CELLULOSE ACETATE BASED ELECTROLYTE

CHARACTERIZATION FOR APPLICATION IN

POLYMER ELECTROLYTE

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ABSTRACT

Cellulose acetate film containing salt and plasticizer cellulose acetate-salt complexes was used to obtain some insight on mechanism of ionic conductivity in cellulose acetate-based polymer electrolytes. In this study, cellulose acetate film is largely amorphous. Mobile ions, NH_4^+ from $NH_4CF_3SO_3$ are contributing for ionic conductivity in the system. The number of mobile ions can be increase by plasticizer. Plasticizer can dissociate the salts which lead to ionic conductivity enhancement. The conductivity was calculated from bulk impedance obtained through impedance spectroscopy. The dielectric constant and dielectric loss versus frequency tend to a maximum at low frequency. The "long tail" feature was shown from graph modulus of imaginary and real parts of electrical modulus of sample. This feature can be attributed to high capacitance and support the plasticizer role as an agent to dissociate the salt into ions.

CHAPTER 1

INTRODUCTION

1.1   Background

Super capacitor resembles a regular capacitor with the exception that offers very high capacitance in small size. It also knows as electrochemical capacitors, electrical double-layer capacitors, gold capacitors or power caches. Super capacitor have attract the worldwide research interest by it potential application as energy storage devices in many field, because of its ability to stores electrical energy in the interface between an electrolyte and solid electrode.

Nowadays, super capacitor have been consider to be use for electric vehicles, digital communication devices, digital cameras, mobile phones, electrical hybrid vehicles, electric tool, pulse laser technique, uninterruptible power supplies for computers, and storage of the energy generated by solar cell. Therefore, supercapacitor has gathered the attention of the scientist to do a research on increasing the capacitance to be use in the energy storage system. It unique characteristic that lies between the conventional and the secondary battery has make the supercapacitor to be considered to be used in energy storage system.