

## **December 2<sup>nd</sup> (Sunday)**

15:00-18:00 Registration (Breezeway-Kohala)

18:00-20:00 Welcome Reception (Poolside)

## **December 3<sup>rd</sup> (Monday)**

8:50–9:00 Opening

### **Memorial Session for Herb Goronkin**

9:00–9:20 Stephen M. Goodnick (Arizona State Univ., USA)  
“Remembering Herb Goronkin”

9:20–9:40 George Maracas (National Science Foundation, USA)  
“Herb Goronkin and Motorola”

9:40-10:10 Naoki Yokoyama (AIST/Fujitsu, Japan)  
“Challenges in Green Nanoelectronics:  
Growing Expectations for the Tsukuba Innovation Arena in Japan”

10:10-10:30 Richard A. Kiehl (UC Davis, USA)  
“Biological Assembly for GaAs, Graphene, and Topological Insulator  
Nanoscale Devices”

10:30-11:00 Coffee Break

### **Topological Insulators**

11:00-11:30 M. Zahid Hasan (Princeton Univ., USA)  
“Topological Surface States in Topological Insulators,  
Superconductors and Beyond”

11:30-11:45 Tonica Valla (Brookhaven, USA)  
“Electrons on Surfaces of Topological Insulators:  
Coherence and Spin-Polarization at Room Temperature”

11:45-12:00 Matthew J. Gilbert (UIUC, USA)  
“Point Group Symmetric Topological Insulators”

12:00-12:15 Brian Dellabetta (UIUC, USA)  
“Supercurrents in Time-Reversal Invariant Topological Insulator  
Josephson Junctions”

## December 3<sup>rd</sup> (Monday) continued

- 12:15-12:30 Taylor L. Hughes (UIUC, USA)  
“Magneto-electric and Superconducting Properties of Doped Topological Insulators”
- 12:30-12:45 Leonid P. Rokhinson (Purdue Univ., USA)  
“Observation of Fractional AC Josephson Effect: The Signature of Majorana Particles”
- 12:45-13:00 Seiya Kasai (Hokkaido Univ., Japan)  
“Design and Formation of Multiple Asymmetric Potential in a GaAs-based Nanowire for Electron Brownian Ratchet”
- 13:00-13:15 Glenn S. Solomon (NIST/Univ. Maryland, USA)  
“Second-harmonic Generation Using  $\bar{4}$ -quasi-phasematching in a GaAs Microdisk Cavity”
- 13:15-19:00 *Ad hoc* Session

### Spintronics (1)

- 19:00-19:30 Joseph P. Heremans (Ohio State Univ., USA)  
“The Spin-Seebeck Effect in Semiconductors”
- 19:30-19:45 Eiji Saitoh (Tohoku Univ., Japan)  
“Dynamical Generation of Spin Currents”
- 19:45-20:15 Frédéric Bonell (Osaka Univ., Japan)  
“Voltage Control of Magnetic Anisotropy in Ultrathin FePd and FeCo, and Coherent Magnetization Switching Using Voltage Pulses”
- 20:15-20:30 Daichi Chiba (Kyoto Univ., Japan)  
“Electric Field Control of Ferromagnetism in Ultra-thin Metals”
- 20:30-21:00 Daniel Pantel (Max Planck Institute, Germany)  
“Reversible Electrical Switching of Spin Polarization in Multiferroic Tunnel Junctions”
- 21:00-21:15 Toshimasa Fujisawa (Tokyo Tech., Japan)  
“Electron Nuclear Feedback in the Pauli Spin Blockade Regime of a Double Quantum Dot”

## December 4<sup>th</sup> (Tuesday)

### Spintronics (2)

- 9:00–9:30 Andrea Morello (Univ. New South Wales, Australia)  
“Single-atom Spin Qubits in Silicon”
- 9:30–9:45 Kohei M. Itoh (Keio Univ., Japan)  
“Semiconductor Isotope Spintronics”
- 9:45–10:15 Shunsuke Fukami (Tohoku Univ., Japan)  
“Spintronics Devices for Nonvolatile Memory and Logic”
- 10:15–10:30 Siegfried Selberherr (TU Wien, Austria)  
“Geometry Dependence of the Switching Time in MTJs  
with a Composite Free Layer”
- 10:30–11:00 Coffee Break
- 11:00–11:15 Masafumi Yamamoto (Hokkaido Univ., Japan)  
“Half-metallic Heusler Alloy Thin Films for Spintronic Devices”
- 11:15–11:45 Robert Buhrman (Cornell Univ., Japan)  
“The Giant Spin Hall Effect and New Approaches  
for Spin Torque Devices and Circuits”
- 11:45–12:00 Yuki Hiramatsu (Osaka Univ., Japan)  
“Device Modeling and Circuit Simulation of Spin-Transfer-Torque  
MRAM Considering Variability”
- 12:00–12:15 Teruo Ono (Kyoto Univ., Japan)  
“Physics and Applications of Current-Induced Domain Wall Motion  
in Magnetic Nano-wires”
- 12:15–12:30 Stuart Wolf (University of Virginia, USA)  
“Reconfigurable Array of Magnetic Automata (RAMA)”
- 12:30–12:45 Bruce W. Wessels (Northwestern Univ., USA)  
“Bipolar Magnetic Junction Transistors for Spin Logic”
- 12:45–13:00 Alexander Khitun (UC Riverside, USA)  
“Magnonic Logic Devices: Current Status and Perspectives”
- 13:00–19:00 *Ad hoc* Session

## December 4<sup>th</sup> (Tuesday) continued

### Spintronics (3)

- 19:00-19:15 Yasuhiro Fukuma (RIKEN, Japan)  
“Giant Enhancement of Spin Accumulation  
and Long-distance Spin Precession in Lateral Spin Valves”
- 19:15-19:30 Berend T. Jonker (Naval Research Lab., USA)  
“Graphene as a Tunnel Barrier:  
Magnetic Tunnel Junctions and Spin Injection into Silicon”
- 19:30-19:45 Pierre Seneor (CNRS, France)  
“Efficient Spin Transport with Graphene”
- 19:45-20:00 Bruno Dlubak (Univ. Cambridge, UK)  
“Spintronics with Graphene-passivated Ferromagnetic Electrodes”
- 20:00-20:15 Viktor Sverdlov (TU Wien, Austria)  
“Reduction of Surface Roughness Induced Spin Relaxation  
in Thin Silicon Films”
- 20:15-20:30 Kazuya Ando (Tohoku Univ., Japan)  
“Dynamical Generation of Spin Currents”
- 20:30-20:45 Igor Zutic (Univ. Buffalo, USA)  
“Spin Lasers and Spin Communication”
- 20:45-21:00 Yoshiro Hirayama (Tohoku Univ., Japan)  
“Evidence of Strong Coupling Between Electron and Nuclear Spin  
Systems in Two-dimensional Quantum Wells”

## December 5<sup>th</sup> (Wednesday)

### Nanowires

- 9:00–9:15 Henning Riechert (Paul Drude Institute, Germany)  
“GaN Nanowires: Growth, Optical Properties ,and the Route Towards LED Applications”
- 9:15–9:30 David B. Janes (Purdue Univ., USA)  
“Tailoring Photonic Properties in Hierarchical, Branched Arrays of Nanowires”
- 9:30–9:45 Stephen M. Goodnick (Arizona State Univ., USA)  
“Dissipative Transport in Nanowire FETs”
- 9:45-10:00 Satoshi Sasaki (NTT, Japan)  
“Characteristics of Gate-All-Around InAs Nanowire FETs”
- 10:00-10:15 Deli Wang (UC San Diego, USA)  
“Vertical Si Nanowire Array High Sensitivity Photodetectors and Retinal Prosthetic Devices”

### Nanocarbon (1)

- 10:15-10:30 Slava V. Rotkin (Lehigh Univ., USA)  
“QED Interfacial Heat Conductance in Nanocarbon Thermal Interconnects”
- 10:30-11:00 Coffee Break
- 11:00-11:15 Takashi Mizutani (Nagoya Univ., Japan)  
“Carbon Nanotube Field Effect Transistors with Graphene Contacts”
- 11:15-11:30 Pawel Hawrylak (NRC, Canada)  
“Graphene Based Integrated Electronic, Photonic, and Spintronic Circuit”
- 11:30-11:45 Junichi Yamaguchi (AIST)  
“Electric Transport and Spectroscopic Studies on CVD Graphene Transistors Fabricated by Using Oxide Passivations”
- 11:45-12:00 David K. Ferry (Arizona State Univ., USA)  
“The Case Against Graphene”
- 12:00-12:15 Antti-Pekka Jauho (TU Denmark, Denmark)  
“Antidot Lattices in Graphene”

**December 5<sup>th</sup> (Wednesday) continued**

- 12:15-12:30 Nadya Mason (UIUC, USA)  
“Tunneling Spectroscopy of Graphene Using Planar Pb Probes”
- 12:30-12:45 Tomoki Machida (Univ. Tokyo, Japan)  
“Ballistic Transport in Graphene/h-BN Mesoscopic Wires”
- 12:45-13:00 Tetsuo Koderu (Tokyo Tech., Japan)  
“Transport Properties of a Single Nanocrystalline Silicon Quantum Dot between Nanogap Electrodes”
- 13:00-18:30 *Ad hoc* Session
- 18:30-21:00 Banquet (Courtyard)

## December 6<sup>th</sup> (Thursday)

### Transport Properties

- 9:00–9:15 Klaus-Jürgen Friedland (Paul Drude Institute, Germany)  
“Adiabatically Motion of Electrons on Cylindrical Surfaces: Curvature Drift and Centrifugal Forces”
- 9:15–9:30 Raymond D. Astumian (Univ. Maine, USA)  
“Theoretical and Experimental Results for Information Transfer at the Nanoscale: The Information Ratchet”
- 9:30–9:45 Gil-Ho Kim (Sungkyunkwan Univ., Korea)  
“Electron Transport Properties of a GaAs/AlGaAs Quantum Well with Self-assembled InAs Dots”
- 9:45-10:00 Taro Shiokawa (Univ. Tsukuba, Japan)  
“Multi-Electron Wave Packet Dynamics with Long-range Coulomb Interaction”
- 10:10-10:15 Yasuteru Shigeta (Osaka Univ., Japan)  
“Theoretical Studies on Current-voltage (I-V) Characteristics of Metal Containing Artificial DNA and Ni Complex Based Molecular Devices”

### Nanodevices (1)

- 10:15-10:30 Akira Fujiwara (NTT, Japan)  
“Accuracy of Single-electron Transfer in Si Nanowire MOSFETs”
- 10:30-11:00 Coffee Break
- 11:10-11:15 Alexei Orlov (Univ. Notre Dame, USA)  
“Defect Detection and Subthreshold Single Electron Charging in Nanoscale Si Single-electron Transistors by RF Impedance Analysis”
- 11:15-11:30 Denis Mamaluy (Sandia National Lab., USA)  
“Quantum Transport Simulation for Cross-Technology Comparisons of Beyond-CMOS Nanodevices”
- 11:30-11:45 Wolfgang Porod (Univ. Notre Dame, USA)  
“Antenna-Coupled Thermocouples for Infrared Detection”

### Optical, Mechanical, and Interfacial Properties (1)

- 11:45-12:00 Hajime Okamoto (NTT, Japan)  
“Coherent Oscillations in a Mechanical System”

## December 6<sup>th</sup> (Thursday) continued

- 12:00-12:15 Fujio Minami (Tokyo Tech., Japan)  
“Nano-Structures Probed by Tip-Enhanced Raman Scattering”
- 12:15-12:30 Mohammad Hassan Norouzi (Rashed Research Nano Ass., Iran)  
“A Systematic Preparation and Investigation of Optical Properties of silica@gold Core-shell Nanocomposites for Using in Photothermal Therapy”
- 12:30-19:00 *Ad hoc* Session

### Optical, Mechanical, and Interfacial Properties (2)

- 19:00-19:15 Hiroki Takahashi (Osaka Univ., Japan)  
“Atomic Disorder Effects on Optical Absorption Spectra of Vertically Stacked InAs/GaAs Quantum Dots”
- 19:15-19:30 Wiley P. Kirk (Univ. Texas Arlington, USA)  
“Managing Dislocations in Quantum-Confined Epitaxial Structures”
- 19:30-19:45 Hideki Hasegawa (RIKEN/Hokkaido Univ., Japan)  
“Fermi Level Pinning Issues in III-V Nanoscale Devices”
- 19:45-20:00 Lei Zhu (Fujitsu Lab., Japan)  
“Control of Interface Charge of GaN MOS Devices when Using GaN Bulk Substrate”
- 20:00-20:15 Saulius Marcinkevicius (KTH, Sweden)  
“Nanoscale Band Profile Variations and Carrier Dynamics in AlInN/GaN HEMT Structures”

### Nanocarbon (2)

- 20:15-20:30 Christoph M. Puetter (Univ. Tsukuba, Japan)  
“Semi-classical Klein Tunneling with Berry Curvature Effects in Graphene”
- 20:30-20:45 Tatsuro Kitayama (Osaka Univ., Japan)  
“Controlling the Electron Flow through Graphene by Vacancies”
- 20:45-21:00 Akinobu Kanda (Univ. Tsukuba, Japan)  
“Electron Transport in Graphene under Local Strain”
- 21:00-21:15 Yuichi Ochiai (Chiba Univ., Japan)  
“Low Temperature Magneto-resistance in MWNT”



## December 7<sup>th</sup> (Friday)

### Nanotube and Nanofabrication

- 9:00–9:15 Koji Ishibashi (RIKEN, Japan)  
“Coherent Control of Excitons in Carbon Nanotube Quantum Dots”
- 9:15–9:30 Jianren Zhou (Prairie View A&M Univ., USA)  
“AFM Characterization of poly(methyl methacrylate) and poly(ethylene glycol) Deposited by Ink-jet Printing”
- 9:30–9:45 Sozaraj Rasappa (Univ. College Cork, Ireland)  
“Block Copolymer Self-assembly Based Device Structures for Nanoelectronic Applications”
- 9:45-10:00 Swapan K. Mandal (Visva-Bharati Univ., India)  
“Fabrication of One-dimensional Conductive Polymer Nanowires Using STM: A Key Step Towards Development of Molecular Devices”

### Nanodevices (2)

- 10:00-10:15 Matthew D. Pickett (HP Lab., USA)  
“Applications of Metal Oxide Memristors Beyond NVRAM”
- 10:15-10:30 Rajendra S. Khairnar (S.R.T.M. Univ., India)  
“Zn Modified Hydroxyapatite Nanoceramic Ethanol Sensors”
- 10:30-11:00 Coffee Break

### Nanobio

- 11:00-11:30 Stefan Harrer (IBM Research Lab., Australia)  
“DNA-translocation Through a Solid-state Nanopore Coated with a Functionally Switchable Self-assembled Monolayer”
- 11:30-12:00 Leslie Yeo (RMIT Univ., Australia)  
“Acoustofluidics: Manipulating Fluids at the Microscale and Nanoscale”
- 12:00-12:30 Stan Skafidas (Univ. Melbourne, Australia)  
“Functionalised Nanowires: Chemical and Electronic Sensors for Nanobionics”
- 12:30-12:45 Closing