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Fabrication and characterization of poly (ethylene oxide) for photo-electronic devices (Article)

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Abstract

Ionic conducting polymer thin films consist of **poly** (ethylene oxide)-chitosan blend, ammonium iodide NH_4I and iodine crystal I_2 were prepared by solution cast technique at room temperature. To improve the mechanical properties of the polymer thin film, chitosan ($C_6 H_{11} NO_4$) is added to the electrolyte, ammonium iodide (NH_4I) is added to supply charge carrier and iodine crystal (I_2) added to provide redox couple. From the complex impedance plot, the bulk resistance Rb was determined and the conductivity of the thin film was calculated. The highest conductivity was observed for the polymer blend containing, 45 wt % ammonium iodide which yield at $(1.18\pm0.7) \times 10^{-5}$ S cm^{-1} by Impedance spectroscopy. Optical **characterization** of the highest conducting PEO and chitosan ionic conductor shows at the corresponding wavelength, 330 nm that the thin film has a band gap of 3.7 eV. The polymer thin films were smooth, flexible and transparent. Thin film polymers are more favourable for photo-electronic applications. © 2006-2015 Asian Research Publishing Network (ARPN).

Author keywords

Ionic conductivity; Photo-electronic; Polymer; Semiconductor; Thin film

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