J Nanomed Nanotechnol 2016, 7:6 (Suppl)
http://dx.doi.org/10.4172/2157-7439.C1.047

Nano hybrid of Phosphorous doped single layer graphene with $Ni_{0.5}Zn_{0.5}Fe_2O_4$ nano particles: green synthesis , characterization and microwave dielectric spectroscopy

Shahid Ameer, Iftikhar Hussian Gul
School of Chemical and Materials Engineering, Pakistan

Nano hybrid of Phosphorous doped single layer graphene sheets with nano crystalline $Ni_{0.5}Zn_{0.5}Fe_2O_4$ ferrites were produced through facile method using a green solvent. The $Ni_{0.5}Zn_{0.5}Fe_2O_4$ ferrite nano particles were synthesized through solvothermal synthesis method with average particle size of 20nm and spherical morphology as indicated by SEM and TEM. The as synthesizd nano hybrids prepared with different loading of phosphorous doped graphene were characterized through XRD, FTIR and TGA. The microwave dielectric spectroscopy was used to study the dielectric properties in 10MHZ-1.5GH_Z spectrum and microwave reflection loss suggested the potential candidacy of the nano hybrids as good microwave absorbers for commercial anechoic chambers.

shahidameer@scme.nust.edu.pk

Fabrication of PANI nanowire as an electrochemical biosensor for DNA detection

Soha Mohajeri
Sharif University of Technology,Tehran, Iran

Polyaniline (PANI) is an organic polymer that possesses metallic conductivity and can be grown 1-dimensionally in the form of a nanowire. In this research the potentiostatic method was applied at the constant potential of 0.75 V to electrochemically deposit PANI nanowires on the stainless steel electrode. Morphological studies of the sample was carried out by Transmission Electron Microscopy (TEM) and it was observed that nanowires with 30–50 nm diameters were fabricated. Cyclic Voltammetry (CV), Scanning Electron Microscopy (SEM), and UV–vis absorption spectra were applied to characterize the PANI nanowires, and the results revealed that ultra-thin nanowires displayed high electrochemical activity. A single stranded Deoxyribonucleic acid (ssDNA) was fixed on PANI nanowires to investigate the efficiency of the system as a biosensor platform. Sensitivity of the PANI electrode was detected by measuring peak currents in Differential Pulse Voltammetry (DPV) after hybridization with different concentrations of the ssDNA. It was concluded that the system worked well even at low concentrations, and large peak current values at the order of mA were produced. Electrochemical Impedance Spectroscopy (EIS) of the sensor electrode was carried out with an Autolab-30 potentiostat/galvanostat to understand chemical transformations and processes associated with conducting polymer supported electrodes. The changes in impedance indicated that the system was extremely effective at low (10–16M) concentrations.

soha.mohajeri@yahoo.com