PVC + $(NH_4)HSO_4$ + SiO_2 (10μm) POLYMER ELECTROLYTES AND ITS ELECTRICAL PROPERTIES

By:

NURHASHIDAH BINTI ANUAR

Supervisor:

PROF. DR. RI HANUM YAHAYA SUBBAN

Co – supervisor:

DR. NOR SABIRIN MOHAMED

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This Final Year Project Report entitled '**PVC + $(NH_4)HSO_4$ + SiO_2 (10μm) POLYMER ELECTROLYTES AND ITS ELECTRICAL PROPERTIES**' was submitted by Nurhashidah Binti Anuar, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Industrial Physics, in the Faculty of Applied Sciences and was approved by

Prof Dr Ri Hanum Yahaya Subban
Supervisor
B. Sc. (Hons.) Industrial Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Dr. Nor Sabirin Mohamed
Co-Supervisor
Centre For foundation Studies in Science
Universiti Malaya Kuala Lumpur

Assc. Prof Dr. Md Yusof Theeran
Project Coordinator
B. Sc. (Hons.) Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Tn. Hj. Isa Bin Mohd Yusof
Head of Programme
B. Sc. (Hons.) Industrial Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

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ABSTRACT

Polymer electrolytes composed of PVC (polyvinyl chloride) as a host polymer, $(NH_4)HSO_4$ as a salt and $SiO_2(10\mu m)$ as a filler will be prepared by solution cast technique using tetrahydrofuran (THF) as a solvent. The conductivity measurements of the samples were carried out using HIOKI-LCR Hi-Tester and are analyzed using impedance spectroscopy (IS). The sample with highest conductivity was recorded for 60 wt % PVC – 40 wt % $(NH_4)HSO_4$ with value of 1.32E-08 Scm^{-1}. The effects of addition of micro sized SiO_2 adder on the conductivity of the highest conducting any polymer electrolyte was investigated. The highest conductivity was obtained for 92 wt % PVC – $(NH_4)HSO_4$ – 8 wt % SiO_2 with value of 3.23E-05 Scm^{-1} which is an increase of 3.23E-05 orders of magnitude compared to the filler-free sample.