

Sunday Afternoon, January 14, 2018

Session PCSI-SuA (Keauhou II) - 2D Surfaces I
 Moderator: Emanuel Tutuc, The University of Texas

3:45pm	INVITED: PCSI-SuA1 Generating Valley Current and Magnetolectricity in MoS ₂ , <i>Jieun Lee</i> , Ajou University, Korea
3:50pm	
3:55pm	
4:00pm	
4:05pm	
4:10pm	
4:15pm	PCSI-SuA7 Diffusion of Silver and Nickel into Few-Layer MoS ₂ and Its Effect on Contact Resistance, <i>Timothy Walter</i> , A.C. Domask, M. Abraham, The Pennsylvania State University; <i>B. Kabius</i> , Materials Research Institute; <i>K.A. Cooley, S.E. Mohney</i> , The Pennsylvania State University
4:20pm	PCSI-SuA8 Ultra-thin van der Waals Heterostructure: How Thin can a Diode be?, <i>Mahfujur Rahaman</i> , A. Mukharjee, Chemnitz University of Technology, Germany; <i>S. Gemming</i> , Institute for Ion beam Physics and Materials Research, Germany; <i>D.R.T. Zahn</i> , Chemnitz University of Technology, Germany
4:25pm	PCSI-SuA9 Surface Modification of SiC by Plasma Oxidation to Form Graphene/SiC Structure with Low Pit Density, <i>Kenta Arima</i> , R. Ito, O. Minami, K. Hosoo, Y. Sano, K. Kawai, Osaka University, Japan
4:30pm 5:00 pm	Poster Setup (Keauhou I) Welcome Reception (Bayview Grounds)

Sunday Evening, January 14, 2018

Session PCSI-SuE (Keauhou II) - Coherent Effects in 0D Systems I Moderator: Erik Bakkers, Eindhoven University of Technology

7:30pm	INVITED: PCSI-SuE1 Rational Design of Coordination Complexes for Quantum Information, <i>Danna Freedman</i> , Northwestern University
7:35pm	
7:40pm	
7:45pm	
7:50pm	
7:55pm	
8:00pm	UPGRADED: PCSI-SuE7 Detecting Low-Intensity Light at the Interface of Chromophores and Diamond, <i>Nicholas Harmon, M.E. Flatté</i> , University of Iowa
8:05pm	
8:10pm	

Session PCSI-SuE (Keauhou II) - Coherent Effects in 0D Systems II Moderator: Erik Bakkers, Eindhoven University of Technology

8:15pm	INVITED: PCSI-SuE10 A New Approach to Magnetic Resonance at Heterointerfaces: Spin Dependent Charge Pumping in 4H-SiC MOSFETs, <i>Patrick Lenahan, M.A. Anders</i> , The Pennsylvania State University; <i>A.J. Lelis</i> , U.S. Army Research Laboratory
8:20pm	
8:25pm	
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8:35pm	
8:40pm	

Monday Morning, January 15, 2018

Session PCSI-MoM (Keauhou II) - New 2D Materials Moderator: James Chelikowsky, University of Texas, Austin	
7:30am	Continental Breakfast (Keauhou I)
8:30am	INVITED: PCSI-MoM1 First-Principles Assisted Design of Molecular Scale Graphane Analogues, Wolfgang Windl , O.D. Restrepo, K. Krymowski, L. Brillson, J. Goldberger, The Ohio State University
8:35am	
8:40am	
8:45am	
8:50am	
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9:00am	PCSI-MoM7 Graphene-like Nanoribbons Periodically Embedded with Four- and Eight-membered Rings, Meizhuang Liu , D. Zhong, Sun Yat-Sen University, China
9:05am	PCSI-MoM8 Hexagonal Boron Nitride on Single-Crystal Epitaxial Graphene and SiC(0001) Substrates by Plasma-Enhanced CBE Deposition, Daniel Pennachio , N.S. Wilson, E.C. Young, T.L. Brown-Heft, University of California, Santa Barbara; K.M. Daniels, R.L. Myers-Ward, D.K. Gaskill, C.R. Eddy, Jr., U.S. Naval Research Laboratory; C.J. Palmström, A.P. McFadden, University of California, Santa Barbara
9:10am	PCSI-MoM9 Data Mining for More Than a Thousand Layered Materials, Hundreds of One-dimensional Materials and Lattice-commensurate Heterostructures, Gwoon Cheon , K.-A. Duerloo, A.D. Sendek, C. Porter, Y. Chen, E.J. Reed, Stanford University
Session PCSI-MoM (Keauhou II) - Magnetic Interfaces Moderator: Scott Crooker, Los Alamos National Laboratory	
9:15am	INVITED: PCSI-MoM10 Thermal Hall Effect and Topological Edge Modes of Magnons, Shuichi Murakami , A. Okamoto, Tokyo Institute of Technology, Japan
9:20am	
9:25am	
9:30am	
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9:40am	
9:45am	UPGRADED: PCSI-MoM16 Strong Zero-Field Topological Hall Effect in B20-FeGe Thin Film and Oxide Bilayer Skyrmion Systems, Fengyuan Yang , J.C. Gallagher, K.Y. Meng, J.T. Brangham, H.L. Wang, B.D. Esser, D.W. McComb, The Ohio State University
9:50am	
9:55am	
10:00am	PCSI-MoM19 Surface Termination Layer Dependence in Heusler Superlattices, Tobias Brown-Heft , A.P. McFadden, J. Logan, University of California, Santa Barbara; C. Guillemard, University of Lorraine, France; P. Le Fevre, F. Bertran, Synchrotron SOLEIL, France; S. Andrieu, University of Lorraine, France; C.J. Palmstrom, University of California, Santa Barbara
10:05am	PCSI-MoM20 Measurement of Band-alignments in Semiconducting Half-Heusler Heterojunctions Grown by MBE, Sean Harrington , A.D. Rice, A.P. McFadden, D.P. Pennachio, C.J. Palmstrom, University of California, Santa Barbara
10:10am	PCSI-MoM21 Magnetoresistance, Metallic Conductivity and Magnetic Properties of Sr and Co Modified Polycrystalline BiFeO ₃ , Azizur Rahman , University of Science and Technology of China
10:15am	UPGRADED: PCSI-MoM22 Interface Magnetization Transition via Minority Spin Injection at Multiferroic Oxide Interface, Gunter Luepke , College of William & Mary
10:20am	
10:25am	
10:30am	Coffee Break & Poster Viewing
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11:25am	
Session PCSI-MoM (Keauhou II) - Organics Moderator: Georg Schmidt, Martin-Luther-Universität Halle-Wittenberg	
11:30am	PCSI-MoM37 A Single-molecule View of the Structure and Energetics at Interfaces in Dilute Heterojunction Organic Solar Cells, Erik Mårzell , University of British Columbia, Canada, Uppsala University, Sweden; B.K. Yuan, K.A. Cochran, M.D. DeJong, D.J. Jones, University of British Columbia, Canada; M. Riede, University of Oxford, England; S.A. Burke, University of British Columbia, Canada

Monday Morning, January 15, 2018

11:35am	PCSI-MoM38 A Comparison of the Electronic Structure of Single-Crystal Hybrid and Inkjet-Printed Nanocrystalline Inorganic Perovskite Films, Andrew John Yost , <i>T. Komesu</i> , University of Nebraska-Lincoln; <i>C.C. Ijie</i> , State University of New York-Oswego; <i>F. Guzman</i> , California State University San Bernardino; <i>B.L. Swanson</i> , <i>I.R. Evans</i> , State University of New York-Oswego; <i>P.S. Costa</i> , <i>J.D. Teeter</i> , <i>M. Shekhirev</i> , <i>N. Benker</i> , University of Nebraska-Lincoln; <i>S. Sikich</i> , Doane College; <i>A. Enders</i> , Universitat Bayreuth, Germany; <i>P.A. Dowben</i> , <i>A. Sinitskii</i> , University of Nebraska-Lincoln
11:40am	PCSI-MoM39 CREM of Photo Induced Charge Separation Mechanisms across Controlled Molecular Spacers, Hagai Cohen , Weizmann Institute, Israel
11:45am	PCSI-MoM40 Synthesis and Field Effect Transistor of Covalent Organic Framework Thin Films, Dong Wang , Chinese Academy of Sciences, China
11:50am	PCSI-MoM41 Surface Structure and Activity of Immobilized Protein G Mutants, <i>E. Harrison</i> , <i>Y.-C. Wang</i> , David Castner , University of Washington
11:55am	PCSI-MoM42 Neutron Scattering Studies of Bio-Interfaces: From Model Systems to Living Cells, Jaroslav Majewski , Los Alamos National Laboratory
Session PCSI-MoM (Keauhou II) -New Techniques I Moderator: Shigeki Kawai, University of Basel	
12:00pm	INVITED: PCSI-MoM43 Optical Pump-probe Scanning Tunneling Microscopy-Present and Future, Hidemi Shigekawa , University of Tsukuba, Japan
12:05pm	
12:10pm	
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12:30pm	PCSI-MoM49 New Visualization Method by Two-dimensional Imaging of Transmitted Hydrogen on Stainless Steel, Naoya Miyauchi , National Institute for Materials Science, Japan; <i>T. Iwasawa</i> , Toho University, Japan; <i>Y. Murase</i> , National Institute for Materials Science, Japan; <i>S. Takagi</i> , Toho University, Japan; <i>A. Itakura</i> , National Institute for Materials Science, Japan
12:35pm	PCSI-MoM50 Environmental Charge Compensation - Near Ambient Pressure XPS as a Tool for Surface Chemical Analysis of Insulators without Charging Effects, Thomas Schultmeyer , <i>S. Bahr</i> , SPECS TII Inc.
12:40pm	UPGRADED: PCSI-MoM51 Opto-Valleytronic Spin Injection in Monolayer MoS ₂ /Few-Layer Graphene Hybrid Spin Valves, Yunqiu (Kelly) Luo , <i>J. Xu</i> , <i>T. Zhu</i> , <i>G. Wu</i> , <i>E. McCormick</i> , <i>W. Zhan</i> , The Ohio State University; <i>M. Neupane</i> , U.S. Army Research Laboratory; <i>R. Kawakami</i> , The Ohio State University
12:45pm	
12:50pm	
12:55pm	Lunch and Poster Viewing (Keauhou Foyer)

Monday Afternoon, January 15, 2018

Session PCSI-MoA (Keauhou II) - Wide Bandgap Moderator: Leonard Brillson, The Ohio State University	
2:00pm	UPGRADED: PCSI-MoA1 Use of Electrografted Aryldiazonium Salts to Control the Surface Conductivity and Reactivity of ZnO, Alexandra McNeill , University of Canterbury, New Zealand; <i>K.J. Bell</i> , MacDiarmid Institute for Advanced Materials and Nanotechnology; <i>R.M. Gazoni, R.J. Reeves, A.J. Downard, M. Allen</i> , University of Canterbury, New Zealand
2:05pm	
2:10pm	
2:15pm	PCSI-MoA4 Influence of Interface State and Band Bending on In and N Polar InN from Angle-resolved XPS, <i>T. Honda, Yusuke Nakajima</i> , Kogakuin University, Japan
2:20pm	PCSI-MoA5 Influence of Al ₂ O ₃ / In _{0.76} Si _{0.24} O _{0.99} C _{0.01} Interface on Reliability for Oxide Thin Film Transistor, Kazunori Kurishima , Meiji University, National Institute for Materials Science, Japan; <i>T. Nabatame</i> , National Institute for Materials Science, Japan; <i>T. Onaya</i> , Meiji University, National Institute for Materials Science; <i>T. Kizu, K. Tsukagoshi, A. Ohi, N. Ikeda, T. Chikyow</i> , National Institute for Materials Science, Japan; <i>A. Ogura</i> , Meiji University, Japan
2:25pm	PCSI-MoA6 Thermodynamic Analysis of 3Ga-H Surface Reaction Process for GaN(0001), Kazuki Sekiguchi , <i>H. Shirakawa, K. Chokawa, M. Araidai</i> , Nagoya University, Japan; <i>Y. Kangawa, K. Kakimoto</i> , Kyushu University; <i>K. Shiraishi</i> , Nagoya University, Japan
2:30pm	PCSI-MoA7 Effects of Incorporating Si into Al ₂ O ₃ Gate Oxides in GaN-MOSFETs, Eiji Kojima , <i>K. Chokawa, H. Shirakawa, M. Araidai, K. Shiraishi, K. Shiozaki, T. Kachi</i> , Nagoya University, Japan
2:35pm	PCSI-MoA8 Native Point Defect Measurement, Processing, and Identification Near Ga ₂ O ₃ Surfaces, <i>H. Gao, G. Foster</i> , The Ohio State University; <i>H. Von Wenckstern</i> , University of Leipzig, Germany; <i>M. Grundmann</i> , Universität Leipzig Institut für Experimentelle Physik II, Germany; <i>M. Higashiwaki</i> , National Institute of Information and Communications Technology, Japan; Leonard Brillson , <i>H. Zhao</i> , The Ohio State University
Session PCSI-MoA (Keauhou II) - Organic Spintronics Moderator: Danna Freedman, Northwestern University	
2:40pm	INVITED: PCSI-MoA9 Geometry Effects in Spin Pumping through Thin Organic Films, Georg Schmidt , Martin-Luther-Universität Halle-Wittenberg, Germany
2:45pm	
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3:10pm	PCSI-MoA15 Controlling Anisotropy in Organic-Based Magnets for Microwave Electronics and Quantum Magnonics, Michael Chilcote , <i>M. Harberts, Y. Lu, I. Froning, H. Yu</i> , The Ohio State University; <i>B. Fuhrmann</i> , IZM, Martin-Luther-Universität Halle-Wittenberg; <i>K. Lehmann</i> , Institute für Physik, Martin-Luther-Universität Halle-Wittenberg; <i>A. Franson</i> , The Ohio State University; <i>N. Zhu, H. Tang</i> , Yale University; <i>G. Schmidt</i> , Martin-Luther-Universität Halle-Wittenberg, Germany; <i>E. Johnston-Halperin</i> , The Ohio State University
3:15pm	PCSI-MoA16 Controlling the Self-Assembly and Optoelectronic Properties of Porphyrin Nanostructures, James Batteas , <i>A. Wan, T. Reyes, M. Elinski, M. Buzbee</i> , Texas A&M University; <i>C.M. Drain</i> , Hunter College of CUNY
3:20pm	Coffee Break & Poster Viewing
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Session PCSI-MoA (Keauhou II) - New Approaches to Epitaxy I Moderators: Fengyuan Yang, The Ohio State University	
4:30pm	INVITED: PCSI-MoA31 Tailoring Semiconductor Growth with Light, Kirstin Alberi , National Renewable Energy Laboratory
4:35pm	
4:40pm	
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4:55pm	

Monday Afternoon, January 15, 2018

5:00pm	PCSI-MoA37 Confined Lateral Overgrowth of Epitaxial InP Layers by Chemical Beam Epitaxy, <i>Sukgeun Choi, B. Markman, H.Y. Tseng, S.S. Brunelli, A. Goswami, D.P. Pennachio, J. Klamkin</i> , University of California, Santa Barbara; <i>M. Rodwell</i> , University of California, Santa Barbara; <i>C.J. Palmstrom</i> , University of California, Santa Barbara
5:05pm	PCSI-MoA38 Epitaxial Wafer Scale Growth of Tungsten Dichalcogenides, <i>Tanushree Choudhury, M. Chubarov, X. Zhang, J. Robinson, J. Redwing</i> , The Pennsylvania State University
5:10pm	PCSI-MoA39 Structural Phenomena at the 3D/2D Interface: Epitaxy of Metals on Transition Metal Dichalcogenides, <i>Kayla Cooley, A.C. Domask, R. Alsaadi, S.E. Mohny</i> , The Pennsylvania State University
Session PCSI-MoA (Keauhou II) - Nanowires and Nanostructures Moderator: Erik Lind, Lund University	
5:15pm	PCSI-MoA40 Temperature Dependence of Photoinduced Hydrogen Production and Simultaneous Purification in TiO ₂ Nanotubes/Palladium Bilayer Membrane, <i>J. Asai, Kei Noda</i> , Keio University, Japan
5:20pm	PCSI-MoA41 Structural Properties and Carrier Transport in Axial Silicon-Germanium Nanowire Heterojunctions, <i>X. Wang, Leonid Tsybeskov</i> , New Jersey Institute of Technology; <i>T. Kamins</i> , Stanford University; <i>X. Wu, D. Lockwood</i> , National Research Council Canada
5:25pm	PCSI-MoA42 High Performance InAs Quantum Dot Lasers Grown on on-axis (001) Si with Low Threading Dislocation Density, <i>Daehwan Jung, J.C. Norman, M.J. Kennedy, C. Shang</i> , University of California, Santa Barbara; <i>R.W. Herrick</i> , Intel Corp.; <i>Y. Wan, B. Shin, I. MacFarlane, C. Jan, A.C. Gossard, J.E. Bowers</i> , University of California, Santa Barbara
5:30pm	PCSI-MoA43 Atomistic Mechanisms of Orientation and Temperature Dependence in Gold-Catalyzed Silicon Growth, <i>Yanning Wang</i> , Massachusetts Institute of Technology; <i>A. Santana</i> , Beijing Computational Science Research Center; <i>W. Cai</i> , Stanford University
5:35pm	PCSI-MoA44 Evaluation of Strain in the Oxide Covered Silicon Nanowires for Thermoelectric Devices by Raman Spectroscopy, <i>Ryo Yokogawa</i> , Meiji University, Japan; <i>S. Hashimoto, M. Tomita, T. Watanabe</i> , Waseda University, Japan; <i>A. Ogura</i> , Meiji University, Japan
6:00pm	Dinner (Bayview Grounds)

Monday Evening, January 15, 2018

Session PCSI-MoE (Keauhou II) - 2D Surfaces II

Moderator: Jieun Lee, Ajou University

7:30pm	INVITED: PCSI-MoE1 Towards Strongly Coupled van der Waals Heterostructures Using Layer-by-layer Transfer, <i>Emanuel Tutuc, K. Kim, G.W. Burg, B. Fallahazad, S. Larentis, H.C.P. Mowwa</i> , The University of Texas
7:35pm	
7:40pm	
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8:00pm	PCSI-MoE7 Electronic and Optical Properties of Defects in Transition Metal Dichalcogenide Monolayers, <i>B. Schuler, S. Barja, S. Wickenberg, N. Borys, E. Barnard, A. Weber-Bargioni, D. Frank Ogletree</i> , Molecular Foundry, Lawrence Berkeley Lab
8:05pm	PCSI-MoE8 Work Function Variations in Twisted Graphene Layers, <i>Jeremy Robinson, J. Culbertson</i> , Naval Research Laboratory; <i>M. Berg, T. Ohta</i> , Sandia National Laboratory
8:10pm	PCSI-MoE9 Quantum Hall Effect Observed for Covalently and non-Covalently Functionalized Epitaxial Graphene, <i>Evgeniya Lock, J. Prestigiacomo</i> , Naval Research Laboratory; <i>P. Dev</i> , Howard University; <i>A. Nath</i> , George Mason University; <i>R.L. Myers-Ward, M. Osofsky, T. Reinecke, K. Gaskill</i> , Naval Research Laboratory

Session PCSI-MoE (Keauhou II) - 2D Magnetism

Moderator: Gunter Luepke, College of William & Mary

8:15pm	INVITED: PCSI-MoE10 2D Magnets and Heterostructures, <i>Xiaodong Xu</i> , University of Washington
8:20pm	
8:25pm	
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8:45pm	UPGRADED: PCSI-MoE16 Antiferromagnetic Ordering in Atomically Thin 2-dimensional Materials Studied by Raman Spectroscopy, <i>J.-U. Lee, K. Kim, S. Lim</i> , Sogang University, Republic of Korea; <i>S. Lee, J.H. Ryoo, S. Kang, T.Y. Kim, P. Kim, C.-H. Park, J.-G. Park</i> , Seoul National University; <i>Hyeonsik Cheong</i> , Sogang University, Republic of Korea
8:50pm	
8:55pm	

Tuesday Morning, January 16, 2018

PCSI-TuM (Keauhou II) - Scanned Probe Moderator: Wolfgang Windl, The Ohio State University	
7:30am	Continental Breakfast (Keauhou I)
8:30am	INVITED: PCSI-TuM1 "Seeing" the Covalent Bond: Simulating Atomic Force Microscopy Images, <i>James Chelikowsky</i> , University of Texas, Austin
8:35am	
8:40am	
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9:00am	PCSI-TuM7 Nanoscale Carrier Distribution Imaging of Layered Semiconductor Materials using Scanning Nonlinear Dielectric Microscopy, <i>Kohei Yamasue, Y. Cho</i> , Tohoku University, Japan
PCSI-TuM (Keauhou II) - 2D Materials and Applications Moderator: Michael Flatté, University of Iowa	
9:05am	PCSI-TuM8 Effects of Edge Structures on the Oxygen Reduction Reaction Activity of Nitrogen-doped Graphene Nanoribbons, <i>Shun-ichi Gomi, H. Matsuyama, A. Akaishi, J. Nakamura</i> , The University of Electro-Communications (UEC-Tokyo), Japan
9:10am	PCSI-TuM9 2D or not 2D? How Nanoscale Surface Roughness Impacts the Frictional Properties of Graphene and MoS ₂ , <i>James Batteas, M. Elinski, Z. Liu, M. Negtiro</i> , Texas A&M University
9:15am	PCSI-TuM10 Synthesis and Characterization of Atomic and Electronic Properties of Graphene-based Heterostructure, <i>Young Jae Song</i> , Sungkyunkwan University, Republic of Korea
9:20am	PCSI-TuM11 Quantitative Relation between the Structural Stability and the Aromaticity of Graphene Nanoflakes, <i>M. Ushirozako, H. Matsuyama, A. Akaishi, Jun Nakamura</i> , The University of Electro-Communications (UEC-Tokyo), Japan
9:25am	PCSI-TuM12 Formation of Water Bilayer on Graphene Surfaces, <i>Akira Akaishi, J. Nakamura</i> , The University of Electro-Communications (UEC-Tokyo), Japan
9:30am	PCSI-TuM13 Scanning Electrochemical Microscopy of Graphene-based Hybrids: Insights into Physicochemical Interfacial Processes and Electroactive Site Distribution, <i>Sanju Gupta</i> , Western Kentucky University
9:35am	Coffee Break & Poster Viewing
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PCSI-TuM (Keauhou II) - Interfaces and Heterostructures Moderator: Kirstin Alberi, National Renewable Energy Laboratory	
11:00am	UPGRADED: PCSI-TuM31 Realization of 2D Group-III Materials Through Thermal Evaporation-Based Intercalation, <i>Natalie Briggs, B. Bersch, A. De La Fuente</i> , Pennsylvania State University; <i>C. Lopez Pernia</i> , Technical University of Madrid, Spain; <i>K. Wang, J. Robinson</i> , Pennsylvania State University
11:05am	
11:10am	
11:15am	PCSI-TuM34 Strain and Compositional Fluctuations in Al _{0.81} In _{0.19} N/GaN Heterostructures, <i>Verena Portz</i> , Academia Sinica, National Taiwan University, Forschungszentrum Jülich GmbH, Republic of China; <i>M. Schnedler</i> , Forschungszentrum Jülich, Germany; <i>M. Duchamp</i> , Nanyang Technological University, Singapore; <i>F.-M. Hsiao</i> , National Taiwan University, Republic of China; <i>H. Eisele</i> , Technische Universität Berlin, Germany; <i>J.-F. Carlin, R. Butté, N. Grandjean</i> , École Polytechnique Fédérale de Lausanne, Switzerland; <i>R.E. Dunin-Borkowski, P. Ebert</i> , Forschungszentrum Jülich, Germany
11:20am	PCSI-TuM35 Theoretical Investigations for Strain Relaxation and Resultant Growth Mode in InAs/GaAs Heteroepitaxial System, <i>Tomonori Ito, T. Akiyama, K. Nakamura</i> , Mie University, Japan
11:25am	PCSI-TuM36 Electric Field-Driven Defect Diffusion at Oxide Semiconductor-Metal Interfaces, <i>H. Gao, G. Foster</i> , The Ohio State University; <i>G. Mackessy</i> , Columbus School for Girls; <i>A. Hyland, M. Allen</i> , University of Canterbury, New Zealand; <i>Leonard Brillson</i> , The Ohio State University
11:30am	PCSI-TuM37 General Absence of Electron Accumulation at Stoichiometric Indium-containing Semiconductor Surfaces, <i>Holger Eisele</i> , Technische Universität Berlin, Germany

Tuesday Morning, January 16, 2018

11:35am	PCSI-TuM38 InAsSbBi/GaAsSbBi Type-II Heterostructures for Mid- and Long-wavelength Infrared Applications, <i>Shane Johnson, S.T. Schaefer, R.R. Kosireddy, A.J. Shalindar, P.T. Webster</i> , Arizona State University
11:40am	
PCSI-TuM (Keauhou II) - Optical Properties of 2D Materials Moderator: Xavier Marie, Institut National des Sciences Appliquées, LPCNO	
11:45am	INVITED: PCSI-TuM40 Excitons in MoS ₂ /MoSe ₂ /MoS ₂ Trilayer Metal Dichalcogenides, <i>Paulina Plochocka</i> , LNCMI, CNRS, France
11:50am	
11:55am	
12:00pm	
12:05pm	
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12:15pm	PCSI-TuM46 Photo-assisted Modulation of Thermal Transport and Thermopower in Single-layer Transition Metal Dichalcogenides, <i>Parijat Sengupta, J. Shi</i> , University of Illinois at Chicago
12:20pm	Free Afternoon

Tuesday Evening, January 16, 2018

Session PCSI-TuE (Keauhou II) – Rump Session: 2D or not 2D?

Moderator: Jun Zhu, Penn State University

7:30pm	<p>INVITED: PCSI-TuE1 III-V Transistors for nm Logic and 100-1000 GHz Wireless, Mark Rodwell, University of California, Santa Barbara</p> <p>Abstract: We examine the opportunities for nm III-V electron devices both in VLSI logic and in mm-wave (and sub-mm-wave) wireless communications. Tunnel FETs (TFETs) are being developed for high on-off current ratios at low operating voltages, enabling low-power VLSI. III-V heterojunction TFETs offer direct (vs. phonon-assisted) tunneling, low tunnel barrier energy, and low electron effective mass. TFET on-currents are nevertheless very low; consequently TFET logic will be very slow. We are developing modified (triple-heterojunction) TFETs [1]. In these, added wide-bandgap source and channel layers increase the junction built-in potential, increasing the junction field and thereby decreasing the tunneling distance. Confinement with transport decreases the hole mass. The tunneling probability is greatly increased, proportionally increasing the on-current and logic speed. As the heterojunctions must be perpendicular to the semiconductor-dielectric interface, both convention TFETs are profoundly difficult to fabricate. Addressing this, our fabrication process, which we are developing, uses template assisted selective epitaxy [2].</p>
7:35pm	<p>Wireless communications will soon move to 5G (28, 38, 57-71, 71-86GHz); research now explores 100-1000 GHz systems. Above ~200GHz, CMOS provides little or no amplification, and scaling below ~32nm does not improve this. We must develop transistors for the low-noise and high-power stages in 100-200GHz systems, and for all stages at higher frequencies. InP HBTs, useful for power, have reached 1.1THz f_{max}. To further improve bandwidth, we are exploring TESA processes to form devices with buried dielectric layers in the base-collector junction. The base contact can be made wider for reduced resistance while the buried dielectric layer maintains low junction capacitance. InP HEMTs, useful for noise, have reached 1.5THz f_{max}. To further improve bandwidth, we are developing nm InAs MOS-HEMTs, with ALD ZrO₂ gate dielectrics, 5nm channels, and modulation-doped access regions surrounding the gate.</p> <p>[1] P. Long, <i>et al.</i>, 2017 Device Research Conference, June, Notre Dame. [2] L. Czornomaz, <i>et al.</i>, 2015 VLSI Symposium, June, Kyoto, Japan</p>
7:40pm	<p>INVITED: PCSI-TuE2 Emerging Frontiers of 2D Materials: From Low-Energy and Bendable Electronics to Quantum-, Spin-, and Valley-Enabled Devices, Roland Kawakami, The Ohio State University</p> <p>Abstract: 2D materials research began with graphene, but has expanded far beyond to include transition metal dichalcogenide (TMD) semiconductors, hexagonal boron-nitride (h-BN) insulators, and other 2D van der Waals systems. Most notably, the 2D materials can be stacked into vertical heterostructures, where proximity effects and transport driven processes can create properties that are not present in the individual 2D sheets. In this talk, I will review some of the exciting trends in 2D materials research as it relates to electronic and photonic devices. Some of the more near term research involves develop novel devices such as tunneling field effect transistors for low energy electronics, as well as printable inks for large area and bendable electronics. Looking further into the future for 2D materials, there are new opportunities for spin-based logic, valley-polarized electronics and photonics, and single photon emitters for quantum information. The advent of spin field effect switches in graphene/TMD heterostructures, monolayer ferromagnets, long valley lifetimes of holes and indirect excitons, and robust single photon emission from defects in h-BN are among the recent new discoveries that fuel the excitement for 2D materials research and their potential applications.</p>
7:45pm	
7:50pm	
7:55pm Followed by Discussion	

Wednesday Morning, January 17, 2018

Session PCSI-WeM (Keauhou II) - Nanowires I Moderator: Ezekiel Johnston-Halperin, The Ohio State University	
7:30 am	Continental Breakfast (Keauhou I)
8:30am	INVITED: PCSI-WeM1 Bottom-up Grown Nanowire Quantum Devices, Erik Bakkers , Eindhoven University of Technology, Netherlands
8:35am	
8:40am	
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9:00am	PCSI-WeM7 Dopant Profiling in Semiconductor Nanowires by Atom Probe Tomography, A. Rodil, R. Plantenga, S. Kolling, A. Cavali, A. Li, D. Car, S. Gazibegovic, E. Bakkers, Paul M. Koenraad , Eindhoven University of Technology, Netherlands
9:05am	PCSI-WeM8 How Can Band Offsets in III-V Nanowires be Determined Correctly by Scanning Tunneling Spectroscopy?, Philipp Ebert , Forschungszentrum Jülich, Germany; P. Capiod , ISEN; T. Xu , Shanghai University; M.J. Wei, A. Díaz Álvarez, X.L. Han, D. Troadec, J.-P. Nys, M. Berthe , ISEN; G. Patriarche , LPN-CNRS; L. Lymparakis, J. Neugebauer , MPIE; I. Lefebvre , ISEN; S.R. Plissard , LAAS-CNRS; P. Caroff , Cardiff University; R.E. Dunin-Borkowski , Forschungszentrum Jülich, Germany; B. Grandidier , ISEN
9:10am	PCSI-WeM9 Lazarevicite-type short-range ordering in ternary III-V nanowires, Michael Schnedler , Forschungszentrum Jülich GmbH, Germany; I. Lefebvre , Institut d'Electronique, de Microélectronique et de Nanotechnologie (IEMN), France; T. Xu , Shanghai University, China; V. Portz , Forschungszentrum Jülich GmbH, Germany; G. Patriarche , Université Paris-Saclay, France; J.-P. Nys , ISEN, France; S.R. Plissard , LAAS-CNRS; P. Caroff , Cardiff University, UK; M. Berthe , ISEN, France; H. Eisele , Technische Universität Berlin, Germany; R.E. Dunin-Borkowski, P. Ebert , Forschungszentrum Jülich, Germany; B. Grandidier , ISEN, France
Session PCSI-WeM (Keauhou II) - Nanowires II Moderator: Ezekiel Johnston-Halperin, The Ohio State University	
9:15am	INVITED: PCSI-WeM10 III-V Nanowire Devices: A 3D Toolbox with Contact, Interface, and Heterostructure Engineering, Erik Lind, L.-E. Wernersson , Lund University, Sweden
9:20am	
9:25am	
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9:35am	
9:40am	
9:45am	PCSI-WeM16 The Zincblende/Wurtzite Interface in III-V Nanowires: Heterostructures with Atomically-abrupt Electronic Transition, J. Knutsson, S. McKibbin, M. Hjort, S. Lehmann , Lund University; N. Wilson, S.J. Patel, C.J. Palmstrom , University of California, Santa Barbara; K.A. Dick , Lund University; A. Mikkelsen, Rainer Timm , Lund University, Sweden
9:50am	PCSI-WeM17 Selective-area Epitaxy and Electronic Transport in in-plane InAs One-dimensional Channels, JoonSue Lee, S. Choi, M. Pendharkar, A.P. McFadden, C.J. Palmström , University of California, Santa Barbara
9:55am	PCSI-WeM18 Writing Gallium Oxide on GaN Nanowires With The AFM Tip, Jovana Colvin, R. Ciechonski, J. Ohlsson, A. Mikkelsen, R. Timm , Lund University, Sweden
10:00am	PCSI-WeM19 Recombination processes and localization effects in GaNAsP Recombination Processes and Localization Effects in GaNAsP Nanowires, M. Jansson, S.L. Chen , Linköping University, Sweden; R. La , University of California, San Diego; J.E. Stehr , Linköping University, Sweden; C.W. Tu , University of California, San Diego; W.M. Chen, Irina A. Buyanova , Linköping University, Sweden
10:05am	Coffee Break & Poster Viewing
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Session PCSI-WeM (Keauhou II) - Topological Properties I Moderator: Paulina Plochocka, LNCMI, CNRS	
11:00am	INVITED: PCSI-WeM31 Quantum Anomalous Hall Effect in the Magnetic Topological Insulator Thin Films, Cui-Zu Chang , The Pennsylvania State University
11:05am	
11:10am	
11:15am	
11:20am	
11:25am	

Wednesday Morning, January 17, 2018

11:30am	UPGRADED: PCSI-WeM37 Molecular Beam Epitaxy of Near Surface InAs _x Sb _{1-x} Quantum Wells for Topological Quantum Computation, <i>Mihir Pendharkar, J.S. Lee, A.P. McFadden, C.J. Palmstrom</i> , University of California, Santa Barbara
11:35am	
11:40am	
Session PCSI-WeM (Keauhou II) - Optical Studies of 2D Materials Moderator: Nicholas Harmon, University of Iowa	
11:45am	INVITED: PCSI-WeM40 Exploring the Bright Side and the Dark Side of Excitons in Atomically-thin Transition Metal Dichalcogenides, <i>Alex High</i> , University of Chicago
11:50am	
11:55am	
12:00pm	
12:05pm	
12:10pm	
12:15pm	PCSI-WeM46 Structure and Peierls Transition of the Indium/Si(111) 1D Model System: A Microscopic View from Raman Spectroscopy, <i>Norbert Esser, E. Speiser, S. Chandola</i> , Leibniz-Institut für Analytische Wissenschaften-ISAS e.V., Germany; <i>S. Wippermann</i> , Max-Planck-Institut für Eisenforschung, Germany; <i>S. Sanna</i> , Institut für Theoretische Physik, Justus-Liebig-Universität, Germany; <i>W.G. Schmidt</i> , Universität Paderborn, Germany
12:20pm	PCSI-WeM47 Charge Transfer Dynamics in Graphene-Inorganic 'hybrids' with Transition Metal Oxides Using In-Situ Raman Spectroelectrochemistry, <i>Sanju Gupta, S.B. Carrizosa</i> , Western Kentucky University
12:25pm	UPGRADED: PCSI-WeM48 Rydberg Excitons & Dielectric Environment Effects in Monolayer Semiconductors: Insight from High Magnetic Fields, <i>A. Stier</i> , Los Alamos National Laboratory; <i>N.S. Wilson</i> , University of California, Santa Barbara; <i>J. Kono</i> , Rice University; <i>X. Xu</i> , University of Washington; <i>Scott Crooker</i> , Los Alamos National Laboratory
12:30pm	
12:35pm	
12:40pm	Lunch and Poster Viewing (Keauhou Foyer)

Wednesday Afternoon, January 17, 2018

Session PCSI-WeA (Keauhou II) - Fabrication and Processing Moderator: Patrick Lenahan, The Pennsylvania State University	
2:00pm	PCSI-WeA1 Preparation and Characterization of Nanometer-thin Silicone Films for Dielectric Elastomer Transducers, <i>Bert Müller, B. Osmani, T. Töpfer</i> , University of Basel, Switzerland
2:05pm	PCSI-WeA2 Improving Interfacial Adhesion Between Active Material and Solid Electrolytes in Thin Film Supercapacitors, <i>S. Ahmed, N. Korivi, Li Jiang, B. Oni</i> , Tuskegee University
2:10pm	PCSI-WeA3 Physical and Chemical Modification of Graphene for High Capacitive Energy Storage, <i>KwangBum Kim</i> , Yonsei University, Republic of Korea
2:15pm	PCSI-WeA4 Interface Analysis and Phase Transition of HfO ₂ Film on Si Substrate after Thermal Treatment, <i>Hassan Siddique, D. Rucheng, W. Zhongping, D. Zejun</i> , University of Science and Technology of China; <i>Z. Zengming</i> , University of Science and Technology of China, Hefei, Anhui, China
2:20pm	PCSI-WeA5 Machine Learning for Process Development for Semiconductor and Nanotechnology Product R&D, <i>Mark Mueller</i> , Georgia Institute of Technology
2:25pm	PCSI-WeA6 Interlayer Assisted Growth of Polycrystalline Germanium on Silicon at Low Temperatures, <i>Naga Korivi, N. Nujhat, S. Ahmed, L. Jiang</i> , Tuskegee University; <i>K. Das</i> , JBP Materials LLC
2:30pm	
Session PCSI-WeA (Keauhou II) - New Approaches to Epitaxy II Moderator: Erik Lind, Lund University	
2:35pm	INVITED: PCSI-WeA8 Plasma-enhanced Atomic Layer Deposition of MoS ₂ : From 2-D Monolayers to 3-D Aligned Nanofins, <i>Ageeth Bol</i> , Eindhoven University of Technology, Netherlands
2:40pm	
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3:05pm	PCSI-WeA14 Phase Control of Ga ₂ O ₃ Films Grown by Atomic Layer Epitaxy, <i>V.D. Wheeler, N. Nepal</i> , U.S. Naval Research Laboratory; <i>L.O. Nyakiti</i> , Texas A&M University; <i>D.R. Boris, S.G. Walton, D.J. Meyer, Charles Eddy, Jr.</i> , U.S. Naval Research Laboratory
3:10pm	PCSI-WeA15 Low-temperature Homoepitaxial Growth of Two-dimensional Antimony Superlattices in Silicon, <i>April Jewell, A.G. Carver, S. Nikzad, M.E. Hoenk</i> , Jet Propulsion Laboratory
3:15pm	PCSI-WeA16 Unraveling Atomic-level Self-organization at the Plasma-material Interface, <i>Jean Paul Allain, A.K. Shetty, B.J. Holybee, M-K. Cheng, C. Jaramillo</i> , University of Illinois at Urbana Champaign
3:20pm	Coffee Break & Poster Viewing
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Session PCSI-WeA (Keauhou II) - 2D Surfaces III Moderator: Robert Wallace, University of Texas at Dallas	
4:30pm	INVITED: PCSI-WeA31 Excitonic Linewidth Approaching the Homogeneous Limit in MoS ₂ based Van der Waals Heterostructures, <i>Xavier Marie</i> , Institut National des Sciences Appliquées, LPCNO, France
4:35pm	
4:40pm	
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4:50pm	
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5:00pm	PCSI-WeA37 Out-of-Plane Electromechanical Response of TMDs, <i>Christopher Brennan, K. Koul, N. Lu, E.T. Yu</i> , University of Texas, Austin
5:05pm	PCSI-WeA38 Infrared Problem in Cold Atom Adsorption on Graphene, <i>Dennis Clougherty</i> , University of Vermont

Wednesday Afternoon, January 17, 2018

5:10pm	PCSI-WeA39 Measuring and Modeling Liquid-Filled Nanobubbles Trapped by 2D Materials, <i>Daniel Sanchez, Z. Dai, P. Wang, A. Cantu-Chavez, C.J. Brennan, E.T. Yu, R. Huang, N. Lu</i> , The University of Texas at Austin
Session PCSI-WeA (Keauhou II) - Growth Moderator: Robert Wallace, University of Texas at Dallas	
5:15pm	PCSI-WeA40 Stress Relaxation Mechanism in the Si-SiO ₂ System and its Influence on the Interface Properties, <i>Daniel Kropman, T. Laas</i> , Tallinn University, Estonia; <i>V. Seeman</i> , Tartu University; <i>A. Medvids</i> , Riga University; <i>J. Kliava</i> , University of Bordeaux
5:20pm	PCSI-WeA41 Characterization of Barium Hexaferrite Thick Films Deposited by Aerosol Deposition with an <i>in situ</i> Magnetic Field, <i>Scooter Johnson</i> , U.S. Naval Research Laboratory; <i>D.-S. Park</i> , Korean Institute of Materials Science; <i>A. Hauser, S. Ranjit, K. Law</i> , University of Alabama; <i>H. Newman, S. Shin, S. Qadri, E. Gorzkowski</i> , Naval Research Laboratory
5:25pm	PCSI-WeA42 Surface Science Studies During Plasma-Assisted Atomic Layer Epitaxial Growth of InN on GaN Substrates, <i>Samantha Rosenberg</i> , U.S. Naval Research Laboratory; <i>D.P. Pennachio</i> , University of California, Santa Barbara; <i>V.R. Anderson, S. Johnson, N. Nepal</i> , U.S. Naval Research Laboratory; <i>C. Wagenbach</i> , Boston University; <i>M. Munger</i> , SUNY Brockport; <i>A.C. Kozen</i> , U.S. Naval Research Laboratory; <i>Z. Robinson</i> , SUNY Brockport; <i>S. Choi</i> , University of California, Santa Barbara; <i>J.K. Hite</i> , U.S. Naval Research Laboratory; <i>K.F. Ludwig</i> , Boston University; <i>C.J. Palmstrøm</i> , University of California, Santa Barbara; <i>C.R. Eddy, Jr.</i> , U.S. Naval Research Laboratory
6:00 pm	Conference Banquet Dinner (Bayview Grounds)

Wednesday Evening, January 17, 2018

Session PCSI-WeB (Keauhou II) - PCSI Banquet Speaker

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7:30pm	INVITED: PCSI-WeB13 Dynamic Materials Inspired by Cephalopods, <i>Alon Gorodetsky</i> , University of California, Irvine
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Thursday Morning, January 18, 2018

Session PCSI-ThM (Keauhou II) - Topological Properties II Moderator: Roland Kawakami, The Ohio State University	
7:30am	Continental Breakfast (Keauhou I)
8:30am	INVITED: PCSI-ThM1 A Valley Valve and Electron Beam Splitter in Bilayer Graphene, <i>J. Li, R.-X. Zhang, Z. Yin, J. Zhang</i> , Penn State University; <i>K. Watanabe, T. Taniguchi</i> , National Institute of Materials Science, Japan; <i>C. Liu, Jun Zhu</i> , Penn State University
8:35am	
8:40am	
8:45am	
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8:55am	
9:00am	PCSI-ThM7 Topological Phase Transition and Isostructural Phase Transition in 1T-TiTe ₂ Single Crystal Under Pressure, <i>Min Zhang</i> , University of Science and Technology of China
9:05am	PCSI-ThM8 Chemical Potential Tuning and Strain Engineering in Topological Half-Heusler Thin Films, <i>Shouvik Chatterjee, J. Logan, N.S. Wilson, H.S. Inbar, T.L. Brown-Heft</i> , University of California, Santa Barbara; <i>A.V. Fedorov</i> , Lawrence Berkeley National Lab; <i>C.J. Palmstrøm</i> , University of California, Santa Barbara
9:10am	PCSI-ThM9 Spin-dependent Processes of Interfacial Charge Transfer Excitons in Polymer-fullerene Solar Cells, <i>Y. Puttisong, F. Gao, Y. Xia, I.A. Buyanova, O. Inganäs, Weimin M. Chen</i> , Linköping University, Sweden
Session PCSI-ThM (Keauhou II) - 2D Surfaces IV Moderator: Roland Kawakami, The Ohio State University	
9:15am	INVITED: PCSI-ThM10 2D Materials: Surfaces, Interfaces, and Defects, <i>Robert Wallace</i> , University of Texas at Dallas
9:20am	
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9:45am	PCSI-ThM16 Synthesis, Properties and Tunability of Lateral 2D Heterostructures, <i>Shruti Subramanian, D. Deng</i> , The Pennsylvania State University; <i>K. Xu</i> , University of Pittsburgh; <i>N. Simonson, K. Wang</i> , The Pennsylvania State University; <i>J. Li, R. Feenstra</i> , Carnegie Mellon University; <i>S. Fullerton-Shirey</i> , University of Pittsburgh; <i>J. Robinson</i> , The Pennsylvania State University
9:50am	PCSI-ThM17 Surface Potential and Photoresponsive Behavior at Graphene-Metal Interfaces, <i>Matthew DeJarlid, P.M. Campbell, A.L. Friedman, M. Currie, R.L. Myers-Ward, A.K. Boyd, S.G. Rosenberg, S.P. Pavunny</i> , U.S. Naval Research Lab; <i>K.M. Daniels</i> , University of Maryland; <i>D.K. Gaskill</i> , U.S. Naval Research Lab
9:55am	Coffee Break & Poster Viewing
10:00am	
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Session PCSI-ThM (Keauhou II) - New Techniques II Moderator: Hidemi Shigekawa, University of Tsukuba	
10:30am	INVITED: PCSI-ThM25 Force Measurement by Atomic Force Microscopy with a Molecular Tip at Low Temperature, <i>Shigeki Kawai</i> , National Institute for Materials Science, Japan
10:35am	
10:40am	
10:45am	
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11:00am	UPGRADED: PCSI-ThM31 Local Deep Level Transient Spectroscopy Imaging for MOS Interface Trap Distribution, <i>N. Chinone, Yasuo Cho</i> , Tohoku University, Japan
11:05am	
11:10am	
11:15am	INVITED: PCSI-ThM34 Interaction and Topological Effects in Two-dimensional Materials, <i>Steven G. Louie</i> , UC Berkeley
11:20am	
11:25am	
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