^{1}H NMR STYDY OF THE ROLE OF ALUMINA FILLERS IN CONDUCTIVITY ENHANCEMENT IN THE PEO BASED SOLID POLYMER ELECTROLYTES

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Conductivity, DSC and NMR measurements have been performed on $(PEO)_9Mg(ClO_4)_2$ and $(PEO)_9Mg(ClO_4)_2$ + Al_2O_3 (neutral) nano-porous polymer electrolyte systems. It is observed that the conductivity enhances due to the presence of filler up to 15 wt % and then decreases. The NMR results are consistent with the idea that the conductivity enhancement is due to increase in chain mobility and ionic mobility of the solid polymer electrolyte made by increased amorphocity of the electrolyte with presence of fillers. DSC results also demonstrated that the amorphous phase is increased by adding fillers.