CONTENTS

Decla Ackn	ficate by the Supervisor aration owledgement Abstract ii of Figures of Tables	
СНА	PTER-I INTRODUCTION	
1.1	Polymer	ţ
1.2 1.3	Polymer electrolytes Nature, Properties and Morphology of polymers	<u>2</u> 3
1.4	Classification of polymer electrolytes:	۷,
	1.4.1 Polymer-salt complexes	
	1.4.2 Plasticized polymer electrolytes	
	1.4.3 Rubbery electrolytes	
	1.4.4 Composite polymer electrolytes	
	1.4.5 Gel polymer electrolytes	>
1.5	Properties of electrode-polymer electrolyte interface	·5
1.6	Polyaniline Nanofiber	
1.7	Statement of the Problem and motivation of the work	
СНА	PTER-II EXPERIMENTAL	7
2.1	Parent Materials	
2.2	Sample Preparation	9
	2.2.1 Lithium trivanadate(LiV_3O_8)	7
	2.2.2 Intercalation of PMMA into LiV ₃ O ₈	
	2.2.3 Synthesis of PMMA-LiV ₃ O ₈ -PC+DEC-LiClO ₄	
	polymer electrolyte	

2.3 Various methods of characterizations				
2.3.1 Transmission Electron Microscopy				
2.3.2 Complex Impedance Analysis				
2.3.3 X-Ray Diffraction				
2.3.4 Scanning Electron Microscopy				
2.3.5 Fourier transform infra red spectroscopy				
i e e e e e e e e e e e e e e e e e e e				
CHAPTER-III RESULTS AND DISCUSSION				
3.1 Ionic conductivity studies				
3.1.1 Room temperature ionic conductivity				
3.1.2 Temerature dependance ionic conductivity				
3.2 X-ray diffraction studies				
3.3 Scanning electron microscope studies				
f^{-1}				
CHAPTER-IV CONCLUSION AND FUTURE PROSPECTS				
4.1 Conclusion				
4-2 Future Prospects				
REFERENCES				

"

LIST OF FIGURES

Figur	e No. Figure Caption	Page No.	
1.1	Arrangement of polymer chains forming crystal and amorphous region in polymers.	3	
2.1	Chemical structure of polymer used in the work	7	
2.2	Chemical structure of solvents used in the present work	7	
2.3	The block diagram of preparation of LiV ₃ O ₈	9	
2.4	Block diagram of solution casting technique for		
-	preparation of PMMA-LiV ₃ O ₈ -PC+DEC-LiClO ₄ -x%		
	polymer electrolyte	10	
2.5	Sample holder for ionic conductivity measurement	11	
3.1	Complex impedance of LiV ₃ O ₈	13	
3.2	Complex impedance of PMMA-LiV ₃ O ₈		
3.3	Room temperature ionic conductivities of		
	(a)LiV $_3$ O $_8$ and (b) PMMA-LiV $_3$ O $_8$ -PC+DEC-LiClO $_4$ -x%	13-14	
3.4	Temperature dependence ionic conductivity of PMMA-LiV ₃ O ₈ -PC+DEC-LiClO ₄ with different composition of LiV ₃ O ₈	15	
3.5	X-ray diffraction of plasticized PMMA-LiV ₃ O ₈ -PC+DEC-LiClO ₄ -x%	17	

LIST OF TABLES

Table N	Title	Page No.
2.1	Some physical properties of polymers used	
	to synthesize polymer electrolytes	8
2.2	Some physical properties of organic solvents	
	used to synthesize polymer electrolytes	8
2.3	Some physical properties of inorganic salt used	
	to synthesize polymer electrolytes	8