

## CONTENTS

Contributors to This Volume	vii
<b>DYNAMIC THERMAL ANALYSIS OF POLYMERS: AN OVERVIEW</b>	<b>3</b>
Jen Chiu	
Abstract	3
Introduction	3
Thermal Analysis of Polymers	5
Differential Thermal Analysis (DTA)/Differential Scanning Calorimetry (DSC)	6
Thermogravimetry (TG)	11
Thermomechanical Analysis (TMA)	13
Thermo-Optical Analysis (TOA)	16
Thermal Evolution Analysis (TEA)	17
Conclusion	17
References	17
<b>MONITORING THE CROSS-LINKING OF EPOXIDE RESINS BY THERMOANALYTICAL TECHNIQUES</b>	<b>25</b>
J. M. Barton	
Abstract	25
Experimental	27
Results and Discussion	27
References	32
<b>EVALUATION OF INITIATORS AND FILLERS IN DIALLYL PHTHAL- ATE RESINS BY DIFFERENTIAL SCANNING CALORIMETRY</b>	<b>33</b>
Paul E. Willard	
Abstract	33
Introduction	34
Experimental	34
Results and Discussion	36
Acknowledgments	41
References	41
<b>NOVEL MELTING PHENOMENA IN A SERIES OF ISOTHERMALLY CRYSTALLIZED POLYETHYLENE SINGLE CRYSTALS</b>	<b>43</b>
Ian R. Harrison	
Abstract	43
Introduction	44

Experimental	44
Results and Discussion	45
Conclusions	51
Acknowledgments	52
References	52
<b>CHARACTERIZATION OF THERMOSETTING RESINS BY THERMAL ANALYSIS</b>	<b>53</b>
T. R. Manley	
Abstract	53
Identification of Polymers	54
Curing Reactions	60
Degradation Reactions	61
Experimental	63
Conclusions	63
References	63
<b>CHARACTERIZATION OF AGING SKIN VIA THERMAL ANALYSIS</b>	<b>65</b>
W. T. Humphries and R. H. Wildnauer	
Abstract	65
Introduction	66
Materials and Methods	68
Experimental Results	69
Conclusion	71
References	72
<b>ADVANCES IN THERMOGRAVIMETRIC ANALYSES OF ELASTOMER SYSTEMS</b>	<b>73</b>
John J. Maurer	
Abstract	73
Results and Discussion	74
References	82
<b>THERMOGRAVIMETRIC ANALYSIS OF VINYL CHLORIDE/ACRYLONITRILE COPOLYMERS</b>	<b>83</b>
B. L. Joesten and N. W. Johnston	
Abstract	83
Introduction	84
Experimental	84
Thermal Stability Measurements	84
Results and Discussion	85
Kinetics	90
Acknowledgments	93
References	94

## CONTENTS

v

<b>THE USE OF DERIVATIVE THERMOGRAVIMETRY TO ESTIMATE DEGREE OF THERMAL DEGRADATION</b>	95
Thomas J. Gedemer	
Abstract	95
Introduction	96
Experimental	96
Results	97
Conclusions	
<b>THE EVALUATION OF TWO PYROLYZERS FOR THE ANALYSIS OF INSOLUBLE POLYMERS</b>	
Peter Cukor and Carmine Persiani	
Abstract	105
Introduction	
Experimental	107
Results and Discussion	109
References	117
<b>DEGRADATION KINETICS AND MECHANISMS OF POLYMERS USING THERMAL SPECTROMETRIC TECHNIQUES</b>	119
F. Zitomer and A. H. DiEdwardo	
Abstract	119
Introduction	119
Experimental	120
Results and Discussion	120
References	132
<b>CROSS-LINKING OF METHYL SILICONE RUBBERS. PART II. ANALYSIS OF EXTRACTABLES FROM SAMPLES CROSS-LINKED UNDER VARIOUS CONDITIONS</b>	135
Philip M. James, Edward M. Barrall II, Barbara Dawson, and J. A. Logan	
Abstract	135
Introduction	136
Experimental	137
Results	140
Conclusions	153
References	155
<b>A KINETIC INVESTIGATION OF THERMAL SHRINKAGE OF AROMATIC POLYMERS BY THERMOMECHANICAL ANALYSIS</b>	157
Hirotaro Kambe, Teiji Kato, and Masakatsu Kochi	
Abstract	157
Experimental	160
Thermal Shrinkage	161

## CONTENTS

Theoretical Analysis of TMA Curve	161
Results and Discussion	163
References	164
<b>THE EFFECT OF VOLUME REORGANIZATION OF AMORPHOUS POLY(ETHYLENE TEREPHTHALATE) ON THERMAL PROPERTIES</b>	
C. C. Yau, W. K. Walsh, and D. M. Cates	
Abstract	165
Introduction	166
Experimental	167
Results and Discussion	167
Summary	173
Acknowledgments	174
References	174
<b>THERMO-OPTICAL ANALYSIS OF POLY(2,6-DISUBSTITUTED- 1,4-PHENYLENE OXIDE) BLENDS</b>	
A. R. Shultz and B. M. Gendron	
Abstract	175
Introduction	176
Experimental	176
Results	178
Discussion	186
Acknowledgments	188
References	188
<b>CHARACTERIZATION OF FIBERS BY DYNAMIC THERMOACOUSTICAL ANALYSIS</b>	
Pronoy K. Chatterjee	
Abstract	191
Introduction	192
Experimental	193
Results and Discussion	195
Concluding Remarks	208
Acknowledgments	209
References	209
<b>PYROLYSIS-MOLECULAR WEIGHT CHROMATOGRAPH OF POLYMERS</b>	
E. Kiran and J. K. Gillham	
Abstract	211
Introduction	212
Experimental	212
Polyethylene	228
Acknowledgments	237
References	237
AUTHOR INDEX	241
SUBJECT INDEX	249