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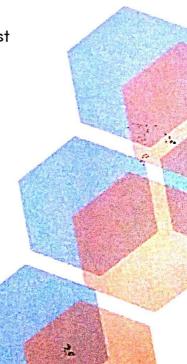
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# Construction of Primary Sodium Ion Conducting Battery Fabrication using Biomaterial Cassia Auriculata based Solid membrane as an Electrolyte

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#### Abstract

In this study, sodium ion-conducting bio-membrane as an electrolyte is developed using Cassia Auriculata [1] flower as host material incorporated with various compositions of Sodium Chloride (NaCl) by Solution Casting method. The prepared biomaterial based membrane has been characterized using X-ray diffraction analysis (XRD) in order to examine the crystalline/amorphous nature of the membrane. AC impedance technique has been used to measure the ionic conductivity of the prepared bio-membranes. 1g of Cassia Auriculata incorporated with 0.7 M.wt % of NaCl membrane exhibits improved high ionic conductivity of  $1.6251 \times 10^{-1}$  S/cm at room temperature. Transference Number Measurement (TNM) is studied to assure that the major transportation is because of ions. Primary sodium-ion conducting battery [2] is fabricated using the membrane resulting with high ionic conductivity as an electrolyte with sodium metal as anode and MnO<sub>2</sub> as cathode. The constructed battery shows an open circuit voltage (OCV) of 2.23V and 19  $\mu$ A of current is drawn while connecting a load of 100 K $\Omega$  to the constructed battery.

#### Reference

- Maneemegalai, S., and T. Naveen. "Evaluation of antibacterial activity of flower extracts of Cassia auriculata." Ethnobotanical Leaflets 2010, no. 1 (2010): 3.
- [2] Tang B, Shan L, Liang S, Zhou J. Issues and opportunities facing aqueous zinc-ion batteries.