

2012 International Silicon-Germanium Technology and Device Meeting

(ISTDM 2012)

**Berkeley, California, USA
4 – 6 June 2012**



**IEEE Catalog Number: CFP1271A-PRT
ISBN: 978-1-4577-1864-9**

2012 ISTDM Table of Contents

| | |
|---|-----------|
| Post-Si-CMOS Devices - Scaling FETs to (Beyond?) 10 nm: From Semiclassical to Quantum Models | 1 |
| Massimo V. Fischetti | |
| Single-Shot Measurement of One and Two-Electron Spin States in Si/SiGe Gated Quantum Dots..... | 3 |
| Mark A. Eriksson, Jon R. Prance, Zhan Shi, C. B. Simmons, John King Gamble, Teck Seng Koh, D. E. Savage, M. G. Lagally, L. R. Schreiber, L. M. K. Vandersypen, Mark Friesen, Robert Joynt and S. N. Coppersmith | |
| Integration of III-V on Si for High-Mobility CMOS..... | 5 |
| Niamh Waldron, Gang Wang, Ngoc Duy Nguyen, Tommaso Orzali, Clement Merckling, Guy Brammertz, Patrick Ong, Gillis Winderickx, Geert Hellings, Geert Eneman, Matty Caymax, Marc Meuris, Naoto Horiguchi and Aaron Thean | |
| Low Temperature RPCVD Epitaxial Growth of Si_{1-x}Ge_x and Ge Using Si₂H₆ and Ge₂H₆ | 7 |
| S. Wirths, D. Buca, A. T. Tiedemann, P. Bernardy, B. Holländer, T. Stoica, G. Mussler, U. Breuer and S. Mantl | |
| Very Low Temperature Reduced Pressure - Chemical Vapour Deposition of SiGe, Si_{1-y}C_y and Si:P Layers: Silane versus Disilane..... | 9 |
| J. M. Hartmann, V. Benevent and C. Deguet | |
| Tensile Strained Ge Layers Obtained via a Si-CMOS Compatible Approach..... | 11 |
| Giovanni Capellini, Grzegorz Kozlowski, Yuji Yamamoto, Marko Lisker, Thomas Schroeder, Abdelhamid Ghrib, Malo de Kersauson, Moustafa El Kurdi, Philippe Boucaud and Bernd Tillack | |
| Single Atom Devices in Silicon and Germanium | 13 |
| M. Y. Simmons | |
| Phosphorus Atomic Layer Doping in Ge Using RPCVD | 14 |
| Yuji Yamamoto, Rainer Kurps, Christian Mai, Ioan Costina, Junichi Murota and Bernd Tillack | |
| Enhancement of Phosphorus Dopant Activation and Diffusion Suppression by Fluorine Co-Implant in Epitaxially Grown Germanium..... | 16 |
| Woo-Shik Jung, Ju Hyung Nam, J.-Y. Jason Lin, Seunghwa Ryu, Aneesh Nainani and Krishna C. Saraswat | |
| Extremely Sharp Phosphorus Turn-Off Slope and Effect of Hydrogen on Phosphorus Surface Segregation in Epitaxially-Grown Relaxed Si_{0.7}Ge_{0.3} by RTCVD | 18 |
| Jiun-Yun Li, Chiao-Ti Huang and James C. Sturm | |
| Germanium nMOSFETs with GeO₂ Passivation and n+/p Junctions Formed by Spin-On Dopants..... | 20 |
| Jason Mantey, William Hsu, Mustafa Jamil, Emmanuel U. Onyegam, Emanuel Tutuc and Sanjay K. Banerjee | |
| Analysis of USJ Formation with Combined RTA/Laser Annealing Conditions for 28nm High-K/Metal Gate CMOS Technology Using Advanced TCAD for Process and Device Simulation..... | 22 |
| E. M. Bazizi, S. M. Pandey, C. Wang, I. Jiang, S. Chu, F. Benistant, T. Herrmann, J. Faul, D.-W. Franke, M. Wiatr and M. Horstmann | |
| Characterization of Anisotropic Strain Relaxation after Mesa Isolation for Strained SGOI and SiGe/Si Structure with Newly Developed High-NA and Oil-Immersion Raman Method | 24 |
| Koji Usuda, Daisuke Kosemura, Motohiro Tomita, Atsushi Ogura and Tsutomu Tezuka | |

| | |
|--|-----------|
| Single-Crystalline Elastically Relaxed SiGe Nanomembranes: Substrates for Epitaxial Growth of Defect-Free Strained-Si/SiGe Heterostructures | 26 |
| Deborah M. Paskiewicz, Boy Tanto, Donald E. Savage, Paul G. Evans, Mark A. Eriksson and Max G. Lagally | |
| Epitaxial Growth and Anisotropic Strain Relaxation of Ge_{1-x}Sn_x Layers on Ge(110) Substrates..... | 28 |
| Takanori Asano, Yosuke Shimura, Noriyuki Taoka, Osamu Nakatsuka and Shigeaki Zaima | |
| Clear Experimental Proof of the Compliant Behavior of Free-Standing Si Nanostructures on SOI for Ge Nanoheteroepitaxy by GI-XRD | 30 |
| Thomas Schroeder, Grzegorz Kozlowski, Peter Zaumseil, Yuji Yamamoto, Joachim Bauer, Tobias Schulli and Bernd Tillack | |
| Fabrication of Bonded GeOI Substrates with Thin Al₂O₃/SiO₂ Buried Oxide Layers | 32 |
| Yoshihiko Moriyama, Keiji Ikeda, Yuuichi Kamimuta, Minoru Oda, Toshifumi Irisawa, Yoshiaki Nakamura, Akira Sakai and Tsutomu Tezuka | |
| 0.8nm EOT and High Hole Mobility of Ge P-MISFETs Using HfAlO/GeO_x/Ge Gate Stacks Formed by Plasma Oxidation and Atomic Layer Deposition | 34 |
| Yuuichi Kamimuta, Keiji Ikeda, Minoru Oda, Yoshihiko Moriyama and Tsutomu Tezuka | |
| Uniaxially Strained Ge-Rich SiGe Nanowire Channel Technology for High-Performance CMOS..... | 36 |
| Keiji Ikeda, Minoru Oda, Toshifumi Irisawa, Yuuichi Kamimuta, Yoshihiko Moriyama and Tsutomu Tezuka | |
| Upper Limit of Two-Dimensional Hole Gas Mobility in Ge/SiGe Heterostructures | 38 |
| Takahisa Tanaka, Yusuke Hoshi, Kentarou Sawano, Yasuhiro Shiraki and Kohei M. Itoh | |
| Germanium Channel P-Mosfet with TiO₂/Al₂O₃ Bilayer High-K Gate Stacks and Solutions for Metal/TiO₂ Interface Stability | 40 |
| Liangliang Zhang, Marika Gungi and Paul C. McIntyre | |
| (NH₄)₂S Passivation for High Mobility Germanium-Tin (GeSn) p-MOSFETs..... | 42 |
| Lanxiang Wang, Shaojian Su, Wei Wang, Xiao Gong, Yue Yang, Pengfei Guo, Guangze Zhang, Chunlai Xue, Buwen Cheng, Genquan Han and Yee-Chia Yeo | |
| Monte Carlo Simulations of Ge Implant Free Quantum Well FETs - The Role of Substrate and Channel Orientation | 44 |
| Kah Hou Chan, Craig Riddet, Jeremy R. Watling and Asen Asenov | |
| Ultra-High Hall Mobility (1 x 10⁶ cm²V⁻¹S⁻¹) in a Two-Dimensional Hole Gas in a Strained Germanium Quantum Well Grown by Reduced Pressure CVD | 46 |
| Andy Dobbie, Maksym Myronov, Richard J. H. Morris, Martin J. Prest, James S. Richardson-Bullock, Amna H. A. H. Hassan, Vishal A. Shah, Evan H. C. Parker, Terry E. Whall and David R. Leadley | |
| Selective Epitaxial Phosphorus-Doped SiGe Layers for Short-Channel Effect Reduction..... | 48 |
| Jeongwon Park, Ramachandran Balasubramanian, Amitabh Jain, Deborah Riley, Harpreet Juneja and Satheesh Kuppura | |
| Epitaxial Growth of Si/Si_{1-x}Ge_x Films on Corrugated Substrates for Improved pMOSFET Performance | 50 |
| Saurabh Chopra, Vinh Tran, Bingxi Wood, Byron Ho, Yihwan Kim, C. P. Chang, Satheesh Kuppura and Tsu-Jae King Liu | |

| | |
|---|-----------|
| Mushroom-Free Selective Epitaxial Growth of Si, SiGe and SiGe: B Raised Sources and Drains on FD-SOI MOSFETs | 52 |
| J. M. Hartmann, V. Benevent, J. P. Barnes, M. Veillerot, D. Lafond, J. F. Damlencourt, N. Loubet and D. Dutartre | |
| Morphology Evolution of Epitaxial SiGe in Patterns | 54 |
| Birgit Seiss and Didier Dutartre | |
| Selective Epitaxial Germanium Growth on Silicon - Trench Fill and In Situ Doping | 56 |
| Yi-Chiau Huang, Jiping Li, Miao Jin, Bingxi Wood, Errol Sanchez and Yihwan Kim | |
| Space-Filling Arrays of Three-Dimensional Epitaxial Ge and Si_{1-x}Ge_x Crystals | 58 |
| C. V. Falub, F. Isa, T. Kreiliger, R. Bergamaschini, A. Marzegalli, A. G. Taboada, D. Chrastina, G. Isella, E. Müller, P. Niedermann, A. Dommann, A. Neels, A. Pezous, M. Meduna, L. Miglio and H. von Känel | |
| Recent Progress of Germanium Gate Stack Technology | 60 |
| Akira Toriumi, Choong Hyun Lee, Toshiyuki Tabata, Shengkai Wang, Dandan Zhao, Tomonori Nishimura, Koji Kita and Kosuke Nagashio | |
| High-K Gate Dielectrics for Ge CMOS and Related Memory Devices | 62 |
| Albert Chin, P. C. Chen, C. H. Cheng, Y. H. Wu, X. Y. Liu and J. F. Kang | |
| Band-Edge Electronic States, and Pre-Existing Defects in Remote Plasma Deposited (RPD) GeO₂ and SiO₂ | 64 |
| Gerald Lucovsky, Kun Wu, Jerry L. Whitten and Brian Papas | |
| Effect of Gate Metal Electrode on Chemical Bonding State in Metal/Pr-Oxide/Ge Gate Stack Structure | 66 |
| Kimihiro Kato, Mitsuo Sakashita, Wakana Takeuchi, Noriyuki Taoka, Osamu Nakatsuka and Shigeaki Zaima | |
| Charge Carrier Traffic at Self-Assembled Ge Quantum Dots on Si | 68 |
| M. Kaniewska, O. Engström, A. Karmous, G. Petersson and E. Kasper | |
| SiGe Nanoring Formation | 70 |
| Wen-Hsien Tu, S.-H. Huang and C. W. Liu | |
| Terahertz Imaging Using Strained-Si MODFETs as Sensors | 72 |
| Y. M. Mezziani, E. Garcia-Garcia, J. E. Velazquez-Perez, D. Coquillat, N. Dyakonova, W. Knap, I. Grigelionis and K. Fobelets | |
| Si_{1-x}Ge_x Nanowire Arrays for Thermoelectric Power Generation | 74 |
| Bin Xu, Chuanbo Li, Maksym Myronov, Z. A. K. Durrani and Kristel Fobelets | |
| SiGe Circuits for THz Applications | 76 |
| U. R. Pfeiffer | |
| Enhancement-Mode Buried Strained Silicon Channel Double Quantum Dot with Integrated Electrometer | 78 |
| Nathaniel Bishop, TzuMing Lu, Tammy Pluym, Joel Means, Paul Kotula, Jefferey Cederberg, Lisa Tracy, Jason Dominguez, Michael Lilly and Malcolm Carroll | |
| Strained High Percentage (60%) Boron Doped Silicon-Germanium Alloys - Strain, Dopant Substitutionality, Carrier Concentration, Resistivity, and Microstructure Development | 80 |
| Alexander Reznicek, Thomas N. Adam, Harold Hovel, Joel De Souza, Zhengmao Zhu, Jinghong Li, Stephen W. Bedell, Vamsi Paruchuri and Devendra K. Sadana | |

| | |
|--|------------|
| 14 nm FinFET Stress Engineering with Epitaxial SiGe Source/Drain | 82 |
| Munkang Choi, Victor Moroz, Lee Smith and Oleg Penzin | |
| Strain Engineering of Ultra-Thin Silicon-on-Insulator Structures Using Ion Implant | 84 |
| Yinjie Ding, Ran Cheng, Qian Zhou, Anyan Du, Nicolas Daval, Bich-Yen Nguyen and Yee-Chia Yeo | |
| Benchmarking of Novel Contact Architectures on Silicon and Germanium..... | 86 |
| Khaled Ahmed, Saurabh Chopra, Ashish Agrawal and Suman Datta | |
| Low-Contact-Resistivity Nickel Germanide Contacts on n+Ge with Phosphorus/Antimony Co-Doping and Schottky Barrier Height Lowering..... | 88 |
| Bin Yang, J.-Y. Jason Lin, Suyog Gupta, Arunanshu Roy, Shurong Liang, W. P. Maszara, Yoshio Nishi and Krishna Saraswat | |
| Metal-Insulator-Semiconductor Contacts on Ge: Physics and Applications | 90 |
| J.-Y. Jason Lin, Arunanshu M. Roy, Yun Sun and Krishna C. Saraswat | |
| High Performance Ge Photodetectors and Si Modulators for Integrated Photonics | 92 |
| Laurent Vivien, Delphine Marris-Morini, Melissa Ziebell, Gilles Rasigade, Paul Crozat, Eric Cassan, Jean-Michel Hartmann and Jean Marc Fédéli | |
| Ge/SiGe Multiple Quantum Well Optoelectronic Devices for Silicon Photonics | 94 |
| Papichaya Chaisakul, Delphine Marris-Morini, Mohamed-Said Rouifed, Giovanni Isella, Daniel Chrastina, Jacopo Frigerio, Xavier Le Roux, Samson Edmond, Jean-René Coudeville and Laurent Vivien | |
| Optical Properties of Ge_{1-x}Sn_x Epitaxial Layers with Very High Sn Contents..... | 96 |
| M. Nakamura, Y. Shimura, W. Takeuchi, N. Taoka, O. Nakatsuka and S. Zaima | |
| Demonstration of Electroluminescence from Strained Ge Membrane LED..... | 98 |
| Donguk Nam, David Sukhdeo, Szu-Lin Cheng, Kevin Chih-Yao Huang, Mark Brongersma, Yoshio Nishi and Krishna Saraswat | |
| Room-Temperature Electroluminescence from Tensile Strained Double-Heterojunction Ge Pin LEDs on Si Substrates | 100 |
| Mathias Kaschel, Marc Schmid, Martin Gollhofer, Jens Werner, Michael Oehme and Jörg Schulze | |
| Reabsorption Effects of Direct Band Emission of Ge..... | 102 |
| Y.-Y. Chen, Y.-H. Nien, Y.-H. Chi and C. W. Liu | |
| High Performance FDSOI MOSFETs and TFETs Using SiGe Channels and Raised Source and Drain | 104 |
| C. Le Royer, A. Villalon, D. Cooper, F. Andrieu, J.-M. Hartmann, P. Perreau and B. Prévitali | |
| 200-mm CVD Grown Si/SiGe Resonant Interband Tunnel Diodes Optimized for High Peak-to-Valley Current Ratios | 106 |
| Anisha Ramesh, Paul R. Berger, Bastien Douhard, Wilfried Vandervorst and Roger Loo | |
| Trap-Assisted Tunneling in Vertical Si and SiGe Hetero-Tunnel-FETs | 108 |
| A. Vandooren, D. Leonelli, R. Rooyackers, A. Hikavy, K. Devriendt, R. Loo, M. Demand, G. Groeseneken and C. Huyghebaert | |
| Tuning the Germanium TFET: Device Optimization for Maximum I_{on} | 110 |
| D. Hähnel, I. Fischer, H. Isemann, M. Oehme and J. Schulze | |

| | |
|---|------------|
| A Study on the Static and Dynamic Behavior of the Germanium Electron-Hole Bilayer Tunnel FET: Perspectives for 0.25 V Supply Voltage Applications | 112 |
| Livio Lattanzio, Nilay Dagtekin, Luca De Michielis and Adrian M. Ionescu | |
| Material Properties and Applications of Ge_{1-x}Sn_x Alloys for Ge Nanoelectronics | 114 |
| Osamu Nakatsuka, Yosuke Shimura, Wakana Takeuchi, Noriyuki Taoka and Shigeaki Zaima | |
| CVD Epitaxial Growth of GeSn Opens a New Route for Advanced Sn-Based Logic and Photonics Devices | 116 |
| Benjamin Vincent, Federica Gencarelli, Arul Kumar, Andre Vantomme, Clement Merckling, Dennis Lin, Valeri Afanasiev, Geert Eneman, Trudo Clarysse, Andrea Firrincieli, Alban Gassenq, Wilfried Vandervorst, Johan Dekoster, Roger Loo and Matty Caymax | |
| The SiGeSn Approach Towards Si-Based Lasers | 118 |
| Greg Sun | |
| Strain Control of Si and Si_{1-y}C_y Layers in Si/Si_{1-y}C_y/Si(100) Heterostructures | 120 |
| Tomohira Kikuchi, Masao Sakuraba, Ioan Costina, Bernd Tillack and Junichi Murota | |
| Efficient Si₃H₈ Based Deposition Process Suitable for High Throughput Cl₂ Based SiCP/SiP Cyclic Deposition and Etch Processes | 122 |
| Matthias Bauer, Matthew G. Goodman and Gregory M. Bartlett | |
| NMOS Epitaxy - Defect Free and Low Resistivity Films | 124 |
| Masato Ishii, Xuebin Li, Yihwan Kim and Balasubramanian Ramachandran | |
| Fully Relaxed Epitaxial Silicon Germanium on Silicon (001) with Low Threading Dislocation Density by Ion Implantation and Anneal | 126 |
| Jinping Liu, Johnson Kasim, Paul Lee, Reddy Chandra, Alex See and John Sudijono | |
| Epitaxial Growth of Highly Strained SiGe Layers Directly on Si(001) Substrate | 128 |
| John Halpin, Vishal Shah, Maksym Myronov and David Leadley | |
| Epitaxial Growth of Tensile Strained SiB Alloy on a Si Substrate | 130 |
| Maksym Myronov, Vishal A. Shah, Stephen Rhead and David R. Leadley | |
| Nano-Cleaning of Ge(100) Surface: A STM Study | 132 |
| Kiarash Kiantaj, Tobin Kaufman Osborn and Andrew C. Kummel | |
| The Effect of Dose of H and He Sequential Implantation in Germanium | 134 |
| J. Y. Dai, H. T. Jiang, Z. F. Di and M. Zhang | |
| Passivation and Nucleation of Ge(100) via H₂O and HOOH Dosing | 136 |
| Tobin Kaufman-Osborn, Joon Sung Lee, K. Kiantaj and Andrew C. Kummel | |
| Highly-Crystallized Ge:H Film Growth from GeH₄ VHF-ICP - Crystalline Nucleation Initiated by Ni-Nanodots | 138 |
| Katsunori Makihara, Jin Gao, Kouhei Sakaike, Syohei Hayashi, Hidenori Deki, Mitsuhsa Ikeda, Seiichiro Higashi and Seiichi Miyazaki | |
| Improvement Effect of Electrical Properties in Post-Annealed Wafer-Bonded Ge(001)-OI Substrate | 140 |
| Shuto Yamasaka, Yoshiaki Nakamura, Osamu Yoshitake, Jun Kikkawa, Koji Izunome and Akira Sakai | |
| First-Principles Study of GeO₂/Ge Interfacial Traps and Oxide Defects | 142 |
| Shang-Chun Lu, Hung-Chih Chang, Tien-Pei Chou and Cheewee Liu | |

| | |
|---|------------|
| Simple Fabrication of Suspended Germanium Structures and Their Electrical Properties from High Quality Ge on Si(001) Layers | 144 |
| Vishal A. Shah, Maksym Myronov, Chalermwat Wongwanitwatana, Richard J. H. Morris, Martin J. Prest, James Richardson-Bullock, Evan H. C. Parker, Terry E. Whall and David R. Leadley | |
| Understanding the Role of the Low Temperature Seed Layer in the Growth of Low Defect Relaxed Germanium Layers on (111) Silicon by Reduced Pressure CVD..... | 146 |
| Van Huy Nguyen, A. Dobbie, M. Myronov and D. R. Leadley | |
| Relaxed Germanium on Porous Silicon Substrates | 148 |
| Tobias F. Wietler, Eddy P. Rugeramigabo, Eberhard Bugiel and Enrique Garralaga Rojas | |
| Electrical Characterization of P-Ge_{1-x}Sn_x/P-Ge and P-Ge_{1-x}Sn_x/n-Ge Heterostructures by Numerical Simulation of Admittance Spectroscopy | 150 |
| Bruno Baert, Dao Y Nhi Truong, Osamu Nakatsuka, Shigeaki Zaima and Ngoc Duy Nguyen | |
| Effect of Germanium Concentration on the Dielectric Function of Strained Si_{1-x}Ge_x Films | 152 |
| Manasa Medikonda, Gangadhara R. Muthinti, Thomas N. Adam, Alexander Reznicek, Vamsi Paruchuri and Alain C. Diebold | |
| Stability of Tensile-Strained Ge Studied by Transmission Electron Microscopy | 154 |
| Meng Qi, William A. O'Brien, Chad A. Stephenson, Ning Cao, Brian J. Thibeault and Mark A. Wistey | |
| Characterization of Ge Films on Si(001) Substrates Grown by Nanocontact Epitaxy | 156 |
| Yoshiaki Nakamura, Wataru Ikeda, Jun Kikkawa, Masakazu Ichikawa and Akira Sakai | |
| Reduced Thermal Conductivity in SiGe Alloy-Based Superlattices for Thermoelectric Applications..... | 158 |
| Z. Aksamija and I. Knezevic | |
| The Effect of Gate Length on Channel Strain of Recessed Source/Drain Si_{1-x}C_x..... | 160 |
| Dae-Hong Ko, Sun-Wook Kim, Dae-Seop Byeon, Sangmo Koo, Mijin Jung, Saurabh Chopra, Yihwan Kim and Hoo-Jeong Lee | |
| The Effect of Ge Condensation on Channel Strain during the Post Annealing Process of Recessed Source/Drain Si_{1-x}Ge_x..... | 162 |
| Dae-Hong Ko, Sun-Wook Kim, Sangmo Koo, Mijin Jung and Hoo-Jeong Lee | |
| Silicon vs. Germanium Bulk Planar Junctionless Transistor | 164 |
| Ratul Kumar Baruah and Roy Paily Palathinkal | |
| An Investigation of Growth and Properties of Si Capping Layers Used in Advanced SiGe/Ge Based pMOS Transistors | 166 |
| Andriy Hikavyi, Liesbeth Witters, Jerome Mitard, Wendy Vanherlee, Wilfried Vandervorst, Johan Dekoster, Roger Loo and Matty Caymax | |
| Effects of Electrical Stress on Defects, Lattice Vibrations and Traps in MOS Capacitors Fabricated with Hafnium-Based Gate Dielectrics on SiGe | 168 |
| A. S. Bandyopadhyay, C. Mukherjee, A. K. Ghosh, S. Mallik, T. Das, M. K. Hota and C. K. Maiti | |
| High Breakdown Voltage Schottky Gating of Doped Si/SiGe 2DEG Systems Enabled by Suppression of Phosphorus Surface Segregation..... | 170 |
| Chiao-Ti Huang, Jiun-Yun Li and James C. Sturm | |
| Impact of Strain Engineering on Nanoscale Ge PMOSFET | 172 |
| B.-F. Hsieh, S. T. Chang and M.-H. Huang | |

| | |
|---|------------|
| Improving the On-Resistance of FETs for Power Applications | 174 |
| H. Isemann, I. Fischer, D. Hähnel, M. Oehme and J. Schulze | |
| Si Tunneling Field Effect Transistor with Tunnelling In-Line with the Gate Field | 176 |
| I. A. Fischer, D. Hähnel, H. Isemann, A. Kottantharayil, G. Murali, M. Oehme and J. Schulze | |
| Two-Dimensional Analytical Model of Hetero Strained Ge/Strained Si TFET | 178 |
| Ning Cui, Renrong Liang, Jing Wang and Jun Xu | |
| Process Development toward Enhancement-Mode Strained-Si/SiGe Double Quantum Dot | 180 |
| Tzu-Ming Lu, Nathaniel C. Bishop, Tammy Pluym, Jason Dominguez, John E. Bower, Jeffrey Cederberg, Paul G. Kotula, Lisa A. Tracy, Joel Means, Michael P. Lilly and Malcolm S. Carroll | |
| Study of Electron Transport Characteristics through Self-Aligned Si-Based Quantum Dots..... | 182 |
| Katsunori Makihara, Chong Liu, Mitsuhsa Ikeda and Seiichi Miyazaki | |
| CMOS-Compatible Plasmon Propagation and Detection in Vertical Si and Ge p-i-n Diodes..... | 184 |
| I. A. Fischer, M. Eßlinger, R. Vogelgesang, J.-L. Wu and J. Schulze | |
| Growth of High Power Ge p-i-n Detectors | 186 |
| Phillip E. Thompson, Anthony Davidson III, Mark Twigg, J. Brad Boos, Doe Park and David Tulchinsky | |
| The Optimization of SiGe Hetero-Structure Thin-Film Solar Cell by the Theoretical Calculation and Quantitative Analysis | 188 |
| M.-H. Liao, Y.-Y. Chen, C.-H. Chen, L.-C Chang, C. Yang and C.-F. Hsieh | |
| Valence Subband Structures and Hole Effective Masses of PMOS Inversion Layer in Uniaxial Strained (110) and (111) Silicon Channel | 2 |
| Fan Jun Wei, Chung-Yi Lin, and Shu-Tong Chang | |