

**PREPARATION AND CHARACTERIZATION OF POLY(METHYL
METHACRYLATE)/DEPROTEINIZED NATURAL RUBBER BASED
POLYMER ELECTROLYTE BY SOLVENT CASTING METHOD**

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ABSTRACT

In this research, thin, transparent and flexible free standing films of poly(methyl methacrylate) (PMMA) / deproteinized natural rubber (DPNR) / lithium triflate (LiCF_3SO_3) were obtained by solvent casting method at all DPNR compositions. The highest ionic conductivity obtained was $1.46 \times 10^{-9} \text{ Scm}^{-1}$ at room temperature when 20% of DPNR were blended into the system. As the concentration of DPNR increased, the conductivity drops drastically due to the insolubility of lithium salt in higher concentration of DPNR. From the FTIR analysis it was confirmed the formation of polymer-salt interaction in the electrolyte system.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The most important power sources that had been widely used in the world are batteries. One of the most popular types is the alkaline battery. An alkaline battery is a liquid base electrolyte. This type of battery is commonly used in many electrochemical devices like mobile phone, camera, laptop and etc. However, the liquid base electrolyte exhibits problems such as leakage of toxic liquid and sometimes it may explode. This situation is harmful to the users and also to the environment. The liquid base electrolyte also have other disadvantages such as short life time and need to recharge for several hours before it can be used again. Therefore, many researches have been focusing on the invention of new solid based electrolyte system such as solid polymer electrolyte. Solid based electrolyte has many advantages such as:

- a. It is more stable compared to the liquid base electrolyte.
- b. It will cause no gassing, corrosion and leakage.
- c. It also have flexible geometry and easy to prepare in thin film form and
- d. Can be operated at wide range of temperature.