



Contribution ID: 391

Type: Poster Presentation

Simonkolleite-graphene foam composites and their superior electrochemical performance

Wednesday, 1 July 2015 16:10 (1h 50m)

Abstract content
 (Max 300 words)
 http://events.saip.org.za/getFile.py?target=_blank
 Formatting & Special chars

Simonkolleite-graphene foam (SimonK/GF) composite has been synthesized by a facile solvothermal and environmentally friendly technique with excellent electrochemical properties. The obtained product was initially analyzed by scanning electron microscopy (SEM), Brunauer-Emmett-Teller (BET), X-ray diffraction (XRD), Fourier Transform Infrared Resonance (FTIR) Spectroscopy and Cyclic Voltammetry (CV) techniques. The microscopy results reveal hexagonal sheets interlaced with each other and adjacent graphene sheets. The existence of graphene foam in the simonK/GF composite is further confirmed from the structural and the optical characteristics obtained from XRD and FTIR respectively. The BET results obtained indicate an improvement in the surface area due to the addition of graphene foam to a value of 39.58 m² g⁻¹. The N₂ adsorption/desorption also shows the presence of active mesopores required for charge transport. As a promising electrode material for supercapacitors, the composite shows a high specific capacitance value of 1094 F/g at 1 A/g with a coulombic efficiency of 99.7% even after 1000 charge-discharge cycles. These results show a potential for adoption of this composite in energy storage applications.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

Prof. Ncholu Manyala
Ncholu.Manyala@up.ac.za
University of Pretoria,

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

No

**Please indicate whether
this abstract may be
published online
(Yes / No)**

No

Primary author: Mr MOMODU, Damilola (UNIVERSITY OF PRETORIA)

Co-authors: Mr BELLO, Abdulhakeem (Department of Physics University of Pretoria); Dr DANGBEGNON, Kouadio Julien (University of Pretoria); Mr MADITO, Moshawe Jack (University of Pretoria); Dr MANYALA, Ncholu (University of Pretoria); Ms MASIKHWA, Tshifhiwa Moureen (University of Pretoria); Mr BARZEGAR, farshad (University of Pretoria)

Presenter: Mr MOMODU, Damilola (UNIVERSITY OF PRETORIA)

Session Classification: Poster2

Track Classification: Track F - Applied Physics