

International Semiconductor Device Research Symposium
December 12-14, 2007
Stamp Student Union
University of Maryland
College Park, Maryland, USA

Technical Program

Wednesday, December 12, 2007

WP1: Novel Device Structures - 1:30pm - 3:30pm

Chairperson: Dr. Agis Iliadis, University of Maryland

Meeting Room: Colony Ballroom

- 1:30pm - 1:50pm **WP1-01 Student**
Strained Si n-FET featuring compliant SiGe Stress Transfer Layer (STL) and Si_{0.98}C_{0.02} Source/Drain Stressors for Performance Enhancement
Grace Huiqi Wang, Eng- Huat Toh, Ganesh Samudra, and Yee-Chia Yeo, National University of Singapore, Doran Weeks, Trevan Landin, Jennifer Spear, and Shawn G. Thomas, ASM, and Chih Hang Tung, Institute of Microelectronics
- 1:50pm - 2:10pm **WP1-02 Student**
Superior n-MOSFET Performance by Optimal Stress Design
Ying-Jhe Yang, M. H. Liao, and C. W. Liu, National Taiwan University, and Lingyen Yeh, T.-L. Lee, and M.-S. Liang, Taiwan Semiconductor Manufacturing Company
- 2:10pm - 2:30pm **WP1-03 Student**
Temperature Dependent Transport Characteristics of Multi-Bridge-Channel MOSFETs (MBCFETs)
YoungChai Jung, ByoungHak Hong, SuHeon Hong, and SungWoo Hwang, Korea Univeristy, D. Ahn, University of Seoul, and KeunHwi Cho, Sung-Young Leem, Min-Sang Kim, Eun-Jung Yoon, Dong-Won Kim, and Donggun Park, Samsung Electronics Co.
- 2:30pm - 2:50pm **WP1-04 Student**
New Bi-Directional T-Shaped Triple Gate n-type Poly-Si TFT by a Low-Temperature SLS-Process for Reducing Kink Effects
Sung-Hwan Choi, Hee-Sun Shin, and Min-Koo Han, Seoul National University
- 2:50pm - 3:10pm **WP1-05 Student**
InAs Growth On Submicron (100) SOI Islands for InAs-Si Composite Channel MOSFETs
Bin Wu and Dana Wheeler, University of Notre Dame, Changhyun Yi, Inho Yoon, and April Brown, Duke University, Smita Jha and Thomas Kuech, University of Wisconsin-Madison, and Patrick Fay and Alan Seabaugh, University of Notre Dame
- 3:10pm - 3:30pm **WP1-06 Student**
Self-aligned Inversion N-channel In_{0.2}Ga_{0.8}As/GaAs MOSFET with TiN Gate and Ga₂O₃(Gd₂O₃) Dielectric
Chih-Ping Chen, Tsung-Da Lin, Yao-Chung Chang, Mingwhei Hong, and J. Raynien Kwo, National Tsing Hua University

WP2: Space Application and Extreme Environments I - 1:30pm - 3:30pm

Chairperson: Dr. Robert Walters, NRL

Co-chairperson: Dr. Shahid Aslam, NASA

Meeting Room: Margaret Brent Room

- 1:30pm - 2:05pm **WP2-01 *Invited***
Using SiGe Technology in Extreme Environments
John D. Cressler, Georgia Tech
- 2:05pm - 2:25pm **WP2-02**
Addressing Challenges in Device-Circuit Modeling for Extreme Environments of Space
Ashok Raman, Marek Turowski, and Alex Fedoseyev, CFD Research Corporation (CFDRC), and John D. Cressler, Georgia Institute of Technology
- 2:25pm - 2:45pm **WP2-03**
Effects of Cryogenic Temperatures on Small-Signal MOSFET Capacitances
Akin Akturk and Neil Goldsman, University of Maryland
- 2:45pm - 3:05pm **WP2-04**
Controlled Localized Heating on Integrated Circuits for Cold-Ambient Temperature Applications
Zeynep Dilli, Akin Akturk, and Neil Goldsman, University of Maryland
- 3:05pm - 3:25pm **WP2-05**
SiGe HBT Compact Modeling in Extreme Temperatures
Beth O. Woods, and H. Alan Mantooth, University of Arkansas, and John D. Cressler, Georgia Institute of Technology

WP3: Oxides and Dielectrics I - 1:30pm - 3:30pm

Chairperson: Dr. John Williams, Auburn University

Meeting Room: Juan Jimenez Room

- 1:30pm - 1:50pm **WP3-01**
Quantum Mechanical Study of Gate Leakage Current in Double Gate MOS Structures
Sabbir Ahmed, Md. Kawsar Alam, Ahsan - Ul - Alam, Md. Golam Rabbani, and Quazi Deen Mohd. Khosru, Bangladesh University of Engineering and Technology
- 1:50pm - 2:10pm **WP3-02 *Student***
Organic Field-effect Transistor Channel Perturbation at Two Surfaces through Analyte Binding and Dielectric Charging
C.H. Fu, H.C. Chuang, and T.K. Wang, National Tsing Hua University, and S.F. Huang, W.F. Tsai, and C.F. Ai, Institution of Nuclear Energy Research
- 2:10pm - 2:30pm **WP3-03**
Large Leakage Current Reduction of Silicon Oxide and High-K Oxides Using the Phonon-Energy-Coupling Enhancement Effect
Zhi Chen, Pangleen Ong, and Chandan B. Samantaray, University of Kentucky
- 2:30pm - 2:50pm **WP3-04**
Transport in Metal-Molecule-Silicon Devices
Adina Scott and David Janes, Purdue University
- 2:50pm - 3:10pm **WP3-05 *Student***
InGaAs n-MOS Devices Integrated using ALD-HfO₂/metal Gate Without Surface Cleaning and Interfacial Layer Passivation
Yao-Chung Chang, National Tsing Hua University
- 3:10pm - 3:30pm **WP3-06 *Student****
Interface Dipole Mechanism and NMOS Ni-FUSI Gate Work Function Engineering using Rare-Earth Metal (RE)-Based Dielectric Interlayers
Andy Eu-Jin Lim, Wei-Wei Fang, Fangyue Liu, Lee T. P. Rinus, Ganesh S. Samudra, and Yee-Chia Yeo, National University of Singapore, and Dim-Lee Kwong, Institute of Microelectronics

WP4: Sensors and Biosensors - 1:30pm - 3:30pm

Chairperson: Dr. David Janes, Purdue

Co-chairperson: Dr. Nicholas Fell, ARL

Meeting Room: Charles Carroll Room

- 1:30pm - 1:50pm **WP4-01 Student**
Integrated Solid-State Optoelectronic Sensor System for Biochemical Detection and Quantification
Clement Joseph and David Starikov, University of Houston, Hanae Naoum and Mounir Boukadoum, University of Quebec at Montreal, and Abdelhak Bensaoula, Center for Advanced Materials, University of Houston
- 1:50pm - 2:10pm **WP4-02 Student**
Numerical Modeling of Nanotube Embedded Chemicapacitive Sensors
Tal Rusak, Cornell University, and Akin Akturk and Neil Goldsman, University of Maryland
- 2:10pm - 2:30pm **WP4-03 Student**
Barrier Height Modulation and Dipole Moments in Metal-Molecule-Silicon Diodes
Adina Scott and David B. Janes, Purdue University, and Chad Risko, Mark A. Ratner, Northwestern University
- 2:30pm - 2:50pm **WP4-04 Student**
Au/ZnO-Nanocomposite/(100)Si N-P Heterojunction Diodes For Gas Sensors
Hasina Ali and Agis Iliadis, University of Maryland
- 2:50pm - 3:10pm **WP4-05 Student**
Effects of Oxygen Content on the Structural and Sensing Properties of Y2O3 Sensing Membrane for pH-ISFET Application
Tung-Ming Pan, Kao-Ming Liao, Li-Chen Yen, Yu-Yi Hsieh, and Yue-Zhang Chen, Chang Gung University
- 3:10pm - 3:30pm **WP4-06**
Sensing Characteristics of a Novel MISiC Schottky-Diode Hydrogen Sensor with HfO2 as Gate Insulator
W.M. Tang, C.H. Leung, and P.T. Lai, The University of Hong Kong

WP5: Novel Devices II - 3:45pm - 5:45pm

Chairperson: Dr. Akin Akturk, University of Maryland

Meeting Room: Colony Ballroom

- 3:45pm - 4:05pm **WP5-01**
Simulation of Silicon Nanowire Tunneling Field-Effect Transistors Including Quantum Effects
Alexander Heigl and Gerhard Wachutka, TU München
- 4:05pm - 4:25pm **WP5-02 Student**
Silicon Nano-Wire Impact Ionization Transistors with Multiple-Gates For Enhanced Gate Control and Performance
Eng-Huat Toh, Grace Huiqi Wang, Chen Shen, Ming Zhu, Lap Chan, Chun-Huat Heng, Ganesh Samudra, and Yee-Chia Yeo, National University of Singapore (NUS)
- 4:25pm - 4:45pm **WP5-03**
Device and Circuit Modeling using Novel 3-State Quantum Dot Gate FETs
Faqir Jain, Supriya Karmakar, and Dr. John Chandy, University of Connecticut, and Dr. Evan Heller, RSoft Design Group
- 4:45pm - 5:05pm **WP5-04 Student**
Poly-silicon Quantum Dot Single Electron Transistors
Kwon-Chil Kang, Hong Sun Yang, Byung-Gook Park, and Jong Duk Lee, Seoul National University, Sangwoo Kang, Hynix, and Seung-hwan Song and Jinho Kim, Samsung Electronics
- 5:05pm - 5:25pm **WP5-05 Student**
A Quantum Dot Memory Cell Based on Spin Polaron Formation
Hani Enaya, Yuriy G. Semenov, and Ki Wook Kim, North Carolina State University, and John M. Zavada, U.S. Research Amry Office
- 5:25pm - 5:45pm **WP5-06 Student**
A Novel Capacitor-less 2-T SOI DRAM Cell
Guohe Zhang, Zhibiao Shao, and Zhigang Hu, Xi'an Jiaotong University

WP6: Space Applications and Extreme Environments II - 3:45pm - 5:45pm

Chairperson: Dr. John Cressler, Georgia Tech

Co-Chairperson: Dr. Andrew Keys, NASA

Meeting Room: Margaret Brent Room

- 3:45pm - 4:10pm **WP6-01 Student**
A Comparison of 63 MeV Proton and 10 keV X-ray Radiation Effects in 4H-SiC Enhancement-Mode Vertical Trench JFETs
Stan Phillips, Bongim Jun, Akil Sutton, and John D Cressler, Georgia Institute of Technology, Neil Merrett, Semisouth, Paul W. Marshall, NASA Consultant, and John Williams, Auburn University
- 4:10pm - 4:35pm **WP6-02**
Advanced Rad Hard SRAM Development and Hardware Test Results
Scott Doyle, BAE Systems
- 4:35pm - 5:00pm **WP6-03 Student**
Hydrogen-terminated Boron-doped Diamond Films under Intense Gamma Irradiation
Sanju Gupta, M. Muralikiran, J. Farmer, and C. M. Greenlief, UMC, J. D. Robertson, J. Farmer, UMC & MURR, and X. Han, Brewer Sciences Inc.
- 5:00pm - 5:25pm **WP6-04 Student**
Proton Induced SEU in SiGe Digital Logic at Cryogenic Temperatures
Akil K. Sutton and John D. Cressler, Georgia Institute of Technology, Martin A. Carts, Muniz Engineering, Paul W. Marshall, Consultant to NASA-GSFC, Jonathan A. Pellish, Robert A. Reed, and Michael L. Alles, Vanderbilt University, and Guofu Niu, Auburn University
- 5:25pm - 5:45pm **WP6-05 Student**
High Resistivity Material for Mitigating Linear Energy Transfer Sensitivities in Highly Scaled Cmos Sram Cells
Esau Kanyogoro and Harold Hughes, Naval Research Laboratory, Martin Peckerar, University of Maryland, and Mike Liu, Honeywell Aerospace

WP7: Oxides and Dielectrics II - 3:45pm - 5:45pm

Chairperson: Dr. Patricia Mooney, Simon Fraser University

Meeting Room: Juan Jimenez Room

- 3:45pm - 4:05pm **WP7-01 Student**
Thermal and Humidity Stability of Ge₃N₄ Thin Layers Fabricated by High-Density Plasma Nitridation
Katsuhiro Kutsuki, Gaku Okamoto, Takuji Hosoi, Akitaka Yoshigoe, Yuden Teraoka, Takayoshi Shimura, and Heiji Watanabe, Osaka University
- 4:05pm - 4:35pm **WP7-02 Invited**
Electron Capture and Emission at Interface States in As-Oxidized and NO-Annealed SiO₂/4H-SiC
Patricia M. Mooney and Xudong Chen, Simon Fraser University, Sarit Dhar, Vanderbilt University, Leonard C. Feldman, Vanderbilt University and Rutgers University, and John R. Williams and Tamara Isaacs-Smith, Auburn University
- 4:35pm - 4:55pm **WP7-03 Student**
Impact of Nitridation on Negative and Positive Charge Buildup in SiC Gate Oxides
John Rozen, Sarit Dhar, and Leonard C. Feldman, Vanderbilt University, and John R. Williams, Auburn University
- 4:55pm - 5:15pm **WP7-04 Student**
A High-k Y₂TiO₅ Charge Trapping Layer for High-Density Flash Memory Application
Tung-Ming Pan, Wen-Wei Yeh, Wei-Tsung Chang, Kai-Ming Chen, Jing-Wei Chen, and Kuo-Chan Huang, Chang Gung University
- 5:15pm - 5:35pm **WP7-05 Student**
Novel SONOS-Type Nonvolatile Memory Device with Stacked Tunneling and Charge-Trapping Layers
Kuei-Shu Chang-Liao, Ping-Hung Tsai, Tai-Yu Wu, and Tien-Ko Wang, National Tsing Hua University, and Pei-Jer Tzeng, Cha-Hsin Lin, Lung-Sheng Lee, and Ming-Jin Tsai, Industrial Technology Research Institute

WP8: Modeling Gate Related Effects - 3:45pm - 5:45pm

Chairperson: Dr. Eric Pop, University of Illinois

Meeting Room: Charles Carroll Room

- 3:45pm - 4:05pm **WP8-01 Student**
Effects of Gate-Edge Metamorphosed(GEM) on Device Characteristics of Scaled MOSFETs
Tatsuya Yamada and Nobuyuki Sano, University of Tsukuba
- 4:05pm - 4:25pm **WP8-02 Student**
A Quantum Mechanical Model of Gate Leakage Current for Scaled NMOS Transistors with Ultra-thin High-K Dielectrics and Metal Gate Electrodes
Yanli Zhang, Zhian Jin, Gan Wang, Luckshitha S. Liyanage, and Marvin H. White, Lehigh University
- 4:25pm - 4:55pm **WP8-03 Student**
Impact of Local Poly-Si Gate Depletion on V_{th} Variation in Nanoscale MOSFETs Investigated by 3D Device Simulation
Arifin Tamsir Putra, University of Tokyo, Akio Nishida, Shiro Kamohara, and Takaaki Tsunomura, MIRAI-Selete, and Toshiro Hiramoto, IIS, University of Tokyo & MIRAI-Selete
- 4:55pm - 5:15pm **WP8-04 Student**
Write/Erase Speed Modeling of Scaled SONOS and TANOS
Gan Wang, Nathan Eichenlaub, Zhian Jin, Yanli Zhang, and Marvin H. White, Lehigh University
- 5:15pm - 5:35pm **WP8-05 Student**
Investigation of a MOSCAP Using NEG
Markus Karner, Oskar Baumgartner, Madhi Pourfath, Martin Vasicek, and Hans Kosina, Institute for Microelectronics

WP9: Poster Session - 6pm - 8:30pm

Chairperson: Dr. Neil Goldsman, University of Maryland

Meeting Room: Grand Ballroom

WP9-01 - Novel Device Concepts and Ideas

- WP9-01-01 Student**
Re-configurable All-Optical Devices Based on Electrically Controlled Cross-Polarized Wave Conversion
Montasir Qasymeh and Michael Cada, Dalhousie University and Dr. Jaromir Pistora, VSB-TU Ostrava
- WP9-01-02 Student**
Single Poly EEPROM with N-well and Stacked MIM Capacitor for Control Gate
Zhi-Yuan Cui, Guk-Hwan Kim, Hong-Sik Kim, Hyung-Gyoo Lee, Nam-Soo Kim, Byeong-Seong So, and In-Seok Jung, Chungbuk National University
- WP9-01-03 Student**
On-State and Switching Performance Investigation of Sub-50nm L-DUMGAC MOSFET Design for High-Speed Logic Applications
Rishu Chaujar, Ravneet Kaur, Mridula Gupta, and R.S. Gupta, UDSC, and Manoj Saxena, University of Delhi
- WP9-01-04 Student**
Impact of Laterally Asymmetric Channel and Gate Stack Architecture on Device Performance of Surrounding Gate MOSFET: A Simulation Study
Harsupreet Kaur, Sneha Kabra, and R. S. Gupta, Semiconductor Devices Research Laboratory, and Subhasis Haldar, University of Delhi
- WP9-01-05 Student**
Enhanced Performance in Strained n-FET with Double-Recessed Si:C Source/Drain and Lattice-Mismatched SiGe Strain-Transfer Structure (STS)
Kah-Wee Ang, Hoong-Shing Wong, Ganesh Samudra, and Yee-Chia Yeo, National University of Singapore, and N. Balasubramanian, Institute of Microelectronics, Singapore
- WP9-01-06 Student**
Negative Read Biasing Effects for the Reliable Operation of NOR Type Floating Gate Flash Memory Devices
Seongjae Cho, Il Han Park, Jong Duk Lee, and Byung-Gook Park, Seoul National University
- WP9-01-07**
Fin Width Variation Effects of Program Disturbance Characteristics on NAND Type Bulk Fin SONOS Flash Memory
Il Hwan Cho, Il Han Park, Hyungcheol Shin, Byung-Gook Park, and Jong Duk Lee, Seoul National University and Jong-Ho Lee, Kyungpook National University

WP9-01-08 Student

Fin and Recess Channel MOSFET (FiReFET) for Performance Enhancement of Sub-50 nm DRAM Cell

Jae Young Song, Jong Pil Kim, Sang Wan Kim, Han Ki Jung, Jae Hyun Park, Jong Duk Lee, and Byung-Gook Park, Seoul National University

WP9-01-09 Student

New EEPROM Concept for Single Bit Operation

V. Bidal, A. Regnier, and J.M. Mirabel, ST Microelectronics, R. Laffont and R. Bouchakour, L2MP, and J.R. Raguet, L2MP and ST Microelectronics

WP9-01-10 Student

Optimum Design of Spacer-type Storage Nodes in Recessed Channel Structure for 2-bit/cell SONOS Flash Memory Cell

Jong-Ho Lee, Kyoung-Rok Han, H. Jung, K.-H. Park, Y. M. Kim, B.-K. Choi, and S.-G. Jung, Kyungpook National University

WP9-01-11 Student

FinFETs with Both Large Body Factor and High Drive-Current

Keisuke Takahashi, Arifin Tamsir Putra, Ken Shimizu, and Toshiro Hiramoto, University of Tokyo

WP9-01-12 Student

A Novel SiGe-On-Insulator IMOS Device with Reduced Bias Voltages

Hamed Nematian and Morteza Fathipour, University of Tehran, Hassan S. Hajghasem, Research Institute in Ministry of ICT, and Farzan Farbiz, University of Illinois at Urbana Champaign

WP9-01-13 Student

Comparative Study of p+/n+ gate Modified Saddle MOSFET and p+/n+ gate Bulk FinFETs for Sub-50 nm DRAM Cell Transistors

Jong-Ho Lee, Ki-Heung Park, Kyoung Rok Han, Young Min Kim, and Byung-Kil Choi, Kyungpook National University

WP9-01-14 Student

Application of a Switch-type Comparator in 4-b FLASH ADC

Zhi-Yuan Cui, Hong-Sik Kim, Hyung-Gyoo Lee, Nam-Soo Kim, Byeong-Seong So, and In-Seok Jung, Chungbuk National University

WP9-01-15 Student

Fin Flash Memory Cells with Separated Double Gates

Jang-Gn Yun, Yoon Kim, Il Han Park, Seongjae Cho, Jung Hoon Lee, Doo-Hyun Kim, Gil Sung Lee, Dong Hua Lee, Se Hwan Park, Wonbo Shim Jong-Duk Lee, and Byung-Gook Park, Seoul National University

WP9-01-16 Student

High Capacitance Battery for Powering Distributed Networks Node Devices

Yves Ngu, Zeynep Dilli, Martin Peckerar, and Neil Goldsman, University of Maryland

WP9-01-17

Engineered Surfaces of Multifunctional and Molecular Diamond for Biosensing

Sanju Gupta, UMC

WP9-01-18 Student

Transistor with Moving Gate to Control Electron Flow

Amey Churi, Parag Kurlawala, Leah Magaldi, and Sam Mil'shtein, UMass

WP9-01-19 Student

Rapid Melt Growth of Ge Tunnel Junctions for Interband Tunnel Transistors

Qin Zhang, Surajit Sutar, Thomas Kosel, and Alan Seabaugh, University of Notre Dame

WP9-01-20 Student

Photodetector with Uniform Response in 620nm to 870nm Range

Ameya Shendye, Anup Pillai and Sam Mil'shtein, UMass

WP9-01-21 Student

Alternative MOS Devices for the Manufacture of High-Density ICs

Fabio Alessio Marino and Gaudenzio Meneghesso, University of Padova

WP9-02 - Modeling (Compact and Distributed)

WP9-02-01

Predicting the Reliability of Metal-Insulator-Metal Capacitors (MIMC) in Analog Devices by Modeling
Jagdish Prasad and Bruce Greenwood, AMI Semiconductor

WP9-02-02

Development of Solid State Left-Handed Materials Using Intrinsic Quantum States
Clifford M. Krowne, Naval Research Laboratory

WP9-02-03 Student*

A Quantum Mechanical Mobility Model for Scaled NMOS Transistors with Ultra-thin High-K Dielectrics and Metal Gate Electrodes
Yanli Zhang, Zhian Jin, Gan Wang, Luckshitha S. Liyanage, and Marvin H. White, Lehigh University

WP9-02-04 Student

A Compact Model for Fully Overlapped LDD FD SOI MOSFETs
Guohe Zhang, Zhibiao Shao, and Kai Zhou, Xi'an Jiaotong University

WP9-02-05 Student

Drain Current Model for Undoped Symmetric Double-Gate FETs using a Velocity Saturation Model with Exponent $n=2$
Venkatnarayan Hariharan, Juzer Vasi, and V. Ramgopal Rao, IIT Bombay

WP9-02-06 Student

Analysis of the BSIMSOI Threshold Voltage Model for Short Channel PD-SOI DTMOS
Abimael Jimenez-P., Javier De la Hidalga-W., Luis Hernández-M., and Pedro Rosales-Q., Instituto Nacional de Astrofísica Óptica y Electrónica (INAOE)

WP9-02-07

Wavefunction Penetration Effect on C-V Characteristic of Double Gate MOSFET
Md. Kawsar Alam, Ahsan-Ul-Alam, Sabbir Ahmed, Md. Golam Rabbani, and Quazi Deen Mohd Khosru, Bangladesh University of Engineering and Technology

WP9-02-08

An Analytic, Compact Model of Threshold Voltage Variations for SONOS Memory Cells due to Lateral Migration
Chun-Hsing Shih, Yuan Ze University, and Ji-Ting Liang, National Tsing Hua University

WP9-02-09 Student

An Alternate Approach of Modeling the Direct Tunneling (DT) Current through Multi-gate Stacks in High-K Devices
Zhian Jin, Yanli Zhang, Gan Wang, and Marvin H. White, Lehigh University

WP9-02-10

Modeling Special High Frequency Devices Using Artificial Neural Networks
Josef Dobeš and Ladislav Pospíšil, Czech Technical University in Prague

WP9-02-11 Student

A New Impact Ionization Current Model Applicable to Both Bulk and SOI MOSFETs by Considering Self-lattice-heating
Chengqing Wei, Xing Zhou, and Guan Hueti See, Nanyang Technological University

WP9-02-12

Physics-based Numerical Simulation for Design of High-Voltage, Extremely-High Current Density SiC Power Devices
Leonardo M. Hillkirk and Allen R. Hefner, NIST, and Robert W. Dutton, Stanford University

WP9-02-13 Student

Redesign and Optimization of Semiconductor Devices
Petru Andrei and Liviu Oniciuc, Florida State University

WP9-03 - MEMS

WP9-03-01 Student*

Thermopile Infrared Detector Fabricated with Dry Silicon Etchant XeF₂
Hengzhao Yang, Chinese Academy of Sciences

WP9-03-02 Student

An Adaptive Nonlinear Estimator for the MEMS Capacitive Accelerometer Based on Adaptive Input-Output Feedback Linearization
Faezeh Arab Hassani, Amir Farrokh Payam, and Morteza Fathipour, University of Tehran and Farzan Farbiz, University of Illinois at Urbana Champaign

WP9-03-03 Student

Effect of Squeeze-film Damping on the Dynamic Behavior of Circular and Rectangular Microplates
S.ahmad Tajalli, M.T.Ahmadian, and Hamid Sadeghian, Sharif University of Technology

WP9-04 - Sensors and Biosensors

WP9-04-01

Fabrication of SnO₂/CNTs Formaldehyde Gas Sensor

Jing Wang, Song-Ying Cong, and Zhen-An Tang, Dalian University of Technology, and Bao-Fu Quan, Jilin University

WP9-04-02

Embedded Sensors for Mechanical Stress Monitoring in Copper Damascene Interconnects

R. Delamare, M. Kasbari, S. Blayac, and K. Inal, Centre de Microelectronique de Provence, and Ch. Rivero, STMicroelectronics

WP9-04-03 Student

Functionalized Organic Semiconductor-based Field-effect Transistors for Phosphonate Vapor Detection

Jai Huang, Joseph Miragliotta, Alan Becknell, and Howard E. Katz, The Johns Hopkins University

WP9-04-04 Student

Low Voltage Charge-Balanced Capacitance-Voltage Conversion Circuit for One-Side-Electrode-Type Fluid-Based Inclination

Asrulnizam Bin Abd Manaf and Yoshinori Matsumoto, Keio University

WP9-04-05

Fluorescence Enhancement by Surface Gratings

Christopher C. Davis, Yu-Ju Hung, Ehren Hwang, and Igor Smolyaninov, University of Maryland

WP9-04-06 Student

Nanostructured Substrates for SERS Detection of Serotonin to Indicate Heart Transplant Rejection

Yu-Hsiang Cheng, Yoav Achiam, and Kristine Rosfjord, University of Maryland, and Chang Chang, Drexel University

WP9-04-07 Student

Towards a Smart Adaptive Feedback Circuit for Microsensors

Reza Ghodssi, Xiao Zhu Fan, and Nathan Siwak, University of Maryland

WP9-05 - Oxides and Dielectrics

WP9-05-01 Student

Study of Low-Temperature and Post-Stress Hysteresis in High-k Gate Dielectrics

Shi-Tin Lin, You-Lin Wu, Chang Cheng Yang, Chien-Hung Wu, and Albert Chin, National Chi Nan University

WP9-05-02 Student*

Temperature Dependant Characteristics of Scaled NMOS Transistors with Ultra-thin High-K Dielectrics and Metal Gate Electrodes

Yanli Zhang, Luckshitha S. Liyanage, Gan Wang, Zhian Jin, and Marvin H. White, Lehigh University

WP9-05-03

A Comparative Study Of Mos Memory Structures That Contain Platinum Or Gold Nanoparticles

Sargentis Christos and Tsamakis Dimitris, National Technical University of Athens, and Travlos Anastasios and Giannakopoulos Kostas, National Centre for Scientific Research `Demokritos`

WP9-05-04 Student

The Effects of Plasma Treatment on the Thermal Stability of HfAlO_x Thin Films

Kow-Ming Chang, Bwo-Ning Chen, and Shih-Ming Huang, National Chiao-Tung University

WP9-05-05 Student

Modeling and Characterization of Soft Breakdown Phenomena in MOS Devices with Ultrathin High-k Gate Dielectric

K M Farhan Shahil, Md. Nayeem Arafat, and Q. D. M. Khosru, Bangladesh University of Engineering and Technology (BUET), and M. Rezwana Khan, United International University

WP9-06 - Silicon on Insulator

WP9-06-01

Ballisticity at Very Low Drain Bias in DG SOI Nano-MOSFETs

Carlos Sampedro, Francisco Gamiz, and Andrés Godoy, University of Granada, and Sorin Cristoloveanu, IMEP-INP Grenoble MINATEC

WP9-06-02 Student

The Role of the Temperature Boundary Conditions on the Gate Electrode on the Heat Distribution in 25 nm FD-SOI MOSFETs with SiO₂ and Gate-stack

Dragica Vasileska and Stephen M. Goodnick, Arizona State University, and Katerina Raleva, FEIT

WP9-06-03

The Role of the Temperature Boundary Conditions on the Gate Electrode on the Heat Distribution in 25 nm FD-SOI MOSFETs with SiO₂ and Gate-stack

Yongxun Liu, Takashi Matsukawa, Kazuhiko Endo, Meishoku Masahara, Shin-ichi O'uchi, Kunihiro Sakamoto, Kenichi Ishii, Junichi Tsukada, Yuki Ishikawa, Hiromi Yamauchi, and Eiichi Suzuki, AIST, and Atsushi Ogura and Tetsuro Hayashida, Meiji University

WP9-06-04 Student

STI Mechanical-Stress-Induced Subthreshold Kink Effect of 40nm PD SOI NMOS Device

James B Kuo, Ision Lin, and Vincen Su, National Taiwan University, and Cheng-Tzung Tsai and Chung-Sing Yeh, UMC

WP9-06-05

Non-isothermal Circuit for SOI MOSFETs for Electrothermal Simulation of SOI Integrated Circuits

Ming-Cheng Cheng and Kun Zhang, Clarkson University

WP9-06-06 Student

Technological Constrains of Bulk FinFET Structure in Comparison with SOI FinFET

Mirko Poljak and Tomislav Suligoj, University of Zagreb, and Vladimir Jovanovic, Delft University of Technology

WP9-07 - Organic Materials and Devices**WP9-07-01**

An Enhanced Model for Circuit Simulation of Polymer Photodiodes and Solar Cells

Michael Sams, University Linz, and Christoph Lackner and Timm Ostermann, JK-University

WP9-07-02 Student*

Design of an Organic TFT Pixel Electrode Circuit with Enhanced Current Programming Method for Active-Matrix OLED Displays

Aram Shin, Jong Chan Choi, and Man Young Sung, Korea University

WP9-07-03

Solution Process ZnO and Pentacene Bilayer Transistor: Ambipolar, p-channel and n-channel Operation

Bhola N Pal and Howard E Katz, Johns Hopkins University

WP9-08 - Flexible Electronics**WP9-08-01 Student**

The Operation of a-Si:H TFTs Flexible Electronics on Plastic Substrate

M. H. Lee, Y.-T. Liu, C.-F. Huang, R.-S. Syu, and K.-W. Shen, National Taiwan Normal University, and K.-Y. Ho and P.-C. Chen, Industrial Technology Research Institute (ITRI)

WP9-08-02 Student*

Three-Dimensional Nano Electronics by Dielectrophoretic Assembly on a Flexible Substrate

Chia-Ling Chen, Shih-Hsien Chao, Selvapraba Selvarasah, and Mehmet R. Dokmeci, Northeastern University

WP9-08-03

Chip-In-Flex Technology for Flexible Electronics Applications

Jay Lewis and Doroa Temple, RTI International

WP9-08-04 Student

Deposition of Nanocrystalline Silicon Thin Film without Substrate Heating for Flexible Electronics

Min-Koo Han, Joong-Hyun Park, Sun-Jae Kim, Sang-Myeon Han, and Seung-Hee Kuk, Seoul National University

WP9-08-05

Novel Method for Crystallization of Amorphous Silicon for Poly Silicon Liquid Crystal Displays

Nick Doudoumopoulos and C. Paul Christensen, Potomac Photonics Inc.

WP9-08-06 Student

Vertical Integration using Transfer Printing

Andrew Tunnell, Vince Ballarotto, and Ellen Williams, University of Maryland

WP9-09 - Engineering Education in Electronic Materials and Devices

WP9-09-01

Development of Learning Modules for Semiconductor and Device Courses
Gregory Triplett and David Jonassen, University of Missouri-Columbia

WP9-09-02

Intehration of Physics/Chemistry into Teaching of Electronic Devices in Undergraduate Engineering Technology Programs
Munir Sulaiman, Norfolk State University

WP9-09-03

Wire Drawing Tool for IC and MEMS CAD Optimized for Creating and Editing Wires on Multiples of 45 Degrees
Roger Doering and Masahiro Nakagawa, California State University, East Bay, and Christopher Arnaiz, Kyocera

WP9-09-04

Relating Electrical and Computer Engineering to the High School Classroom
Zeynep Dilli and Neil Goldsman, University of Maryland

WP9-09-05

K-12 Teachers Forum on Microelectronics and Nanotechnology
Thomas Schulte, West Irondequoit High School, and Elaine Lewis, Michael Jackson, and Santosh Kurinec, Microelectronic Engineering

WP9-10 - Space/Extreme Environments

WP9-10-01 Student

Corner Lot Process Variation Effects on High Speed ADCs for Satellite Receivers
Seokjin Kim and Martin M. Peckerar, University of Maryland, and Radmil Elkis, Hughes Network System, LLC

WP9-10-02

Dual Band Ultraviolet AlGaIn Photodetectors for Space Applications
Shahid Aslam, GSFC/NASA

WP9-10-03

Optimization of PIN Photodiodes Parameters for Enhanced
Marcelo Cappelletti, Ariel Cédola, and Eitel Leopoldo Peltzer y Blancá, GEMYDE, UNLP

WP9-10-04

Numerical Simulations of Carrier Transport in Pillar Structured Solid State Thermal Neutron Detector
Adam Conway, Rebecca Nikolic, and Tzu-Fang Wang, Lawrence Livermore National Lab

WP9-11 - Device Network Applications

WP9-11-01 Student

Improved RF Power Harvesting Circuit Design
Thomas Salter, George Metzger, and Neil Goldsman, University of Maryland

WP9-11-02 Student

A Physically designed 2.2 GHz OOK Receiver for Minimum Power Wireless Sensor Network Applications
Bo Yang, Thomas S. Salter Jr., and Neil Goldsman, University of Maryland

WP9-11-03 Student

Design and Implementation of a Device Network Application for Distributed Line-crossing Recognition
Chung-Ching Shen, Roni Kupershtok, Shuvra S. Bhattacharyya, and Neil Goldsman, University of Maryland

WP9-11-04 Student

Low Power Receiver Design Utilizing Weak Inversion and RF Energy Harvesting for Demodulation
Thomas Salter, Bo Yang, and Neil Goldsman, University of Maryland

WP9-11-05 Student

Using Device Characteristics to Obtain a Low-Power Temperature-Insensitive Oscillator for Smart Dust Networks
Yiming Zhai, Bo Yang, Thomas Salter, Neil Goldsman, and Pamela A. Abshire, University of Maryland

WP9-11-06

Integration of Small Antennas for Ultra Small Nodes in Wireless Sensor Networks
Bo Yang, Xi Shao, Quirino Balzano, and Neil Goldsman, University of Maryland

WP9-12 - Advanced Characterization & Testing

WP9-12-01

Relative Intensity Noise Study in the Injection-locked Integrated Electroabsorption Modulator-Lasers
Xiaomin Jin, California Polytechnic State University, and Bennet Yun Tarnng and Shun Lien Chuang, University of Illinois at Urbana-Champaign

WP9-12-02 Student*

Analysis of the Mechanism and Characteristic for Energy Loss in a Gate-Commutated Thyristor
Ru-Liang Zhang, Yong Gao, Xi Chen, and Cai-Lin Wang, Xi'an University of Technology

WP9-12-03 Student

Spatially Resolving the Degradation of SPC thin-film transistors
Kai-Hsiang Chang, Ming-Hsien Lee, Horng-Chih Lin, and Tiao-Yuan Huang, National Chiao Tung University, and Yao-Jen Lee, National Nano Device Laboratories

WP9-12-04 Student

N+ Shallow Junction Formation using Plasma Doping and Rapid Thermal Annealing
Seong Ho Kong, Jeong Eun Kim, Seung Woo Do, and Yong Hyun Lee, Kyungpook National University, and Jae Geun Oh, Sun Hwan Hwang, and Jin Gu Lee, Hynix Semiconductor Inc

WP9-12-05

40 V High Voltage arbitrary waveform Pulse Generator at Automatic Parametric Tester
Yang Pan, James Yu, Jay Kim, and Peter Griffiths, Keithley Instruments, Inc.

WP9-12-06 Student

An Experimental Method Allowing Quantifying and Localizing Failed Cells of an EEPROM CAST After a Retention Test
Claire Le Roux, F. Lalonde, R. Laffont, and G. Micolau, L2MP laboratory, L. Lopez and J.L. Ogier, STMicroelectronics, and A. Firiti, IMS laboratory

WP9-12-07

Dimensional Dependences of the Dynamic-NBTI with 1.2 nm N2O-ISSG Oxynitrides
Chao Sung Lai and D.C. Huang, Chang Gung University, and S.S. Chung, National Chiao Tung University

WP9-13 - Nanoelectronics (CNTs nanowires graphene)

WP9-13-01

Charging Effect in Germanium Nanocrystals Embedded in a SiO₂ Matrix
Yang Liu, T. P. Chen, M. Yang, L. Ding, J. I. Wong, and Dong Gui, Chartered Semiconductor Manufacturing

WP9-13-02 Student*

Spontaneous Emission Modification Analysis of Hexagonally Shaped Nanowire Lasers
Mohammad Azim Karami, Prof. Ali Afzali-Kusha, and Dr.Reza Faraji-Dana, University of Tehran

WP9-13-03

Electrical Sorting of Carbon Nanotube Transistors for Mass-Productible Bio-sensors
Gyoung-Ho Buh, Jea-Ho Hwang, Eun-kyoung Jeon, Byoung-Kye Kim, Hye-Mi So, Dong-Won Park, Hyunju Chang, Ki-jeong Kong, and Jeong-O Lee, Korea Research Institute of Chemical Technology

WP9-13-04

RF Nanoelectromechanical Switch Employing Nanowires
Mahmoud Al Ahmad, Sabrina Habtoun, Christian Bergaud, Monique Dilhan, David Bourrier, and Robert Plana, LAAS-CNRS

WP9-14 - Advanced Processing Technologies

WP9-14-01

Integrating TiN only Bottom Plate Metal-Insulator Metal Capacitor (MIMC) for Contamination Free Manufacturing
Jagdish Prasad and Bruce Greenwood, AMI Semiconductor

WP9-14-02 Student*

Impact of Width Effect on Performance Enhancement in NMOSFETs with Silicon-Carbon Alloy Stressor and Stress CESL
Wei-Ching Wang, Shin-Jiun Kuang, Shu-Tong Chang, Jacky Huang, and C.-F. Huang, National Chung Hsing University

WP9-14-03 Student

Improvement of Charge Programming and Retention by NH₃ Plasma Treatment on Tunnel Oxide for SiO₂/SixGe1-x/SiO₂ Tri-layer Memory Devices
Chao-Sung Lai, Kung-Ming Fan, and Meng-Chi Tsai, Chang Gung University, Yu-Ching Fang, Chung-Shan Institute of Science & Technology, Chi-Fong Ai, Institution of Nuclear Energy Research, and C. R. Chen, Material Science Service Corp.

WP9-14-04 Student

Low Resistivity Hafnium Nitride Thin Films as Diffusion Barriers for Cu Interconnects
Roy Araujo, Xinghang Zhang, and Haiyan Wang, Texas A&M University

WP9-14-05 Student

Enhancement of Critical Dimension of Wet-etched Thick Insulator Holes in Triode CNT-FED Devices
Hsiao-Fen Wei and Ging-Ho Hsiue, National Tsing Hua University, and Chin-Yh Liu, Kuo-Feng Chen, and Kuang-Chung Chen, Industrial Technology Research Institute

WP9-15 - Wide Band-Gap Semiconductors - Materials and Devices

WP9-15-01 Student

A New Self-heating Effects Model for 4H-SiC MESFETs
Quanjun Cao, Yimen Zhang, Yuming Zhang, and Hui Guo, Xidian University

WP9-15-02

1-D Wavefunction Localization and Effective Quantum Wire Behavior Inside QWs Deposited on Textured GaN Materials
Spilios Riyopoulos, SAIC and Theodore Moustakas, Boston University

WP9-15-03 Student

GaN MESFET Growth on Vicinal Sapphire by MOVPE
Chieh-Chih Huang, Shoou-Jinn Chang, Jia-Ching Lin, and Sheng-Po Chang, National Cheng Kung University, and Yi-Cheng Cheng and Wen-Jen Lin, Chung Shan Institute of Science and Technology

WP9-15-04 Student

Gate Dielectric Engineering of Sub Quarter Micron AlGaIn/GaN Metal Insulator Semiconductor Heterostructure Field Effect
Ruchika Aggarwal, Dr. Anju Agrawal, Dr. Mridula Gupta, and Dr. R.S.Gupta, University of Delhi

WP9-15-05 Student

2-Dimensional Simulation and Characterization of Deep-Submicron AlGaIn/GaN HEMTs for High Frequency Applications
Parvesh Gangwani, Ravneet Kaur, Mridula Gupta, and R.S Gupta, UDSC, Sujata Pandey, Amity School of Engineering and Technology, and Subhasis Halder, University of Delhi

WP9-15-06

Hydrodynamic Transport Parameters of Wurtzite ZnO from Analytic- and Full-Band Monte Carlo Simulation
Enrico Furno, Francesco Bertazzi, Michele Goano, and Giovanni Ghione, Politecnico di Torino, and Enrico Bellotti, Boston University

WP9-15-07 Student

Two-Dimensional Analytical Sub-Threshold Modeling and Simulation of Gate Material Engineered HEMT For Enhanced Carrier Transport Efficiency
Sona P.Kumar, Rishu Chaujar, Mridula Gupta, and R.S.Gupta, UDSC, and Anju Agrawal, University of Delhi

WP9-15-08 Student

The Limiting Frontiers of Maximum DC Voltage at the Drain of SiC Microwave Power Transistors in Case of Class-A Power Amplifier.
Sher Azam and Q. Wahab, Linköping University, and R. Jonnson, Swedish Defense Research Agency

WP9-15-09

Plasmon-assisted Power Dissipation in GaN-based 2DEG Channels for Power HFETs
A. Matulionis, J. Liberis, I. Matulioniene, M. Ramonas, and E. Šermukėnis, Semiconductor Physics Institute

WP9-15-10 Student

Interface Study of Atomic-layer-deposited HfO₂/NO-nitrided SiO₂ Gate Dielectric Stack on 4H SiC
Yanqing Wu, Shurui Wang, Yi Xuan, Tian Shen, Peide D. Ye, and James A. Cooper Jr., Purdue University

WP9-15-11 Student

Effect of the Aspect Ratio in AlGaIn/GaN HEMT s DC and Small Signal Parameters
M. A. Huque, S. A. Eliza, T. Rahman, H. F. Huq, and S. K. Islam, The University of Tennessee

WP9-15-12

Evolution of Annealed Undoped Single Crystal ZnO Surfaces and Implications for Schottky Barrier Height
Dr. Diane Elizabeth Pugel, NASA Goddard Space Flight Center, Dr. Shankar Dhar, Dr. R.D. Vispute, Dr. B. Varughese, Dr. I. Takeuchi, and Dr. T. Venkatesan, University of Maryland, and Dr. S.S. Hullavarad, University of Alaska

WP9-15-13 Student*

AlGaIn/GaN HEMT without Schottky Contact on the Dry-etched Region for High Breakdown Voltage
Young-Hwan Choi, Jiyong Lim, In-Hwan Ji, Kyu-Heon Cho, Young-Shil Kim, and Min-Koo Han, Seoul National University

WP9-15-14 Student*

Modeling and Design of a Monolithically Integrated Power Converter on SiC
Liangchun Yu, Kuang Sheng, and Jian H. Zhao, Rutgers University

WP9-15-15

Implant Activation in GaN Using an AlN cap
Carl Hager IV, Dr. Ken A. Jones, M. D. Derenge, Dr. D. J. Ewing, and Dr. T. S. Zheleva, Army Research Laboratory

WP9-15-16 Student

Optical And Electrical Properties Of Al/ZnO-Nanocomposite/Si N-P Diodes
Hasina Ali, Agis Iliadis, Luz Martinez-Miranda, and Saeed Esmaili Sardari, University of Maryland, and Unchul Lee, Army Research Laboratory

WP9-15-17

A New Ultra-Fast Charge Pumping Measurement Technique for NIT Characterization without Relaxation
Daniel B. Habersat and Aivars J. Lelis, U.S. Army Research Laboratory, Moshe Gurfinkel, Tel Aviv University, Justin Horst, J. Kim, Hao Xiong, Charles Cheung, and John S. Suehle, NIST, and Joseph B. Bernstein and Yoram Shapira, University of Maryland

WP9-15-018 Student

Projections of Schottky Barrier Source-Drain Gallium Nitride MOSFET Based on TCAD Simulation and Experimental Results
A. Merve Ozbek, Matthew T. Veety, Michael Morgensen, Lei Ma, M.A.L. Johnson, and Doug W. Barlage, North Carolina State University

WP9-15-19

Pseudo Quantum Dot Behavior Due to Excitonic Transitions in Wide Gap Quantum Wire Lasers: InGaN-AlGaIn and ZnCdSe-
Wenli Huang, US Military Academy and Faquir Jain, University of Connecticut

WP9-15-20 Student

Simultaneous Study of Nickel Based Ohmic Contacts to Si-face and C-face of n-type Silicon Carbide
Reza Ghandi, H-S. Lee, M. Domeij, C-M. Zetterling, and M. Östling, Royal Institute of Technology

WP9-15-21

Evaluation of 4H-SiC DMOSFETs for Power Converter Applications
Ronald Green, Damian Urciuoli, Aderinto Ogunniyi, Gail Koebke, Lauren Everhart, Dimeji Ibitayo, and Aivars Lelis, Army Research Laboratory

WP9-15-22 Student

Effect of P-type Cladding Layer and P++-GaIn Layer of InGaIn/GaIn MQWs Blue LED
Ray-Ming Lin, Chun-Wei Liao, Yung-Hsiang Lin, Cheng-Ying Yen, Pei-Wen Liu, and Yuan-Chieh Lu, Chang Gung University

WP9-15-23 Student

Normally-Off AlGaIn/GaIn HEMTs with InGaIn Cap Layer: A Theoretical Study
Stanislav Vitanov and Vassil Palankovski, Technical Univeristy Vienna

WP9-15-24

Investigation of Nanocrystalline Diamond Films as Ohmic Contacts to GaIn
Marko J. Tadjer, University of Maryland, Karl D. Hobart, Joshua D. Caldwell, Michael A. Mastro, James E. Butler, Dimitri A. Alexson, and Fritz J. Kub, Naval Research Laboratory, and Tatyana I. Feygelson, SAIC, Inc.

WP9-15-25 Student

Thermal Stability of 5 nm Barrier InAlN/GaIn HEMTs
Farid Medjdoub, University of Ulm

WP9-16 - High Frequency/THz Devices**WP9-16-01 Student**

Design and Modeling of a High fT and fmax Heterojunction Bipolar Transistor
Pik-Yiu Chan and Faquir Jain, University of Connecticut

WP9-16-02

Complex Permittivity and Permeability of Single- and Multi-walled Carbon Nanotubes at High Microwave Frequencies and Quantifying Microwave Absorption
Sanju Gupta, University of Missouri, and N. Al Moayed, U. Khan, M. Obol, and M. Afsar, Tufts University

WP9-16-03

Auxiliary Resistive Components for Millimeter to Sub-millimeter Astronomical Observatories
Ari-David Brown, James Chervenak, David Chuss, Ross Henry, Vilem Mikula, and Edward Wollack, NASA Goddard Space Flight Center

WP9-17 - Si/Ge Devices and Materials**WP9-17-01 Student**

Design and Simulation of Strained Si/SiGe Dual Channel MOSFETs
Puneet Goyal, James E. Moon, and Santosh K. Kurinec, Rochester Institute of Technology

WP9-17-02 Student

Impacts of a Buffer Layer and Hi-wafers on the Performance
Yao-Jen Lee and Fu-Kuo Hsueh, National Nano Device Laboratories, Tzu-I Tsai, King-Sheng Chen, Chia-Chen Wan, Horng-Chih Lin, Tien-Sheng Chao, and Tiao-Yuan Huang, National Chiao Tung University, and Jeff Wang, University of Waterloo

WP9-17-03 Student

Reliability of Strained-channel NMOSFETs with SiN Capping Layer on Hi-wafers with a thin LPCVD-TEOS buffer layer
Yao-Jen Lee and Fu-Kuo Hsueh, National Nano Device Laboratories, Tzu-I Tsai, King-Sheng Chen, Chia-Chen Wan, Horng-Chih Lin, Tien-Sheng Chao, and Tiao-Yuan Huang, National Chiao Tung University, and Jeff Wang, University of Waterloo

WP9-17-04 Student*

Strained-Si:C-Source/Drain NMOSFETs for Channel Strain Enhancement

M. H. Lee, K.-W. Shen, R.-S. Syu, C.-F. Huang, and Y.-T. Liu, National Taiwan Normal University, S. T. Chang, National Chung Hsing University, and S. Maikap, Chang-Gung University

WP9-17-05 Student

Impacts of Precursor Flow Rate and Temperature of PECVD-SiN Capping Films on Strained-Channel NMOSFETs

Ching-Sen Lu, Horng-Chih Lin, and Tiao-Yuan Huang, National Chiao Tung University, and Yao-Jen Lee, National Nano Device Laboratories

WP9-17-06 Student

The Effect of Ge Mole Fraction on the Electrical Characteristics of Nanoscale Si/SiGe Hetrostructure pMOSFET

Morteza Fathipour, University of Tehran, Behrooz Abbaszadeh and Fatemeh Kohani, Islamic Azad University Tehran and Farzan Farbiz, University of Illinois at Urbana Champaign

WP9-17-07 Student

Comparisons on Performance Improvement by Nitride Capping Layer among Different Channel Directions nMOSFETs

Yao-Jen Lee and Fu-Kuo Hsueh, National Nano Device Laboratories, Tzu-I Tsai, King-Sheng Chen, Tiao-Yuan Huang, and Horng-Chih Lin, National Chiao Tung University, and Jeff Wang, University of Waterloo

WP9-17-08 Student

Core-shell Germanium-Silicon Nanoparticle Structure for High K Nonvolatile Memory Applications

Hai Liu, Wyatt Winkenwerder, Yueran Liu, Scott K. Stanley, John G. Ekerdt, and Sanjay K. Banerjee, University of Texas

WP9-17-09 Student

Phonon Heat Dissipation in Silicon

Zlatan Aksamija and Umberto Ravaioli, University of Illinois

WP9-18 - Optoelectronics and Photonics**WP9-18-01**

CMOS-compatible Light Emission Device Based on Thin Aluminum Nitride Film Containing Al Nanocrystals

Yang Liu, T. P. Chen, M. Yang, Z. Liu, L. Ding, and S. Zhang, Nanyang Technical University

WP9-18-02

High-gain Optoelectronic Amplification Circuit for Integrated Optical Detector

Weidong Yang, The 24th Institute, CETC and Zhengfan Zhang and Kaicheng Li, National Key Labs of Analog Integrated Circuits

WP9-18-03

Diamondoids in Nanotechnology: First-principles Simulation of Electronic Structure and Nonlinear Optical Response in Adamantane

Thomas George, University of Missouri-St. Louis, Guoping Zhang, Indiana State University, G. Ali Mansoori, University of Illinois at Chicago, and Lahsen Assoufid, Argonne National Laboratory

WP9-18-04 Student

The Electrical Characteristic of Commercial GaN Blue Light Emitting Diode

Noorah Ahmaed AlAhmadi, King Fahd Medical Research Center, Ian Harrison, University of Nottingham UK, and K.H.Badr, Naval Institute, Jeddah

WP9-18-05 Student*

Design and Characterization of a Gain-Enhanced Floating Gate-body Tied Photodetector in Silicon on Sapphire CMOS

Miriam Adlerstein Marwick and Andreas G. Andreou, Johns Hopkins University

WP9-18-06

Integrated CMOS Photo-transistor Array for Visual Light Identifier(ID)

Yoshinori Matsumoto, Takaharu Hara, and Yohsuke Kimura, Keio University

WP9-18-07 Student

Maximum Number of Longitudinal Modes Oscillating in a Quantum Dot Laser due to Spatial Hole Burning

Li Jiang and Levon V. Asryan, Virginia Polytechnic Institute and State University

Thursday, December 13, 2007

TA1: SiC Power Electronic Devices - 8:00am - 10:00am

Chairperson: Dr. Karl Hobart, NRL

Co-chairperson: Dr. David Singh, US Army RDECOM

Meeting Room: Colony Ballroom

- 8:00am - 8:30am **TA1-01 *Invited***
Challenges in SiC Power MOSFET Design
Kevin Matocha, GE Global Research Center
- 8:30am - 8:50am **TA1-02**
Status of 1200V 4H-SiC Power DMOSFETs
Brett A. Hull, Mrinal K. Das, Sei-Hyung Ryu, Sarah K. Haney, Charlotte Jonas, Craig Capell, Len Hall, Jim Richmond, Robert Callanan, Fatima Husna, and Anant Agarwal, Cree, Inc., and Aivars Lelis, Bruce Geil, and Charles Scozzie, Army Research Laboratory
- 8:50am - 9:10am **TA1-03**
Demonstration of 10 kV, 50A 4H-SiC DMOSFET with Stable Subthreshold Characteristics across 25-200 °C Operating Temperatures
Robert S. Howell, Steven Buchhoff, Stephen Van Campen, Ty McNutt, Bettina Nechay, and Marc Sherwin, Northrop Grumman, and Ranbir Singh, GeneSiC
- 9:10am - 9:30am **TA1-04**
Exploring the Design Space of Rugged Seven Lithographic Level Silicon Carbide Vertical JFETs for the Development of 1200-V, 50-A Devices
Victor Veliadis, Megan McCoy, Eric Stewart, Ty McNutt, Steve Van Campen, and Paul Potyraj, Northrop Grumman, and Charles Scozzie, Army Research Laboratory
- 9:30am - 10:00am **TA1-05 *Invited***
Demonstration of the First Power IC on 4H-SiC
Jian Zhao, Y. Zhang, M. Su, and K. Sheng, Rutgers University, and P. Alexandrov and L. Fursin, United Silicon Carbide, Inc.

TA2: Advanced Processing - 8:00am - 10:00am

Chairperson: Dr. Lloyd Harriott, University of Virginia

Meeting Room: Benjamin Banneker Room

- 8:00am - 8:20am **TA2-01**
Computational Lithography for Nanostructure Science and Technology
Martin Peckerar, David Sander, Ankur Srivastava, and Adakou Foli, University of Maryland
- 8:20am - 8:40am **TA2-02**
Impact of Solid Phase Epitaxial Regrowth on Device Performance for Non-Diffusive Flash-Annealed 45nm SOI-MOSFETs
Ralf Illgen, T. Herrmann, S. Flachowsky, W. Klux, and R. Stenzel, University of Applied Sciences Dresden, and T. Feudel, M. Horstmann, L. Herrmann, and N.W. Hauptmann, AMD Saxony LLC & Co. KG
- 8:40am - 9:00am **TA2-03 *Student****
Source/Drain-Extension-Last Process for Incorporating In Situ Doped Lattice-Mismatched Extension Stressor for Enhanced Performance in SOI N-FET
Wong Hoong Shing, Kah-Wee Ang, Lap Chan, Ganesh Samudra, and Yee-Chia Yeo, National University of Singapore, Keat-Mun Hoe, Chih-Hang Tung, and N. Balasubramaniam, Institute of Microelectronics, and Doran Weeks, Trevan Landin, Jennifer Spear, and Shawn G. Thomas, ASM America Inc
- 9:00am - 9:20am **TA2-04 *Student***
Characteristics and Thermal Stability of MOS devices with Metal Gate Stacks of MoN and TiN
Kuei-Shu Chang-Liao, Chong-Hao Fu, and Po-Yen Chien, National Tsing Hua University
- 9:20am - 9:40am **TA2-05**
Characterization of CoxNiyO Bimetallic Oxide Nanoparticles as Charge Trapping Nodes in Nonvolatile Memory Devices
Chin-Lung Cheng, Jin-Tsong Jeng, and Sung-Wei Huang, National Formosa University, Kuei-Shu Chang-Liao and Ping-Hung Tsai, National Tsing Hua University, and Chien-Wei Liu and Bau-Tong Dai, National Nano Device Laboratories
- 9:40am - 10:00am **TA2-06**
Investigation into Key Technologies of 12-bit DA Converter
Weidong Yang, Ruzhang Li, and Yong Liu, NLAIC

TA3: Applications of Nanoscale Devices - 8:00am - 10:00am

Chairperson: Dr. Gary Pennington, ARL

Meeting Room: Juan Jimenez Room

- 8:00am - 8:20am **TA3-01 Student**
An Empirical Study of Dynamic Properties of an Individual Carbon Nanotube Electron Source System
Mahmud Rahman and Norman G. Gunther, Santa Clara University, Bryan P. Ribaya and Darrell L. Niemann, Santa Clara University / NASA Ames Research Center, Joseph Makarewicz, NASA Ames Research Center, and Cattien V. Nguyen, ELORET Corporation / NASA Ames Research Center
- 8:20am - 8:40am **TA3-02**
Metallic Multiwalled Carbon Nanotubes for Microwave Applications
Mahmoud Al Ahmad and Robert Plana, LAAS-CNRS, and Abbes Tahraoui and Bill Milne, University of Cambridge
- 8:40am - 9:00am **TA3-03 Student**
Digitally Addressable Vertically Aligned Carbon Nanofibers for Implementation of Massively Parallel Maskless Lithography
S. A. Eliza, S. K. Islam, T. Rahman, R. Vijayaraghavana, T. Grundman, and B. Blalock, The University of Tennessee, and S. J. Randolph, L. R. Baylor, T. S. Bigelow, W. L. Gardner, M. N. Ericson, and J. A. Moore, Oak Ridge National Laboratory
- 9:00am - 9:20am **TA3-04 Student**
A Bio-Inspired Image Processor for Edge Detection with Single-Electron Circuits
Andrew Kilinga Kikombo, Tetsuya Asai and Yoshihito Amemiya, Graduate School of Information Science and Technology, Hokkaido University Alexandre Schmid and Yusuf Leblebici, Swiss Federal Institute of Technology (EPFL)
- 9:20am - 9:40am **TA3-05 Student**
A Semi Empirical Model of Vertically Aligned Carbon Nanofiber for Field Emission Devices for Circuit Application
Touhidur Rahman, S. A. Eliza, S. K. Islam, and T. R. Grundman, The University of Tennessee, and L. R. Baylor, Oak Ridge National Laboratory

TA4: Statistical and Technology Modeling - 8:00am - 10:00am

Chairperson: Dr. Christoph Jungemann, Bundeswehr Univeristy

Meeting Room: Charles Carroll Room

- 8:00am - 8:20am **TA4-01**
Strain-Induced Anisotropy of Electromigration in Copper Interconnect
Roberto Lacerda de Orio, Hajdin Ceric, and Siegfried Selberherr, Institute for Microelectronics - TUWien
- 8:20am - 8:40am **TA4-02**
A Simple Hardware-Based Statistical Model on 65nm SOI CMOS Technology
Qingqing Liang, Jim Johnson, Joseph Walko, Ming Cai, Yanfeng Wang, Ronald Logan, David Fried, Gregory Freeman, Edward Maciejewski, Edward Nowak, Scott Springer, and Effendi Leobandung, IBM SRDC
- 8:40am - 9:00am **TA4-03 Student**
Predictive Technology Modeling for 32nm Low Power Design
Yu Cao and Wei Zhao, Arizona State University, and Xia Li and Matt Nowak, Qualcomm Inc.
- 9:00am - 9:20am **TA4-04 Student**
Modeling the Thermal Behavior of Chalcogenide based Phase Change Memory cell
Archana Devasia and Santosh Kurinec, Rochester Institute of Technology
- 9:20am - 9:40am **TA4-05 Student**
Sensitivity of Static Noise Margins to Random Doping Variations in 6T SRAM Cells
Liviu Oniciuc, Florida State University, and Petru Andrei, Florida A&M University and Florida State University
- 9:40am - 10:00am **TA4-06 Invited**
Electrical and Thermal Transport in Metallic Single-Wall Carbon Nanotubes
Eric Pop, University of Illinois
- 10:00am - 10:45am **Coffee Break - Grand Ballroom**

TA5: Wide Bandgap Materials - 10:15pm - 12pm

Chairperson: Dr. Charles Eddy, NRL

Meeting Room: Colony Ballroom

- 10:15am - 10:45am **TA5-01 *Invited***
Silicon Carbide Avalanche Photodiodes
Joe C. Campbell, Han-Din Liu, Dion McIntosh, and Xiaogang Bai, University of Virginia
- 10:45am - 11:05am **TA5-02**
Bulk GaN-Based Schottky Rectifier and UV Photodetector
Minseo Park, Y. Zhou, C. Ahyi, D. Wang, C. C. Tin, and J. Williams, Auburn University, and N. M. Williams, A. D. Hanser, E. A. Preble, and K. Evans, Kyma Technologies, Inc.
- 11:05am - 11:25am **TA5-03 *Student****
Ultrathin MBE-Grown AlN/GaN HEMTs with Record High Current Densities
Yu Cao, Tom Zimmermann, David Deen, John Simon, Jeff Bean, Ning Su, Jing Zhang, Patrick Fay, Huili Xing, and Debdeep Jena, University of Notre Dame
- 11:25am - 11:45am **TA5-04 *Student***
Analysis of AlGaIn/GaN HEMT Modulated by Photosystem I Reaction Centers
Sazia Afreen Eliza and Syed K. Islam, The University of Tennessee, and Ida Lee and Elias Greenbaum, Oak Ridge National Laboratory
- 11:45am - 12:05pm **TA5-05**
Influence of Shockley Stacking Fault Propagation and Contraction on Electrical Behavior of 4H-SiC pin diodes and DMOSFETs
Joshua D. Caldwell, Robert E. Stahlbush, Orest J. Glembocki, Karl D. Hobart, Eugene A. Inhoff, and Kendrick X. Liu, Naval Research Laboratory, and Marko J. Tadjer, University of Maryland
- 12:05pm - 12:25pm **TA5-06**
Physical and Optical Characterization of GaN Doped with Neodymium grown by Plasma-Assisted Molecular Beam Epitaxy
Eric D. Readinger, Grace D. Chern-Metcalf, Hongen Shen, Mark Wood, and Michael Wraback, U.S. Army Research Laboratory, and Volkmar Dierolf, Leigh University

TA6: Silicon on Insulator - 10:15am - 12pm

Chairperson: Dr. Dimitris E. Ioannou, George Mason University

Co-Chairperson: Dr. Marvin White, Lehigh University

Meeting Room: Benjamin Banneker Room

- 10:15am - 10:45am **TA6-01 *Invited***
Advanced Semiconductor on Insulator Substrates for LP and HP Digital CMOS applications
Bich-Yen Nguyen, George Celler, Ian Cayrefourcq, Paul Paltruno, and Carlos Mazure, Soitec
- 10:45am - 11:15am **TA6-02 *Invited***
Transport in Ultra-Thin-Body SOI and Silicon Nanowire MOSFETs
Toshiro Hiramoto, Gen Tsutsui, Ken Shimizu, and Masaharu Kobayashi, University of Tokyo
- 11:15am - 11:35am **TA6-03**
Large Current Enhancement in n-MOSFETs with Strained Si on Insulator
Siegfried Mantl, D.Buca, Q.T. Zhao, B. Holländer, S. Feste, and M. Luysberg, Research Center Juelich, IFF, M. Reiche and U. Gösele, Max Planck Institute of Microstructure, W. Buchholtz, A. Wei, and M. Horstmann, AMD Saxony LLC & Co. KG, and R. Loo, and D. Nguyen, IMEC
- 11:35am - 11:55am **TA6-04 *Student***
Design and Optimization of the SOI Field Effect Diode (FED)
Yang Yang and Dimitris E. Ioannou, George Mason University, and Akram A. Salman and Stephen G. Beebe, Advanced Micro Devices
- 11:55am - 12:15pm **TA6-05**
Material Choice for Optimum Stress Memorization in SOI CMOS Processes
Andreas Gehring, AMD Saxony LLC & Co. KG

TA7: Physics of Nanoelectronic Devices - 10:15am - 12pm

Chairperson: Dr. Matthew Ervin, ARL

Meeting Room: Juan Jimenez Room

- 10:15am - 10:35am **TA7-01 Student**
Electromechanical Response of Silicon Nanowires: Bandgap and Effective Mass
Daryoush Shiri, Yifan Kong, Andrei Buin, and M. P. Anantram, University of Waterloo
- 10:35am - 11:05am **TA7-02**
Monte Carlo Simulation of Hot Optical Phonon Decay in a Carbon Nanotube
Gary Pennington, Steve J. Kilpatrick, and Alma E. Wickenden, Army Research Laboratory
- 10:55am - 11:15am **TA7-03 Student**
A Nonparabolicity Model Compared to Tight-Binding: The Case of Square Silicon Quantum Wires
Aniello Esposito, ETH Zurich, Mathieu Luisier, Martin Frey, and Andreas Schenk, Integrated Systems Laboratory, ETH Zurich and Synopsis LLC.
- 11:15am - 11:35am **TA7-04 Student**
A Fast Semi-numerical Technique for the Solution of the Poisson-Boltzmann Equation in a Cylindrical Nanowire
Ashok T. Ramu and Kaustav Banerjee, University of California, Santa Barbara, and Manjeri P. Anantram, University of Waterloo
- 11:35am - 11:55pm **TA7-05**
Enhancement of Hole Mobility Due to Confinement in Small Diameter [110] Silicon Nanowires
Andrei Buin and Manjeri P. Anantram, University of Waterloo, and Amit Verma, Texas A&M University
- 11:55pm - 12:15pm **TA7-06 Student**
Modeling and Analysis of Intrinsic Gate Capacitance for Carbon Nanotube Array Based Devices Considering Screening Effect and Diameter Variations
Chaitanya Kshirsagar and Kaustav Banerjee, University of California, Santa Barbara, and Tom Kopley, Agilent Laboratories

TA8: Compact Modeling - 10:15am - 12pm

Chairperson: Dr. Allen Hefner, NIST

Meeting Room: Charles Carroll Room

- 10:15am - 10:35am **TA8-01**
Closed-Form Physics-Based Models for Threshold Voltage and Subthreshold Slope in FinFETs Including 3D Effects
Alexander Kloes and Michaela Weidemann, University of Applied Sciences Giessen-Friedberg, and Bryan T. Bosworth, Princeton University
- 10:35am - 11:05am **TA8-02 Student**
Physics-Based Modeling of Output Conductance in Nanoscale Bulk MOSFET by Analytically Solving 2D Poisson
Michaela Weidemann and Alexander Kloes, University of Applied Sciences Giessen-Friedberg, and Benjamin Iniguez, Universitat Rovira i Virgili
- 10:55am - 11:15am **TA8-03 Student**
An Analytical Extraction Method for Scalable Substrate Resistance Model in RF MOSFETs
Shih-Ping Kao, Chih-Yuan Lee, Chuan-Yu Wang, Chen-Chai Chang, and Chin-Hsing Kao, National Defense University, and Joseph Der-Son Deng, Chung-Shan Institute of Science and Technology
- 11:15am - 11:35am **TA8-04**
Analytic Diffusion and Drift Components of Drain Current for Double Gate MOSFETs
Chun-Hsing Shih, Yuan Ze University, and Jhong-Sheng Wang, National Tsing Hua University
- 11:35am - 11:55pm **TA8-05 Student**
Temperature Dependent Empirical Modeling of Proximity Diffused Si Esaki Diodes and Memory Circuits
David Pawlik, Sankha Mukeerji, Ray Krom, Shrini Pandharpure, Santosh Kurinec, and Sean Rommel, Rochester Institute of Technology, and Remesh Anisha and Paul Berger, Ohio State University
- 11:55pm - 12:15pm **TA8-06 Student**
Physics Based Current and Capacitance Modeling of Short-Channel Double Gate MOSFETs
Håkon Børli, Sigbjørn Kolberg, and Tor A. Fjeldly, Norwegian University of Science and Technology
- 12pm - 1pm **Box Lunch - Grand Ballroom**

Plenary Session - 1pm - 3:30pm

Chairperson: *Dr. Neil Goldsman, University of Maryland*

Meeting Room: *Colony Ballroom*

PL1 Invited

Challenges and Opportunities of Emerging Nanotechnology for Future VLSI Nanoelectronics
Dr. Robert Chau, Intel Corporation

PL2 Invited

The Ultimate MOSFET and the Limits of Miniaturization
Dr. Mark S. Lundstrom, Purdue University School of Electrical and Computer Engineering

PL3 Invited

The Coming Revolution in RF Electronics
Dr. Mark Rosker, DARPA

3:30pm - 3:45pm *Coffee Break - Grand Ballroom*

TP1: Performance and Reliability of III-Nitride RF Devices - 3:45pm - 5:45pm

Chairperson: *Dr. Mark Rosker, DARPA*

Meeting Room: *Colony Ballroom*

3:45pm - 4:05pm **TP1-01**

0.18 μm Double-Recessed III-Nitride Metal-Oxide Double Heterostructure Field-Effect Transistors
Vinod Adivarahan, Mikhail Gaevski, MD Monirul Islam, Naveen Tipirneni, Bin Zhang, Yanqing Deng, Ziji Yang, and Asif Khan, University of South Carolina

4:05pm - 4:25pm **TP1-02**

Low-Loss High-Power AlInGaN RF Switches
Grigory Simin, University of South Carolina, Xuhong Hu, Jinwei Yang, and Remis Gaska, Sensor Electronic Technology, Inc., and Ziji Yang and Michael Shur, Rensselaer Polytechnic Institute

4:25pm - 4:45pm **TP1-03 Student**

Gate I-V Characteristics Degradation in AlGaIn/AlN/GaN HEMTs
Lingjia Li and Marek Skowronski, Carnegie Mellon University

4:45pm - 5:05pm **TP1-04 Student***

Extraction of Effective Trap Density and Gate Length in AlGaIn/GaN HEMTs Based on Pulsed I-V Characteristics
Hyeonnam Kim and Wu Lu, The Ohio State University

5:05pm - 5:25pm **TP1-05**

Current Collapse and Reliability Mechanisms in GaN HEMTs
Alexei Koudymov and Michael S. Shur, Rensselaer Polytechnic Institute, and Grigory S. Simin, University of South Carolina

TP2: Si/Ge Materials and Devices - 3:45pm - 5:45pm

Chairperson: *Dr. Paul Berger, Ohio State University*

Meeting Room: *Benjamin Banneker Room*

3:45pm - 4:05pm **TP2-01**

Monocrystalline SiGe for High-performance Uncooled Thermistor
Stanley G. E. Wissmar, C. Vieider, and J.Y. Andersson, Acreo AB, M. Kolahdouz, and H.H. Radamsson, Royal Institute of Technology, and Y. Yamamoto, and B. Tillack, IHP

4:05pm - 4:35pm **TP2-02 Invited**

Carrier-Transport-Enhanced CMOS using New Channel Materials and Structures
Shinichi Takagi and Mitsuru Takenaka, The University of Tokyo, and Toshifumi Irisawa, Tsutomu Tezuka, Shu Nakaharai, Koji Usuda, Norio Hirashita, and Naoharu Sugiyama, MIRAI-ASET

4:35pm - 4:55pm **TP2-03**

Simplified Si Resonant Interband Tunnel Diodes
Phillip E. Thompson and Glenn Jernigan, Naval Research Laboratory, Si-Young Park, Ronghua Yu, R. Anisha, and Paul Berger, Ohio State University, and David Pawlik, Raymond Krom, and Sean Rommel, Rochester Institute of Technology

- 4:55pm - 5:35pm **TP2-04 Student***
 Anneal Time Study of Si Resonant Interband Tunnel Diodes Grown by Low-Temperature Molecular-Beam Epitaxy
R. Krom, D. Pawlik, S. Mukherjee, S. Pandharpure, S. K. Kurinec, and S. L. Rommel, Rochester Institute of Technology, S-Y Park, R. Yu, R. Anisha, and P. R. Berger, Ohio State University, and P. E. Thompson, Naval Research Laboratory
- 5:35pm - 5:55pm **TP2-05 Student**
 Germanium Profile, Graduality and Base Doping Level Influences in the Performance of SiGe HBT
Eloy Ramirez-Garcia, Nicolas Zerounian, and Frederic Aniel, Universite Paris Sud XI, Mauro A. Enciso Aguilar, Instituto Politecnico Nacional, and Benoit Barbalat, Pascal Chevalier, and Alain Chantre, STMicroelectronics

TP3: MEMS - 3:45pm - 5:45pm

Chairperson: Dr.Reza Ghodssi University of Maryland

Meeting Room: Juan Jimenez Room

- 3:45pm - 4:05pm **TP3-01**
 NEMS Switch with 30 nm Thick Beam and 20 nm High Air Gap for High Density Non-Volatile Memory Applications
Min-Sang Kim, Samsung Electronics Co., and Weon Wi Jang, KAIST
- 4:05pm - 4:25pm **TP3-02 Student***
 Toward Smart Micromachines with Integrated Feedback Control
Reza Ghodssi, Mustafa Ilker Beyaz, and Nima Ghalichechian, University of Maryland
- 4:25pm - 4:55pm **TP3-03 Invited**
 Applications of BioMEMS in Cell-Related Research
Svetlana Tatic-Lucic, Lehigh University
- 4:55pm - 5:15pm **TP3-04 Student**
 Amorphous SiC as a Structural Layer in Microbridge-based RF MEMS Switches for Use in Software-Defined Radio
Rocco J. Parro, Sloan Zimmerman, and Christian A. Zorman, Case Western Reserve University, and Maximilian C. Scardelletti and Nicholas C. Varaljay, NASA Glenn Research Center at Lewis Field
- 5:15pm - 5:35pm **TP3-05 Student**
 Low Frequency Noise Measurement of Three-Axis Surface Micro-Machined Silicon Capacitive Accelerometer
Faisal Mohd-Yasin, DS Ong, and HT Chuah, Multimedia University, and DJ Nagel and CE Korman, The George Washington University

TP4: Device Simulations - 3:45pm - 5:45pm

Chairperson: Dr. Tibor Grasser, TU Vienna

Meeting Room: Charles Carroll Room

- 3:45pm - 4:05pm **TP4-01**
 Ballisticity of the Linear Response Transport in Nanometric Silicon Devices
Christoph Jungemann, Bundeswehr University
- 4:05pm - 4:25pm **TP4-02 Student***
 Efficient Simulation of Hole Transport in Strained Si and SiGe on Insulator Inversion Layers
Anh-Tuan Pham, Matthias Klawitter, and Bernd Meinerzhagen, Technical University of Braunschweig, and Christoph Jungemann, Bundeswehr University
- 4:25pm - 4:45pm **TP4-03**
 Two-band k.p Model for the Conduction Band in Silicon: Impact of Strain and Confinement on Band Structure and Mobility
Viktor Sverdlov, Gerhard Karlowatz, Siddhartha Dhar, Hans Kosina, and Siegfried Selberherr, Institute for Microelectronics, TU Wien
- 4:45pm - 5:05pm **TP4-04**
 Smart-Power Device Model Coupling Compact, Distributed and Logic Level Description
Alberto Castellazzi and Mauro Ciappa, Swiss Federal Institute of Technology Zurich (ETH Zurich)
- 5:05pm - 5:25pm **TP4-05 Student***
 Impact of Source to Drain Tunneling on the Ion/Ioff trade-off
Quentin Raffay, Raphaël Clerc, Gérard Ghibaudo, and Georges Pananakakis, IMEP - Minatec - INPG
- 5:25pm - 5:45pm **TP4-06 Student**
 A 2D-Non-Parabolic Six Moments Model
Martin Vasicek, TU Vienna
- 6:15pm - 9:15pm **Symposium Awards Banquet - Grand Ballroom**

Friday, December 14, 2007

FA1: SiC MOS Technology and Issues - 8am - 10am

Chairperson: Dr. Aivars Lelis, ARL

Co-chairperson: Dr. Anant Agarwal, CREE

Meeting Room: Colony Ballroom

- 8:00am - 8:30am **FA1-01 *Invited***
Technical Challenges in Commercial SiC Power MOSFETs
Anant Agarwal, Cree Inc.
- 8:30am - 8:50am **FA1-02**
Time Dependence of Bias-Stress Induced Threshold-Voltage Instability Measurements
Aivars Lelis, Dan Habersat, Ron Green, and Aderinto Ogunniyi, U.S. Army Research Laboratory, Moshe Gurfinkel, and John Suehle, NIST, and Neil Goldsman, University of Maryland
- 8:50am - 9:10am **FA1-03 *Student***
Electrically Detected Magnetic Resonance Studies of Processing Variations in 4H SiC Based MOSFETs
Corey Cochrane and Patrick Lenahan, Penn State University, and Aivars Lelis, Army Research Lab
- 9:10am - 9:25am **FA1-04 *Student***
Atomic Scale Defects in 4H SiC/SiO₂ using Electron Spin Resonance
Aaron Rape and Patrick Lenahan, Penn State University, and Aivars Lelis, Army Research Lab
- 9:25am - 9:45am **FA1-05 *Student***
Characterization of the Origin of Band States in the SiC/SiO₂ Interface
Trinity L. Biggerstaff, and Ryan D. McClellan, North Carolina State University, A. Lelis, and T. Zheleva, Army Research Laboratory, Sarah Haney and Anant Agerwal, Cree, Inc., Wolfgang Windl, Ohio State University, and Sanwu Wang, University of Tulsa
- 9:45am - 10:00am **FA1-06 *Student***
High Temperature High Field Numerical Modeling and Experimental Characterization of 4H-SiC MOSFETs
Siddharth Potbhare and Neil Goldsman, University of Maryland, and Aivars Lelis, US Army Research Laboratory

FA2: High Frequency I - 8am - 10am

Chairperson: Dr. Michael Shur, RPI

Meeting Room: Benjamin Banneker Room

- 8:00am - 8:30am **FA2-01 *Invited***
Picosecond Electrical Soliton Oscillators & THz Electronics
Donhee Ham and Omer Ozgur Yildirim, Harvard University
- 8:30am - 9:00am **FA2-02 *Invited***
Conduction-Band Spin Splitting Effects in Staggered-Bandgap Structures
Weidong Zhang, North Carolina State University, and Dwight Woolard, U.S. Army Research Office
- 9:00am - 9:20am **FA2-03**
Plasma wave FET for sub-wavelength THz imaging
Dmitry Veksler, A. V. Muraviev, T. A. Elkhatib, K. N. Salama, and M. S. Shur, Rensselaer Polytechnic Institute
- 9:20am - 9:40am **FA2-04**
Selective Doping and Optimization of InGaN Channel and InGaN Back-barrier in Deep Submicron GaN Heterojunction Field Effect Transistor with a Recessed Gate
Yanqing Deng, Vinod Adivarahan, and Asif Khan, University of South Carolina
- 9:40am - 10:00am **FA2-05**
Tunable Optically Pumped High Power Terahertz Laser on Cyclotron Resonance in Semiconductors
Dmitry Veksler, Andrei Muraviev, and Michael Shur, Rensselaer Polytechnic Institute, and Valery N. Shastin, Institute for Physics of Microstructures

FA3: Manufacturing Issues of Nanoelectronic Devices - 8am - 10am

Chairperson: Dr. Keith Perkins, NRL

Meeting Room: Juan Jimenez Room

- 8:00am - 8:20am **FA3-01 Student***
Silicon Nanowire Memory Application Using Hafnium Oxide Charge Storage Layer
Xiaoxiao Zhu, Qiliang Li, Dimitris E. Ioannou, and Shuo Yang, George Mason University, and William A. Kimes, John S. Suehle, James E. Maslar, Hao D. Xiong, and Curt A. Richter, NIST
- 8:20am - 8:40am **FA3-02 Student**
Performance Analysis of Multi-Walled Carbon Nanotube Based Interconnects
Hong Li and Kaustav Banerjee, University of California, Santa Barbara, and Wen-Yan Yin and Jun-Fa Mao, Shanghai Jiao Tong University
- 8:40am - 9:00am **FA3-03**
Single Charge Detection Using Single-Walled Carbon Nanotube Single-Hole Transistor
Takafumi Kamimura, Yasuhide Ohno, and Kazuhiko Matsumoto, Osaka University
- 9:00am - 9:20am **FA3-04 Student**
Dynamic C-V and G-V Characteristics of Metal-Insulator-Semiconductor Capacitor with Au Nanocrystals and high-K Tunneling Layer
Kuang-Hao, Chiang, H. C. Wu, and C.H. Kuan, National Taiwan University, P. S. Chen and Ming Hsin, University of Science and Technology, and C. S. Tsai, University of California
- 9:20am - 9:40am **FA3-05**
Impact of High- κ Dielectric and Metal Nanoparticles in Simultaneous Enhancement of Programming Speed and Retention Time of Nano-Flash Memory
Akeed A. Pavel, Mehjabeen A. Khan, Phumin Kirawanich, and Naz Islam, University of Missouri-Columbia
- 9:40am - 10:00am **FA3-06 Student**
Silicon Nanowire Fabrication Using Novel Hydrogenation-Assisted Deep Reactive Ion Etching
Amir Sammak, Soheil Azimi, Shams Mohajerzadeh, Bahar Khadem-Hosseini, and Babak Fallah-Azad, University of Tehran
- 10:00am - 10:15am **Coffee Break - Grand Ballroom**

FA4: Organic Materials and Devices - 8am - 10am

Chairperson: Dr. David Gundlach, NIST

Meeting Room: Charles Carroll Room

- 8:00am - 8:20am **FA4-01**
Achieving High Mobilities in Solution-Processable Organic FETs by Minimizing Contact Effects
Behrang H. Hamadani and David J. Gundlach, NIST, and Iain McCulloch, and Martin Heeney, Merck Chemicals
- 8:20am - 8:40am **FA4-02**
Bottom Contact Organic Transistor Based On Air-Stable N-Type F15-Ntedi
Jia Sun, Kevin See and Howard E. Katz, Johns Hopkins University
- 8:40am - 9:00am **FA4-03**
Influence of the Film Microstructure on the Electronic Properties and Flicker Noise in Organic Thin Film Transistors
Oana D. Jurchescu, Sungkyu K. Park, and Thomas N. Jackson, Penn State University, Behrang H. Hamadani, Hao D. Xiong, Neil M. Zimmerman, and David J. Gundlach, NIST, and Sankar Subramanian and John Anthony, University of Kentucky
- 9:00am - 9:20am **FA4-04 Student**
A Novel Gated Transmission Line Method for Organic Thin Film Transistors
Keum-Dong Jung, Byeong-Ju Kim, Yoo Chul Kim, Byung-Gook Park, Hyungcheol Shin, and Jong Duk Lee, Seoul National University
- 9:20am - 9:40am **FA4-05 Student***
Metal Molecule GaAs Devices using Redox-Active Organic Self-Assembled Monolayers
Rand K. Jean, Bin Xi, Tong Ren, and David B. Janes, Purdue University
- 9:40am - 10:00am **FA4-06 Student**
Thin Film Microstructure of Solution Processable Pyrene-based Small Molecules for Electronic Applications
Leah Lucas and Ghassan E. Jabbour, Arizona State University, Bilal R. Kaafarani, American University of Beirut, and Dean M. DeLonchamp, Lee J. Richter, R. Joseph Kline, and Daniel M. Fischer, NIST

FA5: Wide Bandgap Materials - 10:15am - 12:15pm

Chairperson: Dr. Charles Eddy, NRL

Co-chairperson: Dr. Karl Hobart, NRL

Meeting Room: Colony Ballroom

- 10:15am - 10:45am **FA5-01 Invited**
Stress and Morphology Evolution during the Heteroepitaxial Growth of Group III-Nitrides
Joan Redwing, Jeremy Acord, Ian Manning, Srinivasan Raghavan, Xiaojun Weng, Elizabeth C. Dickey, and D.W. Snyder, Penn State University
- 10:45am - 11:05am **FA5-02**
The Influence of Substrate Atomic Step Morphology on Threading Dislocation Distributions in III-Nitride Films
Yoosuf N. Picard, Joshua D. Caldwell, Mark E. Twigg, Chip R. Eddy Jr., Michael A. Mastro, Richard L. Henry, and Ronald T. Holm, Naval Research Lab, Philip G. Neudeck, NASA Glenn Research Center, Andrew J. Trunek, OAI, and J. Anthony Powell, Sest Inc.
- 11:05am - 11:25am **FA5-03**
Etch Rates for Si-face 4H-SiC using H₂ and a C₃H₈ Partial Pressure
Brenda L. VanMil, Kok-Keong Lew, Rachael L. Myers-Ward, Ronald T. Holm, D. Kurt Gaskill, and Charles R. Eddy, Jr., US Naval Research Laboratory
- 11:25am - 11:45am **FA5-04**
H₂ Etching and Epitaxial Growth on 4H-SiC Boule Domes
Rachael L. Myers-Ward, Kok-Keong Lew, Brenda L. VanMil, Charles R. Eddy, and D. Kurt Gaskill, Naval Research Laboratory, and Colin E. Wood, Office of Naval Research
- 11:45am - 12:05pm **FA5-05 Student**
Triangular Shaped Defects Limiting Reverse Blocking Performance of 4H Silicon Carbide High Power Junction Barrier Schottky Devices
Ronen Berechman and Marek Skowronski, Carnegie Mellon University, and Qingchun Zhang, CREE, Inc.

FA6: High Frequency II - 10:15am - 12:15pm

Chairperson: Dr. Dwight Woolard, ARO

Meeting Room: Benjamin Banneker Room

- 10:15am - 10:45am **FA6-01 Invited**
Milliwatt THz Output Power from a Photoconductive Switch
Elliott R. Brown, Physical Domains, LLC
- 10:45am - 11:15am **FA6-02 Invited**
Plasma Waves in Graphene-Based Heterostructures and their Terahertz Device Applications
Victor Ryzhii, Akira Satou, Maxim Ryzhii, and Fedir Vasko, University of Aizu, and Taiichi Otsuji, Tohoku University
- 11:15am - 11:35am **FA6-03 Student**
80nm In_{0.52}Al_{0.48}As/In_{0.53}Ga_{0.47}As/InAs_{0.3}P_{0.7} Composite Channel HEMT with an fT of 280GHz
Wu Lu, Dongmin Liu, Mantu Hudait, Yong Lin, and Steven A. Ringel, The Ohio State University
- 11:35am - 11:55am **FA6-04**
Impact of Lateral Engineering on the Logic Performance of Sub-50 nm InGaAs HEMTs
Dae-Hyun Kim and Jesus A. del Alamo, MIT

FA7: Novel Nanoscale Devices and Device Technologies - 10:15am - 12:15pm

Chairperson: Dr. Glenn Jernigan, NRL

Meeting Room: Juan Jimenez Room

- 10:15am - 10:45am **FA7-01**
Gallium Nitride Nanowire Devices - Fabrication, Characterization, and Transport Properties
Abhishek Motayed and A. V. Davydov, NIST, and S. N. Mohammad and J. Melngailis, University of Maryland
- 10:45am - 11:15am **FA7-02 Student***
Epitaxially Grown Graphene Field-Effect Transistors with Electron Mobility Exceeding 1500 cm²/Vs and Hole Mobility Exceeding 3400 cm²/Vs
Yanqing Wu, Peide D. Ye, Michael A. Capano, Tian Shen, Yi Xuan, Yang Sui, Minghao Qi, and James A. Cooper Jr., Purdue University
- 11:15am - 11:35am **FA7-03 Student**
Top-gated Field Effect Transistor using Thermally Oxidized Silicon Nanowires Synthesized by Vapor-liquid Solid Method
Tsung-ta Ho, Yanfeng Wang, Bangzhi Liu, Sarah Eichfeld, Kok-Keong Lew, Suzanne Mohnney, Joan Redwing, and Theresa Mayer, Pennsylvania State University
- 11:35am - 11:55am **FA7-04 Student**
Transparent Organic Field-Effect Transistors with Carbon Nanotube Electrodes
Adrian Southard, Vinod Kumar Sangwan, Ellen D. Williams, and Michael S. Fuhrer, University of Maryland
- 11:55am - 12:15pm **FA7-05 Student**
Light Emitting Diodes on Glass and Silicon Substrates Fabricated Using Novel Low Temperature Hydrogenation-Assisted Nano-Crystallization of Silicon Thin Films
Babak Fallah-Azad, Yaser Abdi, Shamsoddin Mohajezadeh, Mehdi Jamei, and Pouya Hashemi, University of Tehran, and M. D. Robertson, Acadia University
- 11:55am - 12:15pm **FA7-06 Student**
Fabrication and Characterization of Suspended Carbon Nanotubes
Vinod Kumar Sangwan, Vincent W. Ballarotto, Michael S. Fuhrer, and Ellen D. Williams, University of Maryland

FA8: Flexible Electronics - 10:15am - 12:15pm

Chairperson: Dr. Stephen Kilpatrick, ARL

Meeting Room: Charles Carroll Room

- 10:15am - 10:45am **FA8-01 Invited**
Carbon Nanotubes for High Performance Flexible Electronics
John A. Rogers, University of Illinois
- 10:45am - 11:05am **FA8-02**
Organic and Carbon-based Electronics Printed onto Flexible Substrates
D. R. Hines, A. E. Southard, V. Sangwan, J-H. Chen, M. S. Fuhrer, and E. D. Williams, University of Maryland
- 11:05am - 11:35am **FA8-03 Invited**
The US Display Consortium Program on Flexible, Printed, and Organic Electronics
Mark Hartney, US Display Consortium
- 11:35am - 11:55am **FA8-04 Student***
Mechanically Strained Laser Crystallized Poly-Silicon Thin Film Transistors and Ring Oscillators Fabricated on Stainless Steel
Abbas Jamshidi-Roudbari, Po-Chin Kuo, and Miltiadis Hatalis, Lehigh University
- 11:55am - 12:15pm **FA8-05**
Improvement of the Performance of Strained 0.13 um MOSFETs Mounted on Flexible Plastic Substrates
Sean McAlister and L. Kao, Chang Gung University, and C.C. Liao and Albert Chin, National Chiao-Tung University
- 12:15pm - 1:15pm **Lunch (on your own)**

FP1: Photodetectors and Memory Devices - 1:15pm - 3:15pm

Chairperson: Dr. Nibir Dhar, ARL

Meeting Room: Colony Ballroom

- 1:15pm - 1:35pm **FP1-01**
Non-equilibrium Operation of Arsenic Diffused Long-wavelength Infrared HgCdTe Photodiodes
Priyalal S. Wijewarnasuriya and Nibir K. Dhar, U.S. Army Research Laboratory
- 1:35pm - 1:55pm **FP1-02 Student**
A Type-II Near-Infrared Detector with Very High Stable Gain and Low Noise at Room Temperature
Omer Gokalp Memis, Wei Wu, Dibyendu Dey, Alex Katsnelson, and Hooman Mohseni, Northwestern University
- 1:55pm - 2:15pm **FP1-03**
Implementation and Study of Photovoltaic Cells Based on InP Lattice-Matched InGaAs and InGaAsP
Mahieddine Emziane, Richard Tuley, and Robin J. Nicholas, University of Oxford, and Dave C. Rogers, Paul J. Cannard, and Jeevan Dosanjh, Centre for Integrated Photonics
- 2:15pm - 2:35pm **FP1-04 Student**
Characterization of Scaled MANOS Nonvolatile Semiconductor
Gan Wang, Nathan Eichenlaub, Yanli Zhang, and Marvin H. White, Lehigh University
- 2:35pm - 2:55pm **FP1-05 Student**
Vertical AND (V-AND) Array: High Density, High Speed, and Reliable Flash Array
Ilhan Park, Seongjae Cho, Jung Hun Lee, Gil Seong Lee, Doo-Hyun Kim, Jang-Gn Yoon, Yoon Kim, Sangwoo Kang, Daewoong Kang, Jong Duk Lee, and Byung-Gook Park, Seoul National University
- 2:55pm - 3:15pm **FP1-06**
Ge/Si hetero-nanocrystal MOSFET memories
Jianlin Liu and Bei Li, University of California, Riverside

FP2: Optoelectronic: New Detectors and Structures - 1:15pm - 3:15pm

Chairperson: Dr. Christopher Davis, University of Maryland

Meeting Room: Benjamin Banneker Room

- 1:15pm - 1:35pm **FP2-01**
Gate-Controlled Photodetector in PIN Technology for Distance Measurements
Alexander Nemecek and Horst Zimmermann, Vienna University of Technology
- 1:35pm - 1:55pm **FP2-02 Student**
A High Voltage PMOS Transistor for Quenching of Geiger-mode Avalanche Photodiodes in Deep Submicron CMOS Technologies
Miriam Adlerstein Marwick and Andreas G. Andreou, Johns Hopkins University
- 1:55pm - 2:15pm **FP2-03 Student**
Properties of High-Performance Phototransistor Photodetector (PTPD) in Standard SiGe BiCMOS Technology
Kuang-Sheng Lai, Ji-Cheng Huang, and Klaus Y. -J. Hsu, ROC
- 2:15pm - 2:35pm **FP2-04 Student**
Compact Demultiplexers with Narrow Spectral Width Channels Using Alternating-Defect Coupled-Cavity Waveguides (AD-CCWs)
Faquir Jain and John Zeller, University of Connecticut
- 2:35pm - 2:55pm **FP2-05 Student**
Simulating Novel EM Effects
Daniel P. Ceperley and Prof. Andrew Neureuther, U.C. Berkeley
- 2:55pm - 3:15pm **FP2-06 Student**
Particle-In-Cell Simulation of Resonant-Cavity-Enhanced Extraordinary Transmission through Sub-Wavelength Plasmonic
Luke Johnson, Xi Shao, and Dennis Papadopoulos, University of Maryland

FP3: Advanced Characterization and Testing I - 1:15pm - 3:15pm

Chairperson: Dr. David Storm, NRL

Meeting Room: Juan Jimenez Room

- 1:15pm - 1:35pm **FP3-01**
Determination of the Channel Temperature in GaN MOSHFETs under Microwave Operational Conditions
Yanqing Deng, MD Monirul Islam, Mikhail Gaevski, Zijiang Yang, Vinod Adivarahan, and Asif Khan, University of South Carolina
- 1:35pm - 1:55pm **FP3-02 Student**
High-Speed Thermal Measurements of High-Power Diode Arrays
Nicholas Rada, Gregory Triplett, and Samuel Graham, University of Missouri-Columbia, and Samuel Graham, Georgia Institute of Technology
- 1:55pm - 2:15pm **FP3-03 Student***
Characterization of Latch-Up in CMOS Inverters in Pulsed Electromagnetic Interference Environments
Kyechong Kim and Agis A. Iliadis, University of Maryland
- 2:15pm - 2:35pm **FP3-04**
Room-Temperature Bias Acceleration Test for Data Retention Screening on SONOS Nonvolatile Memory Devices
Jeong-Mo Hwang, Todd Wallinger, and Holden Hackbarth, Simtek Corporation
- 2:35pm - 2:55pm **FP3-05**
Magnifying Superlens based on Plasmonic Metamaterials
Igor Smolyaninov, Yu-Ju Hung, and Christopher C. Davis, University of Maryland
- 2:55pm - 3:15pm **FP3-06**
Maximum Intrinsic Gain Degradation in Technology Scaling
Mark Pude and P.R. Mukund, Rochester Institute of Technology, and Chris Macchietto, Prashant Singh, and Jeff Burleson, LSI Corporation
- 3:15pm - 3:30pm **Coffee Break - Grand Ballroom**

FP4: Novel Circuits and Devices - 3:30pm - 5:30pm

Chairperson: Dr. Neil Goldman, University of Maryland

Meeting Room: Colony Ballroom

- 3:30pm - 3:50pm **FP4-01**
Bump-Technology Based Vertical Integration of Silicon Power Devices
Alberto Castellazzi, Swiss Federal Institute of Technology Zurich (ETH Zurich), and Philippe Lasserre and Michel Mermet-Guyennet, ALSTOM - Power Electronics Associated Research Lab.
- 3:50pm - 4:10pm **FP4-02 Student**
A Carbon Nanotube Capacitor Structure
Joshua D. Wood and Mark M. Budnik, Valparaiso University
- 4:10pm - 4:30pm **FP4-03**
Simultaneous Two-color Infrared Detectors Based on MBE-grown HgCdTe Heterostructures
Silviu Velicu, C.H. Grein, P. Emelie, and T.S. Lee, EPIR Technologies, and N.K.Dhar, Army Research Laboratory
- 4:30pm - 4:50pm **FP4-04**
Vertical Silicon-on-Nothing FET: Threshold Voltage Calculation Using Compact Capacitance Model
Boris Svilicic, University of Rijeka, Vladimir Jovanovic, Delft University of Technology, and Tomislav Suligoj, University of Zagreb
- 4:50pm - 5:10pm **FP4-05 Student**
A Non-Linear TCAD Large Signal Model to Enhance the Linearity of Transistor
Ahsan-Ullah Kashif, Christer Svensson, Sher Azam, and Qamr-ul Wahab, Linköping Universitet
- 5:10pm - 5:30pm **FP4-06 Student**
A Novel Low-Trigger and High-Holding Voltage SCR Without Externally-Assisted Circuitry for Area-Efficient On-Chip ESD Protection
Lifang Lou and Jun J. Liou, University of Central Florida

FP5: Optoelectronic: New Lasers and Sources - 3:30pm - 5:30pm

Chairperson: *Dr. Christopher Davis, University of Maryland*

Meeting Room: *Benjamin Banneker Room*

- 3:30pm - 3:50pm **FP5-01 Student**
Characterization of Complex-Coupled Multi-Quantum Well DFB Laser Diode with Embedded Absorptive Bragg Grating
Jae-Ho Han, Johns Hopkins University, Zail Lee, Samsung SDI, and Sung-Woong Park, Korea Intellectual Property Office
- 3:50pm - 4:10pm **FP5-02**
Y-coupled GaAs Quantum Cascade Lasers
Gottfried Strasser, SUNY at Buffalo, and Leonard K. Hoffmann, Christophe A. Hurni, Elvis Mujagic, Michele Nobile, Aaron M. Andrews, Pavel Klang, and Werner Schrenk, TU Vienna
- 4:10pm - 4:30pm **FP5-03**
High-Temperature CW Mid-Infrared Interband Cascade Lasers
Igor Vurgaftman, William W. Bewley, Chadwick L. Canedy, Chul Soo Kim, Mijin Kim, J. Ryan Lindle, D. C. Larrabee, J. A. Nolde and J. R. Meyer, Naval Research Laboratory
- 4:30pm - 4:50pm **FP5-04 Student**
Characteristic Temperature of a Tunneling-Injection Quantum Dot Laser
Dae-Seob Han and Levon V. Asryan, Virginia Polytechnic Institute and State University
- 4:50pm - 5:10pm **FP5-05 Student**
Enhanced Nonlinear Susceptibility in Strained Quantum Cascade Lasers
Denzil Roberts and Gregory Triplett, PhD, University of Missouri-Columbia
- 5:10pm - 5:30pm **FP5-06 Student***
Minor Magnesium Doping in P-type Layer of InGaN/GaN MQW LED to Enhance Electrical and Optical Properties
Ray-Ming Lin, Meng-Fu Shih, Yung-Hsiang Lin, Chun-Wei Liao, Cheng-Ying Yen, and Yi-Lun Chou, Chang Gung University

FP6: Advanced Characterization and Testing II - 3:30pm - 5:30pm

Chairperson: *Dr. Martin Peckerar, University of Maryland*

Meeting Room: *Juan Jimenez Room*

- 3:30pm - 3:50pm **FP6-01**
In Situ Gas Phase Infrared Absorption Measurements During Hafnium Oxide Atomic Layer Deposition
James E. Maslar, W.S. Hurst, D.R. Burgess, W.A. Kimes, N.V. Nguyen, and E.F. Moore, NIST
- 3:50pm - 4:10pm **FP6-02**
The Semiconductor-Dielectric Interface from PN Junction Edge and the Voltage Dependence of Leakage Reverse Current
Vasile Obreja, National R&D Institute for Microtechnology (IMT-Bucuresti)
- 4:10pm - 4:30pm **FP6-03**
PCA-based Network Modeling using Standardized X-ray Diffraction Data for the Electrical Characteristics of the HfO₂ Thin Films Grown by MOMBE
Young-Don Ko, Pyung Moon, Chang Eun Kim, Moon-Ho Ham, Jae-Min Myoung, and Ilgu Yun, Yonsei University
- 4:30pm - 4:50pm **FP6-04 Student**
Comprehensive Study on Dynamic Bias Temperature Instability of p-channel Polycrystalline Silicon Thin-film Transistors
Ching-Fang Huang, Ying-Jhe Yang, Cheng-Yi Peng, Hung-Chang Sun, and Chee Wee Liu, National Taiwan University, and Chih-Wei Chao and Kun-Chih Lin, AU Optronics
- 4:50pm - 5:10pm **FP6-05 Student**
Characterization of the Low Temperature Activated P+/N Junction Formed by Implant Into Silicide Method
Kow-Ming Chang, Jian-Hong Lin, and Chih-Hsiang Yang, National Chiao-Tung University
- 5:10pm - 5:30pm **FP6-06 Student**
Leakage Effect Suppression in Charge Pumping Measurement and Stress-Induced Traps in High-k Gated MOSFETs
Kuei-Shu Chang-Liao, Chun-Chang Lu, Chun-Yuan Lu, Shih-Cheng Chang, and Tien-Ko Wang, National Tsing Hua University