

7th World Nano Conference

June 20-21, 2016 Cape Town, South Africa

Facile method on fabrication of mixed phase bimetallic nanocomposite with high activity for electrocatalytic application

N Matinise¹ and M Maaza^{1,2}

¹Nanosciences African Network – iThemba LABS, South Africa

²University of South Africa, South Africa

The research work involves the development of better, inexpensive, reliable, easily and accurate method for the fabrication of novel metal oxide nanoparticles-based nanocomposite materials through green synthetic method. The characterization of the nanostructured nanocomposite materials will use various techniques, including High Resolve Transmission Electron Microscope (HRTEM) technique for the physical property such as morphology, particle size, structure and particle distribution; Fourier transform infrared spectroscopy (FTIR) for the composition and purity of the product; Ultraviolet-vis spectroscopy (UV/Vis spectra) Photoluminescence (PL) analysis for optical studies; X-ray diffraction (XRD) for purity and crystalline structure; Thermal studies by DSC/TGA technique for change phases and weight loss and Electrochemical methods such as cyclic, square wave voltammetry and electrochemical impedance spectroscopy for the evaluating the electrochemical activities. The electrochemical dynamics as a sensor or electrochemical catalyst of the nanostructured crystalline multi-metallic will be studied using cyclic voltammetry and Electrochemical Impedance Spectroscopy (EIS). The development of electrodes is prepared by drop coating the metal oxide nanoparticles-based nanocomposite materials on the surface area of electrode (Glassy carbon/Platinum) electrode for electrochemical application.

Biography

Nolubabalo Matinise has completed her PhD in 2014 at the University of the Western Cape under electrochemistry in Sensorlab research group. Her PhD research involves sensors and applied electrochemistry of nanomaterials. She is a postdoctoral fellow for two years now at iThemba labs under material research department. Her research interests include morphologically, optical, surface modification and dimensionally controlled synthesis and characterization of nanomaterials, bimetallic, polymers, development of new high efficiency and low cost transitional metal nanoscale catalysts, as well as investigation of the relationships between their structures and properties, and exploring their applications in heterogeneous catalysis, electrochemistry, energy conversion or nanoscale electronic devices.

nmatinise@tlabs.ac.za

Notes: