



ACADEMIC PROGRAMS QUARTERLY

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Welcome to the June issue of the *Academic Programs Quarterly* (APQ). The articles in this issue underscore the consistent progress, collaboration, and scientific capability that continue to support the missions of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) and the Nuclear Security Enterprise. They also demonstrate how our Academic Programs portfolio remains focused on building and sustaining a workforce positioned to meet evolving national security requirements.

We begin with NNSA's renewal of the Workforce Opportunities in Regional Careers (WORC) II grant, a significant commitment that reinforces our long-term workforce needs at the Savannah River Site (SRS). The program's record over the past five years—including scholarships,



SRS Apprenticeship Cohort #6 at Augusta Technical College.

internships, apprenticeships, and extensive K-12 STEM engagement—reflects steady progress in developing a skilled regional talent base aligned with mission priorities.

This issue also includes a summary of the 2026 Predictive Science Symposium, which brought together experts from academia, national laboratories, and industry to assess developments in artificial intelligence, high-performance computing, verification and validation, and uncertainty quantification. The ongoing momentum of the Predictive Science Academic Alliance Program IV, reflected in this convening, continues to strengthen the predictive science capabilities necessary for mission-critical research.

You will also read an overview of the 17th Omega Laser Facility Users Group Workshop. As in past years, the workshop served as a productive forum for technical exchange and training, particularly for students and early-career researchers. NNSA's High Energy Density Laboratory Plasmas program's Community Development Program provided travel support for 46 students and postdocs to attend this workshop.

This issue introduces the incoming fellows of the Stewardship Science Graduate Fellowship and Laboratory Residency Graduate Fellowship. These graduate students bring

robust academic preparation and will engage directly with DOE/NNSA laboratories, contributing to research areas foundational to our mission and helping to sustain our long-term scientific expertise.

Additionally, we introduce you to the research of two future innovators in our Academic Programs. The University of Michigan's Jaella Whitfield is leading research for the PlonFront-26A campaign on the Omega-60 laser. The profile of emerging researcher Matilda Duffy's work in actinide chemistry reflects the technical rigor and capability fostered through our academic partnerships.

As you explore this quarter's newsletter, I encourage you to reflect on the significance of our shared mission. The dedication and enthusiasm of our academic partners, students, and staff continue to inspire and energize our efforts. Together, we are building not only a skilled workforce, but also a resilient and innovative future for the Nuclear Security Enterprise. Thank you for your continued support and commitment to excellence.

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2026 CALENDAR

- 7/27-8/5 High Energy Density Summer School, University of Michigan, Ann Arbor, MI
- 8/9-11 ZNetUS Workshop, Hotel Andaluz, Albuquerque, NM
- 8/11-14 Z Fundamental Workshop, Hotel Andaluz, Albuquerque, NM
- 9/20-25 34th Symposium on Fusion Technology (SOFT 2026), Aix-en-Provence, France

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*Contractor Support

NNSA Continues Investment in Regional Workforce Through Workforce Opportunities in Regional Careers by Madalyn Brantley (SRS Community Reuse Organization)

We are proud to announce that the National Nuclear Security Administration (NNSA) has committed to an additional five years of support for the Workforce Opportunities in Regional Careers (WORC) II Renewal grant. This continued investment reinforces a shared commitment to strengthening the workforce pipeline that supports critical national security missions at the Savannah River Site (SRS).

The WORC II Renewal initiative, administered by the SRS Community Reuse Organization (SRSCRO), is designed to expand and sustain a highly skilled talent pipeline across the two-state region of Georgia and South Carolina. By aligning education, training, and workforce development efforts with industry needs, the program ensures that the SRS region is well-positioned to meet the evolving demands of the nuclear enterprise.

Over the first five years of the WORC II grant, the program has delivered significant impact across the region, including:

- ✧ 881 scholarships awarded to support students pursuing high-demand career pathways
- ✧ 138+ SRS interns gaining hands-on experience in mission-critical roles
- ✧ 110 SRS apprentices now working full-time at SRS (Figure 1)
- ✧ 23,098+ K-12 students engaged in STEM career-related, hands-on learning experiences to help build the future workforce pipeline (Figure 2).

Key workforce focus areas identified to support NNSA missions at SRS include:

- ✧ Engineering (Process Control, Operational Technology, Mechanical, Computer Science, Construction)



W·O·R·C
WORKFORCE OPPORTUNITIES
IN REGIONAL CAREERS

- ✧ Chemistry
- ✧ Physics
- ✧ Production Operators
- ✧ Maintenance Support
- ✧ Information Technology (Software, Network, and Systems Engineering)
- ✧ Project Controls (Cost Control, Estimating, Planning, Scheduling)
- ✧ Supply Chain and Procurement
- ✧ K-12 STEM Skill Mentoring and Development
- ✧ SRS Apprenticeship Program.

Through strategic partnerships with educational institutions, industry leaders, and community organizations, the WORC II Renewal will continue to create pathways for students, job seekers, and professionals to enter and advance within these high-demand fields. This renewed support from NNSA, coupled with SRSCRO's leadership in administering the grant, strengthens our regional workforce and ensures the long-term success and sustainability of mission-critical operations at the Savannah River Site. We look forward to building on this momentum and expanding opportunities for our community over the next five years.



Figure 1. SRS Apprenticeship Cohort #5 at Augusta Technical College.



Figure 2. USC Salkehatchie STEM Outreach.



2026 Predictive Science Symposium

by David Etim (NNSA)

The 2026 Predictive Science Symposium, held at the University of Michigan's Institute for Computational Discovery and Engineering, was primarily focused around current advancement in artificial intelligence, high-performance computing, and various topics related to predictive science. This Symposium featured presentations and panel discussions from leading voices across academia, national laboratories, government, and industry with the goal of bringing together researchers in high-performance computing, verification and validation, uncertainty quantification and data science to discuss the state of the predictive science field (Figures 1-3).

These topics are very much relevant to the Predictive Science Academic Alliance Program (PSAAP) which currently has nine Centers of Excellence that were established in September 2025. The University of Michigan is one of the leading institutions with their PSAAP IV Center for Prediction, Reasoning and Intelligence for Multiphysics Exploration. There was a plethora of representatives from the other PSAAP IV Centers led by:

- ❖ Brown University
- ❖ University of California, San Diego
- ❖ University of Florida
- ❖ Massachusetts Institute of Technology
- ❖ Michigan State University
- ❖ University of New Mexico
- ❖ Oregon State University
- ❖ University of Virginia

By having these influential voices gather at one forum, the Symposium offered a grand opportunity to learn more about predictive science and how it is accelerating discovery and providing solutions to real-world problems. The insights that were shared by the presenters will help define the trajectory of predictive science.

Since the launch of PSAAP IV in September 2025, the program has rapidly advanced in both impact and



Figure 1. Brian Spears, LLNL, gives talk on the Genesis Mission: Transforming U.S. Science with Artificial Intelligence.



Figure 2. DOE Genesis Panel Discussion that included (left to right): Earl Lawrence (LANL), Sivasankaran Rajamanickam (SNL), Venkat Raman (UM), Venke Sankaran (AFRL), and Karthik Duraisamy (UM).

innovation. It now supports targeted research in exascale computing, machine learning and data science, verification/validation and uncertainty quantification, and mission-critical disciplines such as combustion, hypersonics, radiation-resilient electronics, and stochastic multiphysics modeling.

During PSAAP's 2024–2025 cycle, there were 23 undergraduates participating in research, 83 supported graduate students, 30 supported postdoctoral researchers (postdocs), 84 peer-reviewed journal publications accepted, 45 invited talks, and 10 NNSA lab/site hires. Currently, there have been 98 NNSA Lab/Site hires since the beginning of PSAAP, and PSAAP III is not set to fully conclude until September 2026.

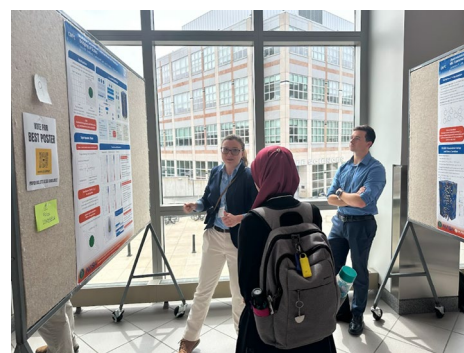


Figure 3. Graduate students/postdocs from different U.S. universities participating in poster session of the PSAAP Predictive Science Symposium in April.

The original PSAAP (PSAAP I) was launched in 2008. It ran through 2013 before evolving into its subsequent phases.

17th Omega Laser Facility Users Group Workshop by Mingsheng Wei (LLE, NLUF and LBS Manager) and Derek Schaeffer (UCLA, OLUG Chair)

The 17th Omega Laser Facility Users Group (OLUG) Workshop was held on April 28-30, 2026 at the Laboratory for Laser Energetics (LLE) at Rochester University. The workshop attracted 149 participants (129 in-person and approximately 20 virtual) from 32 institutions, including approximately 70 students and postdoctoral researchers. Thanks to the High Energy Density Laboratory Plasmas Community Development Program, travel support was provided to 46 students and postdocs.

The annual workshop showcases frontier high energy density (HED) research and facilitates a continuing dialog among individual users and between users and the LLE and facility management. It also provides opportunities for students and young researchers to present their work in an interactive yet informal setting to foster collaborations and networking. This 2.5-day workshop covered a broad range

of user-focused topics, including:

- ✧ presentations by NNSA, DOE, and National Science Foundation staff;
- ✧ sessions featuring AI/ML with experts;

- ✧ sessions featuring PhD thesis talks on work performed on Omega;
- ✧ talks about facility and diagnostic capabilities at LLE/Omega;
- ✧ evening tutorial sessions on popular instrument and diagnostics on Omega;
- ✧ young researcher forum and interactive session on careers and training opportunities in High Energy Density Science;
- ✧ poster sessions with a total of 71 posters;
- ✧ user findings and recommendations session; and
- ✧ LLE director's remarks.

Eight Best Posters were awarded to four graduate students:

Skyler Dannhoff, Matthew Cufari, Brandan Buschmann, Andrew Lanzrath, all from MIT; two undergraduate students: Nyaradzo Mararanje (LLE), Gregory Baker (UCLA); and two postdoctoral researchers: Marin Fontaine (UCSD), Nick Schwartz (MIT).

Also, LLE and the Omega facility team organized pre- and post-OLUG workshop activities during the week, including the facility tour, introduction to the facility, and in-person PI training sessions.



Figure 1. (a) 2026 OLUG Workshop attendees. (b) Best Poster Awardees. Credits: Jacob Deats, LLE

2026-2027 Stewardship Science Graduate Fellowship/Laboratory Residency Graduate Fellowship Fellows Named

The Department of Energy/National Nuclear Security Administration (DOE/NNSA) recently announced the new fellows for its Stewardship Science Graduate Fellowship (SSGF) and Laboratory Residency Graduate Fellowship (LRGF) programs. The SSGF welcomes four new fellows to its community in fall 2026. Katherine Austin of Michigan State University, Levi Hancock of Massachusetts Institute of Technology, Megan Ikeya and Brendan McCluskey, both of Princeton University, will join 111 current fellows and alumni from 45 academic institutions nationwide. As SSGF fellows, they receive a \$45,000 annual stipend, full tuition and fees, and an academic allowance.

The fellowship, renewable for up to four years, also offers a three-month research practicum at one of four DOE national defense sites and encourages collaboration and networking at an annual summer meeting attended by advisors, DOE NNSA staff, alumni, and laboratory personnel.

Similarly, the LRGF is bringing in four new doctoral students in fall 2026. The incoming fellows are Jason Harris of University of California, Berkeley; Samantha Lee of University of Chicago; Daniel Martinez of Stanford University; and Olivia Chen of The University of Texas at Austin. They are supported with program benefits and will participate in two extended,

12-week residencies at DOE/NNSA-approved sites, including Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the Nevada National Security Site, and Sandia National Laboratories. These research experiences grant fellows unique access to advanced experimental and computing facilities, fostering collaboration among laboratory scientists, professors, and students.

In the next issue of *Academic Programs Quarterly*, you'll be able to read about their exciting research.

Academic Programs Highlights

► Facility Access Program

PlonFront-26A Campaign on the Omega-60 Laser

The PlonFront-26A campaign on the Omega-60 laser at the University of Rochester's Laboratory for Laser Energetics explored radiation transport of ~100 eV X-rays through atmospheric density Ar gas relevant to the process of star formation and the reionization of the early universe. In these experiments, lasers heat a copper foil to generate soft X-rays that drive the heating of the argon gas. Additional lasers implode a capsule with a millimeter diameter to produce continuum X-rays that probe the inner shell electrons of the argon plasma through absorption spectroscopy measurements collected with a crystal spectrometer. The experiments vary the timing of the capsule implosion relative to the heated copper foil to observe the changes in the argon at different times.



Figure 1. UM graduate student Whitfield, who was funded by the Facility Access Program, holding one of her targets.

Experiments like this are important for test radiation transport and atomic kinetics models used in radiation hydrodynamics codes. University of Michigan (UM) graduate student Jaela

Whitfield ran the experiments, and the High Energy Density Laboratory Plasmas program's Facility Access Program supported her travel. The experiments were able to successfully measure spectra capturing the propagation of the radiation through the gas. Additional spectral, X-ray imaging, and X-ray flux measurements were able to characterize the copper foil radiation source during integrated experiments for the first time. A total of 11 shots were collected on the day that will progress Jaela toward her PhD thesis.

This National Nuclear Security Administration (NNSA) travel support is crucial and allows for more students, like the undergraduate students involved in target fabrication, to attend these experiments. This allows greater exposure to the type of work and the facilities that the NNSA supports.

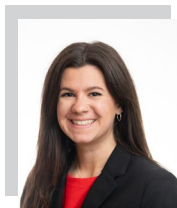
► Student Spotlight | Stewardship Science Academic Alliances

Matilda Duffy (mduffy37@gatech.edu) | Georgia Institute of Technology

Degree in Progress: PhD, Inorganic Chemistry | Advisor: Professor Henry S. La Pierre | SSAA Program: 2024 - Present

Research Topic

Synthesis and Characterization of Plutonium Hydride Complexes



Research Responsibilities

I am developing a molecular approach to understand dihydrogen corrosion of plutonium metal. This project requires synthetic and coordination-chemistry-based skillsets to prepare and isolate very reactive and potentially pyrophoric lanthanide and actinide hydride complexes. Most importantly, it requires deep understanding of both X-ray and neutron scattering and diffraction techniques. So far, I have developed tetravalent cerium and uranium aluminum hydride complexes and have nearly completed model reactions to extend this work to plutonium in facilities at Georgia Institute of Technology (GT). To precisely locate and study the hydride

atoms in the molecular structures, detailed characterization has been carried out. I have analyzed the Ce and U complexes using X-ray absorption spectroscopy, single-crystal X-ray diffraction, and neutron diffraction, among other methods. Hydride positions determined by neutron diffraction studies will be compared to those determined by anisotropic modeling of electron density (NoSpherA2 models) of high-resolution X-ray diffraction data to understand the limitations and capabilities of the two complimentary techniques. In addition to this project, I am an independent scientist in the GT Transuranic Synthetic Facility for work with neptunium and plutonium under rigorously air-free conditions. I have assisted in two other synthetic neptunium projects, which will be published this calendar year. I also act as staff crystallographer for the GT School of Chemistry and Biochemistry.

National Laboratory Experience

Prior to joining the La Pierre Group, I was a post-bachelor fellow in the National Security Directorate at Pacific Northwest National Laboratory for one year. There, I worked with neptunium, plutonium, and americium on both synthetic- and separations-based projects with Drs. R. Gian Surbella and Tatiana Levitskaia. Through this, I developed a passion for working with the actinides and it directly impacted my decision to pursue graduate programs in this field. The projects in the La Pierre Group, funded by the Stewardship Science Academic Alliances (SSAA) program, were the most scientifically interesting and offered deep connections to groups in the national laboratories. The SSAA program has also provided several opportunities to network and collaborate with national laboratory scientists, which have been impactful in helping me determine the next steps in my career.