Mabena,
4) K.Makgopa

Tshwane University of Technology, Faculty of Science, Department of Chemistry, 175 Nelson Mandela Drive, Pretoria, South Africa

Correspondence: L.F. Mabena, N.G. Chauke, C.G. Brink, D.M. Mabena, and K. Makgopa Tshwane University of Technology, Faculty of Science, Department of Chemistry, 175 Nelson Mandela Drive, Pretoria, South Africa

E-mail: mabenalf@tut.ac.za

Received: November 26, 2020, Accepted: November 27, 2020, Published: November 29, 2018