Program Overview

Room /Time	Canyon/Sugarloaf
SuA	PCSI-1SuA: 2D Heterostructure Design PCSI-2SuA: Epitaxial Growth of Quantum Materials and Structures
SuE	PSCI-SuE: Single Photon Detectors
MoM	PCSI-1MoM: Oxides PCSI-2MoM: Hybrid Materials
MoA	PCSI-1MoA: Catalysis/Nanowires PCSI-2MoA: Dopants in Semiconductors
MoE	PCSI-MoE: Superconductivity I
TuM	PCSI-1TuM: Magnetism PCSI-2TuM: Superconductivity II
TuE	PCSI-TuE: The Future of PV
WeM	PCSI-1WeM: Optical Properties of 2D Materials PCSI-2WeM: Material Modification and Self Assembly
WeA	PCSI-1WeA: Devices and Contacts PCSI-2WeA: Synthesis of Materials for Devices
ThM	PCSI-1ThM: 2D Materials - Strain and Heterostructures

Special Events Sunday

Special Events Sunday

6:00 PM Welcome Reception/Century

Sunday Afternoon, January 19, 2020

	Room Canyon/Sugarloaf	
2:30pm		**PCSI** **Session PCSI-1SuA** **2D Heterostructure Design** **Moderator:** Edward Yu, The University of Texas at Austin
2:35pm	**INVITED: PCSI-1SuA-2** Optical Properties of Semiconducting Moiré Crystals, ***Xiaoqin Elaine Li,*** Univ of Texas at Austin
2:40pm	Invited talk continues.
2:45pm	Invited talk continues.
2:50pm	Invited talk continues.
2:55pm	Invited talk continues.
3:00pm	Invited talk continues.
3:05pm	Invited talk continues.
3:10pm	Invited talk continues.
3:15pm	**INVITED: PCSI-1SuA-10** Berryogenesis: Spontaneous Out-of-Equilibrium Plasmonic Magnetism, ***Justin Song,*** Nanyang Technological University Singapore, Singapore
3:20pm	Invited talk continues.
3:25pm	Invited talk continues.
3:30pm	Invited talk continues.
3:35pm	Invited talk continues.
3:40pm	Invited talk continues.
3:45pm	Invited talk continues.
3:50pm	Invited talk continues.
3:55pm	**PCSI-1SuA-18** UPGRADED: Investigation of Graphene/Ge(110) Interface, ***Miriam Galbiati,*** Technical University of Denmark, Denmark
4:00pm	Talk continues.
4:05pm	Talk continues.
4:10pm	Talk continues.
4:15pm	**Break**	
4:20pm	**Break**
4:25pm	**Break**
4:30pm	**PCSI-2SuA-25** UPGRADED: Epitaxial Growth and Electronic Characterization of GdSb, ***Hadass Inbar,*** *S Chatterjee, M Pendharkar, Y Chang, M Bocheff, T Guo, T Brown-Heft,* University of California, Santa Barbara*; A Fedorov,* Lawrence Livermore National Laboratory*; D Read,* Cardiff University*; C Palmstrom,* University of California, Santa Barbara	**PCSI** **Session PCSI-2SuA** **Epitaxial Growth of Quantum Materials and Structures** **Moderator:** Seung Sae Hong, Stanford University
4:35pm	Talk continues.
4:40pm	Talk continues.
4:45pm	Talk continues.
4:50pm	**PCSI-2SuA-29** MBE Growth of $Zn_xCd_{1-x}Te$ on Cd_3As_2, ***Anthony Rice,*** *K Alberi,* National Renewable Energy Laboratory
4:55pm	**PCSI-2SuA-30** Interfaces and Growth of NbTiN-AlN Heterostructures on Sapphire as Epitaxial Josephson Junctions, ***Chris Richardson,*** *A Thomas, A Alexander, C Weddle,* Laboratory for Physical Sciences*; B Arey, M Olszta,* PNNL
5:00pm	**PCSI-2SuA-31** Growth of AlN Barriers in Al/AlN/Al SIS Josephson Junctions by Low Temperature Atomic Layer Epitaxy, ***Charles R. Eddy, Jr.,*** U.S. Naval Research Laboratory*; D Pennachio, J Lee, A McFadden,* University of California, Santa Barbara*; S Rosenberg,* U.S. Naval Research Laboratory*; Y Chang, C Palmstrom,* University of California, Santa Barbara

Sunday Evening, January 19, 2020

PCSI
Room Canyon/Sugarloaf - Session PSCI-SuE
Single Photon Detectors
Moderator: Christopher Palmstrom, University of California, Santa Barbara

7:30pm	**INVITED: PSCI-SuE-1** Theory of Single Photon Detection by a Photoreceptive Molecule and a Quantum Coherent Spin Center, *N Harmon,* University of Evansville; ***Michael Flatté,*** University of Iowa	
7:35pm	Invited talk continues.	
7:40pm	Invited talk continues.	
7:45pm	Invited talk continues.	
7:50pm	Invited talk continues.	
7:55pm	Invited talk continues.	
8:00pm	Invited talk continues.	
8:05pm	Invited talk continues.	
8:10pm	**INVITED: PSCI-SuE-9** From Dark Matter Detection to Artificial Intelligence: Uses for Superconducting Nanowire Single Photon Detectors, ***Sae Woo Nam,*** National Institute of Standards and Technology, UUSA	
8:15pm	Invited talk continues.	
8:20pm	Invited talk continues.	
8:25pm	Invited talk continues.	
8:30pm	Invited talk continues.	
8:35pm	Invited talk continues.	
8:40pm	Invited talk continues.	
8:45pm	Invited talk continues.	

Special Events Monday

Special Events Monday

7:30 AM	Continental Breakfast/Flagstaff/Trail Ridge
10:00 AM	Coffee Break and Poster Viewing/Flagstaff/Trail Ridge
12:00 PM	Lunch and Poster Viewing/Century/Millennium
3:15 PM	Coffee Break and Poster Viewing/Flagstaff/Trail Ridge
6:00 PM	Dinner/Century/Millennium

	Room Canyon/Sugarloaf	
8:30am	**INVITED: PCSI-1MoM-1** MOCVD Epitaxy and Doping for β-Ga_2O_3 and $(Al_xGa_{1-x})_2O_3$, ***Hongping Zhao,*** The Ohio State University	**PCSI** **Session PCSI-1MoM** **Oxides** **Moderator:** Tohru Honda, Kogakuin University
8:35am	Invited talk continues.	
8:40am	Invited talk continues.	
8:45am	Invited talk continues.	
8:50am	Invited talk continues.	
8:55am	Invited talk continues.	
9:00am	Invited talk continues.	
9:05am	Invited talk continues.	
9:10am	**PCSI-1MoM-9** Atomic Structure and Electronic Properties of the Non-Polar In_2O_3 and β-Ga_2O_3(100) Surfaces, *C Schulze, R Zielinski, J Hofmann, C Bruckmann,* Technische Universität Berlin, Germany*; Z Galazka,* Leibniz-Institut für Kristallzüchtung Berlin, Germany*;* ***Holger Eisele,*** Technische Universität Berlin, Germany	
9:15am	**PCSI-1MoM-10** Growth and Structures of Metal Dopant-Ceria Mixed Oxide Interfaces, *E Ginting, L Du,* ***Jing Zhou,*** University of Wyoming	
9:20am	**INVITED: PCSI-1MoM-11** Freestanding Crystalline Oxide Membranes and Heterostructures, ***Seung Sae Hong,*** Stanford University	
9:25am	Invited talk continues.	
9:30am	Invited talk continues.	
9:35am	Invited talk continues.	
9:40am	Invited talk continues.	
9:45am	Invited talk continues.	
9:50am	Invited talk continues.	
9:55am	Invited talk continues.	
10:00am	**PCSI-1MoM-19** Effects of Annealing on Electronic Defects in β-Ga_2O_3 Revealed by Linearly-Polarized Photoluminescence (LPPL), *R Sun, Y Ooi, P Ranga,* University of Utah*; M Saleh, K Lynn,* Washington State University*; S Krishnamoorthy,* ***Mike A. Scarpulla,*** University of Utah	
10:05am	**Coffee Break & Poster Viewing**	
10:10am	**Coffee Break & Poster Viewing**	
10:15am	**Coffee Break & Poster Viewing**	
10:20am	**Coffee Break & Poster Viewing**	
10:25am	**Coffee Break & Poster Viewing**	
10:30am	**Coffee Break & Poster Viewing**	
10:35am	**Coffee Break & Poster Viewing**	
10:40am	**Coffee Break & Poster Viewing**	
10:45am	**Coffee Break & Poster Viewing**	
10:50am	**Coffee Break & Poster Viewing**	
10:55am	**Coffee Break & Poster Viewing**	
11:00am	**INVITED: PCSI-2MoM-31** Hybrid Perovskite-Based High Energy Photon Detectors, ***Wanyi Nie,*** Los Alamos National Laboratory	**PCSI** **Session PCSI-2MoM** **Hybrid Materials** **Moderator:** Joseph Berry, National Renewable Energy Laboratory
11:05am	Invited talk continues.	
11:10am	Invited talk continues.	
11:15am	Invited talk continues.	
11:20am	Invited talk continues.	
11:25am	Invited talk continues.	
11:30am	Invited talk continues.	
11:35am	Invited talk continues.	
11:40am	**PCSI-2MoM-39** Pb-based Metal-Organic Frameworks for Efficient Perovskites Light-emitting Diodes Applications, ***Hsinhan Tsai,*** *W Nie,* Los Alamos National Laboratory	
11:45am	**PCSI-2MoM-40** Arrangement and Electronic Properties of Cobalt Phthalocyanine Molecules on B-Si(111)-√3 × √3 *R* 30°, ***Susi Lindner,*** *M Franz, M Kubicki, S Appelfeller, M Dähne, H Eisele,* Technische Universität Berlin, Germany	
11:50am	**PCSI-2MoM-41** Amino-Acids Detection with Modulation Doped and Surface Nanoengineered GaAs Schottky Diodes, *T Alkhidir, M Abi Jaoude,* KUST, United Arab Emirates*; D Gater,* University College London, United Kingdom*; C Alpha,* Cornell University*;* ***Abdel Isakovic,*** Colgate University	
11:55am	**PCSI-2MoM-42** Carrier Collection and Transport at Interface of Lead-FreeHalide Perovskites (FA,MA)SnI_3 Solar Cells, ***William Jo,*** Ewha Womans University, Republic of Korea	

Monday Afternoon, January 20, 2020

	Room Canyon/Sugarloaf	
2:00pm	**INVITED: PCSI-1MoA-1** Engineering Active and Stable Semiconductor Photoelectrodes by Atomic Layer Deposition, ***Ian Sharp,*** Walter Schottky Institut/Technische Universität München, Germany	**PCSI** **Session PCSI-1MoA** **Catalysis/Nanowires** **Moderators:** Charles R. Eddy, Jr., U.S. Naval Research Laboratory, Hongping Zhao, The Ohio State University
2:05pm	Invited talk continues.	
2:10pm	Invited talk continues.	
2:15pm	Invited talk continues.	
2:20pm	Invited talk continues.	
2:25pm	Invited talk continues.	
2:30pm	Invited talk continues.	
2:35pm	Invited talk continues.	
2:40pm	**PCSI-1MoA-9** Surface States Induced Catalyst-free CO Sensing at GaN and AlGaN/GaN Heterostructures, ***Monu Mishra,*** Indian Institute of Technology Delhi; *G Gupta,* National Physical Laboratory, India	
2:45pm	**PCSI-1MoA-10** Cu_2O Nanoparticles for Ennhancing Gas Phase Photocatalysis over Metal Oxide Semiconductor Nanostructures, ***Hikaru Masegi,*** Keio University, Japan	
2:50pm	**PCSI-1MoA-11** UPGRADED: Self-Selective Formation of 1D and 2D GaBi Structures on GaAs, *Y Liu,* Lund University, Sweden; *S Benter, J Knutsson, S Lehmann,* Lund University; *E Young, N Wilson, C Palmstrom,* University of California, Santa Barbara; *A Mikkelsen,* ***Rainer Timm,*** Lund University, Sweden	
2:55pm	Talk continues.	
3:00pm	Talk continues.	
3:05pm	Talk continues.	
3:10pm	**PCSI-1MoA-15** Iuliacumite: A Novel Two-Dimensional Chemical Short Range Order in a Wurtzite Single Monolayer $InAs_{1-x}Sb_x$ Shell on InAs Nanowires, ***Michael Schnedler,*** Forschungszentrum Jülich, Germany; *T Xu, I Lefebvre, J Nys,* Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes, France; *S Plissard,* Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes, Germany; *M Berthe,* Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes, France; *H Eisele,* Technische Universität Berlin, Germany; *R Dunin-Borkowski, P Ebert,* Forschungszentrum Jülich, Germany; *B Grandidier,* Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes, France	
3:15pm	**Coffee Break & Poster Viewing**	
3:20pm	**Coffee Break & Poster Viewing**	
3:25pm	**Coffee Break & Poster Viewing**	
3:30pm	**Coffee Break & Poster Viewing**	
3:35pm	**Coffee Break & Poster Viewing**	
3:40pm	**Coffee Break & Poster Viewing**	
3:45pm	**Coffee Break & Poster Viewing**	
3:50pm	**Coffee Break & Poster Viewing**	
3:55pm	**Coffee Break & Poster Viewing**	
4:00pm	**Coffee Break & Poster Viewing**	
4:05pm	**Coffee Break & Poster Viewing**	
4:10pm	**Coffee Break & Poster Viewing**	
4:15pm	**Coffee Break & Poster Viewing**	
4:20pm	**INVITED: PCSI-2MoA-29** Control of Spin-Orbit Coupling in Single Acceptor States in Silicon, ***Sven Rogge,*** University of New South Wales, Australia	**PCSI** **Session PCSI-2MoA** **Dopants in Semiconductors** **Moderator:** John Robertson, University of Cambridge
4:25pm	Invited talk continues.	
4:30pm	Invited talk continues.	
4:35pm	Invited talk continues.	
4:40pm	Invited talk continues.	
4:45pm	Invited talk continues.	
4:50pm	Invited talk continues.	

4:55pm	Invited talk continues.	
5:00pm	**PCSI-2MoA-37** UPGRADED: Low-Temperature Epitaxial Silicon Growth and Confinement of Delta Doped Si:P Nanostructures, ***Scott Schmucker***, *E Anderson, J Lucero, E Bussmann, P Lu, A Katzenmeyer, T Luk, T Beechem, L Tracy, T Lu, A Grine, D Ward, D Campbell, P Gamache, M Gunter, S Misra,* Sandia National Laboratories	
5:05pm	Talk continues.	
5:10pm	Talk continues.	
5:15pm	Talk continues.	
5:20pm	**INVITED: PCSI-2MoA-41** The Electronic Bandstructure of Atomically Sharp Dopant Structures in Silicon, ***Justin Wells***, Norwegian University of Science and Technology, Norway	
5:25pm	Invited talk continues.	
5:30pm	Invited talk continues.	
5:35pm	Invited talk continues.	
5:40pm	Invited talk continues.	
5:45pm	Invited talk continues.	
5:50pm	Invited talk continues.	
5:55pm	Invited talk continues.	

Monday Evening, January 20, 2020

PCSI
Room Canyon/Sugarloaf - Session PCSI-MoE
Superconductivity I
Moderator: David Pappas, National Institute of Technology

7:30pm	**INVITED: PCSI-MoE-1** Fluctuating High Temperature Superconductivity in Monolayer FeSe / $SrTiO_3$, ***Kyle Shen***, *B Faeth, S Yang, D Schlom,* Cornell University	
7:35pm	Invited talk continues.	
7:40pm	Invited talk continues.	
7:45pm	Invited talk continues.	
7:50pm	Invited talk continues.	
7:55pm	Invited talk continues.	
8:00pm	Invited talk continues.	
8:05pm	Invited talk continues.	
8:10pm	**PCSI-MoE-9** Advances and Possibilities of the Materials Innovation Platform with Examples from Spin-ARPES, ***Daniel Beaton***, Scienta Omicron Inc.	
8:15pm	**INVITED: PCSI-MoE-10** Superconductivity at Surfaces Studied by Scanning Tunneling Microscopy, ***Yukio Hasegawa***, The University of Tokyo, Japan	
8:20pm	Invited talk continues.	
8:25pm	Invited talk continues.	
8:30pm	Invited talk continues.	
8:35pm	Invited talk continues.	
8:40pm	Invited talk continues.	
8:45pm	Invited talk continues.	
8:50pm	Invited talk continues.	

Special Events Tuesday

Special Events Tuesday

7:30 AM Continental Breakfast/Flagstaff/Trail Ridge
10:05 AM Coffee Break and Poster Viewing/Flagstaff/Trail Ridge

Tuesday Morning, January 21, 2020

	Room Canyon/Sugarloaf	
8:30am	**INVITED: PCSI-1TuM-1** Quantum Microscopy of Nanoscale Materials and Devices, ***Christian Degen,*** ETH Zurich, Switzerland	**PCSI** **Session PCSI-1TuM** **Magnetism** **Moderator:** Michael Flatté, University of Iowa
8:35am	Invited talk continues.	
8:40am	Invited talk continues.	
8:45am	Invited talk continues.	
8:50am	Invited talk continues.	
8:55am	Invited talk continues.	
9:00am	Invited talk continues.	
9:05am	Invited talk continues.	
9:10am	**PCSI-1TuM-9** UPGRADED: Mechanical Control of Valley Magnetization and Berry Curvature Dipole in Monolayer MoS_2, ***Joolee Son,*** Ajou University, Republic of Korea; *K Kim,* Pohang University of Science and Technology, Republic of Korea; *Y Ahn,* Ajou University, Republic of Korea; *H Lee,* Pohang University of Science and Technology, Republic of Korea; *J Lee,* Ajou University, Republic of Korea	
9:15am	Talk continues.	
9:20am	Talk continues.	
9:25am	Talk continues.	
9:30am	**PCSI-1TuM-13** Room Temperature Ferromagnetic Monolayer MnGaN-2D Investigated by Spin-polarized Scanning Tunneling Microscopy/ Spectroscopy and First-principles Density Functional Theory, *Y Ma, T Erickson,* Nanoscale & Quantum Phenomena Institute; *K Meng, F Yang,* The Ohio State University; *D Hunt, A Barral, V Ferrari,* CAC-CNEA, Argentina; ***A.R. Smith,*** Nanoscale & Quantum Phenomena Institute	
9:35am	**PCSI-1TuM-14** UPGRADED: Local Exchange Resonance in DC Magnetoresistance of Spin-Polarized Current Through a Dopant, ***Stephen McMillan,*** University of Iowa; *N Harmon,* University of Evansville; *M Flatté,* University of Iowa	
9:40am	Talk continues.	
9:45am	Talk continues.	
9:50am	Talk continues.	
9:55am	**PCSI-1TuM-18** Room Temperature Ferromagnetism in GaSb Thin Films Doped with Mn, *A Pulzara Mora,* ***Camilo Andres Pulzara Mora,*** Universidad Nacional de Colombia, Colombia	
10:00am	**PCSI-1TuM-19** Magnetotransport Studies in Hybrid 2D/0D Nanostructures, ***Ethel Perez-Hoyos,*** *Y Luo, A Dehankar, J Xu, D Pharis, J Winter, R Kawakami, E Johnston-Halperin,* The Ohio State University	
10:05am	**Coffee Break & Poster Viewing**	
10:10am	**Coffee Break & Poster Viewing**	
10:15am	**Coffee Break & Poster Viewing**	
10:20am	**Coffee Break & Poster Viewing**	
10:25am	**Coffee Break & Poster Viewing**	
10:30am	**Coffee Break & Poster Viewing**	
10:35am	**Coffee Break & Poster Viewing**	
10:40am	**Coffee Break & Poster Viewing**	
10:45am	**Coffee Break & Poster Viewing**	
10:50am	**Coffee Break & Poster Viewing**	
10:55am	**Coffee Break & Poster Viewing**	
11:00am	**INVITED: PCSI-2TuM-31** Fabrication of High Coherence Superconducting Qubits, *J Long, H Ku, X Wu,* NIST; *R Lake,* BlueFors; ***David Pappas,*** NIST	**PCSI** **Session PCSI-2TuM** **Superconductivity II** **Moderator:** Kyle Shen, Cornell University
11:05am	Invited talk continues.	
11:10am	Invited talk continues.	
11:15am	Invited talk continues.	
11:20am	Invited talk continues.	
11:25am	Invited talk continues.	
11:30am	Invited talk continues.	
11:35am	Invited talk continues.	
11:40am	**PCSI-2TuM-39** UPGRADED: Interface Chemistry and Decoherence Processes in Superconducting Quantum Circuits, ***D. Frank Ogletree,*** Lawrence Berkeley National Lab; *V Altoe, X Liu, A Minor, S Cabrini, S Griffin,* Molecular Foundry, LBNL; *A Bannerjee,* Lawrence Berkeley National Lab; *J Kriekebaum, I Siddiqi,* University of California, Berkeley	

Tuesday Evening, January 21, 2020

PCSI
Room Canyon/Sugarloaf - Session PCSI-TuE
The Future of PV
Moderator: Kirstin Alberi, National Renewable Energy Laboratory

7:00pm	**INVITED: PCSI-TuE-1** Progress in Hybrid Perovskite Photovoltaics and Optoelectronics, ***Joseph Berry,*** National Renewable Energy Laboratory	
7:05pm	Invited talk continues.	
7:10pm	Invited talk continues.	
7:15pm	Invited talk continues.	
7:20pm	Invited talk continues.	
7:25pm	Invited talk continues.	
7:30pm	Invited talk continues.	
7:35pm	Invited talk continues.	
7:40pm	**INVITED: PCSI-TuE-9** On the Path Towards Tandem Junction Nanowire Based Solar Cells, ***Magnus Borgström,*** Lund University, Sweden	
7:45pm	Invited talk continues.	
7:50pm	Invited talk continues.	
7:55pm	Invited talk continues.	
8:00pm	Invited talk continues.	
8:05pm	Invited talk continues.	
8:10pm	Invited talk continues.	
8:15pm	Invited talk continues.	

Special Events Wednesday

Special Events Wednesday

7:30 AM	Continental Breakfast/Flagstaff/Trail Ridge
9:45 AM	Coffee Break and Poster Viewing/Flagstaff/Trail Ridge
12:00 PM	Lunch and Poster Viewing/Century/Millennium
3:25 PM	Coffee Break and Poster Viewing/Flagstaff/Trail Ridge
6:30 PM	Conference Banquet Dinner/Century/Millennium

Wednesday Morning, January 22, 2020

	Room Canyon/Sugarloaf	
8:30am	**INVITED: PCSI-1WeM-1** Metals at the Atomic Limit, ***Joshua Robinson,*** Penn State University	**PCSI** **Session PCSI-1WeM** **Optical Properties of 2D Materials** **Moderator:** Wanyi Nie, Los Alamos National Laboratory
8:35am	Invited talk continues.	
8:40am	Invited talk continues.	
8:45am	Invited talk continues.	
8:50am	Invited talk continues.	
8:55am	Invited talk continues.	
9:00am	Invited talk continues.	
9:05am	Invited talk continues.	
9:10am	**PCSI-1WeM-9** Tuning the Spontaneous Emission of Monolayer Wse_2 by Optical Environment Control – Cavity Coupling and Substrate Manipulation, *J Lee,* ***Hyunseung Lee,*** Ajou University, Republic of Korea	
9:15am	**PCSI-1WeM-10** First Principles Study on Optical Properties of Monolayer Bismuthene under an Electric Field, ***Wei-Chieh Liu,*** *L Xu, M Lin,* Hanyang University, South Korea; *T Leung, H Hsu,* National Taipei University of Technology, Republic of China	
9:20am	**PCSI-1WeM-11** Formation of Coherent Phase Domain Heterojunctions in Single Layer MoS_2 on Au(111), ***Fanglue Wu,*** *Z Liu,* Texas A&M University; *M Chandross,* Sandia National Laboratories; *Q Moore,* Texas A&M University; *N Argibay, J Curry,* Sandia National Laboratories; *J Batteas,* Texas A&M University	
9:25am	**PCSI-1WeM-12** UPGRADED: Effects of Electromechanical Coupling in Locally Strained Monolayer MoS_2, ***Alex De Palma,*** *G Cossio, K Jones, J Quan,* The University of Texas at Austin; *X Li,* Univ of Texas at Austin; *E Yu,* The University of Texas at Austin	
9:30am	Talk continues.	
9:35am	Talk continues.	
9:40am	Talk continues.	
9:45am	**Coffee Break & Poster Viewing**	
9:50am	**Coffee Break & Poster Viewing**	
9:55am	**Coffee Break & Poster Viewing**	
10:00am	**Coffee Break & Poster Viewing**	
10:05am	**Coffee Break & Poster Viewing**	
10:10am	**Coffee Break & Poster Viewing**	
10:15am	**Coffee Break & Poster Viewing**	
10:20am	**Coffee Break & Poster Viewing**	
10:25am	**Coffee Break & Poster Viewing**	
10:30am	**Coffee Break & Poster Viewing**	
10:35am	**Coffee Break & Poster Viewing**	
10:40am	**Coffee Break & Poster Viewing**	
10:45am	**Coffee Break & Poster Viewing**	
10:50am	**Coffee Break & Poster Viewing**	
10:55am	**Coffee Break & Poster Viewing**	
11:00am	**INVITED: PCSI-2WeM-31** Neuromorphic Computing with the Redox Transistor, ***Alec Talin,*** Sandia National Laboratories	**PCSI** **Session PCSI-2WeM** **Material Modification and Self Assembly** **Moderator:** Sven Rogge, University of New South Wales, Australia
11:05am	Invited talk continues.	
11:10am	Invited talk continues.	
11:15am	Invited talk continues.	
11:20am	Invited talk continues.	
11:25am	Invited talk continues.	
11:30am	Invited talk continues.	
11:35am	Invited talk continues.	

11:40am	**PCSI-2WeM-39** Kinetically-Driven Assembly of TaS_2-SnS Heterostructures with Flexible Stacking Architectures, ***Dennice Roberts,*** National Renewable Energy Laboratory*; D Bardgett,* University of Oregon*; B Gorman,* Colorado School of Mines*; J Perkins, A Zakutayev, S Bauers,* National Renewable Energy Laboratory	
11:45am	**PCSI-2WeM-40** Globally Aligned Single-Wall Carbon Nanotube Films through Electrostatic Ordering, ***Joshua Walker,*** University of Wyoming*; J Fagan, A Biacchi,* National Institute of Standards and Technology*; V Kuehl,* University of Wyoming*; T Searles,* Howard University*; A Hight Walker,* National Institute of Standards and Technology*; W Rice,* University of Wyoming	
11:50am	**PCSI-2WeM-41** Defining Insulating Regions on TiO_2 Thin Films by Laser Heating, *S Ahmed, J Ritter,* ***Matt McCluskey,*** Washington State University	
11:55am	**PCSI-2WeM-42** Towards Mask Free Direct Write fabrication of Micro- and Nanoscale Architectures on Different Substrates via Aqueous Ink Precursors and CVD Synthesis, ***Irma Kuljanishvili,*** *D Alameri, D Karbach, R Dong, L Moore,* Saint Louis University*; R Divan, Y Liu,* Argonne National Laboratory	

Wednesday Afternoon, January 22, 2020

	Room Canyon/Sugarloaf	
2:00pm	**INVITED: PCSI-1WeA-1** Towards Fermi Level De-pinning at Contacts, ***John Robertson,*** Cambridge University, UK*; Y Guo,* Wuhan University, China*; Z Zhang,* Cambridge University, UK	**PCSI** **Session PCSI-1WeA** **Devices and Contacts** **Moderator:** Alex Demkov, The University of Texas
2:05pm	Invited talk continues.	
2:10pm	Invited talk continues.	
2:15pm	Invited talk continues.	
2:20pm	Invited talk continues.	
2:25pm	Invited talk continues.	
2:30pm	Invited talk continues.	
2:35pm	Invited talk continues.	
2:40pm	**PCSI-1WeA-9** Observation, Characterization, and Mitigation of the Internal *p-n* Junction in Pyrite FeS_2, a Potential Low-cost Solar Absorber, ***Bryan Voigt****, W Moore, J Walter, B Das, M Maiti, M Manno,* University of Minnesota*; E Aydil,* New York University*; C Leighton,* University of Minnesota	
2:45pm	**PCSI-1WeA-10** UPGRADED: Photo-Driven Dipole Reordering: Key to Carrier Separation in Metalorganic Halide Provskites, ***Philipp Ebert****,* Forschungszentrum Jülich, Germany*; H Hsu,* National Taiwan University, Republic of China*; B Huang,* Academia Sinica, Republic of China*; S Chin,* National Taiwan University, Republic of China*; C Hsing, D Nguyen,* Academia Sinica, Republic of China*; M Schnedler,* Forschungszentrum Jülich, Germany*; R Sankar,* Academia Sinica, Republic of China*; R Dunin-Borkowski,* Forschungszentrum Jülich, Germany*; C Wei,* Academia Sinica, Republic of China*; C Chen, Y Chiu,* National Taiwan University, Republic of China	
2:50pm	Talk continues.	
2:55pm	Talk continues.	
3:00pm	Talk continues.	
3:05pm	**PCSI-1WeA-14** First Principles Study on Electronic Properties of Graphene Nanostructures for High Current Density Cathode, ***Nan Zhao****, L Xu, M Lin,* Hanyang University, South Korea*; T Leung,* National Chung Cheng University, Republic of China*; H Hsu,* National Taipei University of Technology, Republic of China	
3:10pm	**PCSI-1WeA-15** Band Offset Modulation in Si-EuO Heterostructures *via* Controlled Interface Formation*, W Li, A Posadas,* The University of Texas at Austin*; **Alex Demkov,*** The University of Texas	
3:15pm	**PCSI-1WeA-16** First Principles Study on Electronic Properties of Magnetite for Spin Polarized Emission under an Electric Field, ***Liang liang Xu****, N Zhao, M Lin,* Hanyang University, South Korea*; T Leung,* National Chung Cheng University, Republic of China*; H Hsu,* National Taipei University of Technology, Republic of China	
3:20pm	**PCSI-1WeA-17** Work Functions of Alkali and Alkaline Earth Metal Surfaces under Electric Fields based on First-Principles Calculations*, Y Wang, L Xu, **Ming-Chieh Lin,*** Hanyang University, South Korea*; T Leung,* National Chung Cheng University, Republic of China*; H Hsu,* National Taipei University of Technology, Republic of China	
3:25pm	**Coffee Break & Poster Viewing**	
3:30pm	**Coffee Break & Poster Viewing**	
3:35pm	**Coffee Break & Poster Viewing**	
3:40pm	**Coffee Break & Poster Viewing**	
3:45pm	**Coffee Break & Poster Viewing**	
3:50pm	**Coffee Break & Poster Viewing**	
3:55pm	**Coffee Break & Poster Viewing**	
4:00pm	**Coffee Break & Poster Viewing**	
4:05pm	**Coffee Break & Poster Viewing**	
4:10pm	**Coffee Break & Poster Viewing**	
4:15pm	**Coffee Break & Poster Viewing**	
4:20pm	**Coffee Break & Poster Viewing**	
4:25pm	**Coffee Break & Poster Viewing**	
4:30pm	**INVITED: PCSI-2WeA-31** Nitrogen Doping of Gallium Oxide by Ion Implantation and its Application to Vertical Transistors, ***Masataka Higashiwaki****,* National Institute of Information and Communications Technology, Japan*; M Wong,* National Institute of Information and Communications Technology*; K Goto, H Murakami, Y Kumagai,* Tokyo University of Agriculture and Technology, Japan	**PCSI** **Session PCSI-2WeA** **Synthesis of Materials for Devices**

Moderator: Alec Talin, Sandia National Laboratories

4:35pm	Invited talk continues.
4:40pm	Invited talk continues.
4:45pm	Invited talk continues.
4:50pm	Invited talk continues.
4:55pm	Invited talk continues.
5:00pm	Invited talk continues.
5:05pm	Invited talk continues.
5:10pm	**PCSI-2WeA-39** Studying the Nucleation of GaP on v-Grooved Si for III-V/Si Device Integration, ***Emily Warren,*** National Renewable Energy Laboratory*; T Saenz,* Colorado School of Mines*; A Norman,* National Renewable Energy Laboratory*; J Zimmerman,* Colorado School of Mines
5:15pm	**PCSI-2WeA-40** Improving Heterointerfaces in Rapidly Grown III-V Electronic Devices using Dynamic Hydride Vapor Phase Epitaxy (D-HVPE), ***Dennice Roberts****, J Simon, K Schulte, A Ptak,* National Renewable Energy Laboratory
5:20pm	**PCSI-2WeA-41** Real-Time Optical Monitoring of the Epitaxial Growth of Zincblende Semiconductors, ***Alfonso Lastras-Martinez,*** Universidad Autónoma de San Luis Potosi, México
5:25pm	**PCSI-2WeA-42** Pulsed Laser Deposition of Epitaxial $Sr_3Al_2O_6$ as a Water-Soluble Sacrificial Layer for GaAs Deposition, ***Imran Khan****, B McMahon, A Norman, A Zakutayev,* National Renewable Energy Laboratory
5:30pm	
5:35pm	**PCSI-2WeA-44** Epitaxial Relationship of Cu3N Grown on YSZ(001) Substrate by Mist CVD Method, ***Nao Wakabayashi,*** Kogakuin University, Japan
5:40pm	**PCSI-2WeA-45** UPGRADED: Halogen Surface Chemistries for Atomically Precise Manufacturing on Si(100), ***Kevin Dwyer****, M Dreyer, K Gaskell,* University of Maryland*; R Butera,* Laboratory for Physical Sciences
5:45pm	Talk continues.
5:50pm	Talk continues.
5:55pm	Talk continues.
6:00pm	**PCSI-2WeA-49** Novel Growth Mechanisms in van der Waals Epitaxy: 3D Morphologies of Bi_2Se_3, ***Theresa Ginley****, S Law,* University of Delaware

Special Events Thursday

Special Events Thursday

7:30 AM Continental Breakfast/Flagstaff/Trail Ridge

PCSI
Room Canyon/Sugarloaf - Session PCSI-1ThM
2D Materials - Strain and Heterostructures
Moderator: Joshua Robinson, The Pennsylvania State University

8:30am	**INVITED: PCSI-1ThM-1** Electron Transport in Strain-Engineered Graphene, ***Nadya Mason,*** University of Illinois at Urbana Champaign	
8:35am	Invited talk continues.	
8:40am	Invited talk continues.	
8:45am	Invited talk continues.	
8:50am	Invited talk continues.	
8:55am	Invited talk continues.	
9:00am	Invited talk continues.	
9:05am	Invited talk continues.	
9:10am	**PCSI-1ThM-9** UPGRADED: Revealing Exciton Masses and Dielectric Properties of Monolayer Semiconductors with High Magnetic Fields, ***Mateusz Goryca****, J Li, A Stier,* Los Alamos National Laboratory*; T Taniguchi, K Watanabe,* National Institute for Materials Science, Japan*; E Courtade, S Shree, C Robert, B Urbaszek, X Marie,* Universite de Toulouse, INSA-CNRS-UPS, LPCNO, France*; S Crooker,* Los Alamos National Laboratory	
9:15am	Talk continues.	
9:20am	Talk continues.	
9:25am	Talk continues.	
9:30am	**PCSI-1ThM-13** Optical Determination of Ice-Induced Interfacial Strain on Single-Layer Graphene, ***Subash Kattel****, J Murphy, S Pasco, J Ackerman, V Alvarado, W Rice,* University of Wyoming	
9:35am	**PCSI-1ThM-14** UPGRADED: Electron Pairing by Remote-Phonon Scattering in Oxide-Supported Graphene, *D Shin,* The University of Texas*; M Fischetti,* The University of Texas at Dallas*; **Alex Demkov**,* The University of Texas	
9:40am	Talk continues.	
9:45am	Talk continues.	
9:50am	Talk continues.	
9:55am	**INVITED: PCSI-1ThM-18** Modeling of Interfaces in All-Solid-State Li-ion Batteries, ***Yue Qi,*** Michigan State University	
10:00am	Invited talk continues.	
10:05am	Invited talk continues.	
10:10am	Invited talk continues.	
10:15am	Invited talk continues.	
10:20am	Invited talk continues.	
10:25am	Invited talk continues.	
10:30am	Invited talk continues.	

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