

Table of Contents

Preface

Annihilation of Self-Interstitials by Dislocations in Silicon as Studied by Gold Diffusion G. Mariani, B. Pichaud and E.B. Yakimov	3
Formation of Electrical Activity of Dislocations in Si during Plastic Deformation O.V. Kononchuk, V. Orlov, O.V. Feklisova and E.B. Yakimov	15
Electronic and Electrical Properties of Polycrystalline Silicon: Effects of Grain Boundary Segregation Y. Fujita, K. Kitakizaki and K. Masuda-Jindo	21
Atomic Simulation Study of Gettering and Passivation in Polycrystalline Semiconductors K. Masuda-Jindo and Y. Fujita	27
The Switching Effects at Grain Boundaries Spontaneously Nucleating at the Crystallization Front of Shaped Silicon A.K. Fedotov, A. Drozdovski and S. Shumski	33
Microcharacterization of Polycrystalline Semiconductors by Scanning Electron Microscopy in Electron Beam Induced Current Mode E.B. Yakimov	39
Beam Injection Methods as Tools for Studying Extended Defects in Semiconductors: Characteristics and Capabilities A. Castaldini and A. Cavallini	51
Scanning Deep Level Transient Spectroscopy Measurements of Extended Defects in Silicon K. Knobloch, M. Kittler, W. Seifert and V. Higgs	63
Lifetime and Material Characteristics of Multicrystalline Silicon Measured with High Spatial Resolution S.W. Glunz, C. Hebling and W. Warta	69
On the Electrical Activity of Fe-Contaminated Silicon Bicrystals A. Ihlal and R. Rizk	75
Microdefects in Polycrystalline Silicon M. Werner, E.R. Weber, S.A. McHugo and K.L. Chapman	81
Investigations for the Detection of Microdefects in Cast Multicrystalline Silicon E. Wolf, D. Klinger and S. Bergmann	87
Dislocation-Related Absorption, Photoluminescence and Birefringence in Deformed n-ZnSe Crystals Y.G. Shreter, Y.T. Rebane, O.V. Klyavin, P.S. Aplin, C.J. Axon, W.T. Young and J.W. Steeds	93
Tight-Binding Total Energy Calculation for Fe, Co and Ni in Silicon A. Hairie, F. Hairie, B. Lebouvier, J.M. Chen, E. Paumier and G. Nouet	99
Polycrystalline Semiconductors: Structure-Property Relationships D.A. Smith and C.S. Nichols	105
Influence of a Preliminary Phosphorus Diffusion on the Evaluation of the Recombination Strenght of Dislocations in Czochralski Silicon Wafers I. Périchaud and J.J. Simon	117
Reconstruction of the Recombination Centre Distribution in Dislocation Impurity Atmosphere in Si I.E. Bondarenko, O.V. Kononchuk and V. Sirotkin	123
Transmission Electron Microscopy Studies of Lattice-Mismatched Semiconductor Heterostructures Used for Integrated Optoelectronic Devices G. Patriarche	131
Electrical and Structural Properties of Solution Grown Silicon Layers on Polycrystalline Silicon Substrates B. Steiner, G. Wagner, A. Voigt, W. Dorsch and H.P. Strunk	143
Preparation of Low Temperature Polysilicon Films with SiH₄ and SiF₄ Gas Mixtures H.S. Choi, K.H. Jang and M.K. Han	149
Structural Studies of Annealing Effects on Semi-Insulating Polycrystalline Layers Obtained by Using Disilane J.J. Pedroviejo, B. Garrido, J.R. Morante, E. Dehan and E. Scheid	155

Growth of n-Type Microcrystalline Silicon at Different Plasma Excitation Frequencies P. Hapke, M. Luysberg, R. Carius, M. Tzolov, F. Finger and H. Wagner	161
On the Nanostructure of Hydrogenated Silicon S.B. Aldabergenova, M. Albrecht, K. Tauasarov, D. Stenkamp, T.I. Taurbaev, B. Dietrich and H.P. Strunk	167
Time Resolved Reflectivity Studies of Phase Transitions in Polycrystalline Si Induced by Excimer Laser Irradiation I. Ulrych, M. Cerník, K.M.A. El-Kader, P. Prikryl, R. Cerný, Z. Chvoj and V. Cháb	173
Characterization of Low Pressure Chemical Vapor Deposited Polysilicon Using Ellipsometry L. Asinovsky, S. Fox, E. Karagiannis, M. Schroth and J.J. Sweeney	179
Correlation between the Hydrogen Bonding Configurations in Amorphous Sputtered Silicon and the Crystallized Material Microstructure L. Lusson, A. Lusson, A. Correia and D. Ballutaud	187
Growth and Defect Formation in Thin Ge and Si_{0.8}Ge_{0.2} Layers Ion Beam Sputter Deposited on Si(001) W. Dorsch, V. Demuth, H.P. Strunk, N. Mosleh, F. Meyer and C. Schwebel	193
Microstructure Influence on the First Stage of the Oxidation Process in Polycrystalline SiGe Layers J.C. Ferrer, J.J. Pedroviejo, B. Garrido, J.R. Morante and J. Calderer	199
Surface Defect States of Crystallites in Sputtered Amorphous Silicon Films Y. Nakano, J. Sakata and Y. Taga	205
n-Type Polydrystalline Silicon for Luminescent Porous Silicon Films F. Guyader, J.K. Jung, M. Guendouz, M. Sarret and P. Joubert	211
Structural Characterization of Poly-SiC Grown on SiO₂/Si by Metalorganic Chemical Vapor Deposition J. Rodríguez-Viejo, J. Stoemenos, N. Clavaguera and M.T. Clavaguera-Mora	217
Photoluminescence from Nanocrystalline Silicon-Amorphous Silica Composite Materials: Changing the Color and Decay Time S. Veprek	225
Nanocrystalline Silicon: From Disordered Insulator to Dirty Metal M. Taguchi, Y. Tsutsumi, R.N. Bhatt and S. Wagner	237
Optical, Electrical and Structural Studies of Microcrystallized Sputtered Silicon R. Rizk, A. Achiq, R. Madelon, F. Gourbilleau and F. Cruege	243
Structure and Optical Properties of Hydrogenated Silicon Films Prepared by Plasma Enhanced Chemical Vapour Deposition A.A. Andreev, A.V. Andrianov, B.Y. Averboukh, R. Mavljanov, S.B. Aldabergenova, M. Albrecht and H.P. Strunk	249
Growth of Polycrystalline Silicon Films at High Deposition Rate and Low Temperature by Hot Wire Chemical Vapour Deposition A.R. Middya, J. Guillet, J.E. Bouree and J. Perrin	255
Grain Boundaries and Grain Size Distributions in Nanocrystalline Diamond Films Derived from Fullerene Precursors R. Csencsits, C.D. Zuiker, D.M. Gruen and A.R. Krauss	261
Cathodoluminescence Microscopy of Square Facets in Chemical Vapour Deposited Diamond Films and its Use in Stress Determination J.W. Steeds, N.C. Burton, A.R. Lang, D. Pickard, Y.G. Shreter and J.E. Butler	271
Transformations in Si_{1-x}Ge_x:H Films on SiO₂ Substrates F. Edelman, R. Weil, P. Werner, M. Reiche, E. Schroer, J. Heydenreich and W. Beyer	283
Modelling of Specular Reflection Infrared Spectra of Oxide Films for Microstructural Analysis D. Narducci and C. Romanelli	289
Chemical Composition and Characterization of the Si/C Interface in Poly-Si Thin Films on Graphite Substrates T. Reindl, T. Fуска, C. Walz, H. Cerva, R. Lemme, C. Weitzel, W. Kruehler, M. Pauli and J. Mueller	295
Phase Transitions during the Deposition of Polycrystalline Iron Pyrite (FeS₂) - Layers by Low-Pressure Metalorganic Chemical Vapor Deposition B. Thomas, K. Diesner, T. Cibik and K. Ellmer	301

Distribution of Defects in Polycrystalline Chalcopyrite Thin Films T. Walter, R. Herberholz and H.-. Schock	309
Noble Transparent Semiconductor: MgIn₂O₄ N. Ueda, H. Hosono and H. Kawazoe	317
Electronic Properties of Cu_xS-ZnS Heterostructure in Zinc Sulphide Luminophors L.A. Kosyachenko, I.K. Vereshchagin and S.M. Kokin	323
Quantum Properties of Two-Dimensional Electron Gas in the Inversion Layer of InSb and (Hg_{1-x}Cd_xTe) Bicrystals W. Kraak, G. Nachtwei, N.Y. Minina and A.M. Savin	329
Growth and Electrical Properties of Reactively Sputtered WS_x Thin Films M. Regula, C. Ballif and F. Lévy	335
Optical and Electrical Properties of Iron Disilicide with Different Degree of Structural Perfection W. Henrion, S. Brehme, I. Sieber, H. von Känel, Y. Tomm and H. Lange	341
Composition Dependent Optical Properties of Polycrystalline CuInSe₂ Thin Films R. Schäffler and H.-. Schock	347
Improvement of the Electrical Properties of WSe₂ Layers by Iodine Treatment H. Essaidi, J.C. Bernede, A. Khelil, J. Pouzet and M. Morsli	353
Electron Beam Induced Current Imaging of Silicon Oxide Damage Due to Reactive Ion Etching H. Kirk, Z.J. Radzimski, A. Romanowski and G.A. Rozgonyi	359
Monte Carlo Simulation of Charge Carriers' Trapping in Polycrystalline Semiconductors A. Mandowski and J. Swiatek	367
Electronic Properties of Defect Levels Investigated by Photocurrent Noise in Polycrystalline Cadmium Compounds A. Carbone and P. Mazzetti	373
Experimental Determination of Hall Factor for Hydrogenated In-Situ Phosphorus Doped Polysilicon Films F. Le Bihan, B. Fortin, H. Lhermite, O. Bonnaud and D. Briand	379
Carrier Transport at Silicon and Germanium Grain Boundaries Enriched by Impurities A.K. Fedotov, Y. Ilyashuk and S. Shumski	385
1/f Noise Transformation that Accompanies the Trimming of Polycrystalline Silicon Layers N.N. Tkachenko	391
Investigation of the Low-Frequency Electrical Noise in Grain Boundaries and Polycrystalline Silicon Films N.N. Tkachenko, G.P. Kolomoets and N.I. Stroiteleva	397
Selective Photoconductivity in n-Type CdMnTe:Ga B. Bieg, S. Kuzminski, A. Morawski and B. Pohoryles	403
Semiconducting Gas Sensors: Basic Science and Empirical Approaches K.D. Schierbaum	409
Influence of the Technological Parameters on the Mechanical Properties of Thick Epipolysilicon Layers for Micromechanical Sensors M.S. Benrakkad, J.M. Lopez-Villegas, J.R. Morante and M. Offenbergl	423
Thickness Dependence of Coloration of Anodic Tungsten Oxide Films for Hydrogen Detection H. Tamura, Y. Hashimoto and K. Ito	429
Preparation, Micromorphology and Stability of Tin Dioxide Thin Films D. Narducci, G. Girardi and C. Piseri	435
Microstructural Study of Nanocrystalline Semiconducting SnO₂ Powders for Sensor Application A. Diéguez, A. Romano-Rodríguez, J.R. Morante, U. Weimar, M. Schweizer and W. Göpel	441
Growth and Post Growth Processes of Multicrystalline Silicon for Photovoltaic Use F. Ferrazza	449
Modern Technologies for Polycrystalline Silicon Solar Cells J. Nijs, S. Sivoththaman, J. Szlufcik, J. Poortmans and R.P. Mertens	461
Microstructure and Electrical Properties of some Multicrystalline Silicon Billets Continuously Cast in a Cold Crucible I. Périchaud, G. Dour, B. Pillin, F. Durand, D. Sarti and S. Martinuzzi	473

Polycrystalline Silicon Solar Cells: Improvements in Efficiency through Hydrogen Passivation	
E.A. Katz, M. Koltun and L.E. Polyak	479
About a Novel Gettering Procedure for Multicrystalline Silicon Samples	
C. Savigni, M. Acciarri and S. Binetti	485
Hydrogen Ion-Implantation Induced Gettering Effects in Polycrystalline Silicon	
Z. Shi, F. Yun and A.W. Simonian	491
Shunts in n+p-Junction Solar Cells Fabricated on Multicrystalline Cast Silicon	
A. Voigt, C. Häßler, D. Karg, H.P. Strunk, G. Pensl and M. Schulz	497
Characterization of Local Shunts in Multicrystalline Silicon Solar Cells by p-n Mesa Structures	
D. Karg, C. Häßler, G. Pensl and M. Schulz	503
Theory of Grain Boundary Effects upon Single Junction and Multijunction Polycrystalline Silicon Thin Film Solar Cells	
M.A. Green	509
Polycrystalline Silicon on Glass Substrates for Thin Film Solar Cells	
R.B. Bergmann, G. Oswald, M. Albrecht and J. Werner	515
Modelling of Thin Polycrystalline Silicon Solar Cells on Low Temperature Substrates	
J. Dugas	521
Electron-Beam Induced Current Profiles for Thin Film Heterojunction Analysis	
R. Scheer	527
Oxygen in Solution Grown CdS Films for Thin Film Solar Cells	
A. Kylner, A. Rockett and L. Stolt	533
Relations between Texture and Electrical Parameters of Thin Polycrystalline Zinc Oxide Films	
K. Ellmer, K. Diesner, R. Wendt and S. Fiechter	541
Interface Charge Separation Processes in TiO₂-Based Solar Cells	
O.I. Shevaleevskii, L.L. Larina and E.M. Trukhan	547
Structure Organization of Fullerene Layers for Photovoltaic Devices	
L.L. Larina, O.I. Shevaleevskii and L.A. Chernozatonskii	553
Compensation Doping of Polysilicon Films for Stable Integrated Circuit Resistors	
M. Rydberg, U. Smith, A. Söderbärg and H. Hansson	561
Physical Properties of Polysilicon Diodes Derived from a Smart Power Technology	
I. Claverie, J. Oualid, J. Mille, O. Bonnaud and R. Jérision	567
Realization of Power Polysilicon Diodes on Indium-Tin-Oxide Substrates for Holographic Commutation Matrix	
D. Briand, M. Sarret, T. Mohammed-Brahim, S. Mottet and O. Bonnaud	573
Manipulating the Electrical and Optical Properties of Polycrystalline ZnO Based Thin Films	
V. Srikant and D.R. Clarke	579
Analysis of Hot-Carrier Effects, 'Kink' Effect and Low Frequency Noise in Polycrystalline Silicon Thin-Film Transistors	
G. Fortunato	585
Thermal and Field-Induced Generation Mechanisms in Polysilicon Thin Film Transistors: A Comparison between n-Channel and p-Channel Devices	
G. Tallarida, P. Migliorato, M. Quinn and C. Reita	597
Thin Polycrystalline Silicon Films Annealed at 950°C: Structural and Electrical Properties and Application to Thin Film Transistors	
A.C. Salaün, B. Fortin, T. Mohammed-Brahim, K. Kis-Sion, L. Haji and O. Bonnaud	603
Deposition and Characterisation of Polycrystalline Silicon for Low Temperature Thin Film Transistor Fabrication	
L.J. Quinn, B. Lee, P.T. Baine, S.J.N. Mitchell, B.M. Armstrong and H.S. Gamble	609
Novel Polysilicon Thin Film Transistor with Buffer Oxide	
B.H. Min, C.M. Park and M.K. Han	615
Leakage Currents in Poly-Si Thin Film Transistors	
S.D. Brotherton, J.R. Ayres and M.J. Trainor	621