

PCSI-50 Program Overview

Room /Time	Keahou I
SuA	PCSI-SuA1: Materials for Novel Information Systems PCSI-SuA2: Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces I
SuE	PCSI-SuE1: Organic and Hybrid Semiconductor Materials PCSI-SuE2: Wide Bandgap Materials I
MoM	PCSI1-MoM1: Characterization of Interfaces and Devices (Transport, Optical, & Electronic) PCSI-MoM2: High-k Dielectrics and Ferroelectrics
MoA	PCSI-MoA1: Superconducting Qubits PCSI-MoA2: 2D Materials and Graphene I PCSI-MoA3: Magnetic Materials (2D, Monolayers, & Heterostructures)
MoE	PCSI-MoE: STM Controlled Surface "Lego" and Panel Discussion
TuM	PCSI-TuM1: Oxide Semiconductor Materials I PCSI-TuM2: Wide Bandgap Materials II
TuE	PCSI-TuE: Rump Session: Quantum Computation Materials and Devices and Panel Discussion
WeM	PCSI-WeM1: Point Defects (for Quantum Information Applications) I PCSI-WeM2: Point Defects (for Quantum Information Applications) II PCSI-WeM3: Photoemission Spectroscopy
WeA	PCSI-WeA1: Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces II PCSI-WeA2: Materials for Catalysis, Energy Storage, and Energy Harvesting PCSI-WeA3: Spin Transport and Spintronics PCSI-WeA4: 2D Materials and Graphene II
ThM	PCSI-ThM1: Topological Materials PCSI-ThM2: Oxide Semiconductor Materials II

Sunday Afternoon, January 19, 2025

Room Keahou I		
2:30pm	INVITED: PCSI-SuA1-1 Interfacing Biomolecules with Coherent Quantum Sensors, <i>P. Maurer, Guanming Lao</i> , University of Chicago	PCSI Session PCSI-SuA1 Materials for Novel Information Systems Moderator: Dominik Zumbuhl , University of Basel, Switzerland
3:10pm	PCSI-SuA1-9 UPGRADED: Er Sites in Si for Quantum Information Processing, <i>Sven Rogge</i> , UNSW, Australia	
3:30 pm		
3:50pm	PCSI-SuA1-17 Development of 'Artificial' Memristive Synapses Using Various Sp ² C (Graphene-Like) -Sp ³ C (Diamond) Heterojunctions as Neuromorphic Devices, <i>Sanju Gupta</i> , Gdansk University of technology and Penn State University; <i>R. Bogdanowicz</i> , Gdansk University of Technology, Poland	
3:55pm	PCSI-SuA1-18 In-Situ Transmission Electron Microscopy of Hafnium Zirconium Oxide for Phase Identification in Memristor Devices, <i>Krishnamurthy Mahalingam</i> , BlueHalo-UES Inc; <i>S. Asapu</i> , Department of Electrical and Computer Engineering, University of Massachusetts; <i>L. Blank</i> , ARCTOS Technology Solutions; <i>D. Winner</i> , University of Dayton; <i>C. Bowers</i> , Blue Halo-UES Inc; <i>S. Ganguli</i> , <i>A. Roy</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; <i>J. Yang</i> , Department of Electrical and Computer Engineering, University of Southern California	
4:00pm	PCSI-SuA1-19 Quantum Sensing Using Two-dimensional Hexagonal Boron Nitride, <i>Hailong Wang</i> , Georgia Institute of Technology, USA	
4:05pm	Break & Poster Viewing	
4:20pm	INVITED: PCSI-SuA2-23 Correct Treatment of Spontaneous Polarization at Polar Wurtzite Interfaces, <i>Chris Van de Walle</i> , University of California Santa Barbara	PCSI Session PCSI-SuA2 Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces I Moderator: Roman Engel-Herbert , Paul-Drude Institute for Solid State Electronics, Germany
5:00pm	PCSI-SuA2-31 Temperature-Dependent Recombination Rate Analysis of the Minority Carrier Lifetimes in Mid-Wave Infrared Antimonide based Materials, <i>Haley B. Wolff</i> , New Mexico State University; <i>R. Carrasco</i> , <i>P. Weber</i> , <i>A. Newell</i> , <i>A. Duchane</i> ,	
5:05pm		
5:10pm		

Sunday Evening, January 19, 2025

Room Keahou I		
7:30pm		PCSI Session PCSI-SuE1 Organic and Hybrid Semiconductor Materials Moderator: Ingmar Swart , University of Utrecht, Netherlands
8:10pm	PCSI-SuE1-9 N-Heterocyclic Carbene and Olefin Monolayers on Silicon, Martin Franz , Technische Universität Berlin, Germany; M. Das , Universität Münster, Germany; C. Hogan , Istituto di Struttura della Materia-CNR (ISM-CNR), Italy; A. Das , Universität Münster, Germany; R. Zielinski , M. Kubicki , Technische Universität Berlin, Germany; M. Koy , Universität Münster, Germany; S. Chandola , Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany; M. Freitag , Universität Münster, Germany; U. Gerstmann , Universität Paderborn, Germany; C. Kosbab , Technische Universität Berlin, Germany; S. Brozzesi , Università di Roma Tor Vergata, Italy; M. Nehring , D. Liebig , V. Balfanz , J. Brühne , Technische Universität Berlin, Germany; W. Schmidt , Universität Paderborn, Germany; N. Esser , F. Glorius , M. Dähne , Technische Universität Berlin, Germany	
8:15pm	PCSI-SuE1-10 On Surface Synthesis of Graphite-N-Doped Molecular Graphene Nanostructures, Dong Wang , Institute of Chemistry, CAS, China	
8:20pm	PCSI-SuE1-11 Importance of Molecular Dipole Alignment and Surface Compensation in P-V Hysteresis of MAPbBr ₃ (001), L. Freter , Forschungszentrum Jülich GmbH, Germany; H. Hsu , National Taiwan University, Taiwan; R. Sankar , Academia Sinica, Taiwan; C. Chen , National Taiwan University, Taiwan; R. Dunin-Borkowski , P. Ebert , Forschungszentrum Jülich GmbH, Germany; Y. Chiu , National Taiwan University, Taiwan; Michael Schnedler , Forschungszentrum Jülich GmbH, Germany	
8:25pm	PCSI-SuE1-12 A Rare Earth Modified Silicon Surface as a Template for Ordered Organic Growth, M. Kubicki , Martin Franz , M. Dähne , Technische Universität Berlin, Germany	
8:30pm	PCSI-SuE2-13 "High Throughput" Exploration of Oxide MBE Growth Space through Cyclical in situ Growth and Etching, S. Schaefer , D. Fébba , M. Smeaton , K. Egbo , G. Teeter , S. Hasan , W. Callahan , A. Zakutayev , Brooks Tellekamp , National Renewable Energy Laboratory	PCSI Session PCSI-SuE2 Wide Bandgap Materials I Moderator: Scott Crooker , Los Alamos National Laboratory
8:35pm	PCSI-SuE2-14 Stability of Interface Morphology and Thermal Boundary Conductance of Direct Wafer Bonded GaN Si Heterojunction Interfaces Annealed at Growth and Annealing Temperatures, K. Huynh , M. Liao , University of California Los Angeles; X. Yan , University of California Irvine; J. Tomko , T. Pfeifer , University of Virginia; V. Dragoi , N. Razek , EV Group, Austria; E. Guiot , R. Caulmilone , Soitec, France; X. Pan , University of Irvine; P. Hopkins , University of Virginia; Mark Goorsky , University of California Los Angeles	
8:40pm	PCSI-SuE2-15 Plasma Deposition of GaN Thin Films on Silicon Substrates at Low Temperature, L. Hussey , J. Maurice , P. Roca I. Cabarrocas , Karim Ouaras , Ecole Polytechnique, France	
8:45pm	INVITED: PCSI-SuE2-16 Si-Integrated Ferroelectric Films for Optical Computing, Alex A. Demkov , A. Posadas , A. Raju , D. Wasserman , The University of Texas at Austin	

Monday Morning, January 20, 2025

Room Keahou I		
8:30am	INVITED: PCSI1-MoM1-1 Atomic Scale Insights into Layered 2D Materials Epitaxy, Dopants and Defects, <i>Jamie Warner</i> , The University of Texas at Austin	PCSI Session PCSI1-MoM1 Characterization of Interfaces and Devices (Transport, Optical, & Electronic) Moderator: Roman Engel-Herbert , Paul-Drude Institute for Solid State Electronics, Germany
9:10am	PCSI1-MoM1-9 Beyond Chemical Composition: How Surface Science Can Measure Electronic Properties, <i>J. Johns, Sarah Zaccarine, J. Mann, K. Artyushkova</i> , Physical Electronics	
9:15am	PCSI1-MoM1-10 Enhancing Interface and Retention Characteristics in NAND Flash Memory by Increasing Poly-Si Thickness to Prevent Pin-Hole Formation, <i>Chansung PARK, B. Choi</i> , Sungkyunkwan University, Korea	
9:20am	PCSI1-MoM1-11 Relation Ship between Defect Density and Photoreflectance Spectroscopy for InAs _x P _{1-x} Metamorphic Buffer Layer, <i>J. Kim, Gyoung Du Park, G. Kim, T. Kang</i> , Yeungnam University, Republic of Korea; <i>S. Lee, D. Kim</i> , Korea Research Instutue of Standards and Science (KRISS), Republic of Korea	
9:25am	PCSI1-MoM1-12 UPGRADED: Imaging Light-Matter Interactions using Low Kinetic Energy Photoelectrons, <i>A. Kim, A. Boehm, M. Berg, Taisuke Ohta, C. Dairon</i> , Sandia National Laboratories; <i>F. Vega</i> , Purdue University; <i>J. Yu, J. Klesko, S. Gennaro</i> , Sandia National Laboratories; <i>F. Liu</i> , los Alamos National Laboratory; <i>S. Smith, G. Copeland</i> , Sandia National Laboratories; <i>C. Chan</i> , University of Colorado at Boulder; <i>A. Mohite</i> , Rice University; <i>A. Cerjan</i> , Sandia National Laboratories; <i>T. Beechem</i> , Purdue University; <i>M. Sinclair, I. Brener, R. Sarma</i> , Sandia National Laboratories	
9:45am	PCSI1-MoM1-16 Examining Radiation Effects on the Electronic Structure and Defect Density of 1L WS2 through in-situ Photoemission Spectroscopy, <i>Christopher Smyth, A. Boehm</i> , Sandia National Laboratories; <i>K. Burns</i> , University of Virginia; <i>A. Kim, T. Ohta</i> , Sandia National Laboratories	
9:50am	PCSI1-MoM1-17 Scalable Synthesis of One-Dimensional Quantum Matter, <i>Ruhin Chowdhury, E. Renteria</i> , The University of New Mexico; <i>S. Addamane</i> , Sandia National Laboratories, USA; <i>D. Shima, D. Prakash, J. Neely</i> , University of New Mexico; <i>F. Cavallo</i> , The University of New Mexico	
9:55am	PCSI1-MoM1-18 Current Characteristics Depending on the Doping Concentration of the Barrier in the GaSb Based Unipolar Detector, <i>J. Kim, Jong Hun Lee, G. Kim, T. Kang</i> , Yeungnam University, Republic of Korea; <i>S. Lee, D. Kim</i> , Korea Research Instutue of Standards and Science (KRISS), Republic of Korea	
10:00am	PCSI1-MoM1-19 MBE-Grown Germanium Quantum Well Planar Josephson Junction, <i>Joshua Thompson, C. Gaspe, R. Card, J. Dong, K. Sardashti</i> , Laboratory for Physical Sciences; <i>S. Davari, H. Churchill</i> , University of Arkansas; <i>K. Serniak, T. Hazard</i> , MIT Lincoln Laboratory; <i>C. Richardson</i> , Laboratory for Physical Sciences	
10:05am		
10:10am	Coffee Break & Poster Viewing	
11:10am	INVITED: PCSI-MoM2-33 Non-Volatile Optical Phase Shifters on Si Photonics Platform, <i>Mitsuru Takenaka, Y. Miyatake, R. Tang, K. Taki, N. Sekine, K. Watanabe, T. Akazawa, H. Sakumoto, D. Bhardwaj, M. Fujita, H. Tang</i> , The University of Tokyo, Japan; <i>K. Makino, J. Tominaga, N. Miyata, M. Okano</i> , National Institute of Advanced Industrial Science and Technology (AIST), Japan; <i>K. Toprasertpong, S. Takagi</i> , The University of Tokyo, Japan	PCSI Session PCSI-MoM2 High-k Dielectrics and Ferroelectrics Moderator: Peter Maurer , University of Chicago
11:50am	PCSI-MoM2-41 In-Situ Analytical Study on Atomic Layer Deposition of Metal Silicate Thin Films Using Hexachlorodisilane and Water, <i>G. Kim, E. Lee, Yo-Sep Min</i> , Konkuk University, Republic of Korea	
11:55am	PCSI-MoM2-42 Enhanced Dielectric Properties of HfO ₂ Thin Films Produced via Novel Catalytic Atomic Layer Deposition Process, <i>Sara Harris, M. Weimer, A. Dameron, D. Lindblad, A. Wang</i> , Forge Nano	
12:00pm	PCSI-MoM2-43 Improving Hot Electron-Induced Punchthrough (Heip) via Dual Sti Sidewall Process in Dram, <i>Jaehyeon Jeon</i> , Sungkyunkwan University, Korea; <i>B. Choi</i> , Sungkyunkwan University (SKKU), Republic of Korea	

Monday Afternoon, January 20, 2025

Room Keahou I		
2:00pm	INVITED: PCSI-MoA1-1 Novel Josephson Effects in Superconductor-Semiconductor Systems, <i>M. Gupta</i> , <i>G. Graziano</i> , <i>C. Riggert</i> , <i>L. Shani</i> , <i>G. Menning</i> , University of Minnesota, USA; <i>M. Pendharkar</i> , Stanford University; <i>C. Dempsey</i> , <i>J. Dong</i> , University of California at Santa Barbara; <i>P. Lueb</i> , <i>J. Jung</i> , Eindhoven University of Technology, The Netherlands; <i>R. Mélin</i> , Institut Néel, CNRS/UGA, Grenoble, France; <i>E. Bakkers</i> , Eindhoven University of Technology, The Netherlands; <i>C. Palmström</i> , University of California at Santa Barbara; Vlad S. Pribiag , University of Minnesota, USA	PCSI Session PCSI-MoA1 Superconducting Qubits Moderator: Chunhui (Rita) Du , Georgia Institute of Technology
2:40pm	PCSI-MoA1-9 UPGRADED: First-Principles Studies of Schottky Barriers and Tunneling Properties at Al(111)/Si(111) and CoSi ₂ (111)/Si(111) Interfaces, Johannes Kevin Nangoi , <i>C. Palmström</i> , <i>C. Van de Walle</i> , University of California, Santa Barbara	
3:00pm	PCSI-MoA1-13 Epitaxial Niobium Titanium Nitride Thin Films for Superconducting Quantum Circuits, Christopher Richardson , <i>A. Thomas</i> , Laboratory for Physical Sciences; <i>E. Supple</i> , <i>B. Gorman</i> , Colorado School of Mines	
3:05pm	PCSI-MoA1-14 Interface-Sensitive Microwave Loss in Tantalum Films Grown on C-Plane Sapphire for Quantum Information Applications, Anthony McFadden , <i>T. Larson</i> , <i>S. Gill</i> , <i>A. Dixit</i> , NIST-Boulder; <i>J. Oh</i> , <i>L. Zhou</i> , Ames Laboratory; <i>F. Lecocq</i> , <i>R. Simmonds</i> , NIST-Boulder	
3:10pm	PCSI-MoA1-15 Cryogenically Grown a-Ta on Inas for 2DEG-Based Josephson Junctions, Teun van Schijndel , <i>J. Dong</i> , UC Santa Barbara; <i>Y. Gul</i> , University College London, UK; <i>D. Vera</i> , University of San Diego; <i>W. Yáñez-Parreño</i> , <i>S. Chatterjee</i> , <i>C. Palmström</i> , UC Santa Barbara	
3:15pm	PCSI-MoA1-16 Low Temperature Deposition of Superconducting Aluminum Films for Quantum Information Applications, Wilson J. Yáñez-Parreño , <i>T. van Schijndel</i> , University of California at Santa Barbara; <i>A. McFadden</i> , <i>R. Simmonds</i> , NIST-Boulder; <i>C. Palmstrom</i> , University of California at Santa Barbara	
3:20pm	PCSI-MoA1-17 Strong Photon-Magnon Coupling Using a Lithographically Defined Organic Ferrimagnet, <i>Q. Xu</i> , <i>H. Cheung</i> , Cornell University; <i>D. Cormode</i> , The Ohio State University; <i>T. Puel</i> , University of Iowa; <i>S. Pal</i> , Cornell University; <i>H. Yusuf</i> , The Ohio State University; <i>M. Chilcote</i> , Cornell University; <i>M. Flatté</i> , University of Iowa; Ezekiel Johnston-Halperin , The Ohio State University; <i>G. Fuchs</i> , Cornell University	PCSI Session PCSI-MoA2 2D Materials and Graphene I Moderator: Nitin Samarth , Penn State University
3:25pm	Coffee Break & Poster Viewing	
4:40pm	UPGRADED: PCSI-MoA2-33 Spectroscopic Imaging Ellipsometry at Cryogenic Temperatures to Indicates a Structural Phase Change in a 2D Polar Metal, Jakob Henz , <i>U. Wurstbauer</i> , University of Muenster, Germany	
5:00pm	PCSI-MoA2-37 Above Room Temperature Ferromagnetism in Epitaxially Grown Films of the 2D Magnets Fe ₅ GeTe ₂ and Fe ₃ GaTe ₂ , <i>H. Lv</i> , <i>T. Shinwari</i> , <i>K. I. A. Khan</i> , <i>M. Hanke</i> , <i>A. Trampert</i> , <i>J. Herfort</i> , <i>R. Engel-Herbert</i> , Joao Marcelo J. Lopes , Paul-Drude-Institute for Solid State Electronics, 10117 Berlin, Germany	
5:05pm	PCSI-MoA2-38 Electrical Side-Gate Control of Magnetic Anisotropy in a Composite Multiferroic, Katherine Johnson , Ohio State University; <i>K. Collins</i> , <i>M. Newburger</i> , <i>M. Page</i> , Air Force Research Laboratory; <i>R. Kawakami</i> , Ohio State University	
5:10pm		
5:15pm		
5:20pm	PCSI-MoA3-41 UPGRADED: Molecular Beam Epitaxy Growth and Stoichiometry-Induced Ferromagnetism in Altermagnetic Candidate MnTe, Matthew Brahlek , Oak Ridge National Laboratory, USA	PCSI Session PCSI-MoA3 Magnetic Materials (2D, Monolayers, & Heterostructures) Moderator: Alex Demkov , The University of Texas
5:40pm	PCSI-MoA3-45 Imaging and Writing Chiral Antiferromagnetic Domains in the 2D Triangular Antiferromagnet Co _{1/3} NbS ₂ , Scott Crooker , Los Alamos National Laboratory	
5:45pm	PCSI-MoA3-46 Electrostatic Extension of Magnetic Proximity Effect in La _{0.75} Fe _{0.4} MnO ₃ , <i>Q. Lan</i> , <i>M. Schnedler</i> , <i>L. Freter</i> , Forschungszentrum Jülich GmbH, Germany; <i>C. Wang</i> , Southern University of Science and Technology, China; <i>K. Fischer</i> , National Institute of Technology, Japan; <i>R. Dunin-Borkowski</i> , Philipp Ebert , Forschungszentrum Jülich GmbH, Germany	
5:50pm	PCSI-MoA3-47 Toward a First-Principles Theory of Rare-Earth Ions in Crystals, <i>Y. Lee</i> , <i>Z. Ning</i> , Ames National Laboratory; <i>R. Flint</i> , Ames Laboratory; <i>R. McQueeney</i> , Ames National Laboratory & Iowa State University; <i>I. Mazin</i> , George Mason University; Liqin Ke , Ames National Laboratory	
5:55pm	PCSI-MoA3-48 Defect Mediated Helical Phase Reorientation by Uniaxial Stress, <i>T. Kim</i> , <i>H. Zhao</i> , <i>L. Ke</i> , Ames National Laboratory; Lin Zhou , Iowa State University	

Monday Evening, January 20, 2025

Room Keahou I		
7:45pm	INVITED: PCSI-MoE-1 Engineering Qubits in Silicon with Atomic Precision, <i>Michelle Simmons</i> , UNSW, Australia	PCSI Session PCSI-MoE STM Controlled Surface "Lego" and Panel Discussion Moderator: Paul M. Koenraad , Eindhoven University of Technology, Netherlands
8:25pm	INVITED: PCSI-MoE-9 Local Probe Investigations of Topological States of Matter, <i>Ingmar Swart</i> , University of Utrecht, Netherlands	
9:05pm	PCSI-MoE-17 Panel Discussion	

Tuesday Morning, January 21, 2025

Room Keahou I		
8:30am	INVITED: PCSI-TuM1-1 Atomistic Simulations for Understanding the Behavior of Dopants and Impurities in Ga ₂ O ₃ and Related Alloys, <i>Joel Varley</i> , Lawrence Livermore National Laboratory	PCSI Session PCSI-TuM1 Oxide Semiconductor Materials I Moderator: Bharat Jalan , University of Minnesota
9:10am	PCSI-TuM1-9 UPGRADED: What Happens When a Dopant Doesn'T Go Where You Expect It to Go? The Case of MBE-Grown Yb-Doped SrTiO ₃ on Si(001), <i>Scott Chambers</i> , Pacific Northwest National Laboratory; <i>E. Ramirez, D. Guragain, J. Ngai</i> , University of Texas at Arlington; <i>P. Sushko, K. Koirala, Y. Du, N. Govind, M. Bowden</i> , Pacific Northwest National Laboratory; <i>D. Biswas, T. Lee</i> , Diamond Light Source, UK; <i>C. Weiland</i> , National Institute of Standards and Technology (NIST); <i>J. Woicik</i> , National Institute for Science and Technology (NIST)	
9:30am	PCSI-TuM1-13 Thickness-Dependent Optical Constants of SnO ₂ Thin Films on Si Grown by Atomic Layer Deposition, <i>Yoshitha Hettige, S. Zollner</i> , New Mexico State University; <i>A. Pratap Singh, B. Dutta, S. Chattopadhyay</i> , Indian Institute of Technology Indore, India	
9:35am	PCSI-TuM1-14 Phototransistor Array Based on Plasma-Engineered Amorphous Metal Oxide Semiconductors with Ferroelectric Dielectrics, <i>Uisik Jeong, S. Kim</i> , Sungkyunkwan University (SKKU), Republic of Korea	
9:40am	PCSI-TuM1-15 Formation of Transparent and Conductive SWCNT/SiO ₂ Composite Thin-Films on Pet Substrates Using Molecular Precursor Method, <i>H. Nagai, Kota Igarashi, M. Sato</i> , Kogakuin University, Japan	
9:45am	PCSI-TuM1-16 A Study on the Impact of Thin Metal Films on Contact Resistance in IGZO FET, <i>Juseong Min</i> , Sungkyunkwan University, Samsung Electronics, Republic of Korea; <i>S. Lee, J.-H. Park</i> , Sungkyunkwan University, Republic of Korea	
9:50am	Coffee Break & Poster Viewing	
11:00am	INVITED: PCSI-TuM2-31 Diamond High Power and Voltage MOSFETs: Inch-Sized Wafer Growth, Doping, Static and Dynamic Characteristics, <i>MAKOTO KASU, N. Saha</i> , Saga University, Japan	PCSI Session PCSI-TuM2 Wide Bandgap Materials II Moderator: Joel Varley , Lawrence Livermore National Laboratory,
11:40am		
11:45am	PCSI-TuM2-40 Atomic and Electronic Structure Prediction for Heterostructural Interfaces with Ultra-Wide Gap Materials , <i>Stephan Lany, S. Mahatara</i> , 15013 Denver West Pkwy	
11:50am	PCSI-TuM2-41 Si Diffusion Into Self-Organized GaN Nanocolumns Grown on Si(111) by RF-MBE, <i>Tohru HONDA, N. GOTO, Y. HOSOYA, T. ONUMA, T. YAMAGUCHI</i> , Kogakuin University, Japan	
11:55am	PCSI-TuM2-42 Realization of Smooth Surface and Interface in Mist CVD Growth of Rocksalt structured-MgZnO/MgO MQWs, <i>Hirayuki Aichi, T. Onuma</i> , Kogakuin University, Japan	
12:00pm		

Tuesday Evening, January 21, 2025

Room Keahou I		
7:00pm	PCSI-TuE-1 Challenges & Opportunities for Developing Superconducting Quantum Information Systems, <i>Raymond Simmonds</i>, National Institute of Standards and Technology, Boulder	PCSI Session PCSI-TuE Rump Session: Quantum Computation Materials and Devices and Panel Discussion Moderator: Christopher Palmstrøm, University of California, Santa Barbara
7:30pm	INVITED: PCSI-TuE-7 Spin-Orbit Qubits with Holes in Silicon and Germanium, <i>Dominik Zumbuhl</i>, University of Basel, Switzerland	
8:00pm	INVITED: PCSI-TuE-13 The Critical Role of Interfaces in Si/SiGe Quantum Dot Qubits: Valley Splitting and Radiation Impacts, <i>Mark Eriksson</i>, University of Wisconsin-Madison	
8:30pm	PCSI-TuE-19 Panel Discussion	

Wednesday Morning, January 22, 2025

Room Keahou I		
8:30am	INVITED: PCSI-WeM1-1 Room Temperature Optically Detected Magnetic Resonance of Single Spins in GaN, <i>Gregory Fuchs</i> , Cornell University	PCSI Session PCSI-WeM1 Point Defects (for Quantum Information Applications) I Moderator: Kai-Mei Fu , University of Washington
9:10am	INVITED: PCSI-WeM-9 Magnetoresistance Spectroscopy of Near-Surface Defects in Semiconducting Hosts, <i>Stephen McMillan</i> , Donostia International Physics Center, Spain	
9:50am	PCSI-WeM1-17 Simulating X-STM Images of Iso-Electronic Dopants in Semiconductors Using DFT, <i>Thomas Verstijnen</i> , <i>D. Tjeertes</i> , <i>E. Banfi</i> , <i>P. Koenraad</i> , Eindhoven University of Technology, Netherlands	
9:55am	PCSI-WeM1-18 GaAsGe Ternary Alloys Studied by Cross-sectional Scanning Tunneling Microscopy, <i>Aurelia Trevisan</i> , <i>W. van Lierop</i> , Eindhoven University of Technology, Netherlands; <i>J. Ripalda</i> , Spanish National Research Council (CSIC), Instituto de Microelectrónica de Madrid, Spain; <i>Y. González</i> , Spanish National Research Council (CSIC) · Instituto de Microelectrónica de Madrid, Spain; <i>P. Caño</i> , <i>E. Navarro</i> , Spanish National Research Council (CSIC), Instituto de Microelectrónica de Madrid, Spain; <i>R. Juluri</i> , <i>A. Sanchez</i> , University of Warwick, UK; <i>P. Koenraad</i> , Eindhoven University of Technology, Netherlands	
10:00am	PCSI-WeM1-19 Imaging Rare-Earth Dopant Clusters in SiC in 3D Using Multislice Electron Ptychography, <i>Shake Karapetyan</i> , <i>M. Thomas</i> , Cornell University; <i>U. Kaiser</i> , <i>J. Biskupek</i> , Ulm University, Germany; <i>D. Muller</i> , Cornell University	
10:05am	PCSI-WeM1-20 Controlling with External Fields the Quantum-Mechanical Core-Hole Manganese Spin in III-V Semiconductors, <i>Julian Zanon</i> , Eindhoven University of Technology, Netherlands; <i>M. E. Flatté</i> , University of Iowa	
10:10am	Coffee Break & Poster Viewing	
11:00am	INVITED: PCSI-WeM2-31 Quantum Point Defects in Wide Band Gap Semiconductors: Donor Properties in ZnO and Charge States of Diamond, <i>X. Wang</i> , <i>E. Hansen</i> , <i>V. Niaouris</i> , <i>C. Pederson</i> , <i>N. Yama</i> , University of Washington; <i>L. Vines</i> , University of Oslo, Norway; <i>Kai-Mei Fu</i> , University of Washington	PCSI Session PCSI-WeM2 Point Defects (for Quantum Information Applications) II Moderator: Gregory Fuchs , Cornell University
11:40am	PCSI-WeM3-39 Surface and Interface Effects on the Electronic and Magnetic Properties of NiCo ₂ O ₄ Thin Films, <i>Arjun Subedi</i> , <i>B. Giri</i> , <i>D. Yang</i> , University of Nebraska–Lincoln; <i>A. N'Diaye</i> , Advanced Light Source, Lawrence Berkeley National Laboratory; <i>T. Komesu</i> , <i>X. Xu</i> , <i>P. Dowben</i> , University of Nebraska–Lincoln	
11:45am	PCSI-WeM3-40 Spectroscopic Calculations for Trivalent Lanthanide Ions, <i>Tharnier O. Puel</i> , University of Iowa; <i>J. Lizarazo-Ferro</i> , <i>R. Zia</i> , Brown University; <i>M. E. Flatté</i> , University of Iowa	PCSI Session PCSI-WeM3 Photoemission Spectroscopy Moderator: Gregory Fuchs , Cornell University
11:50am	PCSI-WeM3-41 Brillouin-Zone-Selection Effects in Angle-Resolved Photoemission Spectroscopy of Silicon, <i>Niels van Venrooij</i> , University of Iowa, Netherlands; <i>P. Constantinou</i> , <i>T. Stock</i> , University College London, UK; <i>V. Strocov</i> , Paul Scherrer Institut, Switzerland; <i>G. Aeppli</i> , ETH Zurich, Switzerland; <i>N. Curson</i> , <i>S. Schaffield</i> , University College London, UK; <i>M. Flatté</i> , University of Iowa	
11:55am	PCSI-WeM3-42 A Topological Superconductor Tuned by Electronic Correlations, <i>Haoran Lin</i> , University of Chicago; <i>C. Jacobs</i> , West Virginia University; <i>C. Yan</i> , University of Chicago; <i>G. Nolan</i> , University of Illinois at Urbana-Champaign; <i>P. Singleton</i> , <i>Y. Bai</i> , <i>Q. Gao</i> , <i>G. Berruto</i> , <i>D. Nguyen</i> , University of Chicago; <i>X. Wu</i> , Chinese Academy of Sciences, China; <i>C. Liu</i> , Penn State University; <i>N. Guisinger</i> , Argonne National Laboratory; <i>P. Huang</i> , University of Illinois at Urbana-Champaign; <i>S. Mandal</i> , West Virginia University; <i>S. Yang</i> , University of Chicago	

Wednesday Afternoon, January 22, 2025

Room Keahou I		
1:35pm	INVITED: PCSI-WeA1-1 Atomic Layer Deposition: Surface Processes Unlocking Advanced Materials in the Semiconductor Industry, <i>Erwin Kessels, A. Mackus, B. Macco</i> , Eindhoven University of Technology, Netherlands	PCSI Session PCSI-WeA1 Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces II Moderator: Karen Kavanagh , Simon Fraser University, Canada
2:15pm	PCSI-WeA1-10 Low Temperature Ge/Si Heterojunction by DC Sputtering, <i>Yi-Jhen Wang, H. Huang, Y. Lai, C. Lin</i> , Tatung University, Taiwan	
2:20pm	PCSI-WeA1-11 Optical and Structural Properties of Group-IV Oxides Produced by Rapid Thermal Oxidation, <i>D. Ortega, Danissa Ortega, H. Woolf, A. Moses, C. Armenta, J. Love, S. Yadav, S. Zollner</i> , New Mexico State University; <i>M. Mircovich</i> , Arizona State Univ.	
2:25pm		
2:30pm	PCSI-WeA1-13 Facile and Inexpensive Development of Nano-Structured Polymer Layers for Surface Enhanced Raman Spectroscopy Applications, <i>L. Jiang</i> , Tuskegee University; <i>N. Korivi</i> , Oregon Institute of Technology	PCSI Session PCSI-WeA2 Materials for Catalysis, Energy Storage, and Energy Harvesting Moderator: Mitsuru Takenaka , The University of Tokyo, Japan
2:35pm	PCSI-WeA2-14 Scalable Si-Based Metal-Insulator-Semiconductor Photoanodes for Water Oxidation Fabricated Using Nanosphere Lithography and Thin Film Reaction, <i>E. Yu, Yunho Choi, S. Wu, J. Risberg, S. Kim</i> , University of Texas at Austin	
2:40pm		
2:45pm		
2:50pm	PCSI-WeA2-17 Minimizing Ion/Electron Pathways Through Ultrathin Conformal Holey Graphene Encapsulation in Li- and Mn-Rich Layered Oxide Cathodes for High-Performance Lithium-Ion Batteries, <i>Heejoon Ahn</i> , 222 Wangsimni-ro, Seongdong-gu, Republic of Korea; <i>S. Kim</i> , Hanyang University, Korea	
2:55pm	PCSI-WeA2-18 Development of High-Performance Hydrogen Generation Catalyst Based on Fluorine-Doped Tin Oxide Aerogel, <i>Hyung-Ho Park</i> , Yonsei University, Korea	
3:00pm	Coffee Break & Poster Viewing	PCSI Session PCSI-WeA3 Spin Transport and Spintronics Moderator: Michael Flatté , University of Iowa
4:00pm	INVITED: PCSI-WeA3-31 Quantum Sensing of Moiré Magnetism, <i>Chunhui (Rita) Du</i> , Georgia Institute of Technology, USA	
4:40pm	PCSI-WeA3-39 Strong on-Chip Microwave Photon-Magnon Coupling Using Ultralow-Damping Epitaxial Y ₃ Fe ₅ O ₁₂ Films, <i>S. Guo, D. Russell, J. Lanier, H. Da, C. Hammel, Fengyuan Yang</i> , The Ohio State University	
4:45pm	PCSI-WeA3-40 Device Architectures for Characterizing Spin Transport Through Chiral Defects in Semiconductors, <i>Jordan Neely, F. Haines, E. Renteria, R. Chowdhury, D. Prakash, D. Shima, F. Cavallo</i> , University of New Mexico	
4:50pm	PCSI-WeA3-41 Orbital Hall Effect and Orbitronics in Magnetic Multilayers, <i>I. Lyalin, Y. Zhu, Roland Kawakami</i> , The Ohio State University	
4:55pm	PCSI-WeA4-42 UPGRADED: Topotaxy in 2D Materials: Towards Synthesis of Novel 2D Materials by Surface Reactions, <i>Matthias Batzill</i> , University of South Florida	
5:15pm	PCSI-WeA4-46 Thickness Calculation of HBN and Graphene Using RGB Colors, <i>Gabriel Ruiz</i> , New Mexico State University; <i>B. Xie</i> , University of California Santa Barbara	PCSI Session PCSI-WeA4 2D Materials and Graphene II Moderator: Scott Crooker , Los Alamos National Laboratory
5:20pm	PCSI-WeA4-47 Optoelectronic Properties of MoS ₂ /Graphene Heterostructures Prepared by Dry Transfer Method for Light-induced Energy Harvesting Applications, <i>Sanju Gupta</i> , Penn State University and Gdansk University of technology	
5:25pm	PCSI-WeA4-48 The Case of the Missing Sulfur, <i>M. Fawzy</i> , Dept. of Physics, Simon Fraser University, Canada; <i>M. Mohammadzadehb, A. Abnavi, T. de Silva, R. Ahmadi, H. Ghanbari, F. Kabir, A. Hasani, M. Adachi</i> , School of Engineering Science, Simon Fraser University, Canada; <i>Karen Kavanagh</i> , Dept. of Physics, Simon Fraser University, Canada	
5:30pm		
5:35pm	PCSI-WeA4-50 Investigating Modulation of Coulomb Interaction in Graphene on a High-k Dielectric, <i>Rubi Km</i> , Los Alamos National Laboratory; <i>J. Hu</i> , National University of Singapore; <i>M. Bal</i> , Radboud University Nijmegen, Netherlands; <i>M. Chan</i> , Los Alamos National Laboratory; <i>A. Ariando</i> , National University of Singapore; <i>U. Zeitler</i> , Radboud University Nijmegen, Netherlands; <i>N. Harrison</i> , Los Alamos National Laboratory	
5:40pm	PCSI-WeA4-51 MBE Growth of Transition Metal Dichalcogenides, <i>Matthew Swann, Z. Li</i> , The Ohio State University; <i>C. Helton</i> , Columbus State Community College; <i>R. Kawakami</i> , The Ohio State University	
5:45pm	PCSI-WeA4-52 Improvement of HfO ₂ on TMDCs using Thermal Expansion Coefficient difference with Substrate, <i>Sukhyeon Eom, J. Park</i> , Sungkyunkwan University (SKKU), Republic of Korea	
5:50pm		

Thursday Morning, January 23, 2025

Room Keahou I		
8:30am	INVITED: PCSI-ThM1-1 Chirality, Spin and Orbital in Dna-Type Chiral Materials, <i>Binghai Yan</i> , Pennsylvania State University	PCSI Session PCSI-ThM1 Topological Materials Moderators: Sven Rogge , University of New South Wales, Australia,
9:10am	PCSI-ThM1-9 Distinguishing Surface and Bulk Electromagnetism via Their Dynamics in an Intrinsic Magnetic Topological Insulator, <i>Khanh Duy Nguyen</i> , W. Lee, University of Chicago; <i>J. Dang</i> , T. Woo, University of Florida; <i>G. Berruto</i> , C. Yan, C. Ip, H. Lin, Q. Gao, University of Chicago; <i>S. Lee</i> , Penn State University; <i>B. Yan</i> , Weizmann Institute of Science, Israel; <i>C. Liu</i> , Z. Mao, Penn State University; <i>X. Zhang</i> , University of Florida; <i>S. Yang</i> , University of Chicago	
9:15am	PCSI-ThM1-10 Infrared Absorption of α -Sn, <i>Jaden R. Love</i> , C. Armenta, A. Moses, S. Zollner, New Mexico State University; <i>A. Engel</i> , University of California Santa Barbara; <i>C. Palmstrom</i> , University of California at Santa Barbara	
9:20am	PCSI-ThM1-11 Coulomb Disorder in Cd ₃ As ₂ Thin Films, <i>Ian Leahy</i> , A. Rice, J. Nelson, National Renewable Energy Laboratory; <i>H. Ness</i> , King's College London, UK; <i>M. van Schilfgaarde</i> , K. Alberi, National Renewable Energy Laboratory	
9:25am	PCSI-ThM1-12 Gate-Tunable Ferromagnetism in Epitaxially Grown Semimetal-Ferromagnetic Semiconductor Heterostructures, <i>Emma Steinebronn</i> , S. Islam, Penn State University; <i>A. Grutter</i> , C. Jensen, J. Borchers, NIST; <i>W. Yanez-Parreno</i> , Penn State University; <i>S. Ghosh</i> , University of Minnesota; <i>J. Chamorro</i> , T. McQueen, Johns Hopkins University; <i>C. Liu</i> , Penn State University; <i>A. Mkhoyan</i> , University of Minnesota; <i>N. Samarth</i> , Penn State University	
9:30am	PCSI-ThM1-13 Growth of Cd ₃ As ₂ on GaAs(110) Substrates, <i>Anthony Rice</i> , I. Leahy, A. Norman, K. Alberi, National Renewable Energy Laboratory	
9:35am	Coffee Break & Poster Viewing	
10:00am	INVITED: PCSI-ThM2-19 Opportunities and Challenges of Complex Oxide Membranes, <i>Bharat Jalan</i> , University of Minnesota, USA	PCSI Session PCSI-ThM2 Oxide Semiconductor Materials II Moderator: Erwin Kessels , Eindhoven University of Technology, Netherlands
10:40am	PCSI-ThM2-27 UPGRADED: The Thermal Decomposition Process of Metalorganic Precursors Used in Hybrid Molecular Beam Epitaxy, <i>B. Fazlioglu Yalcin</i> , The Pennsylvania State University; <i>C. Sanga</i> , I. Erpay, Istanbul Technical University, Turkey; <i>D. Yilmaz</i> , A. van Duin, The Pennsylvania State University; <i>N. Nayir</i> , Istanbul Technical University, Turkey; <i>Roman Engel-Herbert</i> , Paul-Drude Institute for Solid State Electronics, Germany	

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