

A New Approach for Electrodeposition of poly (3, 4-ethylenedioxythiophene)/polyaniline (PEDOT/PANI) Copolymer

ABSTRACT

In this study, poly (3, 4-ethylenedioxythiophene) (PEDOT) and polyaniline (PANI) based copolymer was synthesized by electrochemical oxidative polymerization using chronoamperometry technique. A new approach was used to perform the copolymerization process. The copolymer film was prepared at a potential obtained from the intercept point in the LSV of the both monomers. The electrodeposition was performed in solution containing 10mM of concentrations of each monomer and 0.1 M lithium perchlorate (LiClO₄). The resulting conducting polymer films were characterized using scanning electron microscope (SEM), Raman spectroscopy and Fourier transform infrared (FTIR) to study the surface morphology, chemical properties and the presence of the functional groups of the conducting polymer films. The FTIR and Raman spectra proved the successful formation of the conductive polymers and copolymer onto the ITO glass. The electrochemical properties of the resultant polymer films were further analyzed using the cyclic voltammetry and electrical impedance spectroscopy.

Keyword: Conducting polymer; poly (3, 4-ethylenedioxythiophene); Copolymer; Electrodeposition; Polyaniline