

**EFFECTS OF LiClO_4 AND EC ON THE ENR 50 FOR ELECTROCHEMICAL
SYSTEM**

By

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ABSTRACT

EFFECTS OF LiClO_4 AND EC ON THE ENR 50 FOR ELECTROCHEMICAL SYSTEM

In this study, Epoxidized Natural Rubber (ENR-50) was used as a host polymer. ENR-50, ethylene carbonate (EC) and inorganic lithium perchlorate (LiClO_4) were mixed in the desired proportions and dissolved in 30ml of tetrahydrofuran (THF) solution. The solutions were then poured into various Petri dishes and left to form the film at room temperature. EC was used as a plasticizer. The electrical conductivity of all samples was calculated using the bulk resistance value obtained from the complex impedance plot in the frequency range between 100Hz and 1MHz. The highest electrical conductivity obtained for the salted film containing lithium perchlorate is $8.55 \times 10^{-5} \text{S/cm}$ at room temperature. The plot of conductivity versus wt percent of salt indicates that the conductivity increase with increasing dopant content up to amount of 30wt percent for lithium perchlorate. The highest conducting plasticize polymer electrolyte complex with 30wt percent EC has the highest conductivity value of $1.2 \times 10^{-4} \text{S/cm}$. The highest conducting film for the plasticized ENR-50 was then used as an electrolyte in the fabrication of lithium-air cell. The discharge capacity obtained from the cell is 574mAhg^{-1} .

CHAPTER 1

INTRODUCTION

1.1 Background

Polymer electrolyte now is widely used as the basis of electrolyte electrochemical device. Polymer are being used increasingly as solid media for substituting the liquid component of electrochemical devices such as sensors, displays, supercapacitors, electrochromic windows and rechargeable batteries. Polymer electrolytes are being favor in industrial of batteries fabrication. This intends most of manufacturer to concentrate on researching in this field. Beside that from this research there are widely develop of the new knowledge. In this study the ENR 50 based polymer electrolyte was prepared with doping LiClO_4 and EC as a plasticizer. Introducing of EC which is as plasticizer in this work is to enhance their conductivity.