

Table of Contents

Preface.....	v
J. G. Morse	
INTERFACIAL PHENOMENA	
Microscopic Bonding, Structure, and Reaction at Microelectronic Interfaces.....	3
G. W. Rubloff	
The Insulator-Semiconductor Interface..	5
C. W. Uilmsen	
Laser Probing of Gallium Spin Orbit State Desorption and Scattering from Silicon (100) Surfaces.....	9
K. L. Carleton and S. R. Leone	
Contact Resistance Studies to p-InP.....	15
T. J. Coutts, X. Z. Yu, R. G. Dhere, A. B. Franz and K. U. Jones	
Specific Interfacial Energy Determinations of Precipitates Dissolving by a First Order Transition.....	33
A. Varschavsky	
A New Grain Refiner Al-Ti-C for Aluminium and Its Alloys.....	43
A. Banerji and W. Reif	
The Effects of Ultrahigh Current Density Ion Implantation on Bulk Microstructure.....	47
P. J. Wilbur and W. S. Sampath	
Interfaces in Metal Multilayers.....	57
B. U. Clemens	
Raman Scattering from Surfaces and Interfaces.....	59
T. E. Furtak	
Characteristics of Electrorheological Fluids.....	63
H. Conrad and A. F. Sprecher	
Chemical Modification of Surface Properties.....	77
B. E. Koel and R. G. Windham	
Surface Energy Effects in the Solidification of Immiscible Fluids under Micro-gravity.....	89
G. D. Turner, H. B. Probst, and H. C. deGroot	
The Fe β -SiC Interface after High Temperature Annealing.....	91
K. U. Geib, C. W. Uilmsen, J. Uehara, and H. Bost	
Vaporization Characteristics of Solids Between 250 and 1200°C: "Studies on Te, Ag ₂ Te, and AuTe".....	95
S. Helle, B. Yázar, and T. Uildeman	

Matrix-filler Interactions in Model Elastomeric Composite Materials.....	103
C. G. Reid and A. R. Greenberg	
The Adhesion of Carbon Fibers to Thermoplastic Polymers.....	107
W. D. Bascom, R. H. Jensen, and L. W. Corder	
Experimental and Theoretical Studies of Polymeric Membrane Morphology.....	119
W. B. Krantz, S. W. McFarland, H. W. Wray and A. R. Greenberg	
A SIMS Study of the Interaction of Tetramethoxysilane with Al (100).....	123
L. L. Lauderback and K. Kashanian	

CERAMICS

Advanced Ceramic Research News.....	141
S. H. Hsu and S. J. Dapkunas	
Advanced Automotive Ceramics.....	143
J. S. Howitt	
Ceramic Technology for Advanced Heat Engines Program.....	145
R. B. Schulz and D. R. Johnson	
Development of Whisker-Toughened Ceramic Composites.....	163
A. C. Schauffhouer	
The Science and Engineering of Advanced Ceramics.....	165
R. A. Alliegro, J. G. Hannoosh, and P. O. Charreyron	
Effect of Dopants on the Lattice Thermal Expansion of Cordierite	167
J. Haas, P. Predecki, J. Faber, Jr., and R. L. Hitterman	
Monitoring Damage Growth Processes in Alumina during Four-point Bend Testing.....	171
H. A. Hamstad, R. D. Young, and P. H. Thompeon	
New Syntheses of Ceramics from Well-characterized and Defined Inorganic Polymer Precursors.....	173
M. L. Thompson, A. Tarassoli, R. C. Haltiwanger, J. H. Barendt, and A. D. Norman	

MATERIALS AND PROCESSES FOR HIGH-SPEED ELECTRONIC DEVICES

The Physics of Microelectronics.....	179
G. J. Iafrate	
Materials Considerations for Future High-speed and Optoelectronic Devices.....	185
J. M. Woodall	

H ⁺ Multilayer Structure of GaAs/Epi-silicon/SiO ₂ /Si for MMIC and Millimeter Wave Devices.....	187
A. S. Yue and C. S. Yang	
HOCVD Growth of GaAs Directly on 3- to 6-Inch Silicon Substrates	195
C. Ito, D. McIntyre, H. Feng, V. Eu, and H. B. Kim	
The Effect of Inelasticity on Thermal Stresses during Czochralski Crystal Growth.....	201
J. C. Lambropoulou	
Photoluminescence and the Electron Effective Mass of Se-doped n ⁺ -GaAs Grown by MOCVD.....	215
D. M. Szmyd and A. Hajerfeld	
Mobility of Very Highly Doped GaAs.....	217
D. H. Szmyd, H. C. Hanna, S. Z. Sun, T. Sawada and A. Hajerfeld	
HOCVD Growth and Optical Properties of GaAs Single Quantum Wells	219
M. C. Hanna, D. H. Szmyd, and A. Hajerfeld	
Structure of Ohmic Contacts at AlGaAs/GaAs HODFET Channel Interface	221
A. Ezis, A. K. Rai, and D. W. Langer	
Ohmic Contacts to Si Using HBE Heterostructures of n ⁺ Ge/n ⁺ Si...	223
H. J. Hafich, R. L. Gillenwater, G. Y. Robinson and P. Sheldon	
One- and Two-step Rapid Lamp Annealing (RLA) of Si-implanted InP:Fe	225
H. V. Rao and S. Mulpuri	
Rapid Thermal Annealing Effects on the Gate Oxide of Ion Implanted Devices.....	229
F. Hashemi and C. A. Paz de Araujo	
The Use of Admittance Spectroscopy to Determine Deep-level Characteristics in Semiconductor Heterojunctions.....	233
R. E. Hayes and H. Z. Fardi	
Computer-Aided Design of Polymer Dielectrics for High Speed Electronic Interconnect Technologies.....	237
R. C. Sundahl, J. A. Wrezel, J. J. Zupancic and A. J. Beuhler	
Processing of Self-developing Resists by a Pulsed Electron Beam in Soft Vacuum.....	239
J. Krishnaswamy, L. Li, G. J. Collins, and H. Hiraoka	
Electrical Properties of Laser Deposited Aluminum Oxynitride Film on Indium Phosphide Substrate.....	245
T. Y. Sheng, T. Y. Hwang, and G. J. Collins	
Optimization of Solder/Submount Combinations for Enhanced Reliability of GaAs/AlGaAs Laser Diodes.....	247
W. T. Tack and C. L. Friant	

NEW HIGH PERFORUANCE COUPOSITITES

The Future of Advanced Composites.....	251
A. K. Dhingra	
Polyarylene Sulfide Thermoplastic Composites.....	253
J. E. O'Connor	
A Study of Processing Induced Thermal Stresses in Advanced Composites with Polymeric Uterics	255
P. Zoller	
Strength, Toughness, and Structural Damping Characterization of Tough, Rubber-modified Epoxy Interlayers in High Stiffness Composites.....	257
D. J. Nicholls, M. S. Ewing, and M. L. Becker	
On the Characterization of the Uechnical Response of a Class of Randomly Structured, Composite Systems.....	259
Y. M. Haddad	
Uineral Resources for Advanced Uaterials	277
M. J. Cruickshank	
Quantitative Uetallographic and Fractographic Analyses of MMC Uicrostructures	279
W. J. Drury, K. Banerji, and E. E. Underwood	
Thermal Cycling of Al_2O_3 (FP)/Mg Alloy Composite.....	289
C. S. Lee and K. K. Chawla	
Ductile and Corrosion Resistant "Iron-based Alloy-Ceramic" Composites.....	295
A. H. Ucisik, E. Tsuji, and F. E. Fujita	
Thermal Cycling of Al_2O_3 (FP)/Al-Li Composites.....	297
G. B. Cook and K. K. Chawla	
Structure and Properties of 2-D and 3-D Fabric Reinforced Glass-ceramic Matrix Composites.....	303
F. Ko, M. Koczak, and G. Layden	
Silicon Carbide and Boron Carbide Platelets and Fibers	305
S. C. Weaver, R. D. Nixdorf, and G. Vaughan	
Advanced Techniques for Characterizing Composite Uaterials	317
M. B. Kaen	

AUORPHOUS UATERIALS

Intimate Dangling Bond Pairs and Metastability	321
J. I. Pankove	
Amorphous Photoconductore in Electrophotography.....	331
D. M. Pai	

Amorphous Silicon Transistor Technology.....	349
M. J. Thompson	
Use of Semiconductor/Oxide Multilayer Films to Determine Gap Density of States in Hydrogenated Amorphous Silicon.....	351
R. B. Jones and G. Moddel	
Photoconductivity versus Temperature and Light Intensity as a Diagnostic Test of Intrinsic a-Si:H Film Quality.....	353
J. P. Xi and A. Madan	
Formation of Amorphous Materials by Ion Beam Processing Techniques	359
W. S. Sampath, F. M. Kustas, and P. J. Wilbur	
Preparation of Amorphous Alloys by Cocondensation - Modern Aspects	365
D. L. Cocke, D. E. Mencer, and D. G. Naugle	
Solid State Dynamics of Glassy Polycarbonate-Diluent Systems....	383
L. A. Belfiore	
SUBJECT INDEX.....	391
AUTHOR INDEX.....	396