

**EFFECT OF UNTREATED Al_2O_3 ON THE ELECTRICAL
PROPERTIES OF CHITOSAN – BASED POLYMER ELECTROLYTES**

NURSYAZWANI BINTI MOHAMAD SUKRI

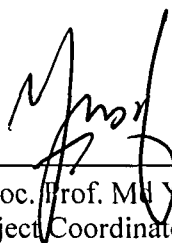
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Dr. Tan Winie
Supervisor
B.Sc(Hons.)Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Assoc. Prof. Md Yusuf Theeran
Project Coordinator
B.Sc(Hons.)Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam

Dr. Abdul Malik Marwan Ali
Head of programme
B.Sc(Hons.)Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam

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ABSTRACT

EFFECT OF UNTREATED Al_2O_3 ON THE ELECTRICAL PROPERTIES OF CHITOSAN- BASED POLYMER ELECTROLYTES

Chitosan composite polymer electrolyte thin films were prepared by casting the composite solutions of chitosan, LiCF_3SO_3 , and Al_2O_3 , of various weight ratios at room temperature. The main objective of this study is to study the effect of untreated Al_2O_3 on the conductivity behavior. Five different compositions of polymer electrolytes were prepared with various Al_2O_3 concentrations, ranging from 0 to 8 wt%. Composition dependence conductivity of all samples at room temperature was measured with Electrical Impedance Spectroscopy (EIS) at frequency range from 100Hz to 1MHz. The highest conductivity of $1.52 \times 10^{-6} \text{ Scm}^{-1}$ was achieved with 6 wt% Al_2O_3 . Dielectric constant study concludes that an increment in Al_2O_3 content from 0 to 8wt% yields enhancement in the number of free charge carriers, and hence an enhancement in ionic conductivity. Fourier Transform Infrared (FTIR) studies the interaction among chitosan, LiCF_3SO_3 and Al_2O_3 .