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Fabrication of Primary Lithium ion conducting battery using Bio-material (Cassia Auriculata) Based Solid Electrolyte

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Abstract

In this work, a Lithium ion conducting biomaterial based membraneas electrolyte has been prepared using the flower part of Cassia Auriculata [1] (Avaram Poo) as host material incorporated with lithium chloride(LiCl) in various concentrations (1.1M.wt%, 1.2M.wt%, 1.3M.wt% of LiCl)using Solution casting technique. The prepared membranes are characterized using various techniques like X-Ray Diffraction (XRD) method, AC Impedance analysis and Transference Number Measurement (TNM). XRD method has been performed to study the Crystalline (or) Amorphous nature of the prepared membranes. The membrane with the concentration of 1g Cassia Auriculata +1.2 M. wt% LiCl exhibits high ionic (Lithium) conductivity of 5.87×10^{-2} S cm^{-1}. Transference number measurement (TNM) has been carried out to confirm that the charge transportation is mainly due to ions. Primary lithium- ion conducting battery [2] has been constructed and its open circuit voltage is observed as 1.84 V. The performance of the battery has been studied by connecting a load of 100 kΩ and 20 μA of current is drawn from the constructed battery.

Keywords CassiaAuriculata. XRD . AC impedance analysis. Lithium- ion conducting battery

Reference

[1] Kumaran, A., & Karunakaran, R. J. (2007). Antioxidant activity of Cassia auriculata flowers. *Fitoterapia*, *78*(1), 46-47.