

Table of Contents

Preface

Defect Engineering in VLSI-Technologies

H. Reimer, W. Nitzsche and M. Reiche 1

Gettering in Silicon by Oxygen Related Defects, Stacking Faults and Thin Polycrystalline Films

R.J. Falster 13

Advances in the Understanding of Oxygen and Carbon in Silicon

C. Claeys and J. Vanhellemont 21

Investigations of the Structure, Formation, and Annihilation of Thermally Induced Donors in Silicon

J. Reichel, M. Reiche and H. Geuther 33

Effect of Volume Defects on Gold Gettering in CZ-SI

K. Schmalz, I. Babanskaya, H. Gdanitz and F.G. Kirscht 41

Investigations of the Behaviour of Transition Metals in Silicon

W. Nitzsche, O. Brodersen, S. Hopfe, M. Reiche and I. Burck 49

Defect Engineering for Bicomos-Technology

G. Ritter, K.-. Ehwald and P. Schley 57

Investigation of Gettering Phenomena in Semiconductors by Simultaneous Charge Collection Microscopy and Cathodoluminescence

M. Eckstein, A. Jakubowicz, M. Bode and H.U. Habermeyer 65

Implantation Induced Defect Modification in P Doped Bipolar Structures

D. Krueger and J. Dziesiaty 73

The Properties of the Defects in Heavy Implanted Silicon

V.G. Litovchenko and B.N. Romanyuk 79

Defect Formation and Lateral Oxidation during Locos Processing

D. Knoll, T. Grabolla and K.-. Ehwald 93

Defects and Their Influence on Parasitic Devices in Integrated Circuits

R. Prejdova 101

Volume Defect Formation in CZ SI Wafers and Related Electrical Effects

F.G. Kirscht, P. Fricke, J. Reichel, I. Babanskaya, R. Bertoldi, G. Buchheim, C. Hansch, P. Hübner, H.-. Machold and R. Scharfe 103

Buried Layer Processing for Advanced Bipolar Technology

E. Simoen, L. Deferm, J. Vanhellemont and C. Claeys 111

Oxygen Precipitation in Silicon: Correlation of the Experimental Results Obtained with IR Spectroscopy, Preferential Etching and X-Ray Topography

E. Hild, J. Seres, E.K. Pal, S. Nouredin and T. Kormány 119

Gettering of Fast Diffusing Impurities by Radiation Defects in III-V Semiconductors

C. Ascheron, M. Rieth and H.A. Klose 127

On the Two-Step Nucleation in Internal Gettering for CMOS Fabrication Process

J. Jablonski, K. Kucharski and J. Wojciechowski 129

Creation of Deep Denuded Zones in CZ Silicon Wafers

G. Kissinger, W. Kissinger, K. Tittelbach and K. Schmalz 135

Defect Engineering for ULSI Epitaxial Silicon

G.A. Rozgonyi and R.R. Kola 143

Computer-Simulation of Gold-Redistribution in Silicon

H. Gdanitz and K. Schmalz 159

An Attempt to Simulate Oxygen Precipitation in Silicon

M. Macek 165

Defect Formation in Dislocation-Free Silicon Containing Oxygen

M.G. Mil'vidskii, V.V. Voronkov and V.J. Reznik 171

Influence of Preannealing on Oxygen Precipitation

S. Nouredin and T. Kormány 173

Silicon Intrinsic Gettering Durability and Effectiveness

D. Sachelarie, A. Badoiu, G. Gradinaru, M. Stoica, M. Sachelarie and V. Vivsencu 179

Effect of Heat Treatment on Defect Formation in Silicon N.A. Sobolev, Y.V. Vyzhigin, V.V. Eliseev, V.A. Kostylev, V.M. Likunova and E.I. Sheck	181
Effects of Rapid Thermal Annealing Treatments on Electrical and Structural Properties of Silicon E. Susi	187
Defect Reactions in Semiconductors M. Suezawa and K. Sumino	197
Electronic States in Plastically Deformed Silicon A. Castaldini, D. Cavalcoli and A. Cavallini	211
Defect Formation and Impurity Redistribution Due to the Electric Field and Elastic Stresses in Interface Regions V.V. Bolotov, V.M. Emeksuzyan and V.A. Stuchinski	221
Interaction of Point Defects with Interstitial Clusters, Dislocations and Impurities During in SITU Electron Irradiation of Silicon Crystals in the Electron Microscope A.L. Aseev, L.I. Fedina, D. Hoehl and H. Bartsch	235
Dependence of Phosphorus Transient Enhanced Diffusion on Depth Position of Extended Defects in Ion Implanted Silicon P. Zaumseil, U. Winter, R. Fabbri, M. Servidori and S. Solmi	243
Impurity Gettering in Semicrystalline Silicon Solar Cells M.A.G. Soler, I. Pereyra and A.M. Andrade	251
Formation and Defect Structure of Fe-B-Fe Complexes in Silicon W. Gehlhoff and U. Rehse	257
Electrical Activity and Impurity Precipitation in Silicon Grain Boundaries J.L. Maurice	265
Photo-Thermal Ionization Spectroscopy of Point Defects in Semiconductors H.G. Grimmeiss and M. Kleverman	277
Kink-Point Defect Interaction and Mobility of Dislocations in Semiconductors B.Y. Farber, H.G. Minasyan and V.I. Nikitenko	289
I. Conductivity Along Dislocations: Temperature Dependence and Nonlinear Effects II. Combined Resonance and Structure Peculiarities of Plastically Deformed Silicon V.V. Kveder, T. Mchedlidze, Y.A. Ossipyan and A.I. Shalynin	301
Recrystallization and Defect Formation in Ion-Implanted Silicon Studied by Transmission Electron Microscopy H. Bartsch and W. Einbrodt	309
Auger Recombination in Heavily-Doped p+ Silicon S. Voinigescu, A. Müller and C. Anton	315
Photo-Capacitive Spectroscopy of Sulphur Atoms and Heat Treatment Defects in n-Si <S> V.M. Arutyunyan, A.P. Akhoyan, R.S. Barseghyan and B.O. Semerdjian	323
EPR Detection of Complex Platinum-Related Defects in Silicon M. Höhne	329
Defect Kinetics and Impurity Diffusion During Hot Implants Into Silicon K. Holldack, H. Kerkow and M. Reiche	335
The Peculiarities of Deep Level Defect Passivation in SI by Atomic Hydrogen S.V. Koveshnikov, S.V. Nosenko and E.B. Yakimov	341
Dislocation Motion in Compound Semiconductors J. Schreiber, H.S. Leipner and H.-. Höche	343
Dislocation Structures after Microdeformation of CaAs Single Crystals H.S. Leipner and M. Surowiec	349
The Effect on the Schottky Barrier Height of Diffusion of Pt into Si From PtSi L. Moller, J. Chevallier and A. Nylandsted-Larsen	355
Electron Pulse Irradiation of Semiconductor Devices M. Lenk, R. Mehnert, A. Müller, L. Prager and E. Koch	361
Charge Collection Microscopy in Gettering and Defect Engineering M. Kittler	367
Lifetime in Silicon D.K. Schroder	383

Scanning Infra-Red Microscope Investigation of Oxide Particles in Czochralski Silicon Heat-Treated for Intrinsic Gettering Z. Laczik, G.R. Booker and R.J. Falster	395
Laser Scanning Tomography: A Study of the Defect Cluster Nucleation and Growth in Silicon J.P. Fillard, P. Gall, M. Castagne and J. Bonnafe	403
The Effect of Low-Energy Electron and Ion Beams on Properties of Near Surface Layers in Semiconductor Crystals E.B. Yakimov	409
The Capacitance Microscope: A Non-Contacting Stylus Technique for the Investigation of Semiconductor Surfaces H.P. Kleinknecht and H. Meier	411
Synchrotron Radiation X-Ray Studies on Strain in Semiconductor Crystals J. Matsui	423
Positron Studies of Thermal-Induced Defects in Silicon N.Y. Arutyunov and V.Y. Traschakov	435
DLTS Investigations of the Carbon-Related Centers in Si C.A. Londos	443
The Noise Spectroscopy of Defects and Impurities in Compensated Silicon Z.N. Adamyan, V.M. Arutyunyan and Z.H. Mkhitarian	449
Determination of Generation Lifetime and Surface Generation Velocity by Sine-Voltage Sweep C-V Method P. Peykov, T. Diaz and T. Carillo	453
Silicon Plates Homogeneity Diagnostics Method by Means of Semiconductor-Electrolyte Structure Surface Photovoltage Measurement A.O. Arackelyan, A.K. Arevyan, V.M. Arutyunyan, M.S. Kazaryan, V.A. Melicsetyan and V.L. Elbackyan	457
Electrically Active Near-Surface Implantation Defects in Silicon and GaAs J. Bollmann and H.A. Klose	461
Trap-Spectroscopy in Insulating Layers H.J. Fitting	467
Insulator Investigations in MIS Structures with Constant-Capacitance-DLTS Technique H. Koester, M. Schmidt and W. Ecke	471
A Theoretical Model of the Surface Avalanche Method G. Gradinaru	477
Application of High T_c Superconducting Thin Films in Microelectronics-Possibilities and Illusions H.U. Habermeier	483
Semiconductor Dynamic Memories D. Landgraf-Dietz	495
Effect of Vibration Frequency and Sample Composition on Acoustic Properties of Y-Ba-Cu-O High-T_c Superconductors J. Engert, H.-. Kaufmann, P.P. Pal-Val, V.D. Natsik, K. Rudolph and W. Matz	501
SOI-Films by Zone Melting Recrystallization of Polycrystalline Silicon W. Bertoldi and B. Tillack	507
Heterogeneous Ion Synthesis of Isolating Layers in Si M.Y. Barabanenkov, A.F. Borun, A.B. Danilin, A.A. Malinin and V.N. Mordkovich	517
Spectroscopic Ellipsometry Studies of Silicon on Insulator Structures J. Vanhellemont and H.E. Maes	525
Silicon-on-Insulator Technology by Si-MBE M. Maeder and A. Zehe	533
Defect Microchemistry at the Si/SiO₂ Interface Grown on Polycrystalline Silicon Sheets. Hydrogenation Effect Study D. Ballutaud and M. Aucoeur	539
Interfacial Defects Study of the Gallium Arsenide on Silicon Heterostructure A. Rocher and M.N. Charasse	547
Some Aspects of Interface and Surface Engineering of AIII-BV-Compound-Semiconductors G. Heymann	555

SOI by Silicon Dioxide Thermal Bonding W. Kissinger and H. Hofmann	561
Defect Engineering in SOI-Structures Formed by High Dose Implantation of Reactive Ions W. Skorupa	565
Strain and Critical Thickness of MBE Grown CaF₂-Insulators on Si(111) A. Tempel, M. Mäder and A. Zehe	571
Defect Control in Thick SOI-Films Produced by Zone Melting Recrystallization B. Tillack, K. Hoeppner, H.H. Richter and R. Banisch	579
Defects and Their Influence on Parasitic Devices in Integrated Circuits R. Prejdova	585
Formation and Structure of Iron-Impurity Complexes in Silicon C.A.J. Ammerlaan	591
Defect Formation in Dislocation-Free Silicon Containing Oxygen M.G. Mil'vidskii, V.V. Voronkov and V.J. Reznik	603