

PCSI-50 Program Overview

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

Sunday Afternoon, January 19, 2025

Room Keahou I	
2:30pm	<p>INVITED: PCSI-SuA1-1 Interfacing Biomolecules with Coherent Quantum Sensors, <i>P. Maurer, Guanming Lao</i>, University of Chicago</p>
3:10pm	<p>INVITED: PCSI-SuA1-9 Magnetoresistance Spectroscopy of Near-Surface Defects in Semiconducting Hosts, <i>Stephen McMillan</i>, Donostia International Physics Center, Spain</p>
3:50pm	<p>PCSI-SuA1-17 Development of ‘Artificial’ Memristive Synapses Using Various Sp² C (Graphene-Like) -Sp³ 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</p>
3:55pm	<p>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, 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</p>
4:00pm	<p>PCSI-SuA1-19 Quantum Sensing Using Two-dimensional Hexagonal Boron Nitride, <i>Hailong Wang</i>, Georgia Institute of Technology, USA</p>
4:05pm	<p>Break & Poster Viewing</p>
4:20pm	<p>INVITED: PCSI-SuA2-23 Correct Treatment of Spontaneous Polarization at Polar Wurtzite Interfaces, <i>Chris Van de Walle</i>, University of California Santa Barbara</p>
5:00pm	<p>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, P. Weber, A. Newell, A. Duchane</i>,</p>
5:05pm	
5:10pm	

PCSI
Session PCSI-SuA1
Materials for Novel Information Systems
Moderator:
Dominik Zumbuhl, University of Basel, Switzerland

PCSI
Session PCSI-SuA2
Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces I
Moderator:
Stephan Lany, National Renewable Energy Laboratory

Sunday Evening, January 19, 2025

Room Keahou I		
7:30pm	<p>INVITED: PCSI-SuE1-1 A Study of Stereochemical Recognition of Chiral Molecules Investigated by STM-Based Techniques, <i>Yuji Kuwahara</i>, Osaka University, Japan</p>	<p>PCSI Session PCSI-SuE1 Organic and Hybrid Semiconductor Materials Moderator: Ingmar Swart, University of Utrecht, Netherlands</p>
8:10pm	<p>PCSI-SuE1-9 N-Heterocyclic Carbene and Olefin Monolayers on Silicon, <i>Martin Franz</i>, Technische Universität Berlin, Germany; <i>M. Das</i>, Universität Münster, Germany; <i>C. Hogan</i>, Istituto di Struttura della Materia-CNR (ISM-CNR), Italy; <i>A. Das</i>, Universität Münster, Germany; <i>R. Zielinski</i>, <i>M. Kubicki</i>, Technische Universität Berlin, Germany; <i>M. Kay</i>, Universität Münster, Germany; <i>S. Chandola</i>, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany; <i>M. Freitag</i>, Universität Münster, Germany; <i>U. Gerstmann</i>, Universität Paderborn, Germany; <i>C. Kosbab</i>, Technische Universität Berlin, Germany; <i>S. Brozsesi</i>, Università di Roma Tor Vergata, Italy; <i>M. Nehring</i>, <i>D. Liebig</i>, <i>V. Balfanz</i>, <i>J. Brühne</i>, Technische Universität Berlin, Germany; <i>W. Schmidt</i>, Universität Paderborn, Germany; <i>N. Esser</i>, <i>F. Glorius</i>, <i>M. Dähne</i>, Technische Universität Berlin, Germany</p>	
8:15pm	<p>PCSI-SuE1-10 On Surface Synthesis of Graphite-N-Doped Molecular Graphene Nanostructures, <i>Dong Wang</i>, Institute of Chemistry, CAS, China</p>	
8:20pm	<p>PCSI-SuE1-11 Importance of Molecular Dipole Alignment and Surface Compensation in P-V Hysteresis of MAPbBr₃(001), <i>L. Freter</i>, Forschungszentrum Jülich GmbH, Germany; <i>H. Hsu</i>, National Taiwan University, Taiwan; <i>R. Sankar</i>, Academia Sinica, Taiwan; <i>C. Chen</i>, National Taiwan University, Taiwan; <i>R. Dunin-Borkowski</i>, <i>P. Ebert</i>, Forschungszentrum Jülich GmbH, Germany; <i>Y. Chiu</i>, National Taiwan University, Taiwan; <i>Michael Schnedler</i>, Forschungszentrum Jülich GmbH, Germany</p>	
8:25pm	<p>PCSI-SuE1-12 A Rare Earth Modified Silicon Surface as a Template for Ordered Organic Growth, <i>M. Kubicki</i>, <i>Martin Franz</i>, <i>M. Dähne</i>, Technische Universität Berlin, Germany</p>	
8:30pm	<p>PCSI-SuE2-13 “High Throughput” Exploration of Oxide MBE Growth Space through Cyclical in situ Growth and Etching, <i>S. Schaefer</i>, <i>D. Fébba</i>, <i>M. Smeaton</i>, <i>K. Egbo</i>, <i>G. Teeter</i>, <i>S. Hasan</i>, <i>W. Callahan</i>, <i>A. Zakutayev</i>, <i>Brooks Tellekamp</i>, National Renewable Energy Laboratory</p>	<p>PCSI Session PCSI-SuE2 Wide Bandgap Materials I Moderator: Scott Crooker, Los Alamos National Laboratory</p>
8:35pm	<p>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, <i>K. Huynh</i>, <i>M. Liao</i>, University of California Los Angeles; <i>X. Yan</i>, University of California Irvine; <i>J. Tomko</i>, <i>T. Pfeifer</i>, University of Virginia; <i>V. Dragoi</i>, <i>N. Razek</i>, EV Group, Austria; <i>E. Guiot</i>, <i>R. Caulmilone</i>, Soitec, France; <i>X. Pan</i>, University of Irvine; <i>P. Hopkins</i>, University of Virginia; <i>Mark Goorsky</i>, University of California Los Angeles</p>	
8:40pm	<p>PCSI-SuE2-15 Plasma Deposition of GaN Thin Films on Silicon Substrates at Low Temperature, <i>L. Hussey</i>, <i>J. Maurice</i>, <i>P. Roca I. Cabarrocas</i>, <i>Karim Ouaras</i>, Ecole Polytechnique, France</p>	
8:45pm	<p>INVITED: PCSI-SuE2-16 Si-Integrated Ferroelectric Films for Optical Computing, <i>Alex A. Demkov</i>, <i>A. Posadas</i>, <i>A. Raju</i>, <i>D. Wasserman</i>, The University of Texas at Austin</p>	

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. Doiron</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 WS ₂ 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	PCSI1-MoM1-20 Neutron Reflectometry Studies of Interfacial Phenomena in Actinide and Actinide Related Thin Films, <i>I. Kruk, P. Wang</i> , Los Alamos National Laboratory; <i>D. Allred</i> , Brigham You; <i>K. Rector</i> , Los Alamos National Laboratory; <i>Jaroslav Majewski</i> , Los Alamos National Laboratory, National Science Foundation	
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	<p>INVITED: PCSI-MoA1-1 Novel Josephson Effects in Superconductor-Semiconductor Systems, <i>M. Gupta, G. Graziano, C. Riggert, L. Shani, G. Menning</i>, University of Minnesota, USA; <i>M. Pendharkar</i>, Stanford University; <i>C. Dempsey, J. Dong</i>, University of California at Santa Barbara; <i>P. Lueb, 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. Palmstrøm</i>, University of California at Santa Barbara; <i>Vlad S. Pribrig</i>, University of Minnesota, USA</p>	<p>PCSI Session PCSI-MoA1 Superconducting Qubits Moderator: Chunhui (Rita) Du, Georgia Institute of Technology</p>
2:40pm	<p>PCSI-MoA1-9 UPGRADED: First-Principles Studies of Schottky Barriers and Tunneling Properties at Al(111)/Si(111) and CoSi₂(111)/Si(111) Interfaces, <i>Johannes Kevin Nangoi, C. Palmstrøm, C. Van de Walle</i>, University of California, Santa Barbara</p>	
3:00pm	<p>PCSI-MoA1-13 Epitaxial Niobium Titanium Nitride Thin Films for Superconducting Quantum Circuits, <i>Christopher Richardson, A. Thomas</i>, Laboratory for Physical Sciences; <i>E. Supple, B. Gorman</i>, Colorado School of Mines</p>	
3:05pm	<p>PCSI-MoA1-14 Interface-Sensitive Microwave Loss in Tantalum Films Grown on C-Plane Sapphire for Quantum Information Applications, <i>Anthony McFadden, T. Larson, S. Gill, A. Dixit</i>, NIST-Boulder; <i>J. Oh, L. Zhou</i>, Ames Laboratory; <i>F. Lecocq, R. Simmonds</i>, NIST-Boulder</p>	
3:10pm	<p>PCSI-MoA1-15 Cryogenically Grown a-Ta on Inas for 2DEG-Based Josephson Junctions, <i>Teun van Schijndel, 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, S. Chatterjee, C. Palmstrøm</i>, UC Santa Barbara</p>	
3:15pm	<p>PCSI-MoA1-16 Low Temperature Deposition of Superconducting Aluminum Films for Quantum Information Applications, <i>Wilson J. Yáñez-Parreño, T. van Schijndel</i>, University of California at Santa Barbara; <i>A. McFadden, R. Simmonds</i>, NIST-Boulder; <i>C. Palmstrom</i>, University of California at Santa Barbara</p>	
3:20pm	<p>PCSI-MoA1-17 Strong Photon-Magnon Coupling Using a Lithographically Defined Organic Ferrimagnet, <i>Q. Xu, 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; <i>Ezekiel Johnston-Halperin</i>, The Ohio State University; <i>G. Fuchs</i>, Cornell University</p>	
3:25pm	<p>Coffee Break & Poster Viewing</p>	<p>PCSI Session PCSI-MoA2 2D Materials and Graphene I Moderator: Nitin Samarth, Penn State University</p>
4:40pm	<p>UPGRADED: PCSI-MoA2-33 Spectroscopic Imaging Ellipsometry at Cryogenic Temperatures to Indicate a Structural Phase Change in a 2D Polar Metal, <i>Jakob Henz, U. Wurstbauer</i>, University of Muenster, Germany</p>	
5:00pm	<p>PCSI-MoA2-37 Above Room Temperature Ferromagnetism in Epitaxially Grown Films of the 2D Magnets Fe₅GeTe₂ and Fe₃GaTe₂, <i>H. Lv, T. Shinwari, K. I. A. Khan, M. Hanke, A. Trampert, J. Herfort, R. Engel-Herbert, Joao Marcelo J. Lopes</i>, Paul-Drude-Institute for Solid State Electronics, 10117 Berlin, Germany</p>	
5:05pm	<p>PCSI-MoA2-38 Electrical Side-Gate Control of Magnetic Anisotropy in a Composite Multiferroic, <i>Katherine Johnson</i>, Ohio State University; <i>K. Collins, M. Newburger, M. Page</i>, Air Force Research Laboratory; <i>R. Kawakami</i>, Ohio State University</p>	
5:10pm		
5:15pm		
5:20pm	<p>PCSI-MoA3-41 UPGRADED: Molecular Beam Epitaxy Growth and Stoichiometry-Induced Ferromagnetism in Altermagnetic Candidate MnTe, <i>Matthew Brahlek</i>, Oak Ridge National Laboratory, USA</p>	<p>PCSI Session PCSI-MoA3 Magnetic Materials (2D, Monolayers, & Heterostructures) Moderator: Alex Demkov, The University of Texas</p>
5:40pm	<p>PCSI-MoA3-45 Imaging and Writing Chiral Antiferromagnetic Domains in the 2D Triangular Antiferromagnet Co_{1/3}NbS₂, <i>Scott Crooker</i>, Los Alamos National Laboratory</p>	
5:45pm	<p>PCSI-MoA3-46 Electrostatic Extension of Magnetic Proximity Effect in La_{0.75}Fe_{0.4}MnO₃, <i>Q. Lan, M. Schnedler, 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, Philipp Ebert</i>, Forschungszentrum Jülich GmbH, Germany</p>	
5:50pm	<p>PCSI-MoA3-47 Toward a First-Principles Theory of Rare-Earth Ions in Crystals, <i>Y. Lee, 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; <i>Liqin Ke</i>, Ames National Laboratory</p>	
5:55pm	<p>PCSI-MoA3-48 Defect Mediated Helical Phase Reorientation by Uniaxial Stress, <i>T. Kim, H. Zhao, L. Ke</i>, Ames National Laboratory; <i>Lin Zhou</i>, Iowa State University</p>	

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	<p>INVITED: PCSI-TuM1-1 Atomistic Simulations for Understanding the Behavior of Dopants and Impurities in Ga₂O₃ and Related Alloys, <i>Joel Varley</i>, Lawrence Livermore National Laboratory</p>
9:10am	<p>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 SrTiO₃ on Si(001), Scott Chambers, 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)</p>
9:30am	<p>PCSI-TuM1-13 Thickness-Dependent Optical Constants of SnO₂ Thin Films on Si Grown by Atomic Layer Deposition, Yoshitha Hettige, <i>S. Zollner</i>, New Mexico State University; <i>A. Pratap Singh, B. Dutta, S. Chattopadhyay</i>, Indian Institute of Technology Indore, India</p>
9:35am	<p>PCSI-TuM1-14 Phototransistor Array Based on Plasma-Engineered Amorphous Metal Oxide Semiconductors with Ferroelectric Dielectrics, Uisik Jeong, <i>S. Kim</i>, Sungkyunkwan University (SKKU), Republic of Korea</p>
9:40am	<p>PCSI-TuM1-15 Formation of Transparent and Conductive SWCNT/SiO₂ Composite Thin-Films on Pet Substrates Using Molecular Precursor Method, <i>H. Nagai, Kota Igarashi, M. Sato</i>, Kogakuin University, Japan</p>
9:45am	<p>PCSI-TuM1-16 A Study on the Impact of Thin Metal Films on Contact Resistance in IGZO FET, Juseong Min, Sungkyunkwan University, Samsung Electronics, Republic of Korea; <i>S. Lee, J.-H. Park</i>, Sungkyunkwan University, Republic of Korea</p>
9:50am	<p>Coffee Break & Poster Viewing</p>
11:00am	<p>INVITED: PCSI-TuM2-31 Diamond High Power and Voltage MOSFETs: Inch-Sized Wafer Growth, Doping, Static and Dynamic Characteristics, MAKOTO KASU, <i>N. Saha</i>, Saga University, Japan</p>
11:40am	
11:45am	<p>PCSI-TuM2-40 Atomic and Electronic Structure Prediction for Heterostructural Interfaces with Ultra-Wide Gap Materials, Stephan Lany, <i>S. Mahatara</i>, 15013 Denver West Pkwy</p>
11:50am	<p>PCSI-TuM2-41 Si Diffusion Into Self-Organized GaN Nanocolumns Grown on Si(111) by RF-MBE, Tohru HONDA, <i>N. GOTO, Y. HOSOYA, T. ONUMA, T. YAMAGUCHI</i>, Kogakuin University, Japan</p>
11:55am	<p>PCSI-TuM2-42 Realization of Smooth Surface and Interface in Mist CVD Growth of Rocksalt structured-MgZnO/MgO MQWs, Hirayuki Aichi, <i>T. Onuma</i>, Kogakuin University, Japan</p>
12:00pm	

PCSI
Session PCSI-TuM1
Oxide Semiconductor Materials I
Moderator:
Bharat Jalan, University of Minnesota

PCSI
Session PCSI-TuM2
Wide Bandgap Materials II
Moderator:
Joel Varley, Lawrence Livermore National Laboratory,

Tuesday Evening, January 21, 2025

Room Keahou I		
7:00pm	<p>PCSI-TuE-1 Challenges & Opportunities for Developing Superconducting Quantum Information Systems, <i>Raymond Simmonds</i>, National Institute of Standards and Technology, Boulder</p>	<p>PCSI Session PCSI-TuE Rump Session: Quantum Computation Materials and Devices and Panel Discussion Moderator: Christopher Palmstrøm, University of California, Santa Barbara</p>
7:30pm	<p>INVITED: PCSI-TuE-7 Spin-Orbit Qubits with Holes in Silicon and Germanium, <i>Dominik Zumbuhl</i>, University of Basel, Switzerland</p>	
8:00pm	<p>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</p>	
8:30pm	<p>PCSI-TuE-19 Panel Discussion</p>	

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	PCSI-WeM1-9 UPGRADED: Er Sites in Si for Quantum Information Processing, <i>Sven Rogge</i> , UNSW, Australia	
9:30am	PCSI-WeM1-13 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	
9:35am	PCSI-WeM1-14 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	
9:40am	PCSI-WeM1-15 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	
9:45am	PCSI-WeM1-16 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	
9:50am	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	
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. Schofield</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	PCSI Session PCSI-WeM3 Photoemission Spectroscopy Moderator: Gregory Fuchs , Cornell University

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
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	PCSI-WeA1-12 Growth Evaluation and Electrochemical Properties of Lab6 Thin Films Deposited by HiPIMS, <i>César D. Rivera Tello, J. Pérez Alvarez, M. Flores, L. Huerta</i> , Universidad de Guadalajara, Mexico
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
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	PCSI-WeA2-15 Development of Bi ₂ Te ₃ -based Thermoelectric Thin Films Using Advanced Pulsed Laser Deposition System, <i>Yakubu Sani Wudil</i> , King Fahd University, Saudi Arabia
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
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 Orbtronics 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
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	

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Semiconductor Heterostructures: Growth, Nanostructures, & Interfaces II
Moderator:
Karen Kavanagh, Simon Fraser University, Canada

PCSI
Session PCSI-WeA2
Materials for Catalysis, Energy Storage, and Energy Harvesting
Moderator:
Mitsuru Takenaka, The University of Tokyo, Japan

PCSI
Session PCSI-WeA3
Spin Transport and Spintronics
Moderator:
Michael Flatté, University of Iowa

PCSI
Session PCSI-WeA4
2D Materials and Graphene II
Moderator:
Scott Crooker, Los Alamos National Laboratory

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, W. Lee</i> , University of Chicago; <i>J. Dang, T. Woo</i> , University of Florida; <i>G. Berruto, C. Yan, C. Ip, H. Lin, Q. Gao</i> , University of Chicago; <i>S. Lee</i> , Penn State University; <i>B. Yan</i> , Weizmann Institute of Science, Israel; <i>C. Liu, Z. Mao</i> , 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, C. Armenta, A. Moses, S. Zollner</i> , 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_3As_2 Thin Films, <i>Ian Leahy, A. Rice, J. Nelson</i> , National Renewable Energy Laboratory; <i>H. Ness</i> , King's College London, UK; <i>M. van Schilfgaarde, K. Alberi</i> , National Renewable Energy Laboratory	
9:25am	PCSI-ThM1-12 Gate-Tunable Ferromagnetism in Epitaxially Grown Semimetal-Ferromagnetic Semiconductor Heterostructures, <i>Emma Steinebronn, S. Islam</i> , Penn State University; <i>A. Grutter, C. Jensen, J. Borchers</i> , NIST; <i>W. Yanez-Parreno</i> , Penn State University; <i>S. Ghosh</i> , University of Minnesota; <i>J. Chamorro, T. McQueen</i> , 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_3As_2 on GaAs(110) Substrates, <i>Anthony Rice, I. Leahy, A. Norman, K. Alberi</i> , 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. Erpay</i> , Istanbul Technical University, Turkey; <i>D. Yilmaz, A. van Duin</i> , 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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