

Table of Contents

	Page
Preface	iii
Session 1 - III-V Optoelectronics	
Novel Waveguide Photodetectors on InP with Integrated Light Amplification *..... <i>J. Piprek, D. Pasquariello, D. Lasaosa, and J.E. Bowers</i>	1
Improvement of Kink Characteristics of 850nm AlGaAs/GaAs Implant Vertical Cavity Emitting Lasers Utilizing Silicon Implantation Induced Disordering *..... <i>H.C. Kuo, Fang-I Lai, Tao-Hung Hsueh, Ya-hsien Chang, Wen-chun Shu, Li-Hung Lai, and S.C Wang</i>	9
Effect of Post-Oxidation Annealing on VCSEL Device Performance..... <i>N.C. Das and W. Chang</i>	15
Low Voltage Operation Phototransistor with InGaP/AlGaAs/GaAs Composite Emitter..... <i>S.W. Tan, W.T. Chen, M.Y. Chu, and W.S. Lour</i>	19
Session 2 - III-V Devices and Processing	
Observation of Current Gain Collapse in Large-area HBT with Rectangular Emitter and Etched Base..... <i>M.-K. Tsai, S.-W. Tan, W.-S. Lour, and Y.-J. Yang</i>	24
Characteristics of Sulfur and InGaP-passivated InGaP/GaAs Heterojunction Bipolar Transistors..... <i>S.-W. Tan, W.T. Chen, M.Y. Chu, and W.S. Lour</i>	28
Interconnect Copper Metallization of InGaP HBT's using WN _x as the Diffusion Barrier..... <i>Shang-Wen Chang, Edward Yi Chang, and Cheng-Shih Lee</i>	33
Solvent-affected Chemistry at GaAs/sulfide Solution Interface..... <i>Mikhail V. Lebedev, Thomas Mayer, and Wolfram Jaegermann</i>	38

Table of Contents	page
Session 3 - InP Electrochemistry	
Anodic Behavior of InP: Film Growth, Porous Structures, and Current Oscillations *.....	48
<i>D.N. Buckley, C. O'Dwyer, E. Harvey, T. Melly, M. Serantoni, D. Sutton, and S.B. Newcomb</i>	
A Mechanistic Study of Anodic Formation of Porous InP	63
<i>C. O'Dwyer, D.N. Buckley, D. Sutton, M. Serantoni, and S.B. Newcomb</i>	
Growth of Anodic Oxides on n-InP Studied by Electrochemistry and Surface Analysis: Correlation between Oxidation Methods and Passivating Properties.....	73
<i>N. Simon, N.C. Quach, and A. Etchberry</i>	
Localized Photoetching of n-InP, at Open-circuit Potential	83
<i>Catherine Debiemme-Chouvy, Anne Quennoy, and Isabelle Gerard</i>	
Poster Session	
Investigation of Defect Passivation in 4H-SiC using Hydrogen Plasma and Effect of Post-Annealing.....	91
<i>Myung Yoon Um, In Sang Jeon, Da Il Eom, Bum Seok Kim, Ho Keun Song Hoon Joo Na, Dae Hwan Kim, Jae Kyeong Jeong, and Hyeong Joon Kim</i>	
HRTEM Study of SiC Buried Layer formed by C+ Implantation in Silicon	98
<i>Yumei Xing, Yuehui Yu, and Zixin Lin</i>	
(Photo-)Electrochemistry at n-GaN Grown on Sapphire and on Si: A Comparative Study.....	103
<i>I.M. Huygens and K. Strubbe</i>	
MOCVD Growth of InP/InGaAlAs Distributed Bragg Reflectors.....	115
<i>J.Y. Tsai, T.C. Lu, and S.C. Wang</i>	
Very Low Temperature Growth of c-axis oriented ZnO Thin Film on Si Substrates... <i>Hyoun Woo Kim, Kwang Sik Kim, and Chongmu Lee</i>	123
Fabrication and NO ₂ Surface Photo Voltage Sensor Properties of Nanoporous Tin-Silica Film.....	130
<i>Brian Yuliarto ,HaoShen Zhou, Takeo Yamada, Itaru Honma, and Keisuke Asai</i>	

Table of Contents	page
Session 4 - Emerging Materials	
Man-made Quantum Structures: From Superlattices to Quantum Dots * <i>Raphael Tsu</i>	134
Effects of Composition and Layer Thickness on the Magnetic and Structural Characteristics of GaMnN * <i>G.T. Thaler, M. Overberg, R. Frazier, C.R. Abernathy, S.J. Pearson, F. Ren, Y.D. Park, R. Rairigh, J. Kelly, J.S. Lee, N. Theodoropoulou, and A.F. Hebard</i>	141
Diamond – the Next Generation Material for High Power Electronics?..... <i>A. Aleksov, M. Schreck, P. Schmid, and E. Kohn</i>	146
Session 5 - III-Nitride Light Emitting Diodes	
Deep Ultraviolet Light Emitting Diodes using AlGaN Quantum Well Active Region * <i>M. Asif Khan, Maxim Shatalov, Vinod Adivarahan, Jain Ping Zhang, Ashay Chitnis, Grigory Simin, and Jinwei Yang</i>	152
Dramatically Improved Current Spreading in UV LED's via Si Delta-doping in the n-AlGaN Cladding Layer..... <i>S.F. LeBoeuf, X.A. Cao, L.B. Rowland, J.J. Flynn and G.R. Brandes</i>	158
Carrier Capture and Recombination at Localized States in InGaN/GaN Light-Emitting Diodes..... <i>X.A. Cao, S.F. LeBoeuf, L.B. Rowland, J.L. Garrett, S.D. Arthur, and D.W. Merfeld</i>	166
Session 6 - Wide Bandgap Materials and Electronic Devices	
Instabilities in GaN based FET Structures – Nature and Alternative Structures *..... <i>E. Kohn, M. Neuburger, I. Daumiller, A. Krtschil, A. Krost, J. Van Nostrand, and T. Jenkins</i>	174
AlGaN Power Rectifiers * <i>S.J. Pearson, J. Kim, F. Ren, K. Baik, B.P. Gila, C.R. Abernathy, Y. Irokawa, J.-I. Chyi, S.S. Park, and Y.J. Park</i>	180
Physics of Electron Injection-Induced Effects in III-Nitrides * <i>Leonid Chernyak and William Burdett</i>	208

Table of Contents	page
DC Characteristics of AlGaN/GaN Heterostructure Field-effect Transistors on Free-Standing GaN Substrates.....	214
<i>Y. Irokawa, B. Luo, F. Ren, C.-C. Pan, G.-T. Chen, J.I. Chyi, S.S. Park, Y.J Park, and S.J. Pearton</i>	
Innovative Substrate Solutions for Wide Band Gap Materials: the Smart Cut TM Approach.....	223
<i>F. Letertre, N. Daval, F. Templier, L. DiCioccio, C. Richtarch B. Faure, A.M. Cartier, and I. Matko</i>	
Session 7 - Optical Properties of III-Nitride Materials	
Microcathodoluminescence Characterization of III-Nitride Heterojunctions and Devices *.....	229
<i>L.J. Brillson, G.H. Jessen, S.H. Goss, X.L. Sun, S.T. Bradley, B.D. White, P.E. Smith, T.E. Levin, A.P. Young, D.C. Look, J.E. Van Nostrand, G.D. Via, J.K. Gillespie, R.W. Dettmer, J.S. Sewell, and R. Fitch</i>	
New Spectroscopic Data of Erbium Ions in GaN Thin Films *.....	235
<i>F. Pelle, F. Auzel, J.M. Zavada, D.S. Lee, A.J. Steckl</i>	
Spectroscopic Ellipsometry Applied to the Characterization of GaN and AlGaN/GaN Heterostructures.....	258
<i>P. Boher, S. Bourtault, J.P. Piel</i>	
Infrared Photocurrent Spectroscopy of Epitaxial III-Nitride Materials.....	265
<i>Edward B. Stokes and Steven F. LeBoeuf</i>	
Fabrication and Characterization of GaN Nanorods.....	270
<i>Ya-hsien Chang, H.C. Kuo, Chang-Chin Yu, Tao-Hung Hsueh, Jung-Wai Chang, Chia-Feng Lin, and S.C. Wang</i>	
Subject Index	276