CONTENTS

			Page
CHAPTER 1	THEC	RETICAL ASPECTS	1
	1.1	Introduction	1
	1.2	Simple Concepts of Solid State Physics 1.2.1 Energy Bands	2 2
	1.3	Energetics of the Semiconductor-	
		Electrolyte Interface	4
	1.4	Photoelectrochemical Cells for Solar	
		Energy Conversion and Storage	8
	1.5	Photodecomposition of Water using	
		Semiconductor Particulate Systems	9
	1.6	Kinetics of Photophysical Processes	13
		1.6.1 Electronically Excited States of Molecules	13
		1.6.1.1 Deactivation Processes	14
		1.6.1.2 Radiative Processes	15
		1.6.1.2.1 Fluorescence	. 16
		1.6.2 The Transfer of Excitation	
		Energy	17
	1.7	Light Absorption Properties of Dyes	18
		Sensitization at Semiconductor Electrodes	21
	1.0		
		1.8.1 Dependence of the Donor Density (Nd) with the Dye Sensitized Photocurrent	
		Overtum Efficiency	22

		Page
CHAPTER 2	KINETICS OF PHOTOCURRENT GENERATION AND	
	QUANTUM EFFICIENCY OF CATHODICALLY SENSITIZED	
	PHOTOELECTROCHEMICAL CELLS	36
	2.1 Introduction	36
•	2.2 Experimental	37
	2.3 Results and Discussions	39
CHAPTER 3	B A TECHNIQUE FOR REDUCING THE RATE OF	
	CONCENTRATION QUENCHING IN A DYE SENSITIZED	
	PHOTOELECTRODE	62
	3.1 Introduction	62
	3.2 Experimental	63
	3.3 Results and Discussions	63
CHAPTER 4	STUDY OF IMPURITY ENERGY BAND STRUCTURES	
	OF IRON DOPED β -CuCNS	78
	4.1 Introduction	78
	4.2 Experimental	79
	4.3 Results and Discussions	80
CHAPTED 5	A REVERSIBLE AND SEPERABLE PHOTOSYSTEM FOR	
CHAPIER 3		93
	DECOMPOSITION OF WATER	93
POSSESSED RI	ESEARCH PUBLICATIONS DURING THE PROJECT	103
REFERENCES		105