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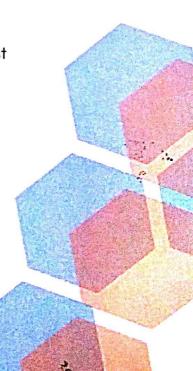
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Editors

Dr. S. Selvasekarapandian Dr. K. S. Lakshmi Dr. V. Meenakshi Sundaram Dr. A. R. Kulkarni Dr. C. Sanjeeviraja Dr. K. Hariharan



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@ Vignesh^{b,d}, S. Selvasekarapandian^{b,e}

^a Department of Chemistry, Fatima College (Affiliated to Madurai Kamaraj University), Madurai-625018, Tamil Nadu, India.

b Material Research Center, Coimbatore-641045, Tamil Nadu, India.

^c Research Centre of Physics, Fatima College (Affiliated to Madurai Kamaraj University), Madurai-625018, Tamil Nadu, India.

d Research Centre of Physics, Mannar Thirumalai Naicker College (Affiliated to Madurai Kamaraj University), Madurai-625004, Tamil Nadu, India.

Department of Physics, Bharathiar University, Coimbatore-641046, Tamil Nadu, India.

*E-mail: a.arulshilpa190802@gmail.com

Abstract

In present study, the proton conducting membrane using Cassia Auriculata (CA) (Aavaram poo) and Ammonium formate (NH₄HCO₂) has been prepared by the Solution Casting Method. The X-Ray Diffraction (XRD) method is used to analyze the crystalline/amorphous nature of the prepared biomaterial membranes. The ionic conductivity of the prepared biomaterial membranes is studied by the AC Impedance spectroscopy. And the membrane with the composition of 1g CA + 1.3 M. wt % of NH₄HCO₂ exhibits an enhanced ionic conductivity of 2.206×10^{-3} S/cm. Transference Number Measurement (TNM) is studied to confirm that the majority of charge carriers are ions. Using the highest ion conducting membrane (1g CA + 1.3 M. wt % of NH₄HCO₂), primary proton conducting battery [1] is fabricated and shows an open circuit voltage of 1.88 V. Then, by connecting a load of 100 k Ω , the voltage drops to 1.78 V and 20μ A of current has been drawn from the cell.

Keywords Cassia Auriculata, NH4HCO2, AC impedance analysis, XRD, Primary proton battery

Reference

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