

PLASTICIZED POLYMER ELECTROLYTES FOR  
ALKALINE BATTERIES

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FOR ALKALINE BATTERIES**

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قالوسبحنك لاعلم لنا إلا ما علمتنا إنك أنت العليم الحكيم

*They said; "Glory to thee, of knowledge we have none, save what Thou hast taught us: in truth it is Thou who art perfect in knowledge and wisdom."*

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## ***TABLE OF CONTENTS***

	<b>Page</b>
<b>ACKNOWLEDGEMENT</b>	iii
<b>TABLE OF CONTENTS</b>	iv
<b>LIST OF TABLES</b>	vii
<b>LIST OF FIGURES</b>	viii
<b>LIST OF ABBREVIATIONS</b>	ix
<b>ABSTRACT</b>	xi
<b>ABSTRAK</b>	xii
<b>CHAPTER</b>	
<b>1 INTRODUCTION</b>	
1.1 Background	1
1.2 Problem statement	3
1.3 Objective of the research	3
1.4 Research aims and rational	3

## *ABSTRACT*

### **PLASTICIZED POLYMER ELECTROLYTES FOR ALKALINE BATTERIES**

Plasticized polymer electrolytes comprise of poly(vinyl alcohol) (PVA), potassium hydroxide (KOH) as ionic dopant, propylene carbonate (PC) as plasticizer and distilled water as a solvent have been prepared by solution casting technique. The concentration of KOH and the amount of PC was varied systematically. The conductivity was studied using a.c impedance spectroscopy to determine the ionic conductivity in sample PVA + KOH and PVA + KOH + PC. The conductivity was calculated using bulk impedance value in the frequency range from 100Hz to 1MHz at room temperature. The highest conductivity for sample PVA + KOH was  $4.52 \times 10^{-4}$  S/cm when 2M KOH was added and the value was enhanced upon the additional of PC. The highest conductivity was  $1.80 \times 10^{-2}$  S/cm when the sample was added with 10% PC. Electrochemical cell of Zn |PVA + KOH + 10%PC| MnO<sub>4</sub> was fabricated and the open circuit voltage (OCV) showed decreasing from 1.063 V to 0.590 V and remained constant for 24 hours.