

Conduction properties study on alginate incorporated with glycolic acid based solid biopolymer electrolytes

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Abstract:

This present work focuses on the conduction properties investigation on solid biopolymer electrolytes (SBEs) based alginate doped with various composition of glycolic acid (GA). The film was successfully prepared via solution casting technique and was characterized for conduction properties by using impedance spectroscopy. Based on ionic conductivity study, the sample containing 20 wt. % of GA possessed an optimum ionic conductivity of $5.32 \times 10^{-5} \text{ S cm}^{-1}$ at ambient temperature (303 K). The dielectric analysis revealed the highest ionic conductivity sample based alginate-GA SBEs has the highest dielectric constant and loss and increased significantly when temperature increases at ambient temperature. The dielectric properties show that the entire alginate- GA SBEs are non-Debye behavior where there is no single relaxation occurred in the present system. © 2020 Trans Tech Publications Ltd, Switzerland.

Keywords: Alginate; Conduction properties; Electrical properties; Solid biopolymer electrolytes

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