

C O N T E N T S

Page

PREFACE

CHAPTER I

INTRODUCTION	...	...	1-54
Historical	...	...	1
Classification of Polymers	...	...	13
Addition Polymerization	...	...	15
Copolymerization	...	...	43
Substances Capable of undergoing vinyl type of polymerization	...	...	45
Medium of Polymerization	...	...	47
Review of the work done on vinyl esters --			48
Scope of the present work	...	...	51

CHAPTER II

POLYMERIZATION OF VINYL ESTERS IN BULK PHASE	...	...	55-120
Introduction	...	...	55
General Kinetic Analysis for Polymerization in the presence of an initiator	...	...	56
Experimental results of the polymerization of vinyl esters in the bulk phase using benzoyl peroxide as the initiator	...	...	61
Studies on the Kinetics of Bulk Polymerization of Vinyl Esters with 2,2' azo-bis-iso-butyro nitrile as initiator	...	...	91

		Page
Comparison of the rate constants	...	112
Discussion	... ..	114
Summary	... ..	119

CHAPTER III

POLYMERIZATION OF THE VINYL ESTERS IN BENZENE SOLUTION 121-129

Introduction	... ..	121
Experimental Results	... ..	122
Discussion	... ..	128

CHAPTER IV

INTRINSIC VISCOSITY-MOLECULAR WEIGHT RELATIONSHIP FOR POLYVINYL ESTERS ... 130-186

Introduction	... ..	130
Methods of Measuring Molecular Weights ..		133
Osmotic Pressure Method of Determination of Molecular Weight (Theory) ..		141
Experimental Procedure and Results	... ..	147
Discussion	... ..	161
Viscosity method of Determination of Molecular Weight	... ..	162
Results of Viscosity Measurements on the Fractionated Samples of the Polyvinyl Esters	... ..	166
Intrinsic Viscosity - Molecular Weight Relationship	... ..	172
Average Effective Dimensions of the Macromolecules in solution	... ..	177

		Page
<u>CHAPTER V</u>		
CHAIN LENGTHS AND THE RATE CONSTANTS	...	187-234
Introduction	... ..	187
Experimental Results on Bulk Polymerization	... ..	197
Calculation of the Rate Constant K_i for the Initiation Process	... ..	214
Discussion	... ..	217
Chain Transfer of Vinyl Esters with Benzene	... ..	218
Discussion	... ..	226
<u>CHAPTER VI</u>		
COPOLYMERIZATION	... ..	235-264
Introduction	... ..	235
Copolymerization of Vinyl iso-caproate with Vinyl Acetate	... ..	245
Copolymerization of Vinyl iso-caproate with Ethylene	... ..	250
Discussion	... ..	259
<u>CHAPTER VII</u>		
SUMMARY	... ..	265-268
REFERENCES	... ..	269-280