ELECTRICAL STUDIES OF PVC BASED NANO COMPOSITE (10nm) POLYMER ELECTROLYTES

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ABSTRACT

ELECTRICAL STUDIES OF PVC BASED NANO COMPOSITE (10nm) POLYMER ELECTROLYTES

In this work, polymer electrolytes composed of Poly (vinyl chloride) (PVC)-$LiBF_4$-SiO_2 was prepared where PVC was used as the polymer host with Lithium tetrafluoroborate ($LiBF_4$) as doping salt and SiO_2 as nanofiller in order to increase conductivity values. The ionic conductivity of all these samples was measured by impedance spectroscopy. The optimum percentage SiO_2 that enhance highest conductivity was determined.

CHAPTER 1

INTRODUCTION

1.0 Introduction

Polymer is a combination of large number of molecules which is formed from the repetition of small and simple chemical units called monomer linked together by covalent bonds. In the early days, polymer is thought to be an insulator but in last three or four decades polymer is able to conduct electricity. Some electron conducting and ion conducting polymer has been synthesized. Thus, this resulted in a group of polymer known as conducting polymers (N.S Mohamed *et al.*, 2000). Conducting polymer includes a group known as polymer electrolytes. Polymer electrolytes are studied in the last two decades due to their potential applications in various electrochemical devices such as high energy density batteries, electrochromic devices and chemical sensors (Stephan *et al*.., 2002)