

IONIC CONDUCTION MECHANISM STUDY IN PMMA/DPNR ELECTROLYTE.

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NOVEMBER 2007

ACKNOWLEDGEMENT

Bismillahirrahmanirrahim.

Assalamualaikum.

First of all, I was grateful and would like to thanks to Allah S.W.T for His blessing and wisdom for give me the strength until I finished this final project. In preparing this thesis, I was in contact with many people, researchers, academicians and librarians. They have contributed towards my understanding and thoughts. I wish to extend my deepest gratitude and profound appreciation to my thesis supervisor, Dr. Famiza Abdul Latif from the chemistry Department, Faculty of Science, Universiti Teknologi Mara for her invaluable supervision.

To all my friends, Faizal, Hafiz and Rodi, thanks for the support. My sincere appreciation also extends to my UiTM colleagues who had supported me.

Last and not least, special thanks to my friends and families who have in more ways than one contributed to the completion of this work.

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ABSTRACT

IONIC CONDUCTION MECHANISM STUDY IN PMMA/DPNR ELECTROLYTE

Thin, transparent and flexible free standing film can be obtained from PMMA/DPNR blend film when prepared by solvent casting method. From the FTIR analysis, it was confirmed the formation of polymer-salt complex that occur at the carbonyl group of PMMA. The lithium ion transport in the system obeys the Arrhenius behavior at which the migration of cation is via ion hopping that is thermally assisted

CHAPTER 1

INTRODUCTION

1.0 Introduction

The development of lithium ion battery has been improve in the last few decades because there are huge demand for the portable telecommunication devices and computer. These devices need battery that is small enough but still can provide enough energy and as the result the weight and the size of the devices can also be reduced.

Current commercial batteries use liquid electrolyte which are highly flammable and this lead to a safety problem. In some cases this type of batteries when expose to excess current or voltage it can cause the batteries to burn.

Because of these reasons, scientists are trying to develop alternative energy resources base on polymer. There are three types of polymer electrolytes that had been developed:

- (i) dry solid polymer electrolyte
- (ii) gel polymer electrolytes
- (iii) Composite polymer electrolyte.

The polymer electrolyte behave as a solvent that allow an ion to move. The advantage of a polymer electrolyte is that it will be no leakage of toxic liquid hence higher energy density and flexible geometry (improve safety hazards). Therefore it has drawn the attention of many researchers on the development on lithium-ion polymer. However, the disadvantage of Li-ion polymer batteries is that it give poor ionic conductivity due to high internal resistance and low cycle count compare to Li-ion battery