STUDIES ON ELECTRONIC CONDUCTIVITY AND STRUCTURAL OF PVA-Chi/Mg(CF$_3$SO$_3$)$_2$/L-LEUCINE SOLID ELECTROLYTES

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ABSTRACT

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PVA-Chi / Mg(CF$_3$SO$_3$)$_2$ / L-LEUCINE SOLID ELECTROLYTES**

More environmental friendly and more biodegradable ionic cells are some of the properties that could give a good electrolyte. In order to obtain a maximum ionic conductivity of solid electrolyte, study of the determination of optimum composition of Mg-based solid electrolyte was completed by making thin film. In addition, the electronic conductivity and structural characteristic of the electrolyte was also carried out. Solid poly(vinylalcohol), (PVA); chitosan; magnesium trifluoromethanesulfonate, (Mg(CF$_3$SO$_3$)$_2$)); and L-leucine was mixed in 1% acetic acid to form homogeneous solution. The solution was casted to a dish and was let evaporated to form thin films. The film was then characterized for determining it ionic conductivity.

CHAPTER 1

INTRODUCTION

1.1   Background of the Study

In recent years, there has been a lot of interests on research and development of solid state electrochemical devices for reversible electrical energy-storage for a number of applications. Development of research for advanced batteries and it's relativity in the sense of physical, chemical and environmental characteristic and properties were analyzed. This research had begun in about two decades ago especially on the polymer electrolytes which based on metal salts dissolved in various type of solvent.

Solid electrolyte can be found in many devices such as rechargeable batteries, capacitors and sensors. One of the main focus for the application is for production of batteries in computing component, entertainment, telecommunication equipment and many other portable devices. With the ease of technology, it will lead to various consumer products and a new substitute for portable power source (David L., 1984).

Nickel/Cadmium and lithium ion batteries are widely used in the market for batteries application. Nickel/Cadmium ion batteries are not preferable to be used in the global market due to some of the drawbacks that Nickel/Cadmium ion batteries produced, for example overcharged Nickel/Cadmium, reversed charging, consequences of cadmium pollution to the environment (www.wikipedia.com/nickel-cadmium batteries). Lithium ion batteries are more preferable because lithium ion batteries can