

**PREPARATION AND CHARACTERIZATION OF
PVA/PMMA BLEND FILM AS ELECTROLYTE IN LITHIUM
ION BATTERY**

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ABSTRACT

PREPARATION AND CHARACTERIZATION OF PVA/PMMA BLEND FILM AS ELECTROLYTE IN LITHIUM ION BATTERY

In this study PVA/PMMA blend was prepared by solvent casting. There was no free standing film can be obtained from all blends composition. From the optical micrograph, it was noted that the swelling morphology of PVA due to the entrapment of moisture has been reduced when PMMA was added. The infra red (FTIR) analysis revealed that there was an interaction between PMMA and PVA via hydrogen bonding. Due to the presence of hydrogen bonding, the glass transition temperature (T_g) of the blend system increases as the amount of PMMA was increased. Overall, the PVA/PMMA blends were less stable than in their individual film.

CHAPTER 1

INTRODUCTION

1.1 Background of study

The development of lithium battery has improved in the past few decades because of huge demand for the portable telecommunication devices and computer. These devices need battery that small enough but still can provide the energy needed in an outstanding duration. This will then result in reduction of the size and weight of the devices.

Current liquid based electrolyte suffers from several advantages such as leakage of toxic liquid and explosion. Thus, it will lead to some problems concerning the environment and the users' safety. To overcome this issue, polymer electrolyte has been introduced (Sivakumar *et al.*, 2005).

Polymer electrolyte can be defined as a solvent free system where the ionic conductivity phase is formed by dissolving salt in a high molecular weight polar polymer matrix. Polymer electrolyte may exhibit several advantages such as:-