

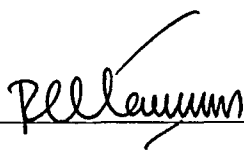
**ELECTRICAL CHARACTERISATION OF PVC-LiTFSI-Al₂O₃
(99% GAMMA 40-80 nm) POLYMER ELECTROLYTES**

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**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Physics
in the Faculty of Applied Sciences
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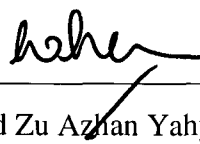
This Final Year Project Report entitled “**Electrical Characterizations of PVC-LiTFSI-Al₂O₃ (99% Gamma 40-80 nm) Polymer Electrolyte**” was submitted by Muhamad Kamarul Azman b Sulaiman, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and approved by



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ABSTRACT

In this study of nanocomposite polymer electrolyte, Poly vinyl chloride, (PVC), was used as the host polymer and lithium (bis) trifluoromethanesulfonimide, (LiTFSI), as the doping salt with Aluminium Oxide, Al_2O_3 as the filler. PVC and salt in different weight % concentrations dissolved in Tetrahydrofuran, (THF). The influence of different concentration of salt on PVC gave rise to different values of ionic conductivity. The best conductivity concentration of PVC-LiTFSI was mixed with various weight % of Aluminium Oxide in nanosize to form PVC-LiTFSI- Al_2O_3 nanocomposite polymer electrolytes. The ionic conductivity of nanocomposite polymer electrolyte was determined by impedance spectroscopy. Temperature dependence of conductivity behavior of the best conducting PVC-LiTFSI and PVC-LiTFSI- Al_2O_3 samples was also investigated to obtain the values of activation energy (E_a) of conduction.