



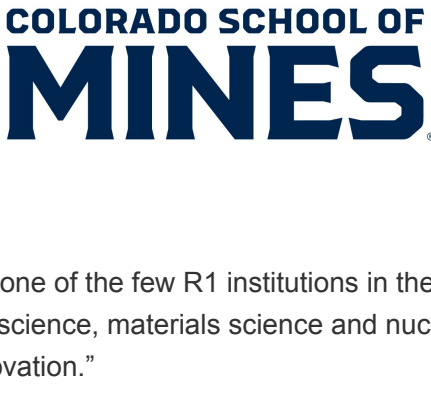
From the Deputy Director

Welcome to the first edition of *SUPER Partnerships in Focus*, a quarterly newsletter celebrating the collaboration between Idaho National Laboratory and our SUPER university partners. Through the Strategic University Partnership for Education and Research agreement, INL and collaborating universities are advancing research, strengthening the nation's energy and security future, and developing the next generation of scientific and engineering talent. These partnerships are essential to solving complex challenges through shared expertise, innovation and discovery.

Each quarter, this newsletter will highlight collaborative research, student and faculty engagement, workforce development efforts, and other accomplishments across the SUPER network. Thank you to our university partners, researchers, students and staff for your continued collaboration and commitment to excellence. We look forward to sharing your stories and successes.

— Todd Combs, deputy laboratory director for science and technology and chief research officer

Partnership Spotlight

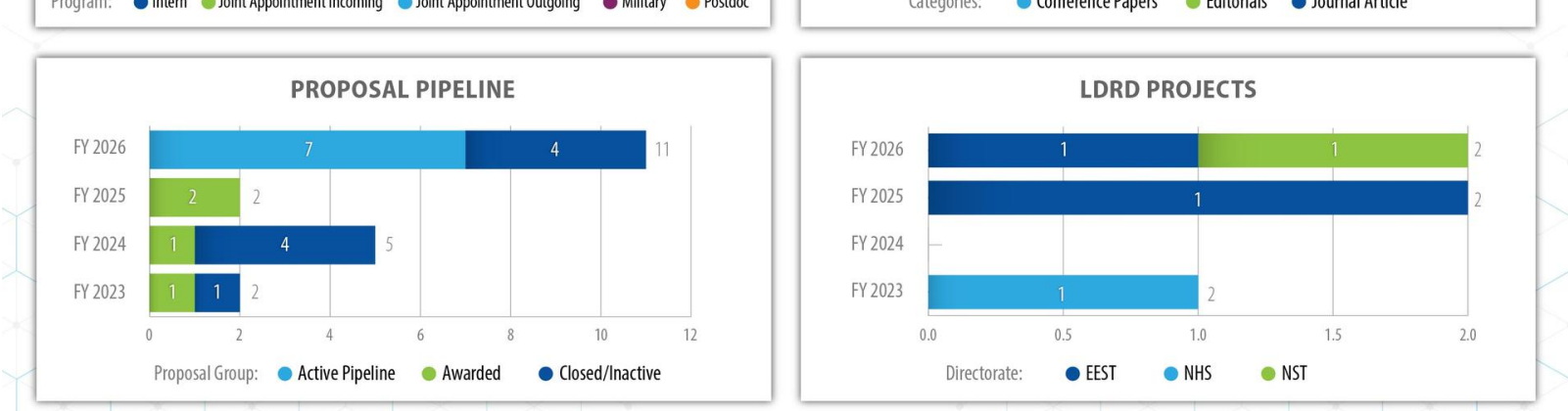


Colorado School of Mines continues to act as a strong strategic partner for INL through a SUPER agreement, collaborating across research, workforce development and advanced energy innovation. Since signing a memorandum of understanding in October 2023, the partnership has generated multiple collaborative research efforts, including Laboratory Directed Research and Development (LDRD) projects, DOE concept papers, and joint proposals.

"Colorado School of Mines brings strong technical expertise in several areas that align closely with INL priorities," said Anthony Nickens, INL's point of contact for the partnership.

"As one of the few R1 institutions in the Mountain West with strengths in areas like actinide chemistry, geothermal energy, geoscience, materials science and nuclear engineering, Mines is an important regional collaborator for advancing research and innovation."

Researchers from both institutions are collaborating through seminars, seed projects and joint appointments. In 2024, Mines hosted INL researcher Greg Holmbeck through a joint appointment. David Holcomb, an INL directorate fellow on a joint appointment, also taught a reactor design course at Mines during the Spring 2025 semester. Mines graduate student Noor Abdel Rahman recently completed an internship with INL researchers Jeremy Hartvigsen and Micah Casteel that resulted in a collaborative Electrochemical Society conference paper.



1) Colorado School of Mines representation among interns, joint appointments, military and postdoc programs at INL; 2) collaborations with publications; 3) collaborations with funding; 4) collaborations in LDRD projects.

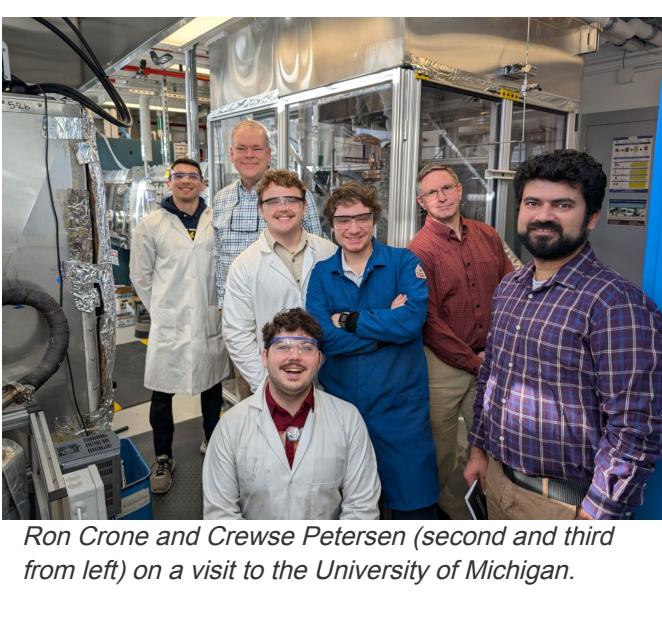
"We are continuing to build momentum in student engagement and workforce development," Nickens said. "These collaborations create opportunities for graduate students, interns and early career researchers to work directly with national laboratory scientists while strengthening the future workforce pipeline."

Looking ahead, both institutions are exploring future opportunities in critical materials, geothermal, advanced energy systems, and commercialization initiatives through programs like Mines' Advanced Energy Systems graduate program and the DOE METALLIC LIFT program.



Colorado School of Mines alumni working at INL.

Student & Workforce Pipeline



Ron Crone and Crewse Petersen (second and third from left) on a visit to the University of Michigan.

The SUPER partnership between INL and the **University of Michigan** is shaping the next generation of nuclear researchers, and two graduate interns exemplify why it works.

Crewse Petersen, a graduate student in nuclear engineering and radiological sciences, studies corrosion and mass transport in molten salt systems. At INL, he supports an LDRD project developing sensors for flowing molten salts, alongside electrochemistry work in fluoride and chloride systems. Diego Macias, a graduate student in the same field, focuses on structural materials for advanced nuclear reactors, developing material surveillance coupons that track how stress, corrosion and irradiation degrade materials in reactor environments. Though their specific research questions differ, both are united by a shared mentor and a shared mission: advancing the materials science that will make next-generation reactors possible.

Both students are mentees of Ruchi Gakhar, an INL researcher in molten salt chemistry, corrosion science and advanced spectroscopy. They credit the strong institutional ties between Michigan and INL as central to their experience. Faculty with joint appointments, including Stephen Raiman and Larry Agesen, have created natural bridges between university research and national lab work.

"The most valuable part has been making connections with people in the lab ecosystem, as well as in industry. It has helped me develop ideas and learn habits that have made these researchers successful," said Macias.

"There is a wealth of knowledge here that has helped accelerate my thesis research. I have been taught so much, both technically and professionally, on what it takes to build a career in research," said Petersen.



Diego Macias with his mentor Ruchi Gakhar.

Research Highlights

Boise State University and INL researchers are advancing advanced manufacturing for nuclear energy applications through the development of 3D-printable magnetostrictive sensor materials. The project combines Boise State's expertise in materials science and additive manufacturing with INL's nuclear research capabilities to create sensors capable of operating in extreme reactor environments. [Learn more.](#)

University of Idaho and INL researchers are collaborating through the Idaho Energy Institute to develop integrated energy systems that combine nuclear power with other energy resources to improve grid reliability and resilience. The research explores how advanced nuclear technologies can support a secure, low-carbon energy future while addressing challenges in power generation, distribution and energy storage. [Learn more.](#)

Arizona State University and INL are working together through the Electrified Processes for Industrial eXcellence (EPIX) institute to develop technologies that replace fossil-fuel-based industrial heating with cleaner electric alternatives. The research focuses on decarbonizing energy-intensive industries such as steel, cement and chemical manufacturing while improving efficiency and strengthening U.S. industrial competitiveness. [Learn more.](#)

Texas A&M University and INL researchers partnered with Clean Core Thorium Energy to develop and test ANEEL (Advanced Nuclear Energy for Enriched Life) fuel, a novel uranium-thorium nuclear fuel designed to improve the performance and longevity of today's reactors. Texas A&M researchers fabricated the proprietary fuel pellets, which were then irradiated in INL's Advanced Test Reactor to evaluate their behavior under reactor conditions, marking an important step toward commercialization of advanced accident-tolerant nuclear fuels. [Learn more.](#)

Publications to Watch

Publication highlights from INL and SUPER university collaborators, January to March 2026:

[High-entropy alloy nanowires for direct electrosynthesis of chlorine from seawater](#) - with Colorado School of Mines

[Ultra-Wideband Communications: Interference Challenges and Solutions](#) - with University of Utah

[Environmental Impact Reduction Potential of Hydrogen Production from Biobased Resources](#) - with University of Idaho

For the full list, see attached file.

Patents from INL and SUPER university collaborators, FY-26:

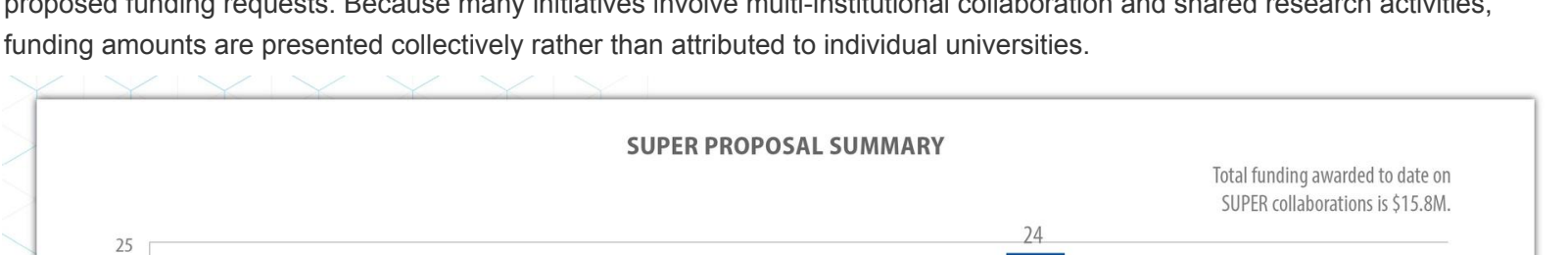
[Cyber Resilient Trade-off Evaluation Systems For Operational Technology Environments, Including Related Methods And Computer Readable Media](#)

[Fluid Flow Simulation Devices, Fluid Heating Chambers, And Associated Methods](#)

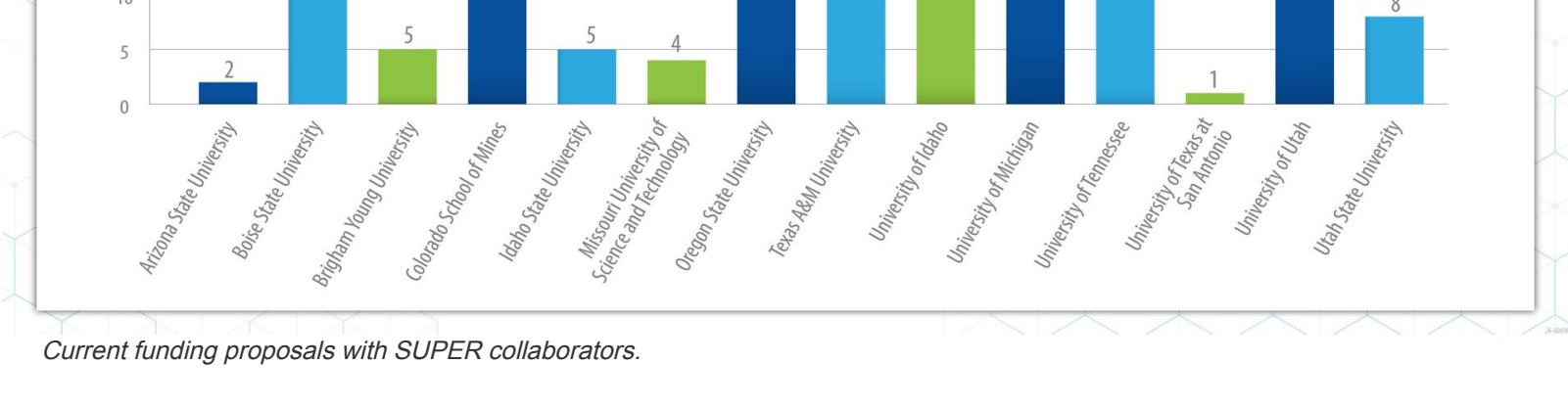
[Tracking Of Health And Resilience Of Physical Equipment And Related Systems](#)

Funding and Resource Leverage

Since FY-25, INL's SUPER partnerships have developed into a significant research portfolio. In FY-25 and FY-26, these partnerships are managing 25 active projects with an estimated \$13 million in LDRD funding, reflecting strong collaboration between our institutions.



Current LDRD projects with SUPER collaborators.



Current funding proposals with SUPER collaborators.

Faculty Exchange and Visiting Researchers



Sridhar Seetharaman, chair of Materials Science and Engineering at **Missouri S&T**, holds a joint appointment at INL. His engagement with INL grew from collaborations through the EPIX Manufacturing Institute and ongoing work with INL researchers on thermal test bed development for advanced manufacturing.

His research focuses on energy-intensive manufacturing processes that rely on high-temperature heat. He sees strong alignment between INL's thermal energy capabilities — particularly the Thermal Energy Delivery System, which enables advanced heat transfer and industrial thermal applications — and Missouri S&T's strengths in materials science and metallurgy.

These combined capabilities have potential applications in chemical processing, steel production and geothermal energy systems.

Seetharaman is working to establish a joint Ph.D. framework in which students are co-supervised by faculty and researchers from both institutions. Although early in his role at Missouri S&T, he is already advancing efforts to bring doctoral students into the collaboration.

The SUPER agreement with Missouri S&T targets integrated energy systems, advanced nuclear reactors, grid security and materials for extreme environments. Seetharaman notes strong cross-cutting opportunities, particularly in metallurgy.

"There is a lot of synergy which could be explored," he said. "A joint doctoral program across disciplines would be a way to get more actual research collaborations going."

Event Roundup

Upcoming: Energy Investment Decision Symposium

The Energy Investment Decision Symposium is a two-day symposium at INL on Sept. 29 and 30 to equip energy technology researchers and professionals with the analytical techniques, tools, and skills needed to rigorously evaluate energy generation technologies, critical materials, and supply chains. designed to equip energy technology researchers and professionals with the analytical techniques, tools, and skills needed to rigorously evaluate energy generating technologies, critical materials, and supply chains. Sessions will span a broad range of topics, including:

- Market and competitive analysis
- Investment-grade and industry-accepted financial modeling
- Project feasibility assessment
- Workforce needs and planning
- Analysis tools and applications
- Cases on technoeconomic analysis
- Tax credit financial modeling
- Using AI for technoeconomic analysis

We encourage all attendees to consider contributing to the symposium's technical program. Abstract submissions are welcome for oral presentations and poster presentations. Abstracts are due by Aug. 28. Registration closes Sept. 21.

Registration and abstract submission details are available on the event website: <https://inl.gov/events/energy-investment-decision-symposium/>

DICE Conference

May 12-13

Salt Lake City

University of Utah

Attendees from across the country explored advances in digital engineering, artificial intelligence, technology-enabled design and more.

Energy Executive Summit

June 24

Coeur d'Alene

University of Idaho

Panel discussion focusing on integrating nuclear and renewable sources to enhance grid reliability and resilience.

INL Days at BSU

March 24-25

Boise

Boise State University

The BSU Division of Research and Creative Activity welcomed INL researchers for two days of workshops and presentations by university faculty and students.

BSU Osher Institute

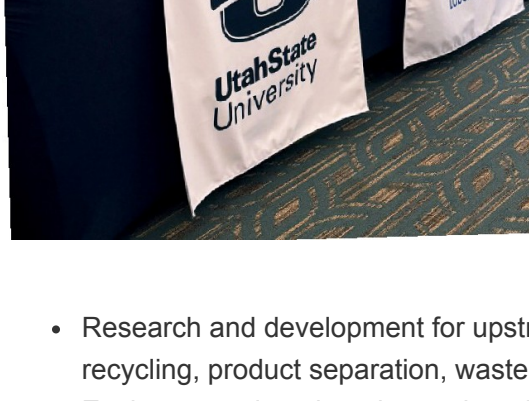
May 8

Boise

Boise State University

Associate laboratory director Jess Gehin presented on small modular reactors and the coming deployment of MARVEL.

New and Expanding Agreements



Utah State University entered into a SUPER agreement with INL in May 2026. It formalizes and expands collaboration between USU and INL, strengthening joint efforts in energy, security technology and research, while enhancing opportunities for students and faculty.

"The partnership through SUPER places Utah State at the forefront of discovery for meeting Utah's energy needs," said USU President Brad Mortensen. "We believe Aggies will find solutions for the energy challenges we face and the goals set in Operation Gigawatt."

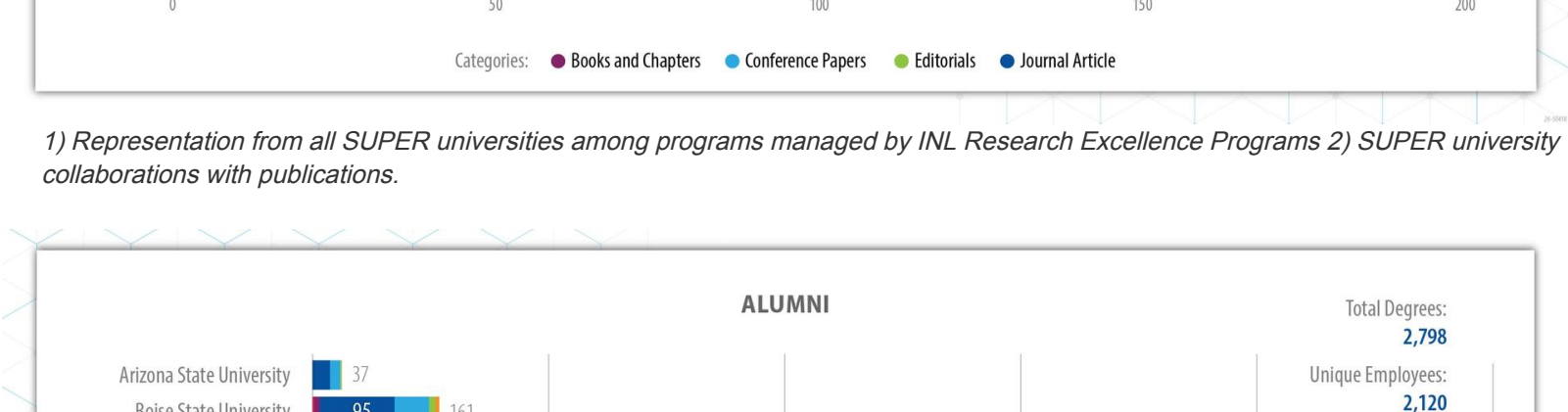
Operation Gigawatt was announced in October 2025 by Governor Spencer Cox. It's part of the state's strategy to double Utah's energy-generating capacity by 2035 and includes plans for a nuclear facility in northern Utah.

In addition to nuclear, the SUPER agreement will allow USU and INL to research other energy options and critical infrastructure, including:

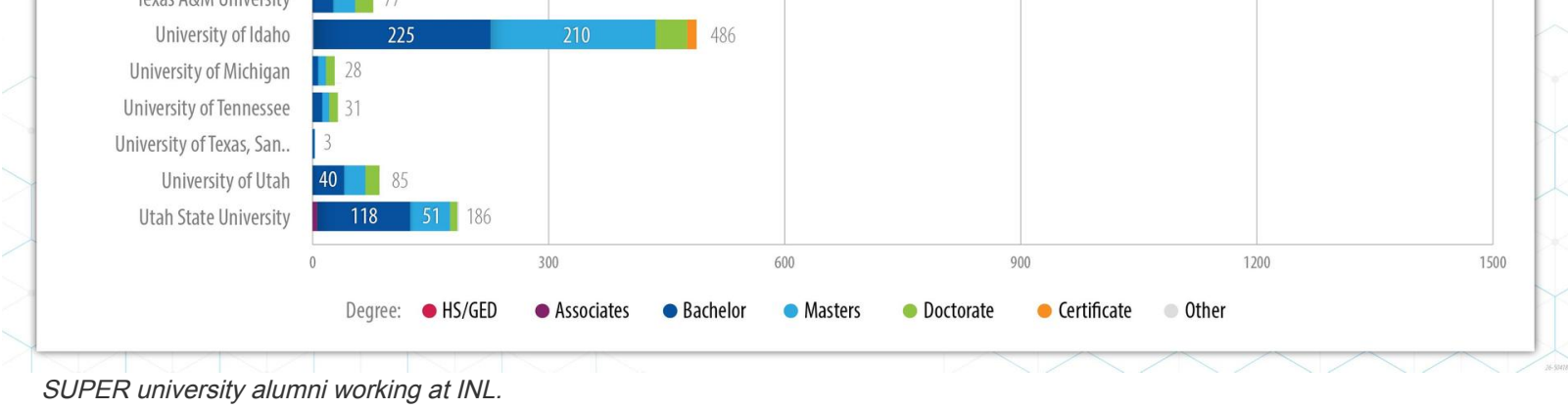
- Research and development for upstream and downstream services to support nuclear power, nuclear material recycling, product separation, waste monitoring and radiation detection.
- Environmental engineering and modeling, including water use and efficiency for nuclear systems and fuel cycle uses.
- Developing tools for energy storage systems — including radiation shielding and damage testing — and extracting and processing critical minerals.
- Automation, control and cybersecurity of machinery and vehicles.

"INL and USU will collaborate on research, host joint workshops and conferences, and establish a joint appointment program to enhance research and academic collaborations. We look forward to the critical work INL does with USU as it is of the utmost importance to our region, our nation, and the future of energy and national security," said Todd Combs, INL deputy laboratory director for science and technology and chief research officer.

By the Numbers



1) Representation from all SUPER universities among programs managed by INL Research Excellence Programs 2) SUPER university collaborations with publications.



Share Your SUPER News

Anyone involved with SUPER university collaborations who would like to share research highlights, student engagement activities, workforce development efforts, publications, awards, events or partnership updates for future editions of the newsletter is encouraged to contact eml.walker@inl.gov or kate.meehan@inl.gov.

We welcome story ideas and contributions that showcase the impact of SUPER partnerships across the laboratory and university community.



About Idaho National Laboratory
Battelle Energy Alliance manages INL for the U.S. Department of Energy's Office of Nuclear Energy. INL is the nation's center for nuclear energy research and development, celebrating 75 years of scientific innovations in 2024. The laboratory performs research in each of DOE's strategic goal areas: energy, national security, science and the environment. For more information, visit www.inl.gov. Follow us on social media: Facebook, Instagram, LinkedIn and X.