# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>TITLE</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>xii</td>
<td></td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
<td></td>
</tr>
<tr>
<td>LIST OF SYMBOLS, ABBREVIATIONS AND NOMENCLATURE</td>
<td>xxi</td>
<td></td>
</tr>
</tbody>
</table>

## 1. INTRODUCTION TO SOLAR CELLS

1.1 Thin Film Solar Cells - an overview 1
1.2 Functional Phenomenon of Solar Cell 4
1.3 Structure and Fabrication Methods of Solar Cells 8
1.4 Performance Analysis 11
1.5 Importance and Scope of the Present Work 14

## 2. CHEMICAL BATH DEPOSITION AND CHARACTERIZATION OF SEMICONDUCTING CdS THIN FILMS

2.1 Introduction 16
2.2 Experimental 18
2.3 Results and Discussions 21
2.4 Conclusion 44

## 3. ELECTRODEPOSITION AND CHARACTERIZATION OF CdS, Zn-DOPED, In-DOPED CdS THIN FILMS

3.1 Introduction 45
3.2 Experimental 48
3.3 Characterizations Studies 50
3.4 Results and Discussions 50
3.5 Conclusion 74
4. ELECTRODEPOSITION AND CHARACTERIZATION OF CdTe AND CuInSe₂ SEMICONDUCTING THIN FILMS

4.1 Introduction 76
4.2 Electrodeposition of CdTe and CuInSe₂ thin films 79
4.3 Characterization Studies 85
4.4 Results and Discussions 86
4.5 Conclusion 111

5. INVESTIGATIONS ON THE ELECTRODEPOSITED CdS/CdTe, CdS/CuInSe₂, AND CdS/InP SOLAR CELL STRUCTURES

5.1 Introduction 113
5.2 Fabrication of Solar Cell Structures by electrodeposition 115
5.3 Characterization Studies 119
5.4 Results and Discussions 121
5.5 Conclusions 140

6. SUMMARY AND SUGGESTIONS FOR FUTURE WORK

6.1 Summary of the Present Investigations 143
6.2 Suggestion for Future work 145