

CONTENTS

Preface	xi
1. Polymeric Materials for Electronic packaging and interconnection : An overview	1
UNMODIFIED POLYIMIDES	
2. Cure Studies of PMDA-ODA- and BTDA-ODA-Based Polyimides by Fluorescence Spectroscopy	26
3. Dynamic Fourier Transform-IR Analysis of Cure Reactions And kinetics of Polyimides	49
4. Polyimide Hydrolysis : Measurement by Fourier Transform-IR Spectroscopy	57
5. Dielectric Characterization of Water in Polyimide And Poly (amid-imide) Thin Films	67
6. Calculated Final-State Effects of the PMDA-ODA Polyimide X-ray Photoemission Spectrum	77
MODIFIED POLYIMIDES	
7. Effect of Diamic Acid Additives on Dielectric Constants Of Polyimides	86
8. Organic Dielectric Materials with Reduced Moisture Absorption and Improved Electrical Properties	93
9. Synthesis and Characterization of the <i>t</i> -Buty Ester of the Oxydianiline-Pyromellitic Dianhydride Polyamic Acid	101
10. Curing of Binary Mixtures of Polyimides	114
11. Polyimides for Dielectric Layers	127
12. Siloxane Polyimides for Interlayer Dielectric Applications	140
13. Electrophoretic Deposition of Polyimides : Electrocoating On the Cathode	154

14. Accelerated Testing of Polyimide Coatings for Neural Prostheses	168
15. Conduction Transients in Polyimides	176

OTHER HIGH-TEMPERATURE POLYMERS

16. Polymer Insulating Layers for Multilayer Hybrid Circuits	192
17. Fabrication and Properties of Thermoset Films Derived From Bis-Benzocyclobutene for Multilayer Applications	199
18. Synthesis of Poly (arylene ether phenylquinoxaline)	212

SILICONE GELS

19. High-Performance Silicone Gel as Integrated-Circuit-Device Chip Protection : Cure Study and Electrical Reliability	220
20. Silicone Gels for Semiconductor Applications : Chemistry and Properties	230
21. Advantages of Silicone Gel for Packaging of Devices with Very Large Scale integration (VLSI)	240
22. Modeling of Triple-Track and Comb-Pattern leakage Current Measurements	249
23. Silicone Gels and Coatings for Integrated-Circuit Packaging	268
24. Ultraviolet-Curable Silicones for integrated-Circuit Protection	275

EPOXY MOLDING COMPOUNDS

25. Moisture Transport Phenomena in Epoxies for Microelectronics Applications	286
26. Heterogeneous Conduction Processes in Integrated-Circuit Encapsulation	321
27. Novel Coatings That Maintain Low Surface-Water Concentrations	337
28. Thermal Stress in Epoxy Molding Compounds and Packaged Devices	344

29. Characterization of Stresses in Polymer Films For Microelectronic Applications	356
30. Stress Factors in Molding Compounds	375

MODIFIED EPOXY MOLDING COMPOUNDS

31. New Transfer Molding Compounds	386
32. Chemistry of Stable Brominated Epoxies	397
33. Performance of Stable Brominated Epoxies in Encapsulants for Microelectronic Devices	405
34. New Polymeric Materials for Electronics Packaging	414
35. Degradation of Brominated Epoxy Resin and Effects on Integrated-Circuit-Device Wirebonds	421
36. Enhancement of Gold-Aluminum Wirebond Reliability In Plastic Encapsulated Very Large Scale Integration (VLSI) Devices Through C-Br Bond Stabilization	429
37. Ordered Polymers for Interconnection Substrates	446
38. Three-Dimension Circuit Interconnections with Thermoplastic Performance Polymers	456
39. Significance of Developments in New Substrate Materials	470

INDEXES

Author Index	486
Affiliation Index	487
Subject Index	487