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Electrical Conductivity Properties of Polyvinyl Alcohol: Graphene Nanocomposites

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Abstract

For the first time, the polyvinyl alcohol: graphene oxide nanoconnposite films for various contents of graphene oxide nanosheets were prepared by spin coating method. The synthesized GO nanosheets and PVA/GO nanoconnposites were characterized using field emission scanning electron microscope (FETEM) technique and energy dispersive X-ray spectroscopy (EDS). The electrical conductivity and current voltage characteristics of PVA/GO nanocomposites were investigated. The nanocomposites were underwent a transition from insulator to semiconductor behavior with GO content. The electrical characterization of Al/PVAGO/p-Si/Au diode was investigated by means of current voltage and capacitance voltage measurements. The prepared Al/PVAGO/p-Si/Au diodes exhibited the rectifying behavior and the rectifying properties were changed with GO content. Considering the very simple and effective fabricate process, the Al/PVAGO/p-Si/Au diodes are competitive candidate for several electronic applications.

Keywords

Author Keywords: Graphene Oxide; Polyvinyl Alcohol Nanocomposites; Microstructure; Electrical; Diode

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