

Table of Contents

PREFACE	iii
I. Biosystems and Microsystems	1
*Ion Track Nanostructuring of Dielectrics - K. Hjort (Uppsala University), E. Balanzat (Centre Interdisciplinaire de Recherche Ions Lasers), C. Trautmann (GSI), M. Toulemonde (Centre Interdisciplinaire de Recherche Ions Lasers), and A. Weidinger (Hahn-Meitner-Institut Berlin)	3
*Design, Integration and Performance Evaluation of Optical Detection Elements for Miniaturized Biochemical Devices - K.B. Mogensen, A.M. Jorgensen, N.J. Petersen, O. Geschke, and J.P. Kutter (Mikroelektronik Centret (MIC))	17
*Silicon-Based Field-Effect Structures - From Dielectrics to Bioelectronics - M.J. Schöening (University of Applied Sciences Aachen)	31
*Neurotransistors for Biomedical Nanotechnology - A.J. Menezes and V.J. Kapoor (The University of Toledo, Biomedical Nanotechnology Research Center)	38
*Biosensors Based On Standard Dielectric Materials - J. Bausells (Centro Nacional de Microelectronica (IMB-CSIC)), A. Errachid (Parc Cientific de Barcelona), and N. Zine (Centro Nacional de Microelectronica (IMB-CSIC))	48
*Barrier Films on Paper and Cellulose using Fluorocarbon Plasmas - S. Vaswani (Georgia Institute of Technology), J. Koskinen (Institute of Paper Science and Technology), S. Zauscher (Duke University), and D. Hess (Georgia Institute of Technology)	63
Controlled Filling of Silicon Trenches with Doped Oxide for MEMS - A. Agarwal and R. N. (Institute of Microelectronics)	75
II. Integrated Optics and Optical Applications	87
*Optical and Electronic Properties of Nanostructured Silicon - D.J. Lockwood (National Research Council)	89
*MOCVD-Deposited Dielectric Films for Integrated Optical and Microelectronic Circuits - J. Mueller (Department of Micro System Technology, Technical University Hamburg- Harburg)	105

*Optical Characterization of LPCVD SiO _x N _y Thin Films - M. Modreanu (National Microelectronics Research Centre (NMRC)), M. Gartner (Institute of Physical Chemistry), and N. Tomozeiu (Utrecht University)	118
*Material Consideration for Integrated Optics in Silica-on-Silicon Technology - L. Wosinski, M. Dainese, and H. Fernando (Royal Institute of Technology (KTH), Dept. of Microelectronics and Information Technology)	130
*Nanoscale characterization and local electromechanical properties of ferroelectric films for MEMS - A. Kholkin, V. Shvartsman, A. Emelyanov (Department of Ceramics and Glass Engineering, University of Aveiro), and A. Safari (Department of Ceramics and Materials Engineering, Rutgers University)	145
*Optical MEMS devices based on wet anisotropic etching of silicon - M. Hoffmann, D. Nüsse, and E. Voges (Universitaet Dortmund)	160
*Progress in the fabrication of complex optical coatings - D. Poitras (National Research Council of Canada)	172
*Silicon Nitride Coatings for Si Solar Cells: Control of Optical Reflection and Surface/Bulk Passivation - B. Sopori (National Renewable Energy Laboratory)	186
III. Materials Processing	201
*Temporal Pulse Shaping and Optimization in Ultrafast Laser Ablation of Materials - R. Stoian, S. Winkler, M. Hildebrand, M. Boyle, A. Thoss, A. Rosenfeld, and I.V. Hertel (Max-Born Institut für Nichtlineare Optik und Kurzzeitspektroskopie)	203
Development and Characterization of KOH Resistant PECVD Silicon Nitride for Microsystems Applications - F.E. Rasmussen, B. Geilman (Mikroelektronik Centret), M. Heschel (Hymite A/S.), O. Hansen, and A.M. Jorgensen (Mikroelektronik Centret)	218
Ferroelectric properties of Pb-excess PZT thin films prepared by Zirconium oxyacetate-based sol-gel process - K. Nakano (Interdisciplinary Graduate School of Engineering Sciences Kyushu University), G. Sakai, K. Shimanoe, and N. Yamazoe (Department of Materials Science, Faculty of Engineering Sciences Kyushu University)	230

IV. Progress in Electronics	241
*Structural and Electronic Properties of Nanocrystalline Silicon –Silicon Dioxide Superlattices- L. Tsybeskov, B. V. Kamenev (New Jersey Institute of Technology), D. J. Lockwood (NRC, Canada)	243
*Properties of Gallium Nitride Nanorods by Hydride Vapor Phase Epitaxy - T.W. Kang and H.-M. Kim (Dongguk University)	255
*New Trends in Silicon Thin Films and Applications - J.-P. Kleider (Laboratoire de Génie Électrique de Paris, SUPÉLEC), P. Roca i Cabarrocas (Laboratoire de Physique des Interfaces et des Couches Minces), and C. Guedj (Laboratoire d'Electronique de Technologie et d'Instrumentation, CEA-Grenoble)	265
*Novel Dielectric Thin Films for Frequency Agile Microwave Devices - M.W. Cole, W. Nothwang, C. Hubbard, E. Ngo, M. Ervin, (U.S. Army research Laboratory), and R.G. Geyer (National Institute of Standards and Technology)	280
*Material Aspects in Emerging Nonvolatile Memories - T. Mikolajick and C.U. Pinnow (Infineon Technologies Dresden)	290
Investigation of ru Thin Films Prepared by Chemical Vapor Deposition as Bottom Electrodes for Memory Applications - S.Y. Kang, H.J. Lim, C.S. Hwang, and H.J. Kim (Seoul National University, School of Materials Science & Engineering)	305
V. Low-K and High-K Dielectrics	313
*Characterization of Low-k to Extreme Low-k SiCOH Dielectrics - A. Grill and D.A. Neumayer (IBM)	315
*High-Throughput Screening of Binary and Ternary Dielectric Oxides by Combinatorial Technology - H. Koinuma, R. Takahashi, H. Minami, Y. Matsumoto, K. Hasegawa (Tokyo Institute of Technology), Y. Yamamoto, K. Itaka, T. Chikyow (National Institute of Material Science, Japan)	323
*Progress in Novel Oxides for Gate Dielectrics And Surface Passivation of GaN/AlGaN Heterostructure Field Effect Transistors - C.R. Abernathy, B.P. Gila, A.H. Onstine, S.J. Pearton, J. Kim, B. Luo, R. Mehandru, F. Ren (University of Florida), J.K. Gillespie, R.C. Fitch, J. Sewell, R. Dettmer, G.D. Via, A. Crespo, T.J. Jenkins (Air Force Research Laboratory), and Y. Irokawa (Toyota Central Research and Development Laboratories, Inc.)	330

Gas-Phase and Surface Reactions in Plasma Enhanced Chemical Etching of High-K Dielectrics - L. Sha and J. Chang (UCLA)	342
Investigation of Slow/Fast Interface States of Al ₂ O ₃ / Si MOS System Using Deep Level Transient Spectroscopy – I.S. Jeon, D. Eom, M. Cho, H.B. Park, J. Park, C.S. Hwang and H. J. Kim (School of Materials Science and Engineering, Seoul National University)	350
Characterization of a Potential Gate Dielectric: MOCVD-Grown Erbium Oxide on Silicon - M.P. Singh, C.S. Thakur, K. Shalini, N. Bhat, and S.A. Shivashankar (Indian Institute of Science)	358
HfO ₂ Thin Films Deposited On SOI by Ion Beam Enhanced Deposition - K. Tao and Y. Yu (Institute of Microsystem and Information Technology, Chinese Academy of Science)	367
Influence of the 5 Å TaN _x Interface Layer on Doped Metal Oxide High-k Dielectric Characterization - Y. Kuo and J. Lu (Thin Film Microelectronics Research Laboratory, Texas A&M University)	374
VI. Poster Session	381
Potential Fluctuations in High-k Based Dielectric MOS Devices - J.-L. Autran, D. Munteanu, and M. Houssa (L2MP - UMR CNRS 6137)	383
Characterization of Thermally Evaporated ZrO ₂ - M. Bhaskaran, P. K. Swain (Sarnoff Corporation), and D. Misra (New Jersey Institute of Technology)	393
Synthesis and Characterization of Zinc Titanate Doped with Magnesium - Y.S. Chang, Y.H. Chang, I.G. Chen (National Cheng Kung University), and G.J. Chen (I-Shou University)	399
Investigation of High Dielectric Film on the Plastic Substrate by Novel Liquid-Phase Heterojunction Deposition- C.J. Huang, W.R. Chen, P.H. Chiu, C.Z. Chen, M.S. Lin, S.L. Lee, and Z.Y. Lin (Southern Taiwan University of Technology)	411
Thickness And Temperature Dependence Of The Ac Electrical Conductivity Of Porous Silicon Thin Films - M. Theodoropoulou, P. Karahaliou, S.N. Georga, C.A. Krontiras, N. Xanthopoulos, M.N. Pisanias (University of Patras), C. Tsamis and A.G. Nassiopoulou (IMEL/NCSR Demokritos)	418
Author Index	431
Subject Index	433
*Invited Paper	