

**Preparation and Characterization of
PMMA –PEO Based Copolymer Electrolytes**

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Abstract

Poly(methylmetacrylate)-poly(ethylene oxide) (PMMA-PEO) based copolymer electrolytes are synthesized using solution cast technique. Different proportions of the starting polymers are used and films are obtained when the solvent is evaporated. The copolymers formed are characterized by Thermogravimetric Analysis (TGA)/ Differential Scanning Calorimetry (DSC), X-Ray Diffraction (XRD) and Fourier Transformed Infrared (FTIR) [1-5]. A.C. impedance spectroscopy is done on the films of copolymers [6]. The film with the highest room temperature conductivity are then modified by introducing plasticizers, ethylene carbonate (EC) and propylene carbonate (PC) in different proportions and impedance measurements are again done on the samples. A lithium salt, LiPF₆, is then added in different proportions to the PMMA-PEO with plasticizer sample exhibiting the highest conductivity. Impedance spectroscopy is again performed on the copolymer samples with the different amounts of salt [4, 5, 7-10]. Results show a range of conductivity values of between 10⁻⁵ – 10⁻³ Scm⁻¹.

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