## CONTENTS

	0		P	ag	e
Preface			1	-	4
	•				
	Part 1				
Synthesis of	f Adipic Acid from Tetrahydrofuran,	carbo	on		
monoxide and	d water.				
Chapter 1.	Introduction		5	-	15
Chapter 2.	Raw materials Required for the synthesis of Adipic Acid from Tetrahydrofuran and Carbon monoxide		16		22
*	a. Production of Tetrahydrofuran			16	
	b. Availability of Carbon monoxide	•••		20	)
Chapter 3.	Thermodynamic Considerations of the Reactions.	•••	23	-	37
Chapter 4.	Experimental Details	•••	38	-	54
	1. Apparatus	• • •	3	8	
()	2. Reactants	• • •	4	+2	
	3. Catalysts	• • •	4	+2	
	4. Experimental Procedure	•••	4	<b>1</b> 3	
	5. Analysis of Gaseous Products	•••	L	<sub>+</sub> 5	
a	Analysis of Liquid Products	•••	L	15	
	6. Calculations	• • •	5	50	
Chapter 5.	Synthesis of Adipic Acid in presence of Nickel Catalysts	• • •	55	-	72

	8 8		Page
•	Preparation of Nickel Catalysts	• • •	55
	Tables showing the activity of Nickel Catalysts	•••	61
	Discussion	• • •	69
Chapter 6.	Results of Experiments with Nickel Iodide-Silica gel Catalysts	••• 73	3 - 87
	Tables showing Results of Experime with Nickel Iodide-Silica gel Cata	nts lysts	76
	Discussion	•••	82
Chapter 7.	Studies on		
	(i) the Catalyst Activity		
	(ii) the Effect of Releasing Tempera	8 ature	8 - 93
NATIONAL OF	Tables showing the Results of Experiments	•••	90
	Discussion	•••	92
Chapter 8.	Results of Experiments with Cobalt Iodide-Silica gel Catalyst	••• 9	
	Preparation of Catalysts and Detail of Experiments	.s	94
0	Tables showing Results of Experiment with Cobalt Iodide-Silica gel Catal	ts	98
	Discussion		102
Chapter 9.	Results of Experiments with Iron Iodide-Silica gel Catalyst		5 - 117
	Preparation of Catalysts and Detail of Experiments	s., 1	06

## ( iii )

	92		Page
	Tables showing Results of Experiments with Iron Iodide-Silica gel Catalyst	•••	110
	Discussion	• • •	114
Chapter 10.	Studies on Catalytic decom- position of Tetrahydrofuran, Adipic Acid and Carbon monoxid at high pressure	е	118 - 130
	Tables showing Results of Experiments	•••	120
36	Discussion	•••	126
Chapter 11.	General Discussion	•••	131 - 140
2 N N	Part 2		-R
Synthesis of and Carbon mon	Delta-valerolactone from Tetrah noxide.	ydrofi	ıran
Chapter 1.	Introduction	• • •	141 - 147
Chapter 2.	Analysis of Gaseous Products	•••	148
	Analysis of Liquid Products	• • •	148
	Calculations	• • •	149
	Thermodynamic Considerations of the Reaction	•••	151
Chapter 3.	Synthesis of Delta-valerolactor in presence of Nickel Iodide-Silica gel Catalyst	ne	152 - 161
	Tables showing Results of Experwith Nickel Iodide-Silica gel		

.. 159

Discussion

## ( iv )

				Page	2
Chapter .	4.	Synthesis of Delta-valerolactone in presence of Cobalt Iodide-Silica gel Catalyst	• • •	162 -	171
		Tables showing Results of Experiments with Cobalt Iodide-Silica gel Catalyst	•••	165	
		Discussion	•••	169	
Cha pter	5.	Synthesis of Delta-valerolactone in presence of Iron Iodide-Silica gel catalyst		172 -	180
		Tables showing Results of Experiments with Iron Iodide-Silica gel Catalyst		174	
		Discussion	•••	178	
Chapter	6.	General Discussion	•••	181 -	185
SUMMARY		3.00	• • •	186 -	192
BIBLIOGR	APHY		•••	193 -	201
ACKNOWLE	DORME	The state of the s			