

Table of Contents

Introduction

Quantum Dots by QED

T. Prevenslik 1

Charge Effect in Organic Field-Effect Transistors - Analyzing Hall Measurements in the Accumulation Layer

H.L. Kwok 4

Surface Optical Waves in Semi-Infinite One-Dimensional Photonic Crystals Containing Alternating Layers of Positive and Negative Media

A. Soltani Vala, J. Barvestani and M. Kalafi 7

Titania/Ormosils Organic-Inorganic Hybrid Thin Films Doped with Azobenzene Small Molecules for Optical Switch Applications

W.X. Que, M. Sun, C.Y. Jia, L. Cheng, Z. Sun, L.L. Wang and X. Hu 11

Sol-Gel Fabrication of Low Temperature Organic-Inorganic Hybrid Film Patterns for Photonic Applications

W.X. Que, X.M. Ren, W. Zhang, W.J. Jiang, Y. Gao and X. Hu 14

Morphology and Crystal Quality of InAs QDs Grown by MOVPE Using Different Growth Modes

Z.Y. Yin, X.H. Tang, J.X. Zhang, D. Sentosa, J.H. Teng, A.Y. Du and M.K. Chin 17

Modulation of Three Dimensional Photonic Band Gap in Visible Region

Y.P. Liu, Y.P. Guo, Z.J. Yan, C.M. Huang and Y.Y. Wang 20

Raman Scattering from GaAs Nanowires Grown by Molecular Beam Epitaxy

N. Begum, A.S. Bhatti, M. Piccin, G. Bais, F. Jabeen, S. Rubini, F. Martelli and A. Franciosi 23

Design and Analysis of 2D Photonic Crystal Waveguides for High Coupling Efficiency

M. Wu, H.R. Liu, W.J. Tong and D.X. Huang 27

Novel Passivation Method in the Fabrication of Submicron InGaAsP/InP Ridge Waveguide Lasers

E.L. Lim, J.H. Teng, S.J. Chua, J.R. Dong, N.S.S. Ang and L.F. Chong 30

Sputtered SiO₂ Induced Atomic Interdiffusion in Semiconductor Nano Heterostructures

V. Hongpinyo, Y.H. Ding, J. Anderson, H.S. Djie, B.S. Ooi, R.R. Du, A. Ganjoo and H. Jain 33

DFB Lasers with Tilted Waveguide for Multi-Wavelength Generation

L.F. Chong, J.H. Teng, E.L. Lim, N.S.S. Ang, J.R. Dong and S.J. Chua 36

Enhanced UV Photodetector Responsivity in Porous GaN/Si(111) by Metal-Assisted Electroless Etching

L.S. Chuah, H. Zainuriah and A.H. Haslan 39

Growth, Surface Morphology and Optical Properties of Gallium Nitride Nanowires

V. Suresh Kumar and J. Kumar 42

Optical Reflection from a Monolayer of Embedded Nano-Objects Covered by a Thick Capping Layer

C.M.J. Wijers and O. Voskoboinikov 52

Visible Light Emission from Ordered Nanopatterned InP Surface

S.K. Mohanta, R.K. Soni, S. Tripathy and S.J. Chua 56

Dependence of the Absorption Spectra of III-V Semiconductor Quantum Dots on the Size Distribution

S. Kumar, D. Biswas and T. Das 59

Conspicuous Presence of Higher Order Transitions in the Photoluminescence of In_xGa_{1-x}N/GaN Quantum Wells

D. Biswas, T. Das, S. Kabi and S. Kumar 62

The Study of Femto-Second Laser Induced Damage Threshold on Semi-Insulating GaAs Wafer

C.Y. Li and Y.G. Wang 65

Temperature-Controlled Catalytic Growth and Photoluminescence Properties of ZnO Nanostructures

P.T. Huy, T.T. An, N.D. Chien and D.J. Kim 68

Fabrication and Optical Properties of ZnO Quantum Dots

X.H. Zhang, S.J. Chua, A.M. Yong, S.Y. Chow, H.Y. Yang, S.P. Lau, S.F. Yu and X.W. Sun 71

Intense Photoluminescence and Photoluminescence Enhancement of Silicon Nanocrystals by Ultraviolet Irradiation	74
P.T. Huy and P.H. Duong	
Nitrogen Interstitial Defects in GaNAs Films Grown by MOCVD	77
D. Sentosa, X.H. Tang, S.J. Chua and Z.Y. Yin	
Influence of Hydrogen Dilution of Silane on the Properties of nc-Si:H Films Grown by Layer-by-Layer Deposition Technique	80
B.T. Goh, S.M. Ab. Gani and S.A. Rahman	
Defect Mediated Photonic Behavior of ZnO Nanocrystals	83
Y.Y. Tay, S. Li and M.L. Liang	
Surface Structure Dependent Growth of InAs/InAlAs Quantum Wires on InP(100).	86
M.F. Casco, J.V. Misa, M. Defensor, A. Garcia and A. Salvador	
Characteristics of Ge Nanocrystals Grown by RF Magnetron Sputtering	89
R.K. Singha, K. Das, S. Das, A. Dhar and S.K. Ray	
Photoluminescence and Fractal Properties of Diverse Carbothermal Zinc Oxide Nanostructures	92
E.R. Magdaluyo, I.H.J. Arellano, A.K.G. Tapia, R.V. Samargo and L.M. Payawan	
Band Structure and Optical Gain of 1.3 um GaAsSbN/GaAs Compressively Strained Quantum Well Laser	95
B. Dong, W.J. Fan and Y.X. Dang	
Fabrication of Photonic Crystals by Holographic Lithography Method	98
J.B. Yeo and H.Y. Lee	
Optical and Structural Properties of Multi Deposition Film Derived SiO₂-TiO₂ Systems by Sol-Gel Process	101
M.Z.A. Malik, M.T. Zainuddin, A.M. Abdullah and A. Isnin	
Investigation of Intersubband Transition in GaAs/AlGaAs Quantum Well Infrared Photodetectors	105
D.S. Li, W.J. Fan, Y.X. Dang, B.S. Ma, D.H. Zhang and S.F. Yoon	
Growth of GaN Nano-Column on Si (111) Substrate Using Au+Ga Alloy Seeding by Pulsed Flow Method Using MOCVD	108
J.C. Song, D.H. Kang, S.H. Lee, E.S. Jang, D.W. Kim, K. Santhakumar and C.R. Lee	
Raman study of Epitaxial lateral Overgrowth of GaN on Patterned Sapphire Substrate	111
D.H. Kang, J.C. Song, H. Song, D.W. Kim, I.H. Lee, K. Santhakumar and C.R. Lee	
Mn, Cu Doping and Optical Properties of Highly Crystalline Ultralong ZnS Nanowires	114
N.D. Chien, H.V. Chung, P.T. Huy, D.J. Kim and M. Ferrari	
In Situ Visualization of Layer Transitions during Convective Self-Assembly in a Sessile Drop	117
L. Gao, Q.F. Yan, C.C. Wong and Y.M. Chiang	
Optical and Surface Morphological Study of GaN Nanocolumn Grown on Gallium Coated Si by Molecular Beam Epitaxy	120
K. Santhakumar, D.H. Kang, J.C. Song, D.W. Kim, J.S. Kim, M.D. Kim and C.R. Lee	
Nanometer-Scale In_{0.5}Ga_{0.5}As Ring-Like Structure Grown by Droplet Epitaxy	123
N. Pankaow, S. Panyakeow and S. Ratanathammaphan	
The Gas Sensitivity Character of WO₃ Nanosized Material	126
S.Z. Huang, W. Lin and W.Z. Chen	
Effect of Oxygen Flow Rate and Temperature on the Structure of DC Sputtered Nanocrystalline Copper Oxide Films	129
M.J. Chiang, C.W. Wu and H.E. Cheng	
In-Mole-Fraction and Thickness of Ultra-Thin InGaAs Insertion Layers Effects on the Structural and Optical Properties of InAs Quantum Dots	132
P. Boonpeng, S. Panyakeow and S. Ratanathammaphan	
Investigation of Electrical Properties in Chalcogenide Thin Film According to Wave Length	135
H. Choi, H.K. Kim, Y.W. Koo, K.H. Nam, S.M. Koo, W.J. Cho and H.B. Chung	
Luminescence Properties of ZnS:Er Quantum Dots with NIR Excitation	138
X.S. Zhang, X.Y. Dong, G.Y. Kai, D.Q. Dong, Y.F. Zhang and Z. Wang	
The Synthesis and Crystallography of Some Novel ZnO Nano- and Micro-Crystals and Structures	141
Z.M. Li, F.Q. Xu and W.H. Zhang	

Degradation of Photoluminescence in CdTe Nanoparticles Due to Cl₂ Contamination	150
H.C. Gardner, B. Patel, C. Bertoni, D.E. Gallardo and S. Dunn	
Preparation and Characterization of Zn-Se Bilayer Structure	153
M. Singh, J.S. Arora, K. Awasthi, R. Nathawat and Y.K. Vijay	
The Formation of InP Ring-Shape Nanostructures on In_{0.49}Ga_{0.51}P Grown by Droplet Epitaxy	158
W. Jewaswan, S. Panyakeow and S. Ratanathammaphan	
Development of Low Size Dispersion, High Volume Fraction and Strong Quantum Confined CdS_xSe_{1-x} Quantum Dots Embedded in Borosilicate Glass Matrix and Study of their Optical Properties	161
A. Verma, P.K. Bhatnagar, P.C. Mathur, S. Nagpal, P.K. Pandey and J. Kumar	
Tuning of Energy Band Gaps in Ternary Semiconductors	164
R. John	
Luminescence Properties of ZnS:Mn Quantum Dots	167
X.S. Zhang, L. Li, D.Q. Dong, Z. Wang and X.Y. Dong	
Surface and Structure of Porous Silicon Layers	170
J.M. Lu and X. Cheng	
Broadband Emission in InAs/InGaAlAs Quantum-Dash-in-Well Laser	173
B.S. Ooi, H.S. Djie, A.S. Helmy and J.C.M. Hwang	
Improved Carbon Counter Electrodes for Dye Sensitized Solar Cells	176
H.S. Lee, H.Y. Lee, S.Y. Ahn, K.H. Kim and J.Y. Kwon	
Development of Fabrication Process and Electrostatic Microactuator for a Mechanically Tunable 2-D Photonic Crystal	179
B.P. Chaudhuri, B. Thubthimthong and F. Chollet	
Nano-Scale Bandgap Engineering Using Nitrogen Implantation: Quantum-Well, Quantum-Dash and Quantum-Dot Nanostructures	182
Y.H. Ding, V. Hongpinyo, H.S. Djie and B.S. Ooi	
Higher Crystalline Volume Yields from Excimer Laser Crystallization of Amorphous Silicon with an Asymmetrical Peak Pulse Profile	185
A.A.D.T. Adikaari, N.K. Mudugamuwa and S.R.P. Silva	
Distributed Feedback Laser Using Buried Dielectric Grating	189
J.H. Teng, L.F. Chong, J.R. Dong, S.J. Chua, N.S.S. Ang, Y.J. Wang and E.L. Lim	
Electrical Properties and UV Response of Single ZnO Nanorod	192
H.Q. Le and S.J. Chua	
Population Dynamics of Excitons in Silicon Nanocrystals Structures under Strong Optical Excitation	196
O.A. Shalygina, D.M. Zhigunov, D.A. Palenov, V. Timoshenko, P.K. Kashkarov, M. Zacharias and P.M. Koenraad	
Investigation of Morphology and Photoluminescence of Hydrothermally-Grown ZnO Nanorods Grown on Substrates Pre-Coated with ZnO Nanoparticles	199
C.B. Tay and S.J. Chua	
Dicing Laminated Wafer for QFN 3D Stacked Die Packaging	202
S. Abdullah, Z. Endut, I. Ahmad, A. Jalar and S.M. Yusof	
DFB Waveguide All-Optical Switching Devices Employing Pump-Induced Refractive Index Change in GaInAsP	206
T. Mizumoto, Y. Akano, K. Tamura and M. Yoshimura	
Study of Thermal-Anneal-Induced Rearrangement of N-Bonding Configurations in GaInNAs/GaAs Quantum Well	209
V. Dixit, H.F. Liu and N. Xiang	
Nano Size Lanthanum Doped Semiconductors: Synthesis, Characterization and their Photocatalytic Activity	212
S. Anandan, Y. Ikuma, T. Kudoh, Y. Ogita and V. Murugesan	
Structural Investigation of Cubic-Phase InN on GaAs (001) Grown by MBE under In- and N-Rich Growth Conditions	215
S. Kuntharin, S. Sanorpim, T. Nakamura, R. Katayama and K. Onabe	
MOVPE Growth Window for High-Nitrogen GaAsN Alloy Films for Long Wavelength Emission	218
S. Sanorpim, F. Nakajima, R. Katayama and K. Onabe	

A Comparison of the Structural Quality of High-In Content InGaAsN Films Grown on InGaAs Pseudosubstrate and on GaAs Substrate	221
S. Sanorpim, P. Kongjaeng, R. Katayama and K. Onabe	
Optical Transitions in InGaPN/GaP Single Quantum Wells on GaP(100) Substrates by MOVPE	224
S. Sanorpim, D. Kaewket, S. Tungasmita, R. Katayama and K. Onabe	
Annihilation of Threading Dislocations in Regrown GaN on Electrochemically Etched Nanoporous GaN Template with Optimization of Buffer Layer Growth	227
C.B. Soh, H. Hartono, S.Y. Chow and S.J. Chua	
Optical Nanowires for Microwave Applications	230
D. Decoster, M. Carette, M. Lesecq, D. Lauvernier, M. Zegaoui, D. Bernard, J.P. Vilcot and J. Chazelas	
Quantum Information Processing in Photonic Crystals	236
M.R. Singh	
Phase Transition in Photonic Crystals Doped with Nanoparticles	242
M.R. Singh	
InGaAsP/InP Electroabsorption Modulator with Single-Sided Large Optical Cavity by Low-Pressure MOCVD	246
H. Yang, M.K. Chin, D.C.S. Lim, S.Y. Lee, C.W. Lee and H.L. Zhu	
Demonstration of the Formation of Porous Silicon Films with Superior Properties Formed on Polished (100) Si with Screen-Printed Back Contacts	249
P. Singh, S.N. Sharma, G. Bhagavannarayana, M. Husain and M. Lal	