
Contents

Preface	ix
SECTION I METAL-SEMICONDUCTOR INTERFACES	
Theoretical Models of Schottky Barriers M. Schluter	3
Electronic Structure of Silicide-Silicon Interfaces G. W. Rubloff and P. S. Ho	21
Direct Observation of Atomic Processes: Silicon Adatoms on Tungsten Surfaces R. Casanova and T. T. Tsong	41
Role of Cation Dissociation in Schottky Barrier Formation at II-VI Compound Semiconductor-Metal Interfaces C. F. Brucker and L. J. Brillson	67
Low Temperature Intermixing Reactions Between Silicon and Metals (Abstract Only) A. Hiraki, T. Narusawa, and W. M. Gibson	75

SECTION II SILICIDE-SI INTERFACES	
Epitaxial Silicides	79
R. T. Tung, J. M. Poate, J. C. Bean, J. M. Gibson, and D. C. Jacobson	
Lattice Imaging of Silicide-Silicon Interfaces	93
L. J. Chen, J. W. Mayer, K. N. Tu, and T. T. Sheng	
The Effects of Nucleation and Growth on Epitaxy in the CoSi ₂ /Si System	101
J. M. Gibson, J. C. Bean, J. M. Poate, and R. T. Tung	
Analysis of High Resolution Electron Microscope Images of the Pd ₂ Si-Si Interface	111
W. Krakow	
Co ₂ Si, CrSi ₂ , ZrSi ₂ , and TiSi ₂ Formation Studied by a Radioactive ³¹ Si Marker Technique	129
A. P. Botha and R. Pretorius	
Formation and Structure of Epitaxial NiSi ₂ and CoSi ₂	137
L. J. Chen, J. W. Mayer, and K. N. Tu	
An Epitaxial Si/Insulator/Si Structure by Vacuum Deposition of CaF ₂ and Silicon	145
T. Asano and H. Ishawara	
SECTION III INTERFACE ANALYSIS AND CHARACTERIZATION	
Ion Beam Crystallography of Metal-Silicon Interfaces: Pd-Si (111)	155
R. Tromp, E. J. van Loenen, M. Iwami, R. Smeenk, and F. W. Saris	
An X-Ray Study of Domain Structure and Stress in Pd ₂ Si Films at Pd-Si Interfaces	165
H. Chen, G. E. White, S. R. Stock, and P. S. Ho	
Effects of Electrically Active Impurities on the Epitaxial Regrowth Rate of Amorphized Silicon and Germanium	175
I. Suni, G. Göltz, M. -A. Nicolet, and S. S. Lau	

Non-Planar Solid Phase Epitaxial Growth Processes in Ion-Implanted GaAs	183
J. S. Williams, F. M. Adams, and K. G. Rossiter	
Dislocations as Growth Step Resources in Solution Growth and Their Influence on Interface Structures	189
E. Bauser and H. Strunk	
Anomalous Bands in the Photoluminescent Spectra from GaAs-(Al,Ga)As Double Heterostructures	201
V. Swaminathan, W. R. Wagner, N. E. Schumaker, and R. C. Miller	
Correlation of the Crystal Structural and Microstructural Effects of the Interfacial Processes Between Gold and GaAs	213
X. -F. Zeng and D. D. L. Chung	
SECTION IV INTERFACE-RELATED THIN FILM STUDIES	
Analysis of Surface Structural Defects by Low Energy Electron Diffraction	227
D. G. Welkie and M. G. Lagally	
The Direct Observation of Atomic Surface Structure and Inclined Planar Defects in Au (111) Films	243
W. Krakow	
Radioactive Ni* Tracer Study of the Nickel Silicide Growth Mechanism	263
J. E. E. Baglin, H. A. Atwater, D. Gupta, and F. M. D'Heurle	
Comparison of the Three Classes (Rare Earth, Refractory, and Near Noble) of Silicide Contacts	273
R. D. Thompson and K. N. Tu	
Differences Between the Growth Kinetics of Thin Film and Bulk Diffusion Couples (Abstract Only)	283
U. Göesele and K. N. Tu	

Formation of Intermetallics and Grain Boundary Diffusion in Cu-Al and Au-Al Thin-Film Couples	285
J. M. Vandenberg, F. J. A. den Broeder, and R. A. Hamm	
Formation and Growth of Voids and/or Gas Bubbles in Thin Films	289
J. R. Lloyd and S. Nakahara	
SECTION V THIN FILM APPLICATIONS IN MICROELECTRONICS I	
Structure and Performance of Polycrystalline Thin Film Solar Cells	297
E. S. Yang	
Magnetron-Sputtered Metal-Amorphous Silicon Interfaces	311
W. W. Anderson, J. L. Crowley, A. D. Jonath, H. F. MacMillan, W. G. Opyd, and J. A. Thornton	
Electron Beam Study of Silicide Schottky Diodes	319
H. -C. W. Huang, C. F. Aliotta, and P. S. Ho	
Studies of Interface States of Silicon Metal-Oxide- Semiconductor Devices by Dynamic Conductance and Noise Measurements and Effects of Bias-Temperature Stresses	331
K. L. Ngai and S. T. Liu	
Effects of Interface Structure on the Electrical Characteristics of PtSi-Si Schottky Barrier Contacts	341
B. -Y. Tsaur, D. J. Silversmith, R. W. Mountain, and C. H. Anderson, Jr.	
Effects of Grain Boundaries on the Resistivity of Cospattered WSi ₂ Films	351
D. R. Campbell, S. Mader, and W. K. Chu	
New Developments in the Defect Structure of Implanted Furnace-Annealed Silicon on Sapphire	357
E. D. Richmond, A. R. Knudson, and T. MaGee	

SECTION VI THIN FILM APPLICATIONS IN
MICROELECTRONICS II

Silicide Applications in Microelectronics (Abstract Only)	369
B. L. Crowder	
Metallization for Very-Large-Scale Integrated Circuits	371
P. B. Ghate	
The Role of Metal and Passivation Defects in Electromigration-Induced Damage in Thin Film Conductors	397
J. R. Lloyd, P. M. Smith, and G. S. Prokop	
Applications of TiN Thin Films in Si Device Technology	409
M. Wittmer and H. Melchior	
Reduction of Effective Barrier Height in PtSi-p-Si Schottky Diodes Using Low Energy Ion Implantation	419
C. -Y. Wei, W. Tantraporn, W. Katz, and G. Smith	
Oxide Barriers to the Formation of Refractory Silicides	425
D. J. Silversmith, D. D. Rathman, and R. W. Mountain	
Author Index	433