NCI Southwest

"At its core, the National Nanotechnology Coordinated Infrastructure (NNCI) exists to help scientists and engineers from around the country access the state-of-the-art resources necessary to participate in the nanotechnology revolution. As the southwest regional node of the NNCI, the goals of the NCI-SW are to build a regional infrastructure for nanotechnology discovery and innovation, to address societal needs through education and entrepreneurship, and to serve as a model site of the NNCI."

Dr. Trevor Thornton
https://ncisouthwest.org/

Southwest Advanced Prototyping (SWAP) Hub

The Arizona State University-led Southwest Advanced Prototyping (SWAP) Hub rapidly delivers flexible, scalable, and low-cost microelectronics prototyping capabilities. SWAP Hub unites 70+ semiconductor and defense companies, academia, and national laboratories from Arizona, Colorado, New Mexico, and across the nation. Hub members share lab-to-fab capabilities and deliver prototype projects tailored to Department of Defense needs in AI Hardware, 5G/6G Technologies, and Commercial Leap Ahead.

Southwest Advanced Prototyping Hub
Arizona State University

New Tools and Capabilities at ASU Research Park, Nanofab and NAU ¡MIRA!

NCI-SW Advanced Electronics and Photonics (AEP) core facility has undergone substantial upgrades as part of the Microelectronics Commons investments in the Southwest Advance Prototyping (SWAP) Hub at ASU. NCI-SW users will have access to the new tools within the AEP core facility.

With support from Applied Materials (AMAT), ASU is acquiring a suite of 300 mm processing tools that are designed for state-of-the-art CMOS manufacturing. The 300 mm tools can often be used for 'coupons' containing smaller diameter wafers or even wafer pieces. The first of the AMAT tools to be installed is a Centura AP reactive ion etch tool, a cluster etch system with two process chambers. To support fast turnaround optical lithography, a Heidelberg MLA-300 mask aligner is also now available at the ASU Research Park.

The ASU Nanofab on the main university campus has acquired a desktop diffusion furnace for boron doping. The tool, acquired with funding from Taiwan Semiconductor Manufacturing Corporation (TSMC), will support our flagship CMOS fabrication course as well as general R&D processing that requires p-type doping. The desktop furnace will complement the existing diffusion furnaces, but will be easier to use with lowering operating costs.

Northern Arizona University (NAU) is in the midst of establishing a Metrology Core Facility with funding from the State of Arizona that will increase materials research capacity at NAU significantly. New instrumentation includes a JEOL TEM and SEM, spectroscopic ellipsometry, focused ion beam, precision stress analysis, and associated tools totaling nearly $3M in new capital investment capabilities. The NCI-SW Center for Materials Interfaces in Research & Access (¡MIRA!) at NAU will play a central role in oversight and maintenance of the core facility capabilities.

NAU Doctoral Student and REU Alumna Awarded Prestigious NSF Graduate Research Fellowship

Ashley Martinez, a 2022 REU alumna and current doctoral student at Northern Arizona University, has been selected for the National Science Foundation's Graduate Research Fellowship Program (GRFP), one of the nation's most competitive and prestigious awards for graduate researchers.

Martinez began her research journey as an undergraduate and continued her research through a 2022 summer REU experience with NCI-SW at NAU, where she worked on the project *"Soft nanomaterial carriers: eliminating burst release of their cargo*." That early experience sparked her interest in materials science and polymer-based delivery systems.

She is now pursuing her doctoral research under the mentorship of Dr. Gabriel Montaño, Director of NAU's ¡MIRA! Research Center and a co-principal investigator for the Nanotechnology Collaborative Infrastructure Southwest (NCI-SW). Her current work focuses on synthetic elastins, which are engineered materials that mimic the flexibility and function of natural elastin proteins, with applications in drug delivery, biosensors, therapeutics, and sustainable alternatives to petroleum-based plastics.

Her achievement highlights both her individual excellence and the strength of long-term mentorship and undergraduate-to-graduate research pathways supported through NCI-SW and NSF-funded programs.

Read more about Ashley's journey here: The NAU Review Dec 3, 2025

https://news.nau.edu/martinez-grfp/

Science Outside the Lab: Nanotechnology & Policy

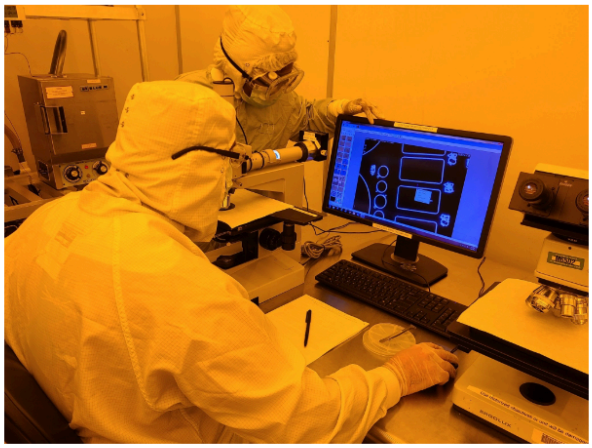
Jameson Wetmore, Associate Director for Societal and Ethical Implications (SEI) at the NNCI Coordinating Office, also serves as the NCI-SW Site Co-director and SEI Coordinator. Dr. Wetmore plays a crucial role in integrating the social studies of nanotechnology into the technical development of the field.

One of the flagship initiatives Dr. Wetmore leads is Science Outside the Lab (SOtL), an annual program designed to help scientists and engineers better understand how science, policy, and society intersect. As scientific research increasingly shapes- and is shaped by-public policy, funding decisions, and societal needs, it is more important than ever for researchers to understand how decisions affecting their work are made.

SOtL brings participants to Washington, D.C., where more than $150 billion in federal research and development funding and countless science-related policy decisions are made each year. During the immersive, week-long workshops, graduate students, postdoctoral researchers, and faculty engage directly with key stakeholders who fund, regulate, critique, communicate, and apply scientific research. These include congressional staffers, federal agency officers, lobbyists, regulators, journalists, academics, and museum professionals. Through these interactions, participants gain firsthand insight into how science policy is shaped and how scientific research can inform better decision-making for society. SOtL also helps participants build transferable skills that provide a competitive edge when pursuing careers in academia, industry, government, or science communication.

Science Outside the Lab summer 2026 program will run May 31- June 6, 2026. Graduate students affiliated with National Nanotechnology Coordinated Infrastructure universities are especially encouraged to apply to this program. We are looking for candidates interested in how decisions are made about science and innovation funding, regulation, and policy. To support broad participation, NCI-SW and the NNCI Coordinating Office cover program fees, housing, most meals, local transportation, and round-trip travel to Washington, D.C. for many participants.

Summer 2026 Application Deadline: February 20, 2026
More information: nnci.net/science-outside-lab
or contact Jamey Wetmore Wetmore@asu.edu



Rio Salado College Secures Nearly $1 Million to Grow Semiconductor Education in Arizona

To help address critical gaps in the STEM and semiconductor workforce pipeline, NCI-SW collaborates with Rio Salado College (RSC), part of the Maricopa County Community College District (MCCD), to deliver multiple hands-on training pathways. Rio Salado College has recently been awarded a $944,769 grant from the National Science Foundation to expand semiconductor education across Arizona and prepare students for careers in this rapidly growing industry. This funding comes through the NSF's Advanced Technical Education (ATE) program, as part of a nationwide partnership with Intel aimed at strengthening technician training in semiconductor design and manufacturing. In addition to ASU, Rio Salado College is collaborating with partners such as the University of Arizona, Northern Arizona University, and the Chandler Unified School District to build statewide capacity and ensure students have clear pathways into high-paying, in-demand semiconductor careers.

Key goals of the project include:

- Developing new, industry-aligned curricula like an Introduction to the Semiconductor Industry course and a Process Technician certificate.
- Expanding hands-on learning with lab equipment and VR technology.
- Creating seamless pathways connecting high school CTE programs with college and university offerings.
- Enhancing student support services and job placement resources.
- Forming a Semiconductor Industry Advisory Board to guide program alignment with workforce needs.

Rio Salado College currently offers three semiconductor program options:

- Introduction to Semiconductor Manufacturing (Fast Track Certificate)

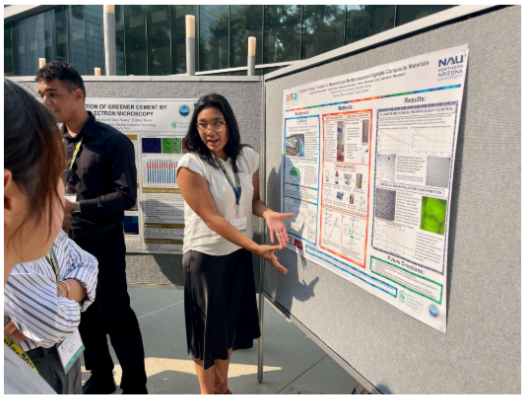
https://www.riosalado.edu/degrees-certificates/science-technology-engineering-and-mathematics/introduction-semiconductor-manufacturing-5275n-ccl

- Semiconductor Manufacturing (Certificate)

https://www.riosalado.edu/degrees-certificates/science-technology-engineering-and-mathematics/semiconductor-manufacturing-5276-ccl

- Semiconductor Manufacturing (Associate Degree)

https://www.riosalado.edu/degrees-certificates/science-technology-engineering-and-mathematics/semiconductor-manufacturing-3168-aas



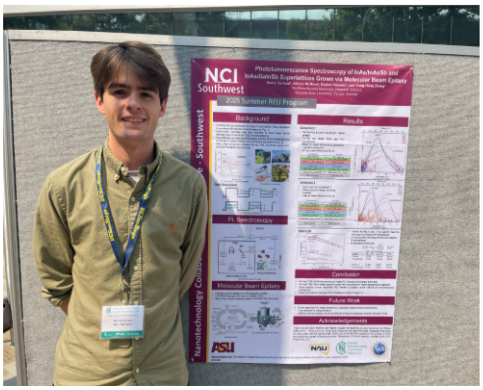
Apply Now! Join NCI-SW for Summer 2026 REU

In partnership with Dr. Inès Montaño and Dr. Gabriel Montaño of Northern Arizona University's ¡MIRA! Research Center, NCI-SW's Dr. Trevor Thornton hosted undergraduate students for the summer 2025 REU program. We welcomed seven participants from a range of local and regional institutions, including Northern Arizona University, Cal State Channel Islands in California, Adams State University in Colorado, Arizona State University, and Phoenix College within the Maricopa Community College system in Arizona. Students were paired with research mentors at their home institutions and also met with the NCI-SW PI and co-PIs. NCI-SW Education Outreach Coordinator Jessica Hauer (ASU) scheduled weekly Zoom team meetings to ensure REU participants had productive experiences and were ready to present at the summer-ending Convocation hosted by the University of California, San Diego.

Students interested in joining our 2026 cohort should apply now! This innovative summer research program is for continuing undergraduate students who have not graduated with a bachelor's degree by the end of the program. Participants will have the opportunity to work with nationally recognized scholars in nanotechnology research and science education. Research may take place at Arizona State University or Northern Arizona University, depending on project availability. Applicants must live within driving distance of ASU in Tempe, AZ, or be prepared to stay in dorms at NAU in Flagstaff, AZ. The program allows students to explore areas such as solid-state physics and chemistry, materials science, quantum science, electronic devices and materials, or biology/biomedical engineering in state-of-the-art laboratories, while conducting research with leading nanotechnology scientists and developing connections between the lab, education, and industry. Participation Stipend is $6,000 for 9 weeks of research, held this year between June 1 and August 7, 2026. Applicants will be reviewed and accepted on a rolling basis, beginning February 1, 2026.

To apply, visit the 2026 NCI-SW REU Application
The application process closes on March 1, 2026, 5:00 pm MT.

https://form.jotform.com/jlhauer/2026nciswREU



NCI-SW REU Researcher Henry Garland Recognized in NAU News Feature

Henry Garland, a participant in the Summer 2025 NCI-SW Research Experiences for Undergraduates (REU) program, was featured by Northern Arizona University, recognizing his undergraduate research achievements. During the NCI-SW REU, Henry conducted research titled *Photoluminescence Spectroscopy of InAs/InAsSb and InAs/GaInSb Superlattices Grown via Molecular Beam Epitaxy* under the mentorship of Dr. Yong-Hang Zhang, Professor of Electrical, Computer, and Energy Engineering at Arizona State University. His work focused on the optical characterization of semiconductor superlattices, contributing to advanced research in infrared and nanostructured materials and earning broader recognition from his home institution.

Congratulations to Henry on co-authoring two peer-reviewed research publications within his undergraduate studies, a significant achievement that reflects both the rigor of his work and his sustained commitment to undergraduate research excellence. We wish Henry continued success as he pursues his future goals of attending a top graduate program, earning a Ph.D. in materials science and engineering, contributing to an esteemed research laboratory, and potentially becoming a college professor.

Read the full article https://news.nau.edu/henry-garland/

SparCQS of ¡MIRA! Recognized as Flagstaff STEM City Community Partner of the Year

The SparCQS (Sparking Curiosity through Quantum Science) program within Northern Arizona University's ¡MIRA! Research Center has been recognized as Flagstaff STEM City Community Partner of the Year and named a STEMMY Award winner, honoring its leadership in inclusive STEM education and community engagement.

SparCQS is a research-to-community initiative that expands access to quantum science, nanotechnology, and advanced STEM learning through hands-on experiences, mentorship, and partnerships with K–12 schools, higher education institutions, and community organizations across Northern Arizona, throughout the Southwest, and beyond.

This recognition also celebrates the leadership of Dr. Inés Montaño, whose vision and commitment have been instrumental in building SparCQS into a nationally recognized model for community-centered STEM pathways. Under her guidance, the program has strengthened connections between research, education, and workforce development while fostering curiosity in STEM. The award highlights the impact of ¡MIRA!'s work in advancing Flagstaff's STEM ecosystem and NAU's broader commitment to STEM education.

NCI-SW Engages K–12 Educators at SEMI Foundation and ASU MicroSpark Conference

NCI-SW Educational Outreach Coordinator Jessica Hauer presented to K–12 educators at the SEMI Foundation and Arizona State University MicroSpark Conference, an event focused on expanding educator awareness of semiconductor and microelectronics education pathways.

During the conference, NCI-SW shared resources and examples of how nanotechnology, microelectronics, and emerging technologies can be integrated into K-12 classrooms through hands-on learning, workforce connections, and research-informed instructional practices. The presentation highlighted educator professional learning opportunities, student pathways into semiconductor and nanotechnology fields, and collaborations across the National Nanotechnology Coordinated Infrastructure (NNCI) network.

By engaging directly with teachers and instructional leaders, NCI-SW continues to strengthen connections between K–12 education, higher education, and the growing semiconductor workforce ecosystem in Arizona and the broader Southwest. Educators looking for classroom resources can visit the **NNCI website** or the **NISE Network nanoDays website**.

https://nnci.net/welcome-nnci-learn-and-explore

https://nnci.net/resources-educators-k-16

https://www.nisenet.org/nanodays

Paid Summer Professional Development Opportunity for Middle School Teachers

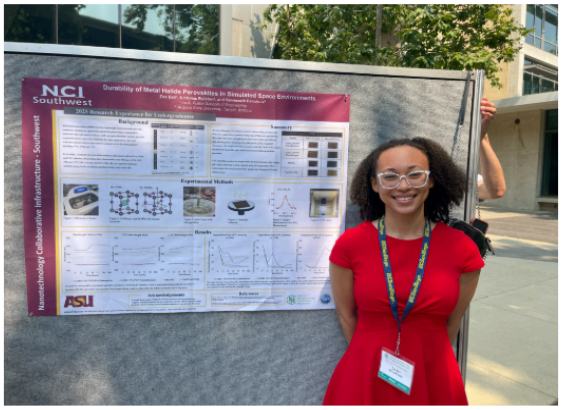
Stanford University's NanoSIMST (Nanoscience Summer Institute for Middle School Teachers) program is now recruiting participants for its 2026 virtual professional development workshop, offered through nano@stanford, Stanford's nanoscience research and education hub.

nano@stanford is an NSF-supported collaborator with the NCI-SW through the National Nanotechnology Coordinated Infrastructure (NNCI). Together, NNCI sites support advanced nanotechnology research, workforce development, and educator training across the U.S.

NanoSIMST introduces middle school teachers to nanoscience and nanotechnology concepts, instructional strategies, and classroom-ready activities they can use to engage students with real-world science and engineering challenges. Participants will learn from expert researchers, receive hands-on materials and lesson supports aligned with NGSS, and join a community of nano-educators. The paid, virtual professional development workshop is scheduled for June 15–19, 2026.

Selected teachers will explore nanoscience content, cutting-edge research connections, high-demand career pathways, and instructional strategies for their classrooms. Participants may receive stipends for completion of the workshop and classroom implementation. By equipping teachers with nanoscience knowledge and resources, the program extends the reach of advanced concepts into classrooms around the country.

Apply by April 11, 2026 to be part of this engaging professional development experience! Applications are accepted on a rolling basis. To learn more: https://nanolabs.stanford.edu/education/nanosimst



Welcome Zoe Bell to the NCI-SW Team

The NCI-SW is excited to welcome Zoe Bell, an undergraduate student at Arizona State University, to the team as a student worker supporting social media, communications, and outreach initiatives. Zoe is an NCI-SW REU alumna, having participated in NCI-SW's NSF-supported Research Experiences for Undergraduates program. During her REU experiences, she contributed to nanotechnology research and outreach activities while developing skills in scientific communication and community engagement.

In her new role, Zoe will support digital storytelling, event promotion, and outreach efforts, helping amplify NCI-SW's research, education, and workforce development activities across the Southwest. Her progression from REU participant to student worker reflects NCI-SW's commitment to long-term mentorship, workforce development, and inclusive STEM pathways. We are thrilled to welcome Zoe back to the NCI-SW team and look forward to her continued contributions.

ASU NanoFab Cleanroom Virtual Tour

Looking for a way to introduce or explain a cleanroom space that is easy to navigate? Check out the ASU NanoFab Virtual Field Trip. The experience offers a unique visual of the ASU Tempe Campus Engineering Research Center flexible foundry that offers state-of-the-art device processing and characterization tools to individuals and companies. [Find the virtual tour here.](https://vft.asu.edu/VFTNanofab/panos/nanofab/cleanroom.html)

https://vft.asu.edu/VFTNanofab/panos/nanofab/cleanroom.html

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