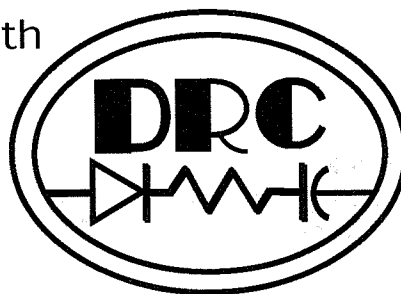


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Y. Dora, A. Chakraborty, L. McCarthy, S. Keller, S. P. DenBaars, U. K. Mishra, Department of Electrical and Computer Engineering, University of California, Santa Barbara, California, USA
- IV.A-8 **p-GaN/AlGaIn/GaN Enhancement-Mode HEMTs**
C. S. Suh¹, A. Chini¹, Y. Fu¹, C. Poblenz², J. S. Speck², U. K. Mishra¹, ¹Department of Electrical and Computer Engineering and ²Department of Materials Science and Engineering, University of California, Santa Barbara, California, USA

Session IV.B. Nanoelectronics I

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- IV.B-1 **Assessment of Carbon Nanotube FETs for High-Frequency Performance**
D.L. Pulfrey, Department of Electrical and Computer Engineering, University of British Columbia, Vancouver, British Columbia, CANADA
- IV.B-2 **High Performance Carbon Nanotube Ring Oscillator**
Z. Chen, J. Appenzeller, P. M. Solomon, Y.-M. Lin, P. Avouris, IBM T. J. Watson Research Center, Yorktown Heights, New York, USA
- IV.B-3 **InAsP/InAs Nanowire Heterostructure Field Effect Transistors**
E. Lind and L.-E. Wernersson, Solid State Physics, Nanometer Consortium, Lund University, Lund, SWEDEN
- IV.B-4 **Inversion-mode Operation of Thermally-oxidized Modulation-doped Silicon Nanowire Field Effect Devices**
Y. Wang¹, T.-Ta Ho¹, S. Dilts², K.-K. Lew², B. i Liu², S. Mohny², J. Redwing², and T. Mayer¹, ¹Department of Electrical Engineering and ²Department of Materials Science and Engineering, The Pennsylvania State University, University Park, Pennsylvania, USA
- IV.B-5 **Nanowire-based, High-Efficiency Thermoelectrics**
H. Linke¹, T. E. Humphrey², and M. F. O'Dwyer³, ¹Materials Science Institute and Physics Department, University of Oregon, Eugene, Oregon, USA, ²Département de Physique Théorique, University of Geneva, Geneva, SWITZERLAND, and ³School of Engineering Physics and Institute for Superconducting and Electronic Materials, University of Wollongong, Wollongong, New South Wales, AUSTRALIA
- IV.B-6 **Label-Free Amperometric Biosensors Based on Single-Walled Carbon Nanotube Modified Microelectrodes**
K. Maehashi¹, J. Okuno¹, K. Matsumoto¹, K. Kerman², Y. Takamura² and E. Tamiya², ¹The Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan, and ²School of Materials Science, Japan Advanced Institute of Science and Technology, Nomi, Ishikawa, Japan
- IV.B-7 **Simulation of Silicon Nanowire Bio-sensors**
P. R. Nair and M. A. Alam, School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA

- IV.B-8 **High-Performance Nanomechanical Oscillators Fabricated by Bottom-up Integration of Silicon Nanowires**
M. Li¹, R. B. Bhiladvala¹, J. A. Sioss², K.-K. Lew³, J. M. Redwing³, C. D. Keating², and T. S. Mayer¹,
¹Department of Electrical Engineering, ²Department of Chemistry, and ³Department of Materials Science and Engineering, The Pennsylvania State University, University Park, Pennsylvania, USA

Session V.A High-Speed and Terahertz Devices

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- V.A-1 **High-Speed Photodiodes and Related Devices**
T. Ishibashi¹ and H. Ito², ¹NTT Electronics Corporation, and ²NTT Photonics Laboratory, NTT Corporation, Atsugi, Kanagawa, JAPAN
- V.A-2 **Terahertz Emission of Radiation from InGaP/InGaAs/GaAs Grating-Bicoupled Plasmon-Resonant Photomixer**
T. Otsuji¹, M. Hanabe¹, Y. M. Meziani¹, and E. Sano², ¹Research Institute of Electrical Communication, Tohoku University, Sendai, JAPAN and ²Research Center for Integrated Quantum Electronics, Hokkaido University, Sapporo, JAPAN
- V.A-3 **Development of TUNNETT Diode as Terahertz Device and Its Applications**
J. Nishizawa, T. Kurabayashi, P. Plotka, and H. Makabe, Semiconductor Research Institute, Sendai, JAPAN
- V.A-4 **Coherent Terahertz-wave Generation from GaP waveguides**
K. Saito¹, T. Tanabe¹, Y. Oyama¹, K. Suto², T. Kimura², and J. Nishizawa², ¹Department of Materials Science, Tohoku University, Sendai, JAPAN, and ²Semiconductor Research Institute, Sendai, JAPAN
- V.A-5 **300 GHz Transistor Performance in Production CMOS Technologies**
B. Jagannathan, D. Chidambarrao, and J. Pekarik, IBM Systems & Technology Group, USA
- V.A-6 **Indium Antimonide based Quantum Well FETs for Ultra-High Speed Electronics**
T. Ashley, QintetiQ
- V.A-7 **Increase in current density at 25-nm-wide emitter for InP hot-electron transistors without base layer**
Y. Miyamoto^{1,2}, I. Kashima¹, A. Suwa¹, and K. Furuya^{1,2,3}, ¹Dept. of Physical Electronics, Tokyo Institute of Technology, Tokyo, JAPAN, ²CREST, Japan Science and Technology Agency, Saitama, JAPAN, and ³QNERC, Tokyo Institute of Technology, Tokyo, JAPAN
- V.A-8 **A 154-GHz Static Divider in 0.25 μ m InP DHBT Technology**
N. Phan, D. Sawdai, B. Oyama, P. Chang, D. Scott, A. Gutierrez-Aitken, and A. Oki, Northrop Grumman Space Technology, Redondo Beach, California, USA

Session V.B Organic Devices

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- V.B-1 **Large-area Electronics Based on Organic Transistors**
T. Someya¹, T. Sakurai², and T. Sekitani¹, ¹Quantum-Phase Electronics Center, School of Engineering, the University of Tokyo, Tokyo, Japan and ²Center for Collaborative Research, the University of Tokyo, Tokyo, Japan
- V.B-2 **Organic Complementary Circuits Using Solution Deposited Active Semiconductors**
B. Yoo¹, D. Basu¹, T. Jung¹, D. Fine¹, B. A. Jones¹, A. Facchetti², M. R. Wasielewski², T. J. Marks², K. Dimmler³, and A. Dodabalapur¹, ¹Department of Electrical and Computer Engineering, Microelectronics Research Center, The University of Texas, Austin, Texas, USA ²Department of Chemistry, Materials Research Center, Center for Nanofabrication and Molecular Self-Assembly, Northwestern University, Evanston, Illinois, USA, and ³OrganicID, Colorado Springs, Colorado, USA

- V.B-3 **Low-Voltage, Low-Power Organic Complementary Circuits with Self-Assembled Monolayer Gate Dielectric**
H. Klauk, U. Zschieschang, Max Planck Institute for Solid State Research, Stuttgart, GERMANY
- V.B-4 **A field-programmable antifuse memory for RFID on plastic**
B. Mattis and V. Subramanian, Department of Electrical Engineering and Computer Science, University of California, Berkeley, California, USA
- V.B-5 **Environmental and Operational Stability of Solution Processed TIPS-Pentacene OTFTs**
S. K. Park¹, J. Anthony², and T. N. Jackson¹, ¹Center for Thin Film Devices and Materials Research Institute, Department of Electrical Engineering, The Pennsylvania State University, University Park, Pennsylvania, USA, and ²Department of Chemistry, University of Kentucky, Lexington, Kentucky, USA
- V.B-6 **Iodine-doped Pentacene Schottky Diodes for High-Frequency RFID Rectification**
D. Huang and V. Subramanian, Department of Electrical Engineering and Computer Science, University of California, Berkeley, California, USA
- V.B-7 **High Speed Characterization of Organic Thin Film Transistors**
D. Basu¹, L. Wang¹, L. Dunn¹, A. Dodabalapur¹, M. Heeney², and I. McCulloch², The University of Texas, Austin, Texas, USA, and ²Merck Chemicals, Southampton, UK

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- R.1 **III-V on IV: Inevitable or Impractical?**
Session Organizers: S. Koester, IBM and P. Wong, Stanford University
- R.2 **What is the Real Commercial Potential for GaN?**
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- R.3 **TFTs on Flex: Does Anyone Care?**
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A. C. Gossard, Department of Materials Science and Engineering, University of California, Santa Barbara, California, USA

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- VI.A-1 **Electrical Detection of Spin Accumulation in Ferromagnet-Semiconductor Devices**
X. Lou¹, C. Adelmann², M. Furis³, S.A. Crooker³, C.J. Palmström², and P.A. Crowell¹, ¹School of Physics and Astronomy, ²Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota, USA, and ³National High Magnetic Field Laboratory, Los Alamos National Laboratory, Los Alamos, New Mexico, USA
- VI.A-2 **Integrating Spintronics with Conventional Semiconductor Devices through Exchange Interactions**
S. Salahuddin, P. Srivastava, and S. Datta, School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA
- VI.A-3 **Monolithically Integrable Semiconductor Waveguide Optical Isolators using III-V Semiconductor / Ferromagnet Hybrid Structures**
H. Shimizu^{1,3}, T. Amemiya^{1,3}, M. Tanaka^{2,3}, and Y. Nakano^{1,3}, ¹Research Center for Advanced Science and Technology / ²Department of Electronic Engineering, The University of Tokyo, Tokyo, JAPAN, and ³JST-SORST, Meguro, Tokyo, JAPAN

- VI.A-4 **Performance of Spin-Based Current-Gating Devices**
M. E. Flatté¹ and K. C. Hall², ¹Department of Physics and Astronomy, University of Iowa, Iowa City, Iowa, USA and ²Department of Physics, Dalhousie University, Halifax, Nova Scotia, CANADA
- VI.A-5 **Inelastic Electron Tunneling Spectroscopy of Molecular Magnetic Tunnel Junctions**
W. Wang and C. A. Richter, Semiconductor Electronics Division, National Institute of Standards and Technology, Gaithersburg, Maryland, USA
- VI.A-6 **Numerical Simulation of Giant Magnetoresistance Resonant Tunneling Diodes**
C. Ertler and J. Fabian, Institute for Theoretical Physics, University of Regensburg, Regensburg, GERMANY

Session VI.B Nanoelectronic Devices II

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- VI.B-1 **Germanium Nanowires: From Synthesis, Surface chemistry, Assembly to Devices**
D. Wang, Division of Chemistry and Chemical Engineering, Caltech, Pasadena, California, USA
- VI.B-2 **Realization of a Ge Nanowire p-n Junction**
E. Tutuc, J. Appenzeller, M. C. Reuter, S. Guha, IBM T. J. Watson Research Center, Yorktown Heights, New York, USA
- VI.B-3 **High-Performance Enhancement-mode ZnO Nanowire Field-Effect Transistors with Organic Nanodielectrics: Effects of Ozone Treatments**
S. Ju¹, K. Lee¹, M.-H. Yoon², A. Facchetti², T. J. Marks², and D. B. Janes¹, ¹School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA and ²Department of Chemistry and the Materials Research Center, Northwestern University, Evanston, Illinois, USA
- VI.B-4 **Seamless Transition from the Single-Electron Regime to Field-Effect Transistor Operation of Nanoscale Schottky-Barrier FETs**
K. M. Indlekofer¹, J. Knoch¹, and J. Appenzeller², ¹Institute for Thin Films and Interfaces and CNI, Research Centre Jülich, Jülich, GERMANY and ²IBM T. J. Watson Research Center, Yorktown Heights, New York, USA
- VI.B-5 **Single-Electron Devices with Granulated Film Cotunneling Suppressors**
A. O. Orlov, X. Luo, T. H. Kosel, and G. L. Snider, Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana, USA

Session VII.A Memory Devices

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- VII.A-1 **A Novel Low Leakage Current VPT (Vertical Pillar Transistor) Integration for 4F2 DRAM Cell Array with sub 40 nm Technology**
J.-M. Yoon¹, K. Lee¹, S.-B. Park¹, S.-G. Kim¹, H.-W. Seo¹, Y.-W. Son¹, B.-S. Kim¹, H.-W. Chung¹, C.-H. Lee², W.-S. Lee³, D.-C. Kim³, D. Park¹, W. Lee¹ and B.-I. Ryu¹, ¹ATD Team, Device Research Team, ²CAE, and ³PD Team, Semiconductor R&D Division, Samsung Electronics Co., Yongin-City, Kyunggi-Do, KOREA
- VII.A-2 **Sub-6F2 Charge Trap Dynamic Random Access Memory Using a Novel Operation Scheme**
Z. Huo, S. Baik, S. Kim, I.-S. Yeo, U.-I. Chung, and J. T. Moon, Process Development Team, Semiconductor R&D Center, Samsung Electronics Co., LTD., Yongin-City, Gyeonggi-Do, KOREA
- VII.A-3 **A Low-Cost Strained Silicon SRAM Technology with Reduced Contact Resistance**
I. Polishchuk¹, S. Levy¹, R. Kapre¹, O. Pohland¹, K. Ramkumar¹, N. Shah², and S. E. Thompson², ¹Cypress Semiconductor, San Jose, California, USA, and ²Department of Electrical and Computer Engineering, University of Florida, Gainesville, Florida, USA

- VII.A-4 **NMOS/SiGe Resonant Interband Tunneling Diode Static Random Access Memory**
S. Sudirgo¹, D. J. Pawlik¹, S. K. Kurinec¹, P. E. Thompson², J. W. Daulton³, S. Y. Park³, R. Yu³, P. R. Berger³, and S. L. Rommel¹, ¹Department of Microelectronic Engineering, Rochester Institute of Technology, Rochester, New York, USA, ²Naval Research Laboratory, Washington, DC, USA, and ³Department of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio, USA
- VII.A-5 **Vertical (3-D) flash memory with SiGe nanocrystal floating gate**
J. Sarkar, S. Dey, Y. Liu, D. Shahrjerdi, D. Q. Kelly, S. K. Banerjee, Microelectronics Research Center and Department of Electrical and Computer Engineering, The University of Texas, Austin, Texas, USA
- VII.A-6 **Fabrication of Self-Assembled Ni Nanocrystal Flash Memories Using a Polymeric Template**
D. Shahrjerdi, J. Sarkar, X. Gao, D. Q. Kelly, S. K. Banerjee, Microelectronics Research Center, University of Texas at Austin, Austin, Texas, USA
- VII.A-7 **3-D Electrostatic Modeling and Impact of High-k Control Oxide in Metal Nanocrystal Memory**
T.-H. Hou, C. Lee, V. Narayanan, U. Ganguly, and E. C. Kan, School of Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA
- VII.A-8 **Charge Trapping WN Nano-dots with /or without Nitride Sub-layer for FinFET FLASH Memory**
J.-D. Choe¹, J. J. Lee², Y. J. Ahn², S.-H. Lee², B. Y. Choi², S. K. Sung², E. S. Cho², S. B. Kim², S. H. Cheong², C.-H. Lee², I. Chung¹, K. Park², D. Park², and B.-I. Ryu² ¹School of Information and Communication Engineering, Sungkyunkwan University, Kyungki-Do, KOREA and ²Device Research Team, Samsung Electronics Co., Yongin-City, Kyungki-Do, KOREA

Session VII.B Nanoelectronics III

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- VII.B-1 **Synthetic Nanomaterials for Novel Electronic Concepts**
A. Javey, Harvard University, Cambridge, Massachusetts, USA
- VII.B-2 **Reduction of 1/f Noise in Carbon Nanotube Devices**
Y.-M. Lin, J. Appenzeller, C. C. Tsuei, Z. Chen, and P. Avouris, IBM T. J. Watson Research Center, Yorktown Heights, New York, USA
- VII.B-3 **Random Telegraph Signals and Noise Behavior in Carbon Nanotube Transistors**
F. Liu¹, K. L. Wang¹, D. Zhang², and C. Zhou², ¹Department of Electrical Engineering, University of California, Los Angeles, California, USA, and ²Department of Electrical Engineering, University of Southern California, Los Angeles, California, USA
- VII.B-4 **Random Telegraph Noise in 130 nm n-MOS and p-MOS Transistors**
Y. Yoon, H. Lee, I. M. Kang, B.-G. Park, J. D. Lee, and H. Shin, Seoul National University, Seoul, KOREA
- VII.B-5 **Novel Inorganic Materials for Solution-Processed Electronics**
D. V. Talapin^{1,2}, D. B. Mitzi¹, E. V. Shevchenko², A. P. Alivisatos², C. B. Murray¹, ¹IBM Research Division, T. J. Watson Research Center, Yorktown Heights, New York, USA, and ²The Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, California, USA
- VII.B-6 **Measurement of Minority Carrier Diffusion Lengths in Semiconductor Nanowires**
J. E. Allen¹, Y. Gu¹, J. P. Romankiewicz¹, J. L. Lensch¹, S. J. May¹, T. W. Odom², B. W. Wessels^{1,3}, and L. J. Lauhon¹, ¹Department of Materials Science and Engineering, ²Department of Chemistry, and ³Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, Illinois, USA
- VII.B-7 **Electrically-excited Infrared Emission from InN Nanowire Transistors**
J. Chen¹, G. Cheng², E. Stern², M. A. Reed², and P. Avouris¹, ¹IBM T. J. Watson Research Center, Yorktown Heights, New York, USA, and ²Departments of Electrical Engineering and Applied Physics, Yale University, New Haven, Connecticut, USA