Center for Integrated Nanotechnologies
2025 Annual User Meeting

September 15–16, 2025
Santa Fe Convention Center

The CINT User Program is designed to provide the international scientific community access to the world-class capabilities and scientific expertise available at the CINT Core and Gateway facilities. To support and cultivate that same community, the CINT User Meeting brings together a diverse collection of world-leading scientists, technologists, technicians, members of academia and industry, and student researchers to gather and discuss critical issues in the diverse fields of nanoscience and nanotechnology.

We have an impressive schedule of sessions with over 40 distinguished speakers from around the world and hope you enjoy this opportunity to share and discover the latest advances in the exciting world of nanoscience research.

Thank you to our valued sponsors!

Center for Integrated Nanotechnologies
2025 Annual User Meeting

September 15–16, 2025

Santa Fe Convention Center

Symposia

DOE Microelectronics Science Research Centers

Coronado/DeVargas Meeting Rooms

Cross-Thrust Autonomous Laboratories

O'Keefe/Milagro Meeting Rooms

Quantum Information Science and Quantum Computing in New Mexico & Colorado

Peralta/Lamy Meeting Rooms

Poster Presentation & Reception

Please join us Monday evening for our annual Poster Presentation & Reception
Sweeney Ballroom, 5:45–7:30 p.m.
Explore over 60 scientific posters and meet the presenters while
you enjoy refreshments courtesy of our sponsors.

Center for Integrated Nanotechnologies
2025 Annual User Meeting — Keynote Speaker

Senator Michael Padilla

New Mexico — District 14

“Quantum Economic Development.”

Senator Padilla has represented District 14 since being elected in 2012. Senator Padilla was elected to the Senate Leadership Team in his second year in office, as the Senate Majority Whip, a position he has been elected to three times. Padilla serves on ten legislative committees, including as chairman of the New Mexico Finance Authority and chairman of the Science, Technology, and Telecommunications Committee and is the only member of the Senate Finance Committee from Central New Mexico. Padilla has successfully passed multiple pieces of legislation to improve job creation and economic development, early childhood education, access to high-speed broadband Internet, child food insecurity, child protective services, and education reform and funding. Padilla has been able to reform many information technology, high speed broadband Internet, cybersecurity, and new technology services provided by state government. In doing so, he has worked to bring job creation and economic development, telemedicine, and distance learning opportunities to some of the most rural parts of New Mexico. He successfully reformed the New Mexico Local Infrastructure Act to include broadband Internet, reformed the New Mexico Universal Service Fund to focus state dollars on new technologies, modernized the New Mexico Telecommunications Act, which had not been updated since before the Internet was widely utilized, and has made New Mexico an attractive state for technology investment funding. In 2021 he brought a bi-partisan group of legislators together from both legislative chambers to create the New Mexico Office of Broadband Access and Expansion, which has six primary functions and will help New Mexico be a leader in the delivery of high speed broadband. In 2023, he sponsored legislation that created the Office of Cybersecurity which supports consistency across state government agencies.

Senator Padilla is from Los Padillas, a rural farming community that his family helped settle over 160 years ago and is located inside of the district he represents. Padilla has always been involved in the Democratic Party of New Mexico, serving as a precinct chairman, ward chairman, county central committee member and state central committee member. He has also served on numerous boards and commissions prior to becoming a senator, including Youth Development Incorporated, Special Olympics New Mexico, Junior Achievement of New Mexico, Association of Commerce and Industry of New Mexico, the New Mexico State Workforce Development Board, and several others.

Center for Integrated Nanotechnologies
2025 Annual User Meeting — Plenary Speaker

Professor Jeehwan Kim

Massachusetts Institute of Technology

“Wafer-Free Monolithic 3D Integration Enabled by Confined Growth and Remote Epitaxy.

Professor Kim joined the Department of Mechanical Engineering faculty in 2015 and DMSE as a joint faculty member in 2016. Before MIT, he was a research staff member at IBM’s Thomas J. Watson Research Center, conducting research in photovoltaics, 2D materials, graphene, and advanced complementary metal-oxide semiconductor devices. Professor Kim has been named a Master Inventor at IBM, with more than 100 patent filings in five years. He received a BS from Hongik University in Seoul, South Korea, an MS from Seoul National University, and a PhD from the University of California, Los Angeles, all in materials science and engineering.

Professor Jeehwan Kim’s research covers a range of topics, from basic material physics and mechanics to electronic and photonic devices and systems for next-generation electronics and 3D integration. Specifically, his research group focuses on innovation in nanotechnology for computing and electronics; innovation in nanotechnology for electronic, photonic, and energy applications; neuromorphic computing, modeled on cognitive systems; and nanotechnology for advanced heterogeneous integration.

Center for Integrated Nanotechnologies
2025 Annual User Meeting — Plenary Speaker

Executive Director Eve Lieberman

Colorado Office of Economic Development and International Trade

Eve Lieberman was appointed by the Governor to serve as the Executive Director of the Office of Economic Development and International Trade on January 2nd, 2023. Prior to that, she had served as the Chief Policy Advisor and Legislative Counsel for Governor Jared Polis for all four years of his first term. She managed the legislative policy and federal affairs teams and oversaw many successful Governor priorities, including the passage of Free Full Day Kindergarten, the implementation of universal preschool, historic investments in transportation, and economic recovery programs.

Eve served over ten years on Capitol Hill, working as Governor Polis' Deputy Chief of Staff & Legislative Director and then Chief of Staff when then-Congressman Polis represented the 2nd Colorado Congressional District in the U.S. House of Representatives. Eve also served on the Rules Committee in her capacity working for another senior member of Congress. Eve earned her undergraduate degree from the University of Michigan and attended law school at the George Washington University Law School, completing her Juris Doctorate in 2011. During her time in law school, Eve served as a Law Clerk for the US Attorney's Office for the District of Columbia, for a DC Superior Court Judge, for the House Judiciary Committee, and for the US Department of Justice. Eve lives in Denver with her husband and two children.

Center for Integrated Nanotechnologies
2025 Annual User Meeting — Plenary Speaker

Interim Director Kevin Yager

AI-Accelerated Nanoscience,
Center for Functional Nanomaterials

“The Future of AI-Accelerated Science.”

Kevin Yager is currently the Interim Director for the Center for Functional Nanomaterials (CFN). The CFN is a national scientific user facility, operated for the U.S. Department of Energy (DOE) as a resource for the worldwide scientific community. Each year, the CFN supports the science of more than 700 researchers from around the world.

Kevin is also the group leader for the AI-Accelerated Nanoscience group at CFN. His research combines AI/ML methods with material science studies. He has a history of leveraging artificial intelligence and machine-learning (AI/ML) to accelerate science, including developing autonomous experimentation. His current research focuses on materials science and nanotechnology and he is most interested in non-equilibrium self-assembly. In particular, Kevin studies how non-equilibrium processing can be used to control the ordering of block-copolymer materials. He has recently demonstrated a suite of techniques that can be used to induce these self-assembling materials to form nanostructures beyond those known at equilibrium. He is also actively developing improved x-ray scattering techniques; especially with regard to exploiting machine-learning to enable autonomous scientific experiments. He also has longstanding interests in self-assembled nanomaterials, especially non-equilibrium assembly of block copolymers; and developing structural characterization using x-rays.

Center for Integrated Nanotechnologies
2025 Annual User Meeting

Meeting Agenda
Monday, September 15

8:00 a.m.	Registration and Light Breakfast	Main Hall/Sweeney Ballroom
9:00 a.m.	**Plenary Session**	**Sweeney Ballroom**
	9:00 CINT Director Jeff Nelson — Welcome and Introductions	
	9:30 Basic Energy Sciences (BES) Program Manager Dr. Mikhail Zhernenkov — BES Update	
	9:45 CINT Co-Director Adam Rondinone — CINT Update	
	10:15 Break	
	10:30 Professor Jeehwan Kim — Massachusetts Institute of Technology "Wafer-Free Monolithic 3D Integration Enabled by Confined Growth and Remote Epitaxy.	
11:30 a.m.	Lunch	Sweeney Ballroom
1:00 p.m.	Parallel Symposia	
3:00 p.m.	Afternoon Break	Sweeney Ballroom
5:45 p.m.	Poster Reception	Sweeney Ballroom

Center for Integrated Nanotechnologies
2025 Annual User Meeting

Monday, September 15
Meeting Agenda — Parallel Symposia

DOE Microelectronics Science Research Centers

Coronado/DeVargas Meeting Rooms

Co-Design and Heterogeneous Integration in Microelectronics for Extreme Environments (CHIME)

Organizer: Jennifer Hollingsworth

1:00 p.m.	Jennifer Hollingsworth — CINT Gateway, Los Alamos National Laboratory “Nano Solutions On-Chip (NSOC): Solution-Processed Integrated Photonics and Electronics.”
1:30 p.m.	Alastair Stacey — Princeton Plasma Physics Laboratory “New Approaches to Extreme Electronics with Diamond.”
2:00 p.m.	Davide Braga — Fermi National Accelerator Laboratory “Single Photon Detectors Integrated with Cryogenic Electronics.”
2:30 p.m.	Benjamin Parpillon — Fermi National Accelerator Laboratory “VIAS: Vertically Integrated AI for Sensing and HPCs — Overview of the Technology Development.”
3:00 p.m.	Afternoon Break
3:15 p.m.	Yongqiang Wang — CINT Gateway, Los Alamos National Laboratory “Materials Science at Nanoscale: Radiation Effects and Testing.”
3:45 p.m.	Arwin Shrestha — Nanoscribe “Additive Manufacturing of High-Precision Nuclear Targets by 2-Photon Grayscale Lithography (2GL).”

Microelectronics Science + Extreme Lithography & Materials Innovation Center (ELMIC)

Organizer: Jeff Nelson

4:00 p.m.	Dan Durham — Argonne National Laboratory “Ultra-Dense Memory: Atom Scale Material Dynamics and System Consequences.”
4:30 p.m.	Arun Devaraj — Pacific Northwest National Laboratory “Accelerating Next-Generation EUV Lithography (ANGEL).”
5:00 p.m.	Jackson Williams — Lawrence Livermore National Laboratory “High Conversion Efficiency 2um Laser-Driven Sources for EUV Lithography and Plasma Science.”
5:30 p.m.	Saien Xie — Princeton Plasma Physics Laboratory “Plasma-Enabled 2D Materials for Energy-Efficient Microelectronics.”

The Center for Integrated Nanotechnologies
2025 Annual User Meeting

Monday, September 15
Meeting Agenda — Parallel Symposia

Cross-Thrust Autonomous Laboratories
O'Keefe/Miro Meeting Rooms

Autonomous Labs I
Organizers — Dale Huber & Remi Dingreville

1:00 p.m.	Prasad Iyer — CINT Core, Sandia National Laboratories "Self-Driving Lab Discovers Principles of Steering Incoherent Emission beyond Traditional Fourier Optics."
1:30 p.m.	Benji Maruyama — Air Force Research Laboratory "Autonomous Experimentation for Accelerated Science."
2:00 p.m.	Agus Poerwoprajitno — CINT Core, Sandia National Laboratories "Self-Optimizing Microfluidic Platform for Precise Nanoparticle Synthesis."
2:30 p.m.	Eric Hintsala — Bruker "Robot, take the Wheel. Increasing Productivity via Autonomous Testing."
3:00 p.m.	Afternoon Break
3:15 p.m.	Eva Natinsky — Sandia National Laboratories "Accelerating Microscopy for Nanoscale Fabrication via Deep-Learning Image Reconstruction."
3:45 p.m.	Maxim Ziatnikov — Pacific Northwest National Laboratory "Intelligent Automation in the Materials Lab: From Statistical Learning to Multi-Agent Reasoning."

Autonomous Labs II
Organizers — Dale Huber & Remi Dingreville

4:15 p.m.	Alexander Scheinker — Los Alamos National Laboratory "Making Generative AI Robust for Time-Varying Systems via Physics and Adaptive Feedback."
4:45 p.m.	Mathew Cherukara — Argonne National Laboratory "HPC & AI enabled Materials Characterization and Experimental Automation."
5:15 p.m.	Steve Whitelam — Lawrence Berkeley National Laboratory (Molecular Foundry) "Computer Programs at the k_BT Scale."

Center for Integrated Nanotechnologies
Annual User Meeting

Monday, September 15
Meeting Agenda — Parallel Symposia

Quantum Information Science and Quantum Computing in NM & CO

Peralta/Lamy Meeting Rooms

Quantum Information Science and Quantum Computing in NM & CO I

Organizer: Mike Lilly

1:00 p.m.	Daniel Lopez — Pennsylvania State University “Quantum Packaging: Wafer-Level Manufacturing of Dielectric Vapor Cells for Rydberg Electrometry.”
1:30 p.m.	Amir Ghods — Mesa Quantum, Inc. “Quantum-Grade VCSELs: Enabling Scalable Photonic Engines for Quantum Sensors and Systems.”
2:00 p.m.	Corban Tilleman-Dick — Maybell Quantum “Scaling Cryogenics for the Quantum Age.”
2:30 p.m.	Medhi Namazi — Qunnect, Inc (Virtual) “Metropolitan Scale Quantum Networks and Their Use-Cases.”
3:00 p.m.	Afternoon Break
3:15 p.m.	Kevin Silverman — National Institute of Science and Technology “Hybrid Quantum Systems of Epitaxial Quantum Dots and Acoustic Resonators.”
3:45 p.m.	Adam Ollanik — Quantinuum, Inc “Photonics Toolbox for Trapped Ion Quantum Computing.”
4:15 p.m.	Fateme Mahdikhany — Icarus “Efficient and Scalable Quantum Interconnects with Semiconductor Quantum Dots.”
4:45 p.m.	Ivan Deutsch — University of New Mexico “New Mexico is a Quantum State!”

Please join us for the 2025 CINT User Meeting
Poster Presentation and Reception
Monday Sept. 15, 5:45–7:45 p.m

Center for Integrated Nanotechnologies
2025 Annual User Meeting

Meeting Agenda
Tuesday, September 16

8:30 a.m.	Registration and Light Breakfast	Sweeney Ballroom
8:45 a.m.	**Plenary Session**	**Sweeney Ballroom**
	8:45 CINT Director Jeff Nelson — Welcome and Introductions 9:00 The Honorable Michael Padilla, State Senator for New Mexico 9:10 Executive Director Eve Lieberman — Colorado Office of Economic Development and International Trade 9:20 Interim Director Kevin Yager — AI-Accelerated Nanoscience, CFN "The Future of AI-Accelerated Science."	
10:00 a.m.	Break	Sweeney Ballroom
10:15 a.m.	Parallel Symposia	O'Keefe/Milagro
12:00 p.m.	Lunch	Sweeney Ballroom
4:00 p.m.	NPON Thrust Meeting	Nambe
4:00 p.m.	SBCN Thrust Meeting	Ohkay Owingeh
4:00 p.m.	ICNM Meeting	Pojoaque

Center for Integrated Nanotechnologies
Annual User Meeting

Tuesday, September 16
Meeting Agenda — Parallel Symposia

DOE Microelectronics Science Research Centers
Coronado/DeVargas Meeting Rooms

Microelectronics Energy Efficiency Research Center for Advanced Technologies (MEERCAT)
Organizer: Jeff Nelson

10:15 a.m.	Vinod K. Sangwan — Northwestern University "BIA: A Co-Design Methodology to Transform Materials and Computer Architecture Research for Energy Efficiency Computing."
10:45 a.m.	Grzegorz Deptuch — Brookhaven National Laboratory "El-Pho: Electro-Photonic Integrated Platform for Near-Sensor Processing in Extreme Environments."
11:15 a.m.	Open
12:00 p.m.	Lunch
1:00 p.m.	Grant Johnson — Pacific Northwest National Laboratory "Self-Assembly of Tunable Molecular Memristors with Long Range Order for Resilient and Energy-Efficient."
1:30 p.m.	Francois Leonard — Sandia National Laboratories "Nanoscale Hybrids: A New Paradigm for Energy-Efficient Optoelectronics."
2:00 p.m.	Afternoon Break
2:30 p.m.	NSR-CHIP Meeting

Center for Integrated Nanotechnologies
Annual User Meeting

Tuesday, September 16 (Day 2)
Meeting Agenda — Parallel Symposia

Quantum Information Science and Quantum Computing in New Mexico & Colorado
Peralta/Lamy Meeting Rooms

Quantum Information Science and Quantum Computing in NM & CO II
Organizer: Mike Lilly

10:15 a.m.	Lincoln Carr — Colorado School of Mines “Fractional Multiscale Many-Body Quantum Materials: From Phase Transitions to Causality.”
10:45 a.m.	Manuel A. Castellanos-Beltran — National Institute of Standards and Technology, Boulder Group “Superconductor Electronics: Precision Metrology Meets Quantum Computing.”
11:15 a.m.	Matthew Beard — National Renewable Energy Laboratory “Chiral Induced Spin Selectivity in Metal Halide Chiral Semiconductors.”
12:00 p.m.	Lunch
1:00 p.m.	Susan Clark — Sandia National Laboratories “QSCOUT: An Ion Trap Testbed for Advancing Quantum Science.”
1:30 p.m.	Andrew Baczewski — Sandia National Laboratories “Simulation Applications for Today's and Tomorrow's Quantum Computers.”
2:00 p.m.	Afternon Break

Quantum Information Science and Quantum Computing in NM & CO III
Organizer: Mike Lilly

2:15 p.m.	Raymond Newell — Los Alamos National Laboratory “Quantum Communications In New Mexico and Beyond.”
2:45 p.m.	Luca Basso — CINT Core, Sandia National Laboratories “Quantum Sensing with Nitrogen-Vacancy Centers in Diamond.”
3:15 p.m.	Vivien Zapf — Los Alamos National Laboratory “The Quantum Science Center and Quantum Materials.”
3:45 p.m.	Obadiah Reid — National Renewable Energy Laboratory “Molecular Control and Optoelectronic Readout of Spin Polarized Excited States.”

The Center for Integrated Nanotechnologies
2025 Annual User Meeting

Tuesday, September 16 (Day 2)
Meeting Agenda — Parallel Symposia

Cross-Thrust Autonomous Laboratories
O'Keefe/Miro Meeting Rooms

Autonomous Labs III
Organizers — Dale Huber & Remi Dingreville

10:15 a.m.	Jean-Charles Stinville — University of Illinois at Urbana-Champaign "Leveraging Material Spatial Intelligence for Microstructure-Based Alloy Design."
10:45 a.m.	Elliott Fowler — Sandia National Laboratories "DCIEDD with CARE — Building an Autonomous Ecosystem for the Discovery and Optimization of Metal Nanoparticle Inks."
11:15 a.m.	Rigoberto Advincula — Oak Ridge National Laboratory (Center for Nanophase Materials Sciences) "Polymer Materials: Advanced Manufacturing and AI/ML."
11:45 a.m.	Michael Hjelmstad — Oxford Instruments "Automated Chemical And Mechanical Characterization Using BEX-EDS, Raman, and Nanoindentation for Large Datasets."
12:00 p.m.	Lunch

Autonomous Labs IV
Organizers — Dale Huber & Remi Dingreville

1:00 p.m.	TBD
1:30 p.m.	Panel Discussion "Challenges and Opportunities in Bringing Autonomy to the Laboratory."
2:30 p.m.	Afternoon Break