

TABLE OF CONTENTS

PREFACE	iii
---------------	-----

Quantum Dots and Nanowires

Progress and challenges of self-assembled quantum dots	3
<i>M. Henini*</i>	
Excitonic Fock-Darwin spectra from electron-hole droplets in self-assembled quantum dots	23
<i>S. Raymond*, S. Studenikin, A. Sachrajda, Z. Wasilewski, S.J. Cheng, W. Sheng, P. Hawrylak, A. Balinski, M. Potemski, G. Ortner, and M. Bayer</i>	
Electrical and optical properties of colloidal quantum dots and quantum dot networks: role of surface states and using biomolecular links in network assembly	39
<i>M.A. Stroscio*, M. Dutta, D. Ramadurai, P. Shi, Y. Li, D. Alexson, B. Kohanpour, A. Sethuraman, V. Saini, and A. Raichura</i>	
Optical and electrical properties of Ge nanowire grown on Silicon (100) and (111) substrates	49
<i>B. Kamenev, V. Sharma, L. Tsybeskov, and T.I. Kamins</i>	
The effect of electrodeposition conditions on single palladium nanowire growth	61
<i>M.A. Bangar, K. Ramanathan, M. Yun, and N.V. Myung</i>	
Selective MBE growth of high-density hexagonal nanowire networks on pre-patterned GaAs (001) and (111)B substrates	71
<i>I. Tamai, T. Sato, and H. Hasegawa</i>	

Transport in Nanoscale Devices

Electron transport properties and device applications of nanocrystalline silicon quantum dots	89
<i>H. Mizuta*, M. Khalafalla, Z.A.K. Durrani, S. Uno, N. Koshida, Y. Tsuchiya, and S. Oda</i>	

Carrier and phonon transport in Ge/Si quantum dot superlattices	107
<i>Y. Bao, W.L. Liu, M. Shamsa, K. Alim, and A.A. Balandin</i>	
Semiconducting carbon nanotubes as three-terminal devices	121
<i>J. Appenzeller*</i>	
Design and implementation of ultra-small and ultra-low-power digital systems on GaAs-based hexagonal nanowire networks utilizing an hexagonal BDD quantum circuits approach	125
<i>S. Kasai, M. Yumoto, T. Tamura, I. Tamai, T. Sato, and H. Hasegawa</i>	
	147
MOSFET tunneling spectroscopy at low temperature	
<i>M. Bao, F. Liu, F. Baron, and K.L. Wang</i>	
Accurate three-dimensional simulation of electron mobility including electron-electron and electron-dopant interactions	165
<i>C. Heitzinger, C. Ringhofer, S. Ahmed, and D. Vasileska</i>	

Spintronics

Semiclassical transport models for semiconductor spintronics	183
<i>Y.V. Pershin, S. Saikin, and V. Privman*</i>	
Full scale simulation of spin-qubit quantum dots and circuits	207
<i>L.-X. Zhang, J. Kim, D. Melnikov, and J.-P. Leburton</i>	
Critical behavior of the Pauli spin susceptibility in a strongly correlated 2D electron system	219
<i>A.A. Shashkin, S. Anissimova, M.R. Sakr, S.V. Kravchenko, V.T. Dolgopolov, and T.M. Klapwijk</i>	

Electrical and Optical Properties of Nanocrystals and Porous Materials

Harmonic generation in metallic nanoscale systems	229
<i>A.M. Malvezzi*, S. Achilli, M. Allione, R. Kofman, M. Patrini, and A. Stella</i>	
Optical properties of nanometer-thick single quantum wells of crystalline silicon	243
<i>D.J. Lockwood, R.L. Williams, and Z.-H. Lu</i>	

A critique of the existing model for excitation exchange between silicon nanoclusters and erbium ions in silica	255
<i>A.J. Kenyon and F. Lucarz</i>	
The optimization of the soft bake step for the Low-k application using novel porous ladder-type HSQ	269
<i>J.-H. Cho, J.-H. Lee, J.-S. Choi, and S.-M. Chon</i>	
Improvement in the efficiency of thermally-induced ultrasonic emission porous silicon by nano-structural control	281
<i>K. Tsubaki, T. Komoda, and N. Koshida</i>	
Fabrication of luminescent porous silicon layers using extremely dilute HF solutions	289
<i>H. Koyama and K. Takemura</i>	
Enhancement of photoluminescence of nanocrystalline porous silicon by high-pressure water vapor annealing	297
<i>B. Gelloz, A. Kojima, and N. Koshida</i>	
Practical wafer-compatible fabrication of nanocrystalline silicon thermally induced ultrasound emitters	303
<i>T. Kihara, T. Harada, and N. Koshida</i>	
 Semiconductor Nanoprocessing and Self-Assembled Structures	
Dielectric spectroscopy on Ga nanoparticles in glassy matrix: negative capacitance effect	313
<i>G.B. Parravicini, A. Stella, M.C. Ungureanu, and R. Kofman</i>	
Nonlinear optical response of nanoparticle single layers: polarization and structural effects	325
<i>S. Achilli, M. Allione, M. Patrini, A. Stella, A.M. Malvezzi, and R. Kofman</i>	
Electrical device structures using Fe_2O_3 nano-particles embedded in polyimide	335
<i>J.H. Kim, E.K. Kim, M.S. Song, and Y.-H. Kim</i>	
Three-dimensional AlGaAs nano-heterostructures using both VLS and MOVPE growth modes	341
<i>K. Tateno, H. Gotoh, and Y. Watanabe</i>	

Fabrication of two-dimensional arrays of graded oxide thin films by the LPI method	351
<i>S. Iizuka, M. Mizuhata, A. Kajinami, and S. Deki</i>	
Encapsulation of semiconducting nanoparticles in amine-functionalized ormosils	363
<i>S.G. Thoma, J.P. Wilcoxon, B.L. Abrams, and A. Sanchez</i>	
Optical study of strain-driven tuning of the emission energy in InAs/InGaAs quantum-dot nanostructures	373
<i>M. Geddo, G. Guizzetti, V. Bellani, M. Patrini, T. Ciabattoni, L. Seravalli, P. Frigeri, M. Minelli, and S. Franchi</i>	
Adsorption of alkanethiol self-assembled monolayers on sputtered gold substrates for atomic nanolithography applications	391
<i>C. O'Dwyer</i>	
Sub-100 nm feature definition optimization using cold Cs beam exposed self-assembled monolayers on Au	411
<i>C. O'Dwyer</i>	
Deposition of low resistivity copper interconnection layers electroplated on electroless plating copper seed layer	431
<i>T. Hara and T. Takachi</i>	
Calculation on solvents and co-solvents of single-wall carbon nanotubes: cyclopyranoses	439
<i>F. Torrens</i>	
Biological Nanostructures, Materials, and Applications	
Use of single-molecule FRET and fluorescence correlation spectroscopy to probe RNA folding and transcriptional initiation	461
<i>P. Stockley*, C. Gell, T. Sabir, R. Leach, C.J. Adams, S. Wigneshveraraj, M. Buck, and D.A.M. Smith</i>	
Interfacing micro-/nano-scale biological and abiological materials for bio/abio hybrid systems	479
<i>J.-W. Kim, S. Tung, and R. Deaton</i>	

Cells, gels and electrochemistry	495
<i>G.H. Pollack*</i>	
The design of self-assembled 3D DNA networks	509
<i>C. Mao, P.E. Constantinou, F. Liu, J. Kopatsch, T. Wang, B. Ding, R. Sha, W.B. Sherman, H. Yan, J.J. Birktoft, H. Zhong, P.S. Lukeman, Y. Pinto, L. Foley, L.A. Wenzler, R. Sweet, M. Becker, and N.C. Seeman*</i>	
Potential use of peptide-conjugated liposomes for optical sensing of specific targets	521
<i>T. Nishiya and C. Toma</i>	
Fabrication of highly ordered nanopatterns of biological molecules using anodic porous alumina	531
<i>F. Matsumoto, M. Harada, K. Nishio, and H. Masuda</i>	
Conformational changes and small word association in proteins	539
<i>M. Cetinkaya, L. Salway, O. Keskin, and M. Demirel</i>	
Biologically derived nanoparticle arrays via a site-specific reconstitution of ferritin and their electrochemistry	547
<i>J.-W. Kim, S.H. Choi, P.T. Lillehei, S.-H. Chu, G.D. Watt, G.C. King, Y. Park, and J.R. Elliot</i>	
Towards an implantable micro PH electrode array for visual prostheses	563
<i>D. Zhou, A. Chu, A. Agazaryan, A. Istomin, and R. Greenberg</i>	
Electrochemical bio-lithography for controlling bionic interfaces	577
<i>M. Nishizawa*, H. Kaji, K. Takoh, and T. Matsue</i>	
Biomedical applications of nanostructured column-void si	585
<i>A.K. Kalkan, M.R. Henry, J.D. Cuiffi, H. Li, D.J. Hayes, and S.J. Fonash</i>	
Effect of additives on bactericidal effect of ZnO solid solutions	601
<i>O. Yamamoto, J. Sawai, and Y. Iida</i>	
Enhancing proton exchange membrane functionality with biomolecules	615
<i>B. Chu, D. Ho, H. Lee, K. Kuo, and C. Montemagno</i>	
Electrochemical measurement of coupled protein functionality across polymer membranes	621
<i>D. Ho, B. Chu, K. Kuo, H. Lee, and C. Montemagno</i>	
Membrane proteins in biomimetic systems	631
<i>H. Lee, D. Ho, B. Chu, K. Kuo, and C. Montemagno*</i>	

Constructing of an imitating nanomotor driven by six ATP-binding RNAs of bacterial virus PHI29	639
<i>D. Su, W.-D. Moll, and P. Guo</i>	

*** Invited Speaker**

AUTHOR INDEX	653
---------------------------	-----

SUBJECT INDEX	659
----------------------------	-----