## LIST OF PUBLICATIONS

- 1. " AN INVESTIGATION OF ARSENIC -DOPED Cds / ELECTROLYTE SOLAR CELLS";
  - L.P.Deshmukh, A.B.Palwe and V.S.Sawant,

Solar Cells ; 28 ( 1990 ) 1 .

- 2. "DEPOSITION AND CHARACTERISATION OF CdS AND CdS :AS THIN FILMS";
  - L.P.Deshmukh, A.B.Palwe and V.S.Sawant,
    Solar Energy Materials; 20 (1990) 341.
- 3. SOME INVESTIGATIONS ON THICKNESS DEPENDENT ELECTRICAL
  BEHAVIOUR OF CdS: AS / ELECTROLYTE SOLAR CELLS";
  L.P.Deshmukh, P.P.Hankare, V.S.Sawant and A.B.Palwe;
  Solar Cells (accepted).
- 4. "SOME MEASUREMENTS ON CHEMICALLY DEPOSITED Cds Thin films ";
  - L.P.Deshmukh, V.S.Sawant and A.B.Palwe,
  - Proc. International Conference and Intensive Tutorial Course On Semiconductor Materials;
  - Dec. 8 16, 1988, University of Delhi, (INDIA).

## CONTENTS

CHAPTER - I. INTRODUCTION	1
1.1 An Overview of Thin Film Technology And Solar	2
Cells.	
1.2 Essentials of a Photoelectrochemical (PEC)	
Cell.	11
1.3 The Selection of The Constituents And Problem	
In Brief.	14
CHAPTER - II. BASICS OF THIN FILM DEPOSITIONS AND ESSENTIALS	19
OF ELECTROCHEMISTRY	
2.1 Introduction.	21
2.2 Thin Film Deposition Techniques.	22
2.3 Chemical Deposition Process and Mechanism of	
Cds Film Formation.	31
2.4 Electronation and De-electronation Processes.	36
2.5 The Semiconductor/Electrolyte (S/E) Interface	38
2.6 Charge Transfer Mechanism Across The	
Semiconductor/ Electrolyte Interface.	66
2.7 Efficiency Calculations	7 c

CHAPTER - III DESIGN AND EXPERIMENTAL TECHNIQUES.	82
3.1 Introduction.	84
3.2 Development of Chemical Deposition System.	84
3.3 Deposition of CdS and CdS:As Thin Films.	90
3.4 Characterisation of The Films.	94
3.5 Design, Fabrication and Measurements on	
Photoelectrochemical (PEC) Cells.	99
CHAPTER - IV MEASUREMENTS, OBSERVATIONS AND DISCUSSION.	107
4.1 Introduction.	109
4.2 Experimental.	111
4.3 Results and Discussion.	113
CHAPTER - V SUMMARY AND CONCLUSIONS.	145
REFERENCES.	155