## ACCGE-23/OMVPE-21

# Schedule

**(Version 8/3/23)**

*Schedules are grouped by symposium and chronologically therein.*

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## Advanced crystal growth technology & equipment

Monday (August 14, 2023)

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Growth of Single Crystal Fibers for Laser Applications**

*Allen Benton (Clemson University), Joseph Kolis*

Thursday (August 17, 2023)

**Canyon II & IV (Chair: Darren Hansen)**

01:30 PM - 02:00 PM

**(Invited) Development and scale-up of n-type conductive SiC for power electronics applications**

*Ian Manning (SK Siltron CSS), Sungchul Baek, Taehee Kim, Dowon Song, Meongkeun Ju, Andrey Soukhojak, Vladimir Pushkarev, Kevin Moeggenborg, Tawhid RanaMatthew Gave, Gil Chung, Edward Sanchez*

02:00 PM - 02:30 PM

**(Invited) Manufacturing 2-inch AlN and beyond: the road to 4-inch AlN substrates**

*Justin Mark (Crystal IS), Robert T. Bondokov, Kasey Hogan, Griffin Q. Norbury, James Grandusky*

***Version: 08/02/23***

## Advanced OMVPE: novel materials & devices

Monday (August 14, 2023)

**Canyon I (Chair: Ryan Lewis)**

10:30 AM - 11:00 AM

**(Invited) Template-Assisted Selective Epitaxy of InAs on W metal films**

*Johannes Svensson (Lund University, Electrical and Information Technology), Patrik Olausson, Heera Menon, Erik Lind, Mattias Borg*

11:00 AM - 11:30 AM

**(Invited) GaAs solar cells on V-groove Si substrates**

*Theresa Saenz (National Renewable Energy), Jacob Boyer, John Mangum, Anica Neumann, Sarah Collins, Michelle Young, Myles Steiner, Ryan France, Bill McMahonJeramy Zimmerman, Emily Warren*

11:30 AM - 11:50 AM

**RELIABLE BURIED HETEROSTRUCTURE LASER via AN MOCVD IN-SITU ETCH PROCESS**

*Anthony SpringThorpe (National Research Council Canada), Omid Salehzadeh Einabad, Muhammad Mohsin, Grzegorz Pakulski*

***Version: 08/03/23***

## Biological and biomimetic materials

### Monday (August 14, 2023)

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Delineating the roles of casein at the interface in enzymatic induced carbonate precipitation with highly spatial and temporal methods**

*Erin Dickey (Arizona State University)*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) TBD**

*Jannette Marti-Subirana (Arizona State University)*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) TBD**

*Nathan Miller (Arizona State University)*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) TBD**

*Jalynn Wells (Arizona State University)*

### Tuesday (August 15, 2023)

**Aster (Chair: Haitao Yu & Sakshi Schmid & Jong Seto)**

03:00 PM - 03:30 PM

**(Invited) Biomolecular and materials structure determination by cryo-electron microscopy and microcrystal electron diffraction**

*Brent Nannenga (Arizona State University)*

03:30 PM - 04:00 PM

**(Invited) Nucleation Kinetics of Amorphous Carbonates in Confinement**

*Derk Joester (Northwestern)*

**Aster (Chair: Haitao Yu & Sakshi Schmid & Jong Seto)**

04:30 PM - 04:50 PM

**Thermodynamic effects of stress on the crystal growth of apatite in aqueous environments**

*Alix Deymier (UConn Health), Pierre Deymier, Marat Latypov, Krishna Muralidharan*

04:50 PM - 05:10 PM

**Biomimetic Control of Sequence-Defined Peptoids over Ag Nanocrystal Formation and Anisotropic Self-Assembly**

*Biao Jin (Pacific Northwest National Laboratory), Md. Emtias Chowdhury, Feng Yan, Xin Qi, Jim Pfaendtner, James J De Yoreo, Chunlong Chen*

05:10 PM - 05:30 PM

**Multiphase silk assembly for two-dimensional composite**

*Chenyang Shi (Pacific Northwest National Laboratory), Shuai Zhang, Marlo Zorman, Jim Pfaendtner, James De Yoreo*

Wednesday (August 16, 2023)

**Aster (Chair: Haitao Yu & Sakshi Schmid & Jong Seto)**

01:30 PM - 02:15 PM

**(Invited) TBD**

*Kimberly Weirich (Clemson University)*

02:15 PM - 03:00 PM

**Biologically Inspired Synthesis of Metal Oxide Particles with Varied Morphology and Orientation**

*Haitao Yu (University of California, Irvine), David Kisailus*

03:00 PM - 03:20 PM

**Designed Interfaces Between Proteins and Inorganic Crystals for Templated Assembly and Co-Assembly**

*Sakshi Yadav Schmid (Pacific Northwest National Lab), Amy Stegmann, Benjamin Helfrecht, Harley Pyles, Christopher Mundy, Shuai Zhang, David Baker, James de Yoreo*

**Aster (Chair: Haitao Yu & Sakshi Schmid & Jong Seto)**

04:00 PM - 04:30 PM

**(Invited) [CANCELLED]**

*Laurie Gower (University of Florida)*

04:30 PM - 04:50 PM

**Tatumella morbirosei: A Study of Cyanophycin Synthetase and Cyanophycin**

*Alison Haymaker (Arizona State University), Kyle Swain, Itai Sharon, Wyatt Blackson, Sydney Parrish, Stefan Tekel, T. Martin Schmeing, Brent L. Nannenga, David R. Nielsen*

04:50 PM - 05:10 PM

**SINGLE PARTICLE CRYO-EM STRUCTURE OF FERRITIN BIOMINERALIZATION SHOWING THE PROTEIN-NANOPARTICLE COMPLEX**

*Sagnik Sen (Arizona State University)*

05:10 PM - 05:30 PM

**Delineating the Roles of Casein at the Interface in Enzyme Induced Carbonate Precipitation (EICP) with Highly-Resolved Spatial and Temporal Methods**

*Logan Tsosie (Arizona State University), Edward Kavazanjian, Jong Seto*

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## Bulk crystal growth

Monday (August 14, 2023)

**Canyon II & IV (Chair: Kevin Zawilski & Peter Schunemann)**

10:30 AM - 11:00 AM

**(Invited) Bulk Crystal Growth and Opto-electronic Characterization of Î²-Ga2O3**

*John McCloy (Washington State University), Benjamin Dutton, Jani Jesenovec, Marc Weber, Matt McCluskey*

11:00 AM - 11:20 AM

**Experience-based Feedforward control of Czochralski growth process using data processing.**

*Jan Kovar (CRYTUR, spol. s r.o.), Martin Klejch, Jan Polak, Jindrich Houzvicka*

11:20 AM - 11:40 AM

**Growth of large diameter yttrium aluminium garnet crystals by Czochralski method**

*Jan Polak (Crytur spol. s. r. o.), Jindrich Houzvicka*

11:40 AM - 12:00 PM

**Bulk Crystal Growth of Yb3Ga5O12 and GdLiF4 for Adiabatic Demagnetization Refrigeration Devices**

*Adam Lindsey (Northrop Grumman SYNOPTICS), Kelvin Chang, Greg Foundos, Chase Scott, Kevin Stevens, Allen Brady*

**Canyon II & IV (Chair: Kevin Zawilski & Peter Schunemann)**

01:30 PM - 02:00 PM

**(Invited) Crystal growth and characterization of large Ca0.582Sr0.418F2 single crystal by Czochralski method using cone die**

*Kazuya Takahashi (Fukuda Crystal Laboratory Co., Ltd.), Marilou Cadatal-Raduban, Nobuhiko Sarukura, Toru Kawamata, Kazumasa Sugiyama, Tsuguo Fukuda*

02:00 PM - 02:30 PM

**(Invited) Solution Phase Diagram of Lead Zirconate Titanate (PZT) in a High Temperature Solution**

*Vincent Fratello (Quest Integrated, LLC), Song Won Ko*

02:30 PM - 02:50 PM

**Vertical gradient freeze growth of 8 inch diameter semiconducting GaAs**

*Wei Gao (AXT Inc.), Weiguo Liu, Yuanli Wang, Shuhui Zhang, Tim Bettles, Rajaram Shetty, Morris Young*

02:50 PM - 03:10 PM

**Controlling Morphology of NiSb Needles in InSb through Low Temperature Gradient Horizontal Gradient Freeze**

*Jani Jesenovec (BAE Systems), Kevin Zawilski, Stephan Meschter, Sambit Saha, Peter Alison, Peter Schunemann*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Magnetization - induced spin current flip in (4R)FeO3 single crystal (R- Rare-earth)**

*Ramki Chakaravarthy (Saveetha Engineering College), Tarak Bachagha, Wencheng Fan, Shixun Cao, Wei Ren*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Influence of Eu 3+ doped on the spin reorientation in the imperfect antiferromagnetic system of Sm 1-x Eu x FeO 3 (x = 0.25, 0.5 and 0.75) single crystals**

*Ramki Chakaravarthy (Saveetha Engineering College), Tarak Bachagha, Arnab Pal, Shixun Cao, Wei Ren*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Nucleation parameters, thermal and mechanical behavior of nonlinear optical potassium hydrogen oxalate trihydroxyborate single crystal**

*Ajisha D S (Vellore Institute of Technology, Vellore), Ezhil Vizhi R*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Optical characteristics of multifunctional heavy metal based multifunctional materials**

*Amalthea Trobasre (University of Maryland Baltimore County), Meghan Brandt, Ching Hua Su, Leslie Scheurer, Bradley Arnold, Fow-Sen Choa, Narasimha Prasad, Brian Cullum, N. B. Singh*

## Thursday (August 17, 2023)

**Canyon II & IV (Chair: Kevin Zawilski & Peter Schunemann)**

10:30 AM - 11:00 AM

**(Invited) Synthesis and Characterization of Novel Metal Thiophosphate Materials**

*Michael Susner (Air Force Research Laboratory), Rahul Rao, Enam Chowdhury, Bing Lv*

11:00 AM - 11:30 AM

**(Invited) Low-Background Crystals for Rare Event Searches in Nuclear and High Energy Physics**

*Joshua Tower (Radiation Monitoring Devices, Inc.), Guido Ciampi, Yaroslav Ogorodnik, Huicong Hong, Lindley Winslow, Joseph Formaggio, Aldo Ianni, Michael R. Squillante*

11:30 AM - 12:00 PM

**(Invited) Hydrothermal Growth of Magnetically Frustrated Crystals: Lanthanide Stannate Pyrochlores as a Prototype**

*Joseph Kolis (Clemson University), Matthew Powell*

**Canyon II & IV (Chair: Darren Hansen)**

02:30 PM - 03:00 PM

**(Invited) Optical emission characteristics of PVT grown doped ZnSe crystals in near IR wavelength region**

*Narsingh Singh (University of Maryland Baltimore County), Ching Hua Su, Bradley Arnold, Meghan Brandt, Eric Bowman, Leslie Scheurer, Fow-Sen Choa, Brian Cullum*

**Canyon II & IV (Chair: John Frank)**

03:30 PM - 04:00 PM

**(Invited) Design and Discovery of Superior Nonlinear Optical Crystals**

*Venkatraman Gopalan (Pennsylvania State University), Jingyang He, Rui Zu, Seng Huat Lee, Abhishek Kannan Iyer, Victor Trinquet, Guillaume Brunin, Geoffroy Hautier, Gian-Marco RiganeseMercouri Kanatzidis, Zhiqiang Mao*

04:00 PM - 04:20 PM

**Ternary chalcopyrite semiconductors for mid-IR laser applications**

*Peter Schunemann (BAE Systems, Inc.), Kevin Zawilski*

04:20 PM - 04:40 PM

**Growth of BaGa4S7 and BaGa4Se7: new broad-band nonlinear crystals for the mid-infrared**

*Peter Schunemann (BAE Systems, Inc.), Kevin Zawilski*

04:40 PM - 05:00 PM

**Absorption and Defects Related to High Average Power Operation of CdSiP2 Crystals**

*Kevin Zawilski (FAST Labs, BAE Systems), Peter Schunemann, Jani Jesenovec, Lindsay Radl, Spencer Horton, Tim Gustafson, Larry Halliburton, Nancy Giles, Kent AverettJon Slagle*

05:00 PM - 05:30 PM

**(Invited) Anisotropic thermal properties of CdSiP2 crystals**

*Shekhar Guha (Air Force Research Laboratory), Joel Murray, Michael Susner, Emmanual Rowe, Michael McLeod, Kevin Zawilski, Peter Schunemann*

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## Characterization techniques for bulk & epitaxial crystallization

Monday (August 14, 2023)

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Characterization of Growth Sectors in Gallium Nitride Substrate Wafers**

*Yafei Liu (Stony Brook University), Shanshan Hu, Zeyu Chen, Qianyu Cheng, Balaji Raghothamachar, Michael Dudley*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Investigation of non-destructive and non-contact electrical characterization of GaN thin film on ScAlMgO4 substrate using THz-TDSE with characteristic impedance analytical model**

*Hayato Watanabe (Ritsumeikan Univ.), Dingding Wang, Takashi Fujii, Momoko Deura, Toshiyuki Iwamoto, Tsuguo Fukuda, Tsutomu Araki*

Wednesday (August 16, 2023)

**Canyon I (Chair: Sakiko Kawanishi)**

01:30 PM - 02:00 PM

**(Invited) Engineered Substrates: Understanding structure and defects through x-ray and electron-based characterization techniques**

*Mark Goorsky (UCLA), Michael Liao, Kenny Huynh, Kaicheng Pan, Lezli Matto*

02:00 PM - 02:30 PM

**(Invited) Growth and characterization of pure and substituted rare-earth orthoferrite single crystals**

*Suja Elizabeth Saji (Indian Institute of Science), Bhawna Mali*

02:30 PM - 03:00 PM

**(Invited) The comprehensive synchrotron topography and rocking curve imaging capabilities at the Advanced Photon Source**

*XianRong Huang (Argonne National Laboratory), Michael Wojcik, Lahsen Assoufid*

03:00 PM - 03:20 PM

**Step-bunching on 4H-SiC (000-1) in Si based solutions at 1873 K during interface reconstruction**

*Takeshi Yoshikawa (Osaka University), Hideto Aoki, Didier Chaussende, Sakiko Kawanishi, Takeshi Mitani*

03:20 PM - 03:40 PM

**Effective Penetration Depth Analysis of Dislocations Lying on the Basal Plane in Grazing Incidence Synchrotron X-ray Topographs of 4H-SiC Wafers**

*Qianyu Cheng (Stony Brook University), Shanshan Hu, Zeyu Chen, Yafei Liu, Balaji Raghothamachar, Michael Dudley*

**Canyon I (Chair: Michael Dudley)**

04:00 PM - 04:30 PM

**(Invited) Measurement of temperature-dependent refractive indices and absorption coefficients of ZnSe and ZnTe**

*Shekhar Guha (Air Force Research Labortory), Jean Wei, Joel Murray, Peter Stevenson*

04:30 PM - 05:00 PM

**(Invited) In situ observation of growth behavior of small-angle grain boundaries in multicrystalline silicon during directional solidification**

*Lu-Chung Chuang (Institute for Materials Research, Tohoku University), Kozo Fujiwara*

05:00 PM - 05:20 PM

**In-situ observation of 4H-SiC{0001} dissolution into molten alloy at 1500 K**

*Sakiko Kawanishi (Kyoto University), Hiroyuki Shibata, Takeshi Yoshikawa*

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## Fourth symposium on ferroelectric crystals & textured ceramics

Thursday (August 17, 2023)

**Aster (Chair: Zuo-Guang Ye & Shunjun Zhang & Jun Luo)**

01:30 PM - 02:00 PM

**(Invited) Development in Crystal Growth of PMN-PT Based Single Crystals**

*Jian Tian (CTS Corporation)*

02:00 PM - 02:30 PM

**(Invited) A Review of Single Crystal Underwater Transducers**

*Harold Robinson (Naval Undersea Warfare Center Division Newport)*

02:30 PM - 03:00 PM

**(Invited) Motivation, Challenges and Potential Solutions in Characterisation of Bulk Piezoelectric Crystal Materials**

*Sandy Cochran (University of Glasgow), Sakineh Fotouhi, Abdul Hadi Chibli, Mingwei He, Bo Liu*

**Aster (Chair: Zuo-Guang Ye & Shunjun Zhang & Jun Luo)**

03:30 PM - 04:00 PM

**(Invited) Process/Property Relationships of Textured Piezoelectric Ceramics for Acoustic Applications**

*Richard Meyer (The Pennsylvania State University), Mark Fanton, Josh Fox, Brian Weiland, Edward Oslosky, Rick Gable, Scott Brumbaugh, Beecher Watson, Christopher EadieChloe Fellabaum*

04:00 PM - 04:30 PM

**(Invited) Templated Grain Growth of High Performance Textured Piezoelectric Ceramics**

*Yongke Yan (Xi'an Jiaotong University), Zhuo Xu, Shashank Priya*

04:30 PM - 05:00 PM

**(Invited) Textured BiScO3-PbTiO3 Piezoelectric Ceramics with both High Electromechanical Coupling Factor and High Curie Temperature**

*Fei Li (Electronic Materials Research Laboratory (Key Lab of Education Ministry), State Key Laboratory for Mechanical Behavior of Materials and School of Electronic Science and Engineering, Xiâ€™an Jiaotong University, Xiâ€™an, China.), Mingwen Wang, Shuai Yang, Jie Wu, Jinglei Li, Liao Qiao, Xuechen Liu, Chao Wang, Xinya FengChunchun Li*

05:00 PM - 05:30 PM

**(Invited) Synthesis and Characterization of High-TC Piezo-/Ferroelectric Single Crystals Based on Bismuth Scandate**

*Zuo-Guang Ye (Simon Fraser University), Tara Nazari*

Friday (August 18, 2023)

**Aster (Chair: Zuo-Guang Ye & Shunjun Zhang & Jun Luo)**

08:00 AM - 08:30 AM

**(Invited) Alternating current poled relaxor-PbTiO3 single crystals for ultrasound transducers**

*Xiaoning Jiang (NC State University), Haotian Wan, Huaiyu Wu, Hwang-Pill Kim*

08:30 AM - 09:00 AM

**(Invited) AC Poling Treatment over Tc in Grain-oriented BT-BNT Piezoceramics**

*Satoshi Wada (University of Yamanashi), Zhuangkai Wang, Sota Saito, Ichiro Fujii, Shintaro Ueno, Kosuke Kawachi, Minsu Kim, Ryo Ito, Hyunwook Nam*

09:00 AM - 09:30 AM

**(Invited) Ferroelectric BiFeO3-based epitaxial thin films with engineered domain structures for photovoltaic applications**

*Hiroki Matsuo (Kumamoto University), Yuji Noguchi*

09:30 AM - 10:00 AM

**(Invited) Growth and characterization of PMN-PT crystals by vertical gradient freeze (VGF) technology**

*Guojian Wang (Luxium Solutions), John Frank, Peter Menge, Danna Boughner*

**Aster (Chair: Zuo-Guang Ye & Shunjun Zhang & Jun Luo)**

10:30 AM - 11:00 AM

**(Invited) Crystal Growth of [100] Lead Zirconate Titanate (PZT) Crystals with composition Near the Morphotropic Phase Boundary by High Temperature Solution Growth**

*Vincent Fratello (Quest Integrated, LLC), Son Won Ko, Wanlin Zhu, Veronika Kovacova, Susan Trolier-McKinstry*

11:00 AM - 11:30 AM

**(Invited) Enhanced piezoelectric properties and superior unipolar fatigue resistance in textured Pb(Mg1/3Nb2/3)O3-PbZrO3-PbTiO3 textured ceramics**

*Yunfei Chang (Harbin Institute of Technology), Linjing Liu, Rui Lv, Qiangwei Kou, Hang Xie*

11:30 AM - 12:00 PM

**(Invited) Lead zirconate titanate ceramics with aligned crystallite grains**

*Jinglei Li (Xi'an Jiaotong University), Fei, Shujun*

12:00 PM - 12:30 PM

**(Invited) Development of Doped Relaxor-PT Ferroelectric Crystals at TRS**

*Jun Luo (TRS Technologies Inc (a subsidiaries of TAYCA Corporation)), J. Moretz, K. Kitahata, Y. Sakano, S. Dynan*

***Version: 08/02/23***

## Fundamentals of crystal growth

Monday (August 14, 2023)

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Growth and characterization of co-crystal of vanillin and hexamethylenetetramine for NLO application**

*Pooja Devi (National Institute of Technology Silchar), Kintali Manohor Prasad, Arindam Roy, P. Srinivasan, Suganya Devi K*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Growth and characterization of metal derivative of 1,4-Diazobicyclo [2.2.2] octane (DABCO) for non-linear optical applications.**

*Arindam Roy (National Institute of Technology Silchar), Kintali Manohar Prasad, P. Srinivasan, Suganya Devi K., Saikatendu Deb Roy*

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Investigation on structural, elemental, spectral, thermal, mechanical, linear, and nonlinear optical nature of Rubidium hydrogen succinate dihydrate metal-organic single crystals**

*Kavitha S (VELLORE INSTITUTE OF TECHNOLOGY), Ezhil Vizhi*

Tuesday (August 15, 2023)

**Canyon II & IV (Chair: Moneesh Upmanyu)**

10:30 AM - 11:00 AM

**(Invited) Growth of highly oriented, high-entropy transition metal disulfide (VNbMoTaW)Sx thin films**

*Cristian Ciobanu (Colorado School of Mines), Koichi Tanaka, Hicham Zaid, Toshihiro Aoki, Aditya Deshpande, Koki Hojo, Christian Ratsch, Suneel Kodambaka*

11:00 AM - 11:20 AM

**Polymer Assisted Growth of Metal Nanoparticles for Sensing Applications**

*Chao Hsuan (Joseph) Sung (University of California, Irvine), David Kisailus*

11:20 AM - 11:50 AM

**(Invited) Growth of metastable (Si)GeSn semiconductors**

*Oussama Moutanabbir (Department of Engineering Physics, Ecole Polytechnique de Montreal, Montreal, Quebec, Canada)*

11:50 AM - 12:10 PM

**Effect of valence electrons on the core level x-ray photoelectron spectra of 4d transition-metal oxide thin films**

*Jasnamol Pezhumkattil Palakkal (Advanced Epitaxy, Institute of Materials Physics, Georg-August-University of GÃ¶ttingen, Germany), Pia Henning, Lambert Alff*

**Canyon II & IV (Chair: Moneesh Upmanyu)**

03:00 PM - 03:30 PM

**(Invited) Ken Jackson's Life and Work**

*Vincent Fratello (Quest Integrated, LLC), Robert Feigelson*

03:30 PM - 04:00 PM

**(Invited) Relating stress in thin films to the processes of crystal growth**

*Eric Chason (Brown U)*

**Canyon II & IV (Chair: Moneesh Upmanyu)**

04:30 PM - 05:00 PM

**(Invited) BCF Analysis of Azimuth Dependence of Step Dynamics**

*Gregory Brian Stephenson (Argonne National Laboratory), Dongwei Xu, Carol Thompson, Matthew J. Highland, Jeffrey A. Eastman, Weronika Walkosz, Peter Zapol, Bo Shen*

05:00 PM - 05:30 PM

**(Invited) Evolution of Jackson-Hunt Diffusion theory and transition into 3D-dendritic morphology: An Overview**

*Narsingh Singh (University of Maryland Baltimore County), Mona Chopra, Martin Glicksman*

05:30 PM - 05:50 PM

**Applying Kinetic Monte Carlo Modeling to Irregular Rod Eutectic Systems**

*Daniel Bentz ()*

## Wednesday (August 16, 2023)

**Canyon II & IV (Chair: Moneesh Upmanyu)**

01:30 PM - 02:15 PM

**(Invited) Stress modulation via oscillations in emergent grain boundary phases during growth of polycrystalline thin films**

*Moneesh Upmanyu (Northeastern University), Mengyuan Wang, Hailong Wang*

02:15 PM - 03:00 PM

**(Invited) Concentration-driven transition between classical and nonclassical modes in organic crystallization**

*Peter Vekilov (University of Houston), Manasa Yerragunta, Akash Tiwari, Bart Kahr, Peter G. Vekilov*

03:00 PM - 03:20 PM

**Crystal Growth, Structure and Magnetism of Transition Metal â€œHobbyâ€ Crystals**

*Rylan Terry (Clemson University), Ben Bell, Sydney Maddox, Joseph Kolis*

**Canyon II & IV (Chair: Moneesh Upmanyu)**

04:00 PM - 04:30 PM

**(Invited) Impact of configurational entropy on point defect thermodynamics in silicon**

*Talid Sinno (University of Pennsylvania), Jinping Luo, Lijun Liu*

04:30 PM - 04:50 PM

**Crystallization pathways and interfacial drivers for the formation of hierarchical architectures**

*Maria Sushko (Pacific Northwest National Laboratory (PNNL)), Lili Liu, Duo Song*

04:50 PM - 05:10 PM

**Investigation of Synthesis Growth and Characterization of Single Crystal of 2-Methyl Benzimidazole and 4-Aminobenzoic Acid for Photonic Applications**

*Ramki Chakaravarthy (Saveetha Engineering College), Sowmiya Kumar, Gunasekaran B*

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## III-V epitaxial growth for devices

Wednesday (August 16, 2023)

**Canyon III (Chair: Theresa Saenz & Qiang Li)**

01:30 PM - 02:15 PM

**(Invited) Freestanding semiconductor nanomembranes: from materials to devices**

*Abderraouf Boucherif (Université de Sherbrooke)*

02:15 PM - 03:00 PM

**(Invited) All-epitaxial growth of orientation-patterned GaAs and GaP engineered nonlinear optical crystals**

*Peter Schunemann (BAE Systems, Inc.)*

03:00 PM - 03:20 PM

**Growth of AlInP by Dynamic-Hydride Vapor Phase Epitaxy for Optoelectronic Devices**

*Jacob Boyer (National Renewable Energy Laboratory), Kevin Schulte, Aaron Ptak, John Simon*

03:20 PM - 03:40 PM

**Imaging dislocation networks formed by using defect filter layers in the growth of GaSb on GaAs.**

*Ganesh Balakrishnan (University of New Mexico), Darryl Shima, Thomas Rotter, Fatih Ince*

**Canyon III (Chair: Luke Mawst)**

04:00 PM - 04:30 PM

**(Invited) MOCVD growth of InAs/InP quantum dots for C-band to near 2 Âµm emission**

*Qiang Li (Cardiff University)*

04:30 PM - 05:00 PM

**(Invited) Monolithically Integrated III-V Lasers for Silicon Photonics**

*Ting Wang (Institute of Physics, Chinese Academy of Sciences)*

05:00 PM - 05:20 PM

**Real-time, In-situ Flux Monitoring: A Revolutionary New Development in Solid-Source Molecular Beam Epitaxy**

*James Gupta (University of Ottawa), Zbigniew Wasilewski, Laura Burchell, Leslie Lebrun, John Weber*

05:20 PM - 05:40 PM

**InP Nano-Ridge Engineering for III-V device integration on silicon substrates**

*Reynald Alcotte (IMEC), Yves Mols, Peter Swekis, Guillaume Boccardi, Robert Langer, Bernardette Kunert*

***Version: 08/02/23***

## III-V wide bandgap nitride semiconductors and devices

Monday (August 14, 2023)

**Canyon II & IV (Chair: Guangxu Ju)**

03:30 PM - 04:00 PM

**(Invited) Defect Evolution and Mg Segregation in implanted GaN using Ultra-High-Pressure Annealing**

*Mark Goorsky (UCLA), Yekan Steven Wang, Michael Liao, Kenny Huynh, James Tweedie, Ramon Collazo, Dolar Khachariya, Zlatko Sitar*

04:00 PM - 04:20 PM

**Stress induced van der Waals lift-off of 4-inch GaN grown on two-dimensional BN by metal organic chemical vapor deposition**

*Michael Snure (Air Force Research Laboratory), Eric Blanton, Timothy Vogt, Andrei Osinsky, Nicholas Glavin*

04:20 PM - 04:40 PM

**Single-Crystalline Layer-Transferred III-N Films for Flexible Piezoelectric Sensors in Extreme Environment Applications**

*Jae-Hyun Ryou (University of Houston), Nam-In Kim, Muhammad Aqib, Miad Yarali*

04:40 PM - 05:00 PM

**Defect Elimination in N-Polar GaN Nanostructures on Si**

*Alexana Roshko (National Institute of Standards and Technology, Boulder, Colorado), Matthew Brubaker, Kristine Bertness*

Tuesday (August 15, 2023)

**Canyon I (Chair: Ramón Collazo)**

10:30 AM - 11:00 AM

**(Invited) GaN on GaN Epigrowth Using Chemically Pure Hydride Vapor Phase Epitaxy (HVPE)**

*Jacob Leach (Kyma Technolgies), Kevin Udwary, Heather Splawn*

11:00 AM - 11:20 AM

**Piezoelectric Single-Crystalline Flexible GaN Thin Film for Stress Hormone Detection from Sweat**

*Jae-Hyun Ryou (University of Houston), Nam-In Kim, Asad Ali*

11:20 AM - 11:40 AM

**Optimization of ZnGeN2/GaN Quantum Wells for Green LEDs**

*Moira K. Miller (Colorado School of Mines), Anthony D. Rice, David R. Diercks, Adele Tamboli, Brooks Tellekamp*

11:40 AM - 12:00 PM

**Strain Accumulation and Relaxation in AlN Film on Si (111) Substrate: A Consideration on Crack Formation in Epitaxial Growth of Ultrawide-Bandgap Semiconductor Films**

*Muhammad Aqib (University of Houston), Mina Moradnia, Sara Pouladi, Jae-Hyun Ryou*

**Canyon I (Chair: Shashwat Rathkanthiwar & Jacob Leach)**

03:00 PM - 03:30 PM

**(Invited) Revealing the Alternating Step Kinetics during Nitride Growth by OMVPE**

*Guangxu Ju (Peking University), Dongwei Xu, Carol Thompson, M. J. Highland, J. A. Eastman, Weronika Walkosz, P. Zapol, B. Shen, G. B. Stephenson*

03:30 PM - 03:50 PM

**Micro-Electroluminescence and -Photoluminescence of Hexagonal Hillocks in UVC LEDs**

*James Loveless (North Carolina State University), Ronny Kirste, Baxter Moody, Pramod Reddy, Shashwat Rathkanthiwar, Will Mecouch, Dolar Khachariya, Jack Almeter, Cristyan Quiñones-GarcíaRamon Collazo, Zlatko Sitar*

03:50 PM - 04:10 PM

**On the solubility of boron nitride in supercritical ammonia-sodium solutions**

*Jacob Dooley (Lehigh University), Nathan Stoddard, Kai Landskron, Siddha Pimputkar*

**Canyon I (Chair: Shashwat Rathkanthiwar & Jacob Leach)**

04:40 PM - 05:00 PM

**RF-MBE Growth of GaN on ScAlMgO4 Substrate**

*Tsutomu Araki (Ritsumeikan University), Yuuchi Wada, Yuuya Kuroda, Seiya Kayamoto, Naoki Goto, Momoko Deura, Takashi Fuji, Y. Shiraishi, Tsuguo Fukuda*

05:00 PM - 05:20 PM

**Conduction mechanism in Mg-doped compositionally graded AlGaN: the role of polarization field and point defects**

*Shashwat Rathkanthiwar (North Carolina State University), Pramod Reddy, Dolar Khachariya, Pegah Bagheri, Cristyan Quiñones-Garcia, James Loveless, Masahiro Kamiyama, Yasutomo Kajikawa, Rafael DalmauBaxter Moody, Seiji Mita, Ronny Kirste, Ramon Collazo, Zlatko Sitar*

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## Materials for photovoltaics & other energy technologies

Monday (August 14, 2023)

**Aster (Chair: Kevin Schulte & Ryan France)**

01:30 PM - 02:00 PM

**(Invited) Green Solar Wafers for High-Efficiency Solar Cells Produced by Epitaxy**

*Frank Siebke (NexWafe GmbH), Maxi Richter, Giuliano Vescovi, Klaus Wachtmann, Bernd Stannowski*

02:00 PM - 02:30 PM

**(Invited) MBE growth of single and polycrystalline CdTe and CdSeTe for photovoltaic applications**

*Alexander Goldstone (Sivananthan Laboratories Inc.), Ramesh Dhere, Christoph Grein, Paul Boieriu, Sivalingam Sivananthan*

02:30 PM - 02:50 PM

**Optimizing Oxygen Reduction Reaction Efficiency through Templated Synthesis and Crystallographic Orientation Control of Transition Metals within Graphitic Nanofibers**

*Sivasankara Rao Ede (University of California Irvine), David Kisailus*

**Aster (Chair: Kevin Schulte & Ryan France)**

03:30 PM - 04:00 PM

**(Invited) Room-Temperature Growth, Ferroelastic Domains and Optoelectronic Properties of Halide Perovskite CH3NH3PbX3 (X = I, Br and Cl) and CsPbBr3 Single Crystals**

*Maryam Bari (Simon Fraser University), Alexei A. Bokov, Zuo-Guang Ye*

04:00 PM - 04:30 PM

**(Invited) Overview of hydride vapor phase epitaxy development for affordable III-V solar cells at AIST**

*Ryuji Oshima (National Institute of Advanced Industrial Science and Technology), Yasushi Shoji, Kikuo Makita, Akinori Ubukata, Shuuichi Koseki, Takeyoshi Sugaya*

04:30 PM - 04:50 PM

**27% Efficient GaAs Solar Cells Grown on Acoustically Spalled Substrates for Lower Cost III-V Photovoltaics**

*Kevin Schulte (National Renewable Energy Laboratory), Steve W. Johnston, Anna K. Braun, Jacob T. Boyer, Anica E. Neumann, William E. McMahon, Michelle Young, Pablo Coll, Mariana I. BertoniEmily L. Warren, Myles A. Steiner*

04:50 PM - 05:10 PM

**GaAs/AlGaAs Photodetector Arrays for Soft X-ray Beam Position Monitoring**

*Jingze Zhao (Department of Electrical and Computer Engineering, Stony Brook University, Stony Brook, NY 11794), Kevin Kucharczyk, Jinghe Liu, Dmitri Donetski, Boris Podobedov*

*Version: 08/02/23*

## Modeling of crystal growth processes

Thursday (August 17, 2023)

**Canyon III (Chair: Talid Sinno)**

03:30 PM - 04:00 PM

**(Invited) Molecular Insights into the Interactions between Antifreeze Proteins and Ice**

*Amish Patel (University of Pennsylvania), Aniket Thosar, Yusheng Cai, Zachariah Vicars, Jeongmoon Choi*

04:00 PM - 04:30 PM

**(Invited) Crystal growth impedance from boundary layer transport, conformational interconversion, and dimerization kinetics**

*Baron Peters (University of Illinois at Urbana-Champaign), Armin Shayesteh Zadeh*

04:30 PM - 05:00 PM

**(Invited) Reshaping and diffusion of metallic nanocrystals**

*Jim Evans (Iowa State University and Ames National Laboratory USDOE), King Lai, Yong Han, Da-Jiang Liu*

05:00 PM - 05:30 PM

**(Invited) Investigation of in-liquid ordering mediated transformations in Al-Sc via ab initio molecular dynamics and unsupervised learning**

*Deep Choudhari (New Mexico Institute of Mining and Technology), Bhaskar S Majumdar, Hunter Wilkinson*

05:30 PM - 05:50 PM

**Computational Study of Non-Classical Homogeneous Crystallization in Liquid Si**

*Talid Sinno (University of Pennsylvania), Abdullah Alateeqi*

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## Nanocrystals, quantum dots, and nanowires

Thursday (August 17, 2023)

**Canyon III (Chair: Eli Sutter & Peter Sutter)**

10:30 AM - 11:00 AM

**(Invited) Selective Area Growth of N-polar GaN Nanostructures for Core-Shell Optoelectronic Devices**

*Matt Brubaker (National Institute of Standards and Technology), Alexana Roshko, Kris Bertness*

11:00 AM - 11:30 AM

**(Invited) Buckets of Transistors: Scalable Nanoelectronic Devices via Bottom-up Crystal Growth and Area-Selective Processes**

*Michael Filler (Georgia Institute of Technology)*

11:30 AM - 11:50 AM

**Nanoscale selective area growth of ultra-high density InGaN/GaN QDs for visible emission patterned by diblock copolymer**

*Cheng Liu (University of Wisconsin Madison), Nikhil Pokharel, Qinchen Lin, Dominic Lane, Miguel A. Betancourt Ponce, Padma Gopalan, Nelson Tansu, Chirag Gupta, Shubhra S. PasayatLuke Mawst*

**Canyon III (Chair: Eli Sutter & Peter Sutter)**

01:30 PM - 02:00 PM

**(Invited) Nanoparticle Assembly into Ordered Superlattices: When and Why these 'Artificial Atoms' Break Conventional Rules for Crystallization**

*Robert Macfarlane (MIT)*

02:00 PM - 02:20 PM

**Gallium doped zinc oxide nanowires for quantum information applications: optical characterization of doping**

*David Lister (Department of Physics, Simon Fraser University), Colton Lohn, Shirin Riahi, Simon Watkins*

***Version: 08/02/23***

## Narrow gap semiconductors

Thursday (August 17, 2023)

**Canyon I (Chair: Dmitri Donetski)**

01:30 PM - 02:00 PM

**(Invited) Development of mid- and long-wavelength infrared detectors and focal plane arrays in JPL**

*Alexander Soibel (Jet Propulsion Lab), David Z. Ting, Arezou Khoshakhlagh, Cory J. Hill, Sir B. Rafol, Anita Fisher, Sam A. Keo, Sarath D. Gunapala*

02:00 PM - 02:30 PM

**(Invited) Purcell Effect versus Auger Recombination in Variable Thickness Superlattices in Resonant Cavity Mid Infrared LEDs**

*John Prineas (University of Iowa), Katrina Schrock, Matthew Bellus, David Montealegre, Logan Nichols*

02:30 PM - 02:50 PM

**Barrier heterostructures with bulk InAsSb absorbers for high operating temperature long-wave infrared sensors**

*Jingze Zhao (Department of Electrical and Computer Engineering, Stony Brook University, Stony Brook, NY 11794), Jinghe Liu, Kevin Kucharczyk, Dmitri Donetski, Gela Kipshidze, Gregory Belenky, Stefan P. Svensson*

02:50 PM - 03:10 PM

**Molecular Beam Epitaxy of Binary and Ternary Manganese and Chromium Nitrides**

*Brelon May (Idaho National Laboratory), Kevin Vallejo, Krzysztof Gofryk, Sandra Julieta Gutierrez-Ojeda, Gregorio H. Cocoletzi*

**Canyon I (Chair: Dmitri Donetski)**

03:30 PM - 04:00 PM

**(Invited) Extremely low excess-noise and high gain AlxGa1-xAsSb avalanche photodiodes lattice matched to InP substrates**

*Seunghyun Lee (The Ohio State University), Xiao Jin, Hyemin Jung, Harry Lewis, Yifan Liu, Bingtian Guo, Christoph Grein, Theodore. J. Ronningen, John. P. R. DavidJoe. C. Campbell, Sanjay Krishna*

04:00 PM - 04:30 PM

**(Invited) Development of SiGeSn Technology for Monolithic Infrared Silicon Photonics**

*Wei Du (University of Arkansas), Shui-Qing Yu*

04:30 PM - 05:00 PM

**(Invited) InAs/InAsSb type-II superlattice and its applications in devices**

*Yong-Hang Zhang (Arizona State University)*

05:00 PM - 05:20 PM

**Long-wave infrared beam steering with InAsSb-based plasmonic phased arrays**

*Jingze Zhao (Department of Electrical and Computer Engineering, Stony Brook University, Stony Brook, NY 11794), Jinghe Liu, Kevin Kucharzcyk, Dmitri Donetski, Gela Kipshidze, Gregory Belenky, Stefan P. Svensson*

*Version: 08/02/23*

## OMVPE: III-N

Tuesday (August 15, 2023)

**Canyon I (Chair: Andy Allerman)**

08:00 PM - 08:20 PM

**Crack suppression of high Al-mole-fraction AlGaN layers on patterned GaN substrates for ultraviolet laser diodes**

*Russell Dupuis (Georgia Institute of Technology), Zhiyu Xu, Theeradetch Detchprohm, Preston Young, Yuto Ando*

08:20 PM - 08:40 PM

**Nitrogen-Implanted Floating Guard Rings as Edge Termination for kV-Class Vertical GaN PIN Rectifiers for Breakdown Voltage Improvement and Premature Breakdown Study by Sub-bandgap Photoluminescence**

*Russell Dupuis (Georgia Institute of Technology), Matthias A. Daeumer, Minkyu Cho, Marzieh Bakhtiary-Noodeh, Jae-Hyuck Yoo, Qinghui Shao, Ted A. Laurence, Daryl Key, Tadao HashimotoEdward Letts, Theeradetch Detchprohm, Zhiyu Xu, Shyh-Chiang Shen*

08:40 PM - 09:00 PM

**Lattice matched virtual substrates for Al-X-N epitaxy**

*Brooks Tellekamp (National Renewable Energy Laboratory), Kei Yazawa, Anthony Rice, Moira Miller, Andrew Norman, Sage Bauer, Nancy Haegal, Dennice Roberts*

09:00 PM - 09:20 PM

**Computational Fluid Dynamics Modeling of a Novel High-Pressure Spatial Chemical Vapor Deposition Reactor (HPS-CVD) Design for Growth of Indium-Containing Nitrides**

*Siddha Pimputkar (Lehigh University), Hooman Enayati*

09:20 PM - 09:40 PM

**XRD analysis of relaxation of non-biaxial strain at the semipolar interface in AlGaN grown via heteroepitaxial FACELO**

*Jack Almeter (North Carolina State University), Ronny Kirste, Seiji Mita, Shashwat Rathkanthiwar, James Loveless, Ramon Collazo, Zlatko Sitar*

09:40 PM - 10:00 PM

**Quasi Vertical Schottky Barrier Diodes on Bulk AlN Substrates**

*Cristyan Quiñones (North Carolina State University), Dolar Khachariya, Pegah Bagheri, Preamod Reddy, Jack Almeter, Ronny Kirste, Seiji Mita, Erhard Kohn, Ramon CollazoZlatko Sitar*

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## OMVPE: III-V

Monday (August 14, 2023)

**Canyon I (Chair: Andy Allerman)**

08:00 PM - 08:20 PM

**Ga(As,P) OMVPE on Si substrates employing surfactant Sb and Ge ion implantation**

*Trevor Smith (McMaster University), Spencer McDermott, Vatsalkumar Patel, Ross Anthony, Andrew Knights, Ryan B. Lewis*

08:20 PM - 08:40 PM

**Optical and Structural Characteristics of ~1.65um-emitting Quantum Dots Grown by Selective Area Epitaxy**

*Nikhil Pokharel (University of Wisconsin, Madison), Miguel A. Betancourt Ponce, Jeremy Kirch, Shining Xu, Alex Kvit, Padma Gopalan, Luke J. Mawst*

08:40 PM - 09:00 PM

**In-situ Reflectometry for Controlling Synthesis of 2D Materials and Heterostructures during MOCVD**

*Michael Heuken (AIXTRON), Jan Mischke, Simonas Krotkus, Sergej Pasko, Wang, B. Conran, C. McAleese, J. Walker, A. HenningS. El Kazzi, M. Heuken*

09:00 PM - 09:20 PM

**Atomically-resolved structure and composition at III-V device heterointerfaces grown by MOVPE**

*Kerstin Volz (Philipps-University Marburg), Andreas Beyer, Celina Becker, Shining Xu, Huilong Gao, Suraj Suri, Jeremy Kirch, Dan Botez, Luke Mawst*

09:20 PM - 09:40 PM

**~ 8.1 Î¼m InP-based quantum cascade lasers grown on Si via OMVPE**

*Shining Xu (Uniersity of Wisconsin-Madison), Shuqi Zhang, Huilong Gao, Jeremy Kirch, Yiteng Wang, Minjoo Lee, Rao Tatavarti, Dan Botez, Luke Mawst*

09:40 PM - 10:00 PM

**Impact of tellurium doping on minority carrier lifetime in heterostructures with bulk In(Ga)AsSb absorbers**

*Jingze Zhao (Department of Electrical and Computer Engineering, Stony Brook University, Stony Brook, NY 11794), Jinghe Liu, Gela Kipshidze, Dmitri Donetski, Leon Shterengas, Gregory Belenky*

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## Plenary

### Monday (August 14, 2023)

**Canyon II & IV (Chair: Balaji Raghothamachar & Siddha Pimputkar)**

08:00 AM - 08:30 AM

**Welcome!**

*Partha Dutta (ACCGE), Mike Dudley*

08:30 AM - 09:15 AM

**Unlocking the AlN-based technology through crystal growth and epitaxy**

*Zlatko Sitar (North Carolina State University), P. Reddy, R. Kirste, R. Collazo*

09:15 AM - 10:00 AM

**Frontiers in Selective Area Growth, Etching, and Doping of GaN by OMVPE**

*Jung Han (Yale University)*

### Tuesday (August 15, 2023)

**Canyon II & IV (Chair: Partha Dutta)**

08:30 AM - 09:15 AM

**Bridgman Crystal Growth on Earth and in Microgravity**

*Aleksander Ostrogorsky (Illinois Institute of Technology)*

09:15 AM - 10:00 AM

**The development of ultrawide bandgap, pseudomorphic AlGaN semiconductor on native AlN substrates and its potential for opto-electronic and power devices (dedicated to Crystal IS co-founder Glen Slack)**

*Leo Schowalter (Lit Thinking, University of Central Florida, Cornell University, Nagoya University, Crystal IS)*

**Canyon II & IV (Chair: Bob Feigelson)**

01:30 PM - 02:15 PM

**From Crystal Growth, to Entrepreneur, to Space Flyer**

*Greg Olsen (GHO Ventures)*

### Thursday (August 17, 2023)

**Canyon II & IV (Chair: Tom Kuech)**

09:15 AM - 10:00 AM

**[AACG AWARD] Bulk Crystal Growth of Ternary III-V Compound Semiconductors – 30 years of personal journey**

*Partha S. Dutta (United Semiconductors LLC)*

***Version: 08/02/23***

## Reduced gravity crystal growth symposium

Monday (August 14, 2023)

**Canyon I (Chair: Aleks Ostrogorsky)**

01:30 PM - 02:00 PM

**(Invited) Potential Role of Reduced Gravity for Semimetal-Semiconductor Composite Bulk Crystal Growth and Novel Devices**

*Partha Dutta (United Semiconductors LLC)*

02:00 PM - 02:20 PM

**Characterization of Protein-based Artificial Retina Thin Films Produced via Layer-by-Layer Assembly on the International Space Station**

*Nicole Wagner (LambdaVision), Jordan Greco, Krishna Dixit, Daniel Sylva, Hope Sylva*

02:20 PM - 02:40 PM

**An AI predictive platform for microgravity innovation**

*Ioana Cozmuta (G-SPACE Inc), Dr. Remus Osan, Dr. Brian Motil, Dr. Christianna Taylor*

**Canyon I (Chair: Martin Volz)**

03:30 PM - 04:00 PM

**(Invited) Solution convection and the nucleation precursors in protein condensation.**

*Peter Vekilov (University of Houston)*

04:00 PM - 04:20 PM

**Commercial Space Platform for Crystal Growth**

*Divya Panchanathan (Axiom Space)*

04:20 PM - 04:40 PM

**Crystal Growth in the SUBSA furnace in MSG: 2002 to 2022**

*Aleksandar Ostrogorsky (Illinois Institute of Technology), Martin Volz, Arne Croel*

04:40 PM - 05:00 PM

**Detached Melt and Vapor Growth of InI in SUBSA hardware**

*Vladimir Riabov (Illinois Institute of Technology), Aleksandar Ostrogorsky, Martin P. Volz, Arne Croell*

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## Silicon carbide & gallium oxide materials & devices

### Thursday (August 17, 2023)

**Canyon I (Chair: Sriram Krishnamoorthy)**

10:30 AM - 11:00 AM

**(Invited) Advancements in Numerical Modeling of Epitaxy of Electronic Materials**

*Alex Galyukov (STR US, Inc.)*

11:00 AM - 11:30 AM

**(Invited) Growth of 2H-SiC pure hexagonal polytype by using nucleating agents**

*Narsingh Bahadur Singh (University of Maryland Baltimore County)*

11:30 AM - 11:50 AM

**Analysis of strain due to High Energy Ion Implantation by Synchrotron X-ray Topography**

*Zeyu Chen (Stony Brook University), Yafei Liu, Qianyu Cheng, Shanshan Hu, Balaji Raghothamachar, Reza Ghandi, Stacey Kennerly, Michael Dudley*

### Friday (August 18, 2023)

**Canyon I (Chair: Balaji Raghothamachar)**

08:00 AM - 08:30 AM

**(Invited) Gallium Oxide Bulk Crystal and Substrates Technology.**

*Akito Kuramata (Novel Crystal Technology, Inc.)*

08:30 AM - 09:00 AM

**(Invited) Materials and Device Engineering for High-Performance Gallium Oxide Electronics**

*Siddharth Rajan (The Ohio State University), Sushovan Dhara, Ashok Dheenan, Nathan Wriedt*

09:00 AM - 09:20 AM

**Epitaxy and Engineering of beta-Ga2O3 Devices for High-Voltage Applications**

*Sriram Krishnamoorthy (Materials, University of California, Santa Barbara), Arkka Bhattacharyya, Saurav Roy, Carl Peterson*

09:20 AM - 09:40 AM

**Recent advances in epitaxial growth, in-situ etch, and regrowth of beta-Ga2O3 films using MOVPE**

*William Brand (Agnitron Technology), Fikadu Alema, Andrei Osinsky*

**Canyon I (Chair: Shailaja Rao)**

10:30 AM - 11:00 AM

**(Invited) Large Diameter 4H-SiC Growth and Defect Characterization Methods**

*Robert Leonard (Wolfspeed, Inc.), Yuri Khlebnikiov, Adrian Powell, Caleb Kent, Michael Fusco, Matthew Conrad, Varad Sakhalkar, Edward VanBrunt, Elif Balkas*

11:00 AM - 11:30 AM

**(Invited) The research and industrialization of SiC substrate in China**

*Yan Peng (Shandong University), Xianglong Yang, Xiufang Chen, Xuejian Xie, Xiaobo Hu, Xiangang Xuï, Yaohao Wang*

11:30 AM - 11:50 AM

**Evaluation of thermal stress distribution in off-axis grown SiC crystals**

*Peter Muzykov (Onsemi), Eugene Tupitsyn, Roman Drachev, Dean Skelton, Hrishikesh Das, Bhuvaragasamy Ravi, Honza Tesik, Jestin Johnston*

11:50 AM - 12:10 PM

**Investigation of defect formation at the early stage of PVT-grown 4H-SiC crystals**

*Shanshan Hu (Stony Brook University), Yafei Liu, Zeyu Chen, Qianyu Cheng, Balaji Raghothamachar, Michael Dudley*

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## Sixth symposium on 2D and low dimensional materials

Monday (August 14, 2023)

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

10:30 AM - 11:00 AM

**(Invited) Novel Graphene and SiC Epitaxy to Enable Film Transfer**

*Daniel Pennachio (US Naval Research Laboratory), Jenifer R. Hajzus, Andrew C. Lang, Rhonda M. Stroud, Rachael L. Myers-Ward*

11:00 AM - 11:30 AM

**(Invited) Electric and spin Hall transition in monolayer Fe3GeTe2**

*Gen Yin (Georgetown University)*

11:30 AM - 12:00 PM

**(Invited) Towards Controlled Synthesis and Scalable Production of 2D Crystals**

*Jun Lou (Rice University)*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

01:30 PM - 02:00 PM

**(Invited) Investigating the Magnetotransport Properties of Hydrogen and Magnesium Intercalated Graphene on Silicon Carbide.**

*Jimmy Kotsakidis (Laboratory for Physical Sciences), Gregory M. Stephen, Matthew DeJarld, Rachael L. Myers-Ward, Kevin M. Daniels, D. Kurt Gaskill, Michael S. Fuhrer, Aubrey T. Hanbicki, Adam L. Friedman*

02:00 PM - 02:30 PM

**(Invited) Van der Waals epitaxial growth of 2D materials and heterostructures**

*Kai Xiao (Center for Nanophase Materials Sciences, Oak Ridge National Laboratory), Xufan Li, Yu-Chuan Lin, Sumner Harris, Alex Puretzky, Chris M. Rouleau, Gerd Duscher, Mina Yoon, David B. Geohegan*

02:30 PM - 02:50 PM

**Epitaxial Growth of Transition Metal Dichalcogenide Monolayers by MOCVD for Large Area Device Applications**

*Andrew Graves (Materials Research Institute, The Pennsylvania State University), Thomas McKnight, Nicholas Trainor, Chen Chen, Shalini Kumari, Meghan Leger, Joan M. Redwing*

02:50 PM - 03:10 PM

**Growth of BN dielectric layer on GaN by metal organic chemical vapor deposition**

*Michael Snure (Air Force Research Laboratory), Eric Blanton, Gordon Grzybouski*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

03:30 PM - 04:00 PM

**(Invited) Epitaxial Graphene for Sensing Applications**

*Rachael Myers-Ward (Naval Research Laboratory), Keith Perkins, JongBong Nah, Jenifer Hajzus, Evgeniya Lock, Anthony Boyd, Lisa Shriver-Lake, Scott Dean, Jeffrey EricksonDaniel Zabetakis, Joel Golden, D. Kurt Gaskill, Daniel Pennachio, Scott Trammell*

04:00 PM - 04:30 PM

**(Invited) Reciprocal Quantum Electrodynamics for Two-Dimensional Materials**

*Shoufeng Lan (Texas A&M University)*

04:30 PM - 05:00 PM

**(Invited) The synthesis and engineering of two-dimensional Janus quantum layers**

*Sefaattin (Seth) Tongay (Arizona State University)*

05:00 PM - 05:30 PM

**(Invited) Towards novel morphologies of 2D materials: intercalation and twists**

*Jie Yao (UC Berkeley)*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

08:00 PM - 08:30 PM

**(Invited) Layered topological semimetals for novel high-performance electronics and THz optoelectronics**

*Jun Xiao (University of Wisconsin Madison)*

08:30 PM - 09:00 PM

**(Invited) Novel plasmonic effects in 2D materials**

*Tony Low (University of Minnesota)*

## Tuesday (August 15, 2023)

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

10:30 AM - 11:00 AM

**(Invited) 2D Materials Electronic and Optoelectronic Device Applications**

*Sina Najmaei (US Army Research Lab)*

11:00 AM - 11:30 AM

**(Invited) Growth and Emerging Functionality of van der Waals Crystals and Heterostructures**

*Eli Sutter (University of Nebraska-Lincoln), Peter Sutter*

11:30 AM - 12:00 PM

**(Invited) Heterostructuring by Mechanochemical Reshuffling of Layered 2D - Metal Chalcogenides.**

*Viktor Balema (ProChem Inc.)*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

03:00 PM - 03:30 PM

**(Invited) Spintronic Quantum Phase Transition in a Graphene/Pb0.24Sn0.76Te Topological Heterostructure with Giant Rashba Spin Texture**

*Jennifer DeMell (Laboratory for Physical Sciences), Gregory M. Stephen, Ivan Naumov, Nicholas A. Blumenschein, Jeremy T. Robinson, Patrick J. Taylor, Pratibha Dev, Aubrey T. Hanbicki, Adam L. Friedman*

03:30 PM - 04:00 PM

**(Invited) Structure-optimized phosphorene for super-stable potassium storage**

*Apparao Rao (Clemson University), Jie Guan, Bingan Lu*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

04:30 PM - 05:00 PM

**(Invited) Electrical Transport and Phase Modulation in Two-Dimensional Topological Superconductors**

*Jifa Tian (University of Wyoming)*

05:00 PM - 05:30 PM

**(Invited) Synthesis of Transition Metal Dichalcogenides on oxide surfaces**

*Stephen McDonnell (The University of Virginia), Maria Gabriela Sales, Clayton Rogers, Abir Hasan, Alex L Mazzoni, Christopher Jezewski , Carl H. Naylor, Sina Najmaei, Wendy L SarneyNikhil Shukla*

**Canyon III (Chair: Kevin Daniels & Cheng Gong & Soaram Kim & James Gupta)**

08:00 PM - 08:30 PM

**(Invited) New Functional Heterostructures Through Low-Temperature Growth of van der Waals Materials**

*Christopher Hinkle (University of Notre Dame)*

08:30 PM - 08:50 PM

**Growth and Emerging Functionality of van der Waals Crystals and Heterostructures**

*Peter Sutter (University of Nebraska-Lincoln), Eli Sutter*

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| Students |
| --- |
| Tuesday (August 15, 2023) |
| **Aster (Chair: Kevin Schulte)** |
| 06:30 PM - 08:00 PM |
| **Career Panel Event for Students** |
| *Kevin Schulte (AACG)* |

***Version: 08/02/23***

## Symposium on detector materials: scintillators & semiconductors

### Monday (August 14, 2023)

**Arizona Foyer (Chair: Partha Dutta)**

05:30 PM - 07:00 PM

**(Poster) Development of Ce doped LiGdCl4/LiCl eutectic as a high concentration 6Li contening thermal neutron scintillator**

*Kei Kamada (Tohoku univ.)*

### Tuesday (August 15, 2023)

**Aster (Chair: Chuck Melcher & Edgar van Loef)**

10:30 AM - 11:00 AM

**(Invited) Intrinsic Tl-based Halide Scintillators for Particle Detectors**

*Rastgo Hawrami (Xtallized Intelligence, Inc.)*

11:00 AM - 11:20 AM

**First Bridgman growth of RbSrI3:Eu scintillator for high energy X-ray radiography**

*Kimberly Pestovich (University of Tennessee), Luis Stand, Charles Melcher, Edgar van Loef, Lakshmi Pandian, Mariya Zhuravleva*

11:20 AM - 11:40 AM

**Thermophysical Property Measurements of Indium Iodide Crystals**

*Martin Volz (NASA Marshall Space Flight Center), Arne Croell, Vladimir Riabov, Aleksander Ostrogorsky*

11:40 AM - 12:00 PM

**Using In-situ Sublimation Methods in the Growth of Halide Perovskite Single Crystal Semiconductors**

*Peng Wang (Department of Chemistry, Queenâ€™s University), David Kunar, Matthew Webster, Michael Lewis*

### Thursday (August 17, 2023)

**Aster (Chair: Guangxu Ju)**

10:30 AM - 11:00 AM

**(Invited) The Luminescence of Aluminate Spinels: The Role of Defects and Impurities**

*Luiz Jacobsohn (Clemson University), Robin L. Conner*

11:00 AM - 11:30 AM

**(Invited) Recent developments in Scintillator Co-doping at Luxium Solutions**

*Peter Menge (Luxium Solutions), Vladimir Ouspenski, Fang Meng, John Frank*

11:30 AM - 11:50 AM

**Discovery and Scale Up of New Ultrafast Chloride Scintillators**

*Daniel Rutstrom (University of Tennessee), Luis Stand, Maciej Kapusta, Charles L. Melcher, Mariya Zhuravleva*

Friday (August 18, 2023)

**Canyon II & IV (Chair: Edgar van Loef)**

08:00 AM - 08:30 AM

**(Invited) Cd1-x-yMgxZnyTe, a New Alternative High-Performance Radiation Detector Material**

*Sudhir Trivedi (Brimrose Technology Corporation), Sue Kutcher, Corey Rosemier, Siva Ram Swaminathan, Henry Chen*

08:30 AM - 08:50 AM

**Physical Properties of CsPbBr3 Crystal and Bridgman Crystal Growth**

*Duck Young Chung (Argonne National Laboratory), Indra Pandey, Mustafa Unal, Mercouri Kanatzidis*

08:50 AM - 09:10 AM

**Crystal Growth, Density Functional Theory, and Scintillation Properties of TlSr2Cl5 and Tl2Sr2Br5**

*Edgar van Loef (Radiation Monitoring Devices, Inc.), Lakshmi Soundara Pandian, Guido Ciampi, Luis Stand, Mariya Zhuravleva, Charles Melcher*

***Version: 08/02/23***

## Symposium on twisted crystals

Monday (August 14, 2023)

**Aster (Chair: Bart Kahr)**

10:30 AM - 11:00 AM

**(Invited) Extreme Helical Morphology Exhibited by Iodinated Phenanthroline Crystals**

*Christopher Grainger (University of Bristol)*

11:00 AM - 11:30 AM

**(Invited) Bowties vs Mantis Shrimp. Who can rotate the polarization of light better?**

*Prashant Kumar (Characterization)*

11:30 AM - 12:00 PM

**(Invited) Twisted Organic Semiconductor Crystals**

*Stephanie Lee (New York University), Bart Kahr, Alexander Shtukenberg, Sehee Jeong, St. John Whittaker, Yongfan Yang*