

**STUDY ON PHYSICALS, CHEMICALS AND IONIC CONDUCTIVITY
PROPERTIES OF POLYETHYLENE OXIDE (PEO) INCORPORATED
WITH DIFFERENT SALTS**

SITI NOR IJAN BT SAMSUDIN

**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

MAY 2009

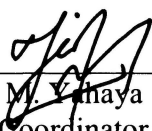
APPROVAL SHEET

This Final Year Project Report entitled "Study on Physicals, Chemicals and Ionic Conductivity Properties of Polyethylene Oxide (PEO) Incorporated with Different Salts" was submitted by Siti Nor Ijan Bt Samsudin, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by



Sabrina M. Yahaya
Supervisor

B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Sabrina M. Yahaya
Project Coordinator
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Dr Yusairee Mohd
Head of Programme
B. Sc. (Hons.) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date: 22/5/09

ACKNOWLEDGEMENT

Upon completion of this project, I would like to express my gratitude to many parties especially to my supervisor, Ms Sabrina M. Yahaya for giving me the chance to be supervised under her and for her support during the completion of this project. Thank you for all the comments, morale support and guidance that you have given to me. Also I would like to thank all chemical lab staff for their helpful, useful advice and for their tolerance in helping me to finish this work. Also to all project members, thank you for your co-operation, support and comments during the implementation of this project. Lastly, for those who are not mentioned here, thank you for the advice and endless co-operation.. Without those help, I would not complete the report

Siti Nor Ijan bt Samsudin

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	v
LIST OF FIGURES	vii
ABSTRACT	viii
ABSTRAK	i
 CHAPTER 1 INTRODUCTION	
1.1 Research background	1
1.2 Problem statement	3
1.3 Research objectives	4
1.4 Scope of study	4
 CHAPTER 2 LITERATURE REVIEW	
2.1 Conducting Polymers	6
2.1.1 Polyaniline (PANI)	6
2.1.2 Polymethyl Methacrylate (PMMA)	8
2.1.3 Polyethylene Oxide (PEO)	8
2.2 Gel polymeric electrolyte	9
2.2.1 Applications of solid polymer electrolytes towards ionic conductivity	10
2.3 Sodium Chloride	11
2.3.1 Introduction	12
2.3.2 Chemical properties	12
2.3.3 Physical properties	12
2.3.4 Applications	13
2.4 Magnesium Chloride	13
2.4.1 Introduction	12
2.4.2 Chemical properties	13
2.4.3 Physical properties	14
2.4.4 Applications	15
2.5 Aluminium Chloride	16
2.5.1 Introduction	16
2.5.2 Chemical properties	17
2.5.3 Physical properties	17
2.5.4 Applications	18

ABSTRACT

STUDY ON PHYSICALS, CHEMICALS AND IONIC CONDUCTIVITY PROPERTIES OF POLYETHYLENE OXIDE (PEO) INCORPORATED WITH DIFFERENT SALTS

An investigation on physicals, chemicals and ionic conductivity properties of Polyethylene Oxide (PEO) incorporated with different salts (sodium, magnesium and aluminium salt) in 9:1 ratio revealed the enhancing in physical, chemical and ionic conductivity properties on the polymeric electrolytes. This project shows that the addition of salts to the conducting polymer has decrease the crystallinity of polymer and Mg^{2+} and Al^{3+} can enhance the conductivity and thermal stability of the polymer composite electrolytes.