

**SYNTHESIS AND CHARACTERIZATION OF PLASTICIZED
CARBOXYMETHYL CELLULOSE BASED SOLID BIOPOLYMER
ELECTROLYTE**

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ABSTRACT

In this study, solid biopolymer electrolyte (SBE) has been prepared using carboxymethyl cellulose (CMC) and ammonium chloride (AC) by solution casting method. The effect of plasticizers; ethylene carbonate (EC) and propylene carbonate (PC) was investigated. The ionic conductivity of CMC-AC-EC and CMC-AC-PC achieved at $2.715 \times 10^{-5} \text{ Scm}^{-1}$ and $3.672 \times 10^{-5} \text{ Scm}^{-1}$, respectively. The Fourier Transform Infrared (FTIR) spectra showed the occurrence of complexation between the SBE and AC salt. X-Ray diffraction (XRD) indicated that amorphous nature is higher in CMC-AC-PC. Differential Scanning Calorimetry (DSC) showed higher T_g for CMC-AC-PC. It can be concluded that PC is the promising plasticizer to enhance the ionic conductivity and performance of SBE system.

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