

PREPARATION AND CHARACTERIZATION OF PVDF/ENR-50 POLYMER BLEND ELECTROLYTE

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ABSTRACT

The present study is focused on the characterization of polymer electrolyte based on poly(vinylidene fluoride) (PVdF) and epoxidised natural rubber (ENR). Polymer electrolyte film from the blending of PVdF and ENR-50 doped with lithium triflate (LiCF_3SO_3) and N-lithiotrifluoromethane-sulfonimide ($\text{LiN}(\text{CF}_3\text{SO}_3)_2$) are produced through solution casting technique. The best ionic conductivity recorded from the polymer electrolyte which is doped with certain ratio of LiCF_3SO_3 is 1.38×10^{-5} S/cm at room temperature. For the polymer blend doped with $\text{LiN}(\text{CF}_3\text{SO}_3)_2$ the ionic conductivity is 2.69×10^{-5} S/cm at 20°C . Characterizations of these polymer electrolytes were carried out using scanning electron microscopy (SEM) and differential scanning calorimetry (DSC). SEM managed to illustrate the different morphologies between the polymer electrolyte films studied. Meanwhile, DSC is employed to determine the glass transition temperature indicating the presence of homogenous and heterogeneous phases in the polymer electrolyte prepared.

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