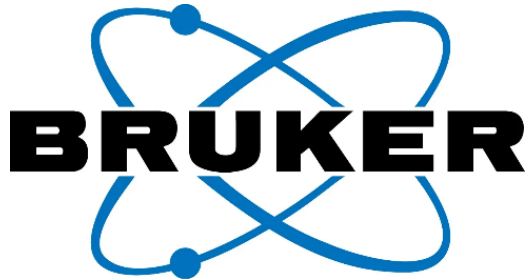




The Center for Integrated Nanotechnologies
Annual User Meeting

September 19-20, 2023
Santa Fe Convention Center,
Santa Fe, New Mexico

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The Center for Integrated Nanotechnologies Annual User Meeting



Meeting Agenda Tuesday, September 19 (Day 1) Registration and Plenary Session

8:00 am	Registration	Main Hall outside Sweeney Ballroom
8:00 am	Continental Breakfast	Sweeney Ballroom
9:00 am	Plenary Session	Sweeney Ballroom
	Welcome and Introductions — CINT Director Jeff Nelson	
	Basic Energy Sciences (BES) Welcome — Associate Director of Science for BES Dr. Linda Horton	
	CINT Update — CINT Co-Director Adam Rondinone	
	Steven J Zinkle — University of Tennessee, Knoxville; Governor's Chair for Nuclear Materials, Oak Ridge National Laboratory <i>Grand Challenges to Realize Fusion Energy: Materials Perspective.</i>	
10:45 am	Morning Break	
	Nuh Gedik — Massachusetts Institutes of Technology Center for Quantum Engineering, Soldier Nanotechnologies (ISN) <i>Capturing Light-induced Phase Transitions with Femtosecond Movies.</i>	
12:00 pm	Lunch	Sweeney Ballroom



The Center for Integrated Nanotechnologies Annual User Meeting

Tuesday, September 19 (Day 1)
Meeting Agenda — Parallel Symposia

In-Situ Characterization and Nanomechanics & Soft, Biological, and Composite Nanomaterials Joint Symposium on Clean Energy

ICNM/SBCN Joint Symposium on Clean Energy — Nuclear Energy <i>Organizers: Yongqiang Wang, Wanyi Nie, Stephen House, Amalie Frischknecht, John Watt</i>		
1:00 pm	Blas Uberuaga — Los Alamos National Laboratory <i>New Capabilities for Understanding the Properties of Non-equilibrium Defects under Irradiation Extremes.</i>	
1:30 pm	Xinghang Zhang — Purdue University <i>Work Hardening and Radiation Response of Gradient Alloys.</i>	
2:00 pm	Lin Shao — Texas A&M University <i>Using Ion Irradiation for Fast Simulation of Reactor Neutron Damage: Credibility, Issues, and Mitigation.</i>	
2:30 pm	Mitra Tehari — Johns Hopkins and Pacific Northwest National Laboratory <i>Developing High Entropy Alloys for Fusion and Aerospace Applications.</i>	
3:00 pm	Afternoon Break	Sweeney Ballroom
ICNM/SBCN Joint Symposium on Clean Energy — Solar Energy <i>Organizers: Yongqiang Wang, Wanyi Nie, Stephen House, Amalie Frischknecht, John Watt</i>		
3:15 pm	Jun Lou — Rice University <i>Electrochemical Behaviors of Two-Dimensional Materials for Energy and Environmental Applications.</i>	
3:45 pm	Donghee Son — Texas A&M University <i>Photogeneration of the Upconverted Hot Electrons in Mn-doped Semiconductor Nanocrystals and their Application in Photocatalysis.</i>	
4:15 pm	Jeffery Urban — Inorganic Nanostructures Facility, Molecular Foundry, Lawrence Berkeley National Laboratory	
4:45 pm	Gang Wu — University at Buffalo <i>Atomically Dispersed PGM-free Electrocatalysts for CO₂ to CO Conversion: From Single to Dual Metal Sites.</i>	
5:00 pm	Poster Session Reception and Awards	Sweeney Ballroom

The Center for Integrated Nanotechnologies Annual User Meeting



Tuesday, September 19 (Day 1)
Meeting Agenda — Parallel Symposia

Quantum Materials Systems

Ion Implantation and Characterization for Quantum Materials Systems and Microelectronics

Ion Implantation and Characterization for QIS and Microelectronics — Ion Implantation <i>Organizers: Mike Lilly, Michael Titze, Jinkyong Yoo</i>		
1:00 pm	Gregor Hlawacek – Helmholtz-Zentrum Dresden-Rossendorf <i>Materials Science with Fibs across Applications and Fluencies at the HZDR Ion Beam Center.</i>	
1:30 pm	Nikolay Lavrik — Center for Nanophase Materials Sciences, Oak ridge National Laboratory <i>Enhanced Thermal and Photothermal Carbonization of Polymers by Focused Ion Implantation of Gold.</i>	
2:00 pm	Ivan Kravchenko — Center for Nanophase Materials Sciences, Oak Ridge National Laboratory <i>Exploring Different Applications for Multi-species Focused Ion Beams.</i>	
2:30 pm	Dan Read — University of California at Santa Barbara <i>Materials Modification with Focused Ion Beam using a GaBiLi Liquid Metal Ion Source.</i>	
3:00 pm	Afternoon Break	Sweeney Ballroom
3:15 pm	Vendor Presentation	
3:30 pm	<i>Qing Tu — Texas A&M University</i> <i>Failure of 2D Metal Halide Perovskites under External Stressors: Nano Insights into the Long-term Durability.</i>	
4:00 pm	<i>Luis Jauregui — University of California at Irvine</i> <i>High-quality Van der Waals Heterostructures based on Air-sensitive Quantum Materials: Unlocking the Potential of Quantum Devices.</i>	
4:30 pm	<i>Yun Seog Lee — Seoul National University</i> <i>Monolayer Transfer and Patterning of Single-crystalline Ruddlesden-Popper Halide Perovskite for Opto-Electronic Devices.</i>	
5:00 pm	Poster Session Reception and Awards	Sweeney Ballroom



The Center for Integrated Nanotechnologies Annual User Meeting

Tuesday, September 19 (Day 1)
Meeting Agenda — Parallel Symposia

Nanophotonics and Optical Nanomaterials Ultrafast Dynamics and Control in Emerging Quantum Materials

Ultrafast Dynamics and Control in Emerging Quantum Materials — Nonlinear Optics <i>Organizers: Prashant Padmanabhan, Hou-Tong Chen</i>		
1:00 pm	Mark Sherwin — University of California at Santa Barbara <i>Higher Order Sideband Generation.</i>	
1:30 pm	Wei Xiong — University of California at San Diego <i>Ultrafast Dynamics of Molecular Polaritons.</i>	
2:00 pm	Vendor Presentation	
2:30 pm	Michael Zuerch — University of California at Berkeley <i>Band-selective Electron-phonon Coupling and Excitonic Melting in 1T-TiSe₂ Probed by Attosecond Transient Absorption Spectroscopy.</i>	
3:00 pm	Afternoon Break	Sweeney Ballroom
Ultrafast Dynamics and Control in Emerging Quantum Materials — ARPES and X-Ray Spectroscopies <i>Organizers: Prashant Padmanabhan, Hou-Tong Chen</i>		
3:15 pm	Robert Kaindl — Arizona State University <i>Advanced Ultrafast Probes of Quantum Materials — from THz to X-rays.</i>	
3:45 pm	Keshav Dani — Okinawa Institute of Science and Technology <i>Excitons in Momentum Space.</i>	
4:15 pm	Mark Dean — Brookhaven National Laboratory <i>Quantum Materials under a Resonant X-ray Spotlight: Low Valence Nickelate Superconductors.</i>	
4:45 pm	Na Hyun Jo — University of Michigan <i>Manipulation of Quantum Materials through Strain.</i>	
5:00 pm	Poster Session Reception and Awards	Sweeney Ballroom

The Center for Integrated Nanotechnologies Annual User Meeting



Wednesday, September 20 (Day 2)
Meeting Agenda — Plenary Session

8:30 am Breakfast Sweeney Ballroom

9:00 am Plenary Session Sweeney Ballroom

Welcome —

Dr. Andrew Ouder Kirk — META

*Key Challenges in AR Optics from the Materials and Component Perspective and
how we are Utilizing AI and ML to Discover New Candidate Materials to Achieve Higher
Performance*



The Center for Integrated Nanotechnologies

Annual User Meeting

Wednesday, September 20 (Day 2)
Meeting Agenda — Parallel Symposia

In-Situ Characterization and Nanomechanics & Soft, Biological, and Composite Nanomaterials Joint Symposium on Clean Energy

ICNM/SBCN Joint Symposium on Clean Energy — Batteries

Organizers: Yongqiang Wang, Wanyi Nie, Stephen House, Amalie Frischknecht, John Watt

10:00 am	Kevin Zavadil — Sandia National Laboratories; Joint Center for Energy Storage Research	
10:30 am	Morning Break	Sweeney Ballroom
10:45 am	Stephen Mick — Gatan AMETEK <i>Spatial Lithium Quantification by Backscattered Electron Microscopy and Energy-dispersive X-ray Spectroscopy.</i>	
11:00 am	Nikita Dutta — National Renewable Energy Laboratory <i>Revealing In-situ Structure and Chemistry at Active Battery Interfaces through Cryo-Electron Microscopy.</i>	
11:30 am	Dave Mitlin — University of Texas at Austin <i>Microstructural Design Principles for Achieving Stable Metal Anode Interphases with Liquid and Solid-State Electrolytes.</i>	
12:00 am	Susmita Sarkar — Purdue University, Stanford University <i>Electrochemical Instability in Sodium-metal Electrodes: Evolution and Elimination.</i>	
12:30 pm	Lunch	Sweeney Ballroom

ICNM/SBCN Joint Symposium on Clean Energy — Fuel Cells & Electrocatalysis

Organizers: Yongqiang Wang, Wanyi Nie, Stephen House, Amalie Frischknecht, John Watt

1:30 pm	Chaochao Dun — Lawrence Berkeley National Lab <i>Accelerating the Advancement of Functional Nanomaterials for Clean Energy Applications from Viewpoint of High Entropy Driven Principles.</i>	
2:00 pm	Karen Winey — University of Pennsylvania <i>Hydrated Fluorine-free Terpolymers with Percolated Nanoscale Water Channels.</i>	
2:30 pm	Jacob Spendelow — Los Alamos National Laboratory <i>Microfabrication of Advanced Fuel Cell Electrode Structures.</i>	
3:00 pm	Richard Tilley (Virtual) — University of New South Wales <i>Atomically Precise Synthesis of Metal Nanoparticles for Catalysis.</i>	

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Wednesday, September 20 (Day 2)
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Quantum Materials Systems

Ion Implantation and Characterization for Quantum Materials Systems and Microelectronics

Ion Implantation and Characterization for QIS and Microelectronics — Characterization
Organizers: Mike Lilly, Michael Titze, Jinkyong Yoo

10:00 am	Mahdi Hosseini — Purdue University <i>Engineering 1D and 2D Atomic Arrays in Photonic Chips for Quantum Applications.</i>	
10:30 am	Morning Break	Sweeney Ballroom
11:00 am	Madison Sutula — Massachusetts Institutes of Technology <i>Large-scale Characterization of Solid-state Quantum Emitters.</i>	
11:30 am	Xingyi Wang — University of Washington <i>Properties of Donor Qubits in ZnO Formed by Indium Ion Implantation.</i>	
12:00 pm	Yongzhou Xue — University of Arizona <i>Selective Generation of V₂ Silicon Vacancy Centers in 4H Silicon Carbide with High Efficiency.</i>	
12:00 pm	Lunch	Sweeney Ballroom



The Center for Integrated Nanotechnologies Annual User Meeting

Wednesday, September 20 (Day 2)
Meeting Agenda — Parallel Symposia

Nanophotonics and Optical Nanomaterials
Ultrafast Dynamics and Control in Emerging Quantum Materials

Ultrafast Dynamics and Control in Emerging Quantum Materials — Nanoscopy <i>Organizers: Prashant Padmanabhan, Hou-Tong Chen</i>		
10:00 am	Jigang Wang — Iowa State University; Ames Laboratory <i>Higgs Bosons and Weyl Fermions Controlled by Light: Terahertz and Nanometer Scales.</i>	
10:30 am	Morning Break	Sweeney Ballroom
10:45 am	Vendor Presentation	
11:00 am	Tom Siday — Oxford University <i>Unveiling the Nanoscale Dynamics of Excitons in 2D Van der Waals Semiconductors.</i>	
11:30 pm	Long Ju — Massachusetts Institutes of Technology	
12:00 pm	Lunch	Sweeney Ballroom