

**PREPARATION AND CHARACTERIZATION OF PLASTICIZED ETHYLENE
CARBONATE (EC) ON CELLULOSE -NH₄I ELECTROLYTES**

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This Final Year Project entitled “**Preparation and Characterization of Plasticized Ethylene Carbonate (EC) On Cellulose- NH₄I Electrolyte**” was submitted by Marini binti Musataffa, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons) Physics, in the faculty of Applied Sciences, and was approved by



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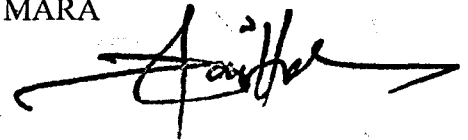


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ABSTRACT

PREPARATION AND CHARACTERIZATION OF PLASTICIZED ETHYLENE CARBONATE (EC) ON CELLULOSE-NH₄I ELECTROLYTE.

In this study, cellulose acetate (CA) containing different concentration of ammonium iodide (NH₄I) salt were prepared using a solution cast technique. The optimum percentage of salt and plasticizer that gave the highest value of electrical conductivity of the sample was determined. Impedance spectroscopy technique was carried out in order to determine the electrical conductivity value. The highest conductivity value was $3.7515 \times 10^{-5} \text{ Scm}^{-1}$ for 1 g CA at 35 wt % ammonium iodide at 303 K. This conductivity was calculated using the bulk resistance value which can be obtained from the complex impedance plot in frequency range between 100 Hz and 1 MHz. The same procedure was repeated in order to prepare plasticized samples with ethylene carbonate (EC) using the optimum concentration of salted sample. The highest conductivity was $3.4396 \times 10^{-4} \text{ Scm}^{-1}$ at 40 wt % EC. Finally, the highest conducting plasticized sample was characterized using impedance spectroscopy at different temperatures from 303K to 373K.