

Structural and Electrical properties of PVDF based Ag^+ ion conducting Polymer Electrolyte for Battery Applications

G.Sunita Sundari*, K.Vijaya Kumar, Sk. Shahenoor Basha

Solid state Ionics laboratory Department of Physics, K L University,
Guntur, India 522 502

Abstract: An attempt has done on a new solid polymer electrolyte system by blending of poly (vinylidene fluoride) (PVdF), and Silver perchlorate (AgClO_4). Solid Polymer electrolyte films were prepared by solution-casting technique and various characterization techniques has done by using IR, DSC, composition-dependence conductivity and transference number studies. The complexation between the polymers PVdF with salt AgClO_4 was revealed by IR studies. Differential Scanning Calorimetry was used to determine the melting point, glass transition temperatures of solid polymer electrolyte. The high ionic conductivity for PVdF+ AgClO_4 (60:40) polymer electrolyte system was found to be 4.20×10^{-5} S/cm at room temperature. The majority charge carrier's takes place in this polymer electrolyte system is mainly due to ions. An Electrochemical cell has been fabricated with the configuration of $\text{Ag}^+ / (\text{PVdF} + \text{AgClO}_4) / (\text{I}_2 + \text{C} + \text{electrolyte})$ and discharge characteristics were studied under a constant load of 100 K Ω . Various cell parameters, such as Open circuit voltage, Short circuit current, power density and energy density were calculated.

Keywords: Sol-casting, IR, DSC, A.C Conductivity, Transport properties, Electrochemical Cell.

G.Sunita Sundari *et al* /International Journal of ChemTech Research, 2016,9(5),pp 624-631.
