

Table of Contents

Preface

Impurity Concentration Mapping in Multicrystalline Silicon Wafers S. Martinuzzi and O. Palais	3
Single Contact Beam Induced Current Phenomena - A Review D.S.H. Chan, J.C.H. Phang, J.M. Chin and S. Kolachina	11
Challenging the Spatial Resolution Limits of CL and EBIC C.E. Norman	19
EBIC Investigation of a 3-Dimensional Network of Inversion Channels in Solar Cells on Silicon Ribbons O. Breitenstein, M. Langenkamp and J.P. Rakotoniaina	29
Electrical Behaviour of Crystal Defects in Silicon Solar Cells M. Kittler, W. Seifert and O. Krüger	39
LBIC Control Mapping of Textured Silicon Thin Film Obtained by Liquid Phase Epitaxy on Transferable Silicon Grid A. Fave, J.P. Boyeaux, M. Lemiti, A. Laugier, P. Kleimann and J. Linnros	49
Beam Injection Studies of Dislocations and Oxygen Precipitates in Semiconductor Silicon S. Pizzini, S. Binetti, A. Le Donne, E. Leoni, M. Acciarri, G. Salviati and L. Lazzarini	57
Depth Profiling of the Recombination Activity of Defects Measured by Temperature-Dependent Cross-Sectional EBIC O.F. Vyvenko, O. Krüger and M. Kittler	65
Simulation of EBIC Contrast for Extended Defects Inclined to the Surface V.V. Sirotkin and E.B. Yakimov	73
Reconstruction of Diffusion Length Distribution by the Modulated EBIC and OBIC E.B. Yakimov	79
Cathodoluminescence Study of the Y_0 Emission from ZnSe Films T. Mita, N. Yamamoto, T. Mitsui, S. Heun, A. Franciosi and J.M. Bonard	89
Recombination Properties of Defects in Gallium Nitride A. Castaldini, A. Cavallini, L. Polenta and G. Salviati	95
Cathodoluminescence from Nanocrystals in Mechanically Milled Silicon C. Díaz-Guerra, A. Montone, J. Piqueras and F. Cardellini	103
Highly Efficient CdS/CdTe Solar Cells Investigated by Cathodoluminescence Spectroscopy U. Jahn, T. Okamoto, A. Yamada and M. Konagai	111
Cathodoluminescence Depth Profiling of Ge-Implanted SiO_2 Layers H.J. Fitting, T. Barfels, B. Schmidt and A. von Czarnowski	119
Luminescence Centers Characterization in A^2B^6 Semiconductors and Their Thin Diffusion Layers by Cathodoluminescence Defectoscopy M.V. Nazarov	127
Multi-Band Cathodoluminescence Microscopy for Materials Science H. Saijo, T. Isshiki and M. Shiojiri	133
SEM CL In-Situ Observation during Dislocation Motion in GaAs and CdTe L. Hoering, J. Schreiber and U. Hilpert	139
Semiconductor Inspection System for Yield Enhancement Y. Usami and I. Kawata	149
Formation and Current-Voltage Characteristics of SiC/Si-dot/SiC Resonant Tunneling Diodes Y. Ikoma, T. Tada, K. Uchiyama, F. Watanabe and T. Motooka	157
Excitonic Emission from High-Quality Homoepitaxial Diamond Film H. Watanabe, T. Sekiguchi and H. Okushi	165
Defect Characteristics in Sulfur-Implanted CVD Homoepitaxial Diamond M. Hasegawa, M. Ogura, D. Takeuchi, S. Yamanaka, H. Watanabe, S. Ri, N. Kobayashi, H. Okushi and T. Sekiguchi	171
Scanning Probe Field Emission Current Measurements on Polycrystalline Diamond Films H. Wakimoto, H. Tomokage, Y.D. Kim, W. Choi, Y. Iseri and T. Ando	177

Surface Characterization of Plasma Etched DLC Films by Scanning Tunneling Microscopy and Atomic Force Microscopy E.R. Hwang, W. Choi, Y. Iseri and H. Tomokage	183
Field Emission Characteristics of Plasma Enhanced Chemical Vapor Deposited Diamond-Like Carbon Films Using Scanning Probe Measurements W. Choi, E.R. Hwang, N. Nomura, S. Itose, Y. Iseri, T. Ando, Y.D. Kim and H. Tomokage	191
Defects Analysis of Diamond Films in Cross Section Using Cathodoluminescence and High-Resolution Transmission Electron Microscopy D. Takeuchi, H. Watanabe, S. Yamanaka, H. Sawada, H. Ichinose, T. Sekiguchi and H. Okushi	197
Radiation Induced Lattice Defects in n-MOSFETs and Their Effects on Device Performance K. Kobayashi, H. Ohyama, M. Nakabayashi, E. Simoen, C. Claeys, Y. Takami, M. Yoneoka, K. Hayama and S. Kohiki	205
MC-IR-LST and TEM Combined Analysis of Defects in the OSF-Ring of Cz-Silicon Crystals C. Frigeri, M. Ma, T. Irisawa and T. Ogawa	211
An In-Situ Observation of Dislocations and Crystal-Melt Interface during the Melting of Silicon Y. Wang and K. Kakimoto	217
Negative Photoconductivity in Polycrystalline Silicon Films Doped with Phosphorus M. Nakabayashi, H. Ohyama, E. Simoen, M. Ikegami, C. Claeys, K. Kobayashi, M. Yoneoka, Y. Takami, H. Sunaga, H. Takizawa and K. Miyahara	225
Effects of Lattice Defects on Degradation of Flash Memory Cell K. Kobayashi, H. Ohyama, M. Nakabayashi, E. Simoen, C. Claeys, K. Kudou, M. Yoneoka, K. Hayama and S. Kohiki	231
Electron Beam Induced Current Contrast of Oxygen Precipitation Related Defects in Czochralski Silicon T. Ono, T. Sasaki, H. Kirk and G.A. Rozgonyi	237
Modeling the Influence of Dislocations on Minority Carrier Diffusion Length in Silicon as a Function of Dislocation Contamination W. Seifert and M. Kittler	253
Defect Characterization in Multicrystalline Silicon Using Scanning Techniques S.S. Ostapenko, I. Tarasov and J.P. Kalejs	259
Minority Carrier Lifetime Scan Maps Applied to Metallic Impurity Detection in Silicon Wafers O. Palais	267
Surface Concentration Dependence of Diffusion Profile Shape for Phosphorus in Si Y. Banno, T. Ichino, H. Uchida, M. Ichimura, E. Arai and M. Yoshida	275
Rapid Diffusion of Titanium along Grain Boundaries in Polysilicon during Electron Beam Evaporation K. Yokota, T. Kobayashi and K. Nakamura	281
EBIC/XPS Study of the Antimony Equilibrium Segregation at Germanium Surface N. Tabet	289
Luminescence Studies on $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ Multiple Quantum Wells by Selective Excitation Spectroscopy C. Sasaki, M. Iwata, Y. Yamada, T. Taguchi, S. Watanabe, M.S. Minsky, T. Takeuchi, R. Schneider and N. Yamada	297
Cathodoluminescence of the Composite Nanoscale Dendrite - Like GaAs-Ge Epitaxial Heterostructure V.P. Ulin, M.V. Zamoryanskaya, F.Y. Soldotenkov and S.G. Konnikov	301
SEM-Motion Picture System Observation of Moving High-Field Domains in Semi-Insulating GaAs R. Tabei, J. Matsuoka, T. Ikeno and Y. Tokumaru	307
Abnormal Redistribution of S Atoms Implanted into GaAs during Si Thermal Doping K. Yokota, Y. Tachino, S. Shimizu, K. Nakamura, Y. Sekine, M. Watanabe and H. Takano	313
Impact of Lattice Defects on Device Performance of AlGaAs/GaAs p-HEMTs K. Kobayashi, H. Ohyama, T. Hakata, T. Kudou, K. Shigaki, H. Takizawa, S. Kohiki and Y. Uwatoko	319
Secondary Electron Emission Induced by Deep Level Defects in GaAs F. Iwase and Y. Hayashi	325

Interaction of Copper and Sulfur with Dislocations in GaAs N. Engler, H.S. Leipner, R.F. Scholz, J. Schreiber and P. Werner	331
Dose Rate Dependence of Ion-Induced-Damage in Si Evaluated by Spectroscopic Ellipsometry Y. Murakami, H. Yamauchi, T. Sadoh, A. Kenjo and M. Miyao	341
Influence of Ion Beam Irradiation on Solid-Phase Regrowth of Amorphous Si on SiO₂ I. Tsunoda, T. Nagata, T. Sadoh, A. Kenjo and M. Miyao	345
Formation of Silicon Nanoclusters in Silicon Oxide Using an Electron Beam M.V. Zamoryanskaya, V.I. Sokolov and A.A. Sitnikova	349
Assessment of Radiation Induced Lattice Defects in Shallow Trench Isolation Diodes Irradiated by Neutron K. Kobayashi, H. Ohyama, K. Hayama, Y. Takami, E. Simoen, A. Poyai, C. Claeys, A. Mohammadzadeh and S. Kohiki	357
Deep Levels in Bulk-ZnSe Grown by Bridgman Method M. Yoneta, T. Kubo, K. Ohmori, K. Yoshino, M. Ohishi and H. Saito	367
Characterization of Defects in 6H-Type Epitaxially Grown Silicon Carbide Wafer by Cathodoluminescence Microscopy T. Isshiki, H. Saijo, S. Nishino and M. Shiojiri	377
The Relaxation of the ZnO Single Crystals (000-1) Surface H. Maki, N. Ichinose, N. Ohashi, H. Haneda and M. Tanaka	381
TEM Observation of Barium Titanate Thin Films Consisting of Nano-Sized Single Crystals Prepared by Sol-Gel Processing Y. Yamashita, N. Kurata and M. Kuwabara	387
The Investigation of Charge Transport Properties of SOI Semiconductor Devices Using a Heavy Ion Microbeam T. Hirao, J.S. Laird, H. Mori, S. Onoda and H. Itoh	395
A System for Ultra-Fast Transient Ion and Pulsed Laser Current Microscopies as a Function of Temperature J.S. Laird, T. Hirao, S. Onoda, H. Mori and H. Itoh	401
Visualization of Electron Beam Charge Storage and Thermal Release in Thin Insulating Layers H.J. Fitting, T. Hingst and E. Schreiber	407
Development of an Ultra-Precision Positioner and its Applications Y. Egashira, K. Kosaka, S. Takada, T. Iwabuchi, M. Shibata, K. Nagamoto and H. Kubota	413
Photoabsorption Spectroscopy on Nanometer Scale by Scanning Tunneling Microscopy A. Hida, Y. Mera and K. Maeda	419
Scanning Capacitance Microscopy on Semiconductor Materials V. Raineri and F. Giannazzo	425