

# Influence of lithium bromide on electrical properties in bio-based polymer electrolytes

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## **Abstract:**

The present work reports on the influence of lithium bromide (LiBr) in electrical properties of alginate, as bio-based polymer electrolytes (BBPEs) system. Alginate bio-based were prepared with various composition of LiBr via solution casting technique. The ionic conductivity and electrical properties of the prepared BBPEs samples were investigated using electrical impedance spectroscopy over a frequency range from 50 Hz to 1 MHz. The maximum ionic conductivity of  $7.46 \times 10^{-5} \text{ S cm}^{-1}$  was obtained at ambient temperature (303 K) for sample containing with 15 wt. % lithium bromide-doped alginate bio-based polymer electrolytes. The electrical analysis revealed the highest ionic conductivity sample based alginate-LiBr BBPEs has the optimum dielectric constant and loss and increases significantly when temperature increased. The dielectric properties show that the entire alginate-LiBr BBPEs are in non-Debye behavior condition where there is no single relaxation occurred in the present system.

**Keywords:** Bio-Based Polymer; Ionic Conductivity; Electrical Analysis; Dielectric Properties.

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