

STARFIRE | 2026 SUMMER WORKSHOP VOICES OF STARFIRE



STARFIRE

SPACE • NUCLEAR • EXPLORATION

TABLE OF CONTENTS

Vivek Agarwal	3
Sheree Ahart	3
Matt Anderson	3
Jason Andrus	3
Samuel Bays, Ph.D.	3
Sebastian Corbisiero	4
Ryan Coulson	4
Theresa Cutler	4
Wenqian Dong	4
Jordan A. Evans, Ph.D.	4
Dianne Ezell	5
Bethany Eppig	5
Ryan Fronk	5
Konor Frick, Ph.D.	5
Jess C. Gehin, Ph.D.	6
Will Grier	6
Steven L. Hayes, Ph.D.	7
Michael Houts, Ph.D.	7
Lisa Hudston	7
Stephen Johnson, Ph.D.	8
Cole Kostelac	8
Ross Kunz	8
Bhavya Lal, Ph.D.	8
Noah J. McFerran, Ph.D.	9
Suzanne Nowicki, Ph.D.	9
Jeffrey (Jeff) Phillips, Ph.D.	10
Simon M. Pimblott, Ph.D.	10
DV Rao	11
Everett Redmond	11
Bailey Reichelt	11
Piyush Sabharwall, Ph.D.	11
Dawn Scates	12
Shervin Taghavi	12
Stefano Terlizzi	12
James Tompkins	12
Dean Wang, Ph.D.	13
Vince Wang, Ph.D.	13
Bryan Zilka	14

Vivek Agarwal

Idaho National Laboratory

Bio to come

Sheree Ahart

Idaho National Laboratory

Bio to come

Matt Anderson

Idaho National Laboratory

Bio to come

Jason Andrus

Antares Nuclear

Bio to come



Samuel Bays, Ph.D.

*Department Manager, Reactor Physics and Shielding
Idaho National Laboratory*

Bays is the department manager for Reactor Physics and Shielding at Idaho National Laboratory. Over the past two decades, he has tackled a diverse range of nuclear engineering challenges spanning reactor design, waste and safety, advanced fuels, and space nuclear power.

Bays earned a doctorate researching nuclear waste transmutation using fast neutrons to reduce the long-term radiotoxicity of used nuclear fuel. At INL's Advanced Test Reactor, he led efforts to modernize reactor simulation capabilities and mentored reactor engineers in advanced computational and simulation methods.

He later led a design team for the Versatile Test Reactor, a conceptual test reactor intended to advance fuels and materials for fast neutron reactors. His research has also examined nuclear nonproliferation and the security of advanced reactors, including the fabrication and transportation of high-assay low-enriched uranium.

In 2020, Bays led a Department of Energy team that developed concepts for nuclear power and propulsion systems to support crewed missions to Mars. He represented DOE on the NASA study board and provided a technology maturation plan for ground-testing space reactors.

More recently, his work has focused on microreactor safety, advanced radiation shielding and regulatory approaches for emerging technologies. This work included developing guidance for the U.S. Army based on common regulatory approaches among the Army, DOE and the Nuclear Regulatory Commission, as well as an artificial intelligence tool to generate engineering requirements from historical program documents.

Bays now leads the Reactor Physics and Shielding department, which develops advanced simulation tools and analysis methods for designing advanced reactors and reactor experiments.



Sebastian Corbisiero

National Technical Director, DOE Space Reactor Program

Idaho National Laboratory

Corbisiero, from INL, represents the Department of Energy as the National Technical Director of the Space Reactor Program, leading space fission reactor development for the national laboratories. He joined INL in 2020 to support space reactor efforts. Previously, Corbisiero spent 15 years working on advanced reactor design and fuel system development at Knolls Atomic Power Laboratory, where he also served as a nuclear engineer on Project Prometheus. He spent three years at General Dynamics as a manager of systems engineering, supporting missile control systems. Corbisiero holds a degree in nuclear engineering from Rensselaer Polytechnic Institute.

Ryan Coulson

Idaho National Laboratory

Bio to come

Theresa Cutler

Los Alamos National Laboratory

Bio to come

Wenqian Dong

Oregon State University

Bio to come

Jordan A. Evans, Ph.D.

Nuclear Materials Scientist, Irradiated Fuels and Materials

Idaho National Laboratory

Evans graduated from Texas A&M University with bachelor's and master's degrees in nuclear engineering, and a doctorate in materials science. Evans took first in the Texas A&M Student Research Week Competition, earning the distinction of Texas A&M University's Best Research Student. Prior to joining INL in 2020, Evans held the Glenn T. Seaborg Distinguished Postdoctoral Fellowship at Los Alamos National Laboratory. As a nuclear materials scientist, Evans' research interests broadly include engineering, design, and qualification of nuclear fuels, claddings, burnable neutron absorbers, solid moderators, and other in-core materials for use in extreme conditions and advanced nuclear reactor systems; advanced manufacturing and process-structure-property-performance relationships of nuclear materials; irradiation performance of textured/anisotropic nuclear materials; nuclear nanotechnology for energy and medical therapy applications; and analysis of materials through a variety of diffraction, microscopy, spectroscopy, ultrasonic, and probe/indentation techniques. Evans' recent activities at INL include Fuel Design and Performance group lead for the Microreactor Applications Research Validation and Evaluation (MARVEL) project; fuel and core materials subject matter expert supporting several National Reactor Innovation Center microreactor demonstration projects; principal investigator of the U.S. Department

of Energy Office of Nuclear Energy's Innovative Nuclear Materials Outboard-A Project; and principal investigator of several Laboratory Directed Research and Development (LDRD) Projects. Evans also supports various other projects through the INL LDRD Program, NASA's Fission Surface Power Program, the Gateway for Accelerated Innovation in Nuclear Program, and the U.S. Microreactor Program

Dianne Ezell

DOE-NE ASI National Technical Director

Idaho National Laboratory

Bio to come

Bethany Eppig

NASA Glenn Research Center

Bio to come



Ryan Fronk

Radiation Measurement Scientist and Spectroscopist

Idaho National Laboratory

Fronk is a radiation measurement scientist and spectroscopist at INL's Radiation Analysis and Detection Laboratory. His primary responsibilities are measuring and analyzing advanced nuclear fuels and materials using gamma-ray spectroscopy, monitoring neutron flux, and developing reactor power monitoring solutions for advanced microreactor deployments. For over 17 years, Fronk has worked to develop radiation detectors, including modeling, designing, fabricating, and hands-on testing. He has developed detectors for both the Department of Energy and the Department of Defense, covering a wide range of missions including in-reactor-core and ex-reactor-core neutron sensor instrumentation, spent-fuel monitoring, radiological-source tracking, and supporting nuclear nonproliferation. He has experience assembling, testing and optimizing radiation detection systems for numerous environments and applications. Fronk holds a doctorate in nuclear engineering and a bachelor's degree in mechanical and nuclear engineering from Kansas State University.

Konor Frick, Ph.D.

Senior Manager, Reactor Systems and Heat Transport

Idaho National Laboratory

Frick is a nuclear engineering leader with expertise in thermal hydraulics, safety analysis, code development, advanced reactors and integrated energy systems. He currently serves as senior manager of the Reactor Systems and Heat Transport group, where he supports technical leadership, staff development, and delivering reactor systems across advanced nuclear programs.

Frick began his career at INL as one of the first two graduate fellows selected for the lab's Graduate Fellowship Program in 2018 and became the first graduate fellow to complete the program. He has contributed to advanced reactor, microreactor, heat pipe, thermal energy delivery and integrated energy systems programs. As an application case lead and technical contributor, he helped advance DOE-funded

projects with annual budgets exceeding \$2 million and supported the development of open-source analysis tools such as HYBRID and FORCE for nuclear-hybrid energy systems. His work also included technoeconomic assessments of integrated energy solutions with industrial partners and contributions to programs including the microreactor test bed, the Thermal Energy Delivery System, and heat pipe development.

Frick later joined TerraPower, where he served as manager of the Plant Thermal Hydraulic Safety Methods and System Analysis departments. He led teams of more than 15 professionals supporting the Sodium reactor and oversaw the development of design basis accident safety methods, ASME methodologies, and TP RELAP5-3D, TerraPower's sodium-fast-reactor-specific version of RELAP5-3D. He also supported the validation and NQA-1 certification of the tool.

Frick holds a doctorate in nuclear engineering from North Carolina State University, where his research focused on small modular reactors, thermal energy storage, and grid-integrated energy solutions. His career reflects a sustained commitment to developing advanced nuclear technologies, strengthening engineering analysis capabilities and supporting the future of clean, reliable energy.



Jess C. Gehin, Ph.D.

*Associate Laboratory Director, Nuclear Science & Technology
Idaho National Laboratory*

Gehin became associate laboratory director for INL's Nuclear Science and Technology (NS&T) directorate in March 2021 after serving as chief scientist for the directorate since 2018. Over his 28-year career, he has built national strategies and priorities for nuclear energy, led complex projects and organizations, and developed strong relationships with senior leaders within INL, DOE and federal sponsors, and other laboratories, companies, and universities. In support of the DOE Office of Nuclear Energy, he served as the national technical director for the Microreactor Program. He expanded NS&T's strategic direction and helped establish key projects to build advanced reactors at INL, such as the Department of Defense's demonstration microreactor Project Pele, and the MARVEL project. Previously, he held research and leadership positions at Oak Ridge National Laboratory in nuclear reactor core physics, reactor core and system technologies, reactor modeling and simulation, and fuel cycle reactor applications. While there, he served as director of the Consortium for Advanced Simulation of Light Water Reactors. He earned a bachelor's degree in nuclear engineering from Kansas State University, and master's and doctoral degrees from the Massachusetts Institute of Technology. He was an associate professor at the University of Tennessee, is a fellow of the American Nuclear Society, and has authored or co-authored more than 120 refereed journal and conference articles, technical reports, and conference summaries.

Will Grier

NASA

Bio to come



Steven L. Hayes, Ph.D.

Director, Nuclear Fuels and Materials Division

Idaho National Laboratory

Hayes is director of the Nuclear Fuels and Materials division and a fellow of the Nuclear Science and Technology directorate. A former national technical director of DOE's Advanced Fuels Campaign and technical lead for the Fuels Product Line in the Nuclear Energy Advanced Modeling and Simulation Program, he has led DOE efforts in developing and qualifying enhanced accident tolerant fuels for the current fleet of commercial light water reactors, developing fuels for future advanced reactors, and developing and validating the MOOSE-based applications BISON and Marmot for mechanistic modeling of nuclear fuel performance.

Hayes began his career in Idaho in 1992 and has extensive experience in developing and testing a wide variety of nuclear fuels, including designing irradiation experiments for Experimental Breeder Reactor-II, Phénix and ATR; post-irradiation examinations; and fuel performance modeling and simulation. He earned bachelor's, master's and doctoral degrees in nuclear engineering from Texas A&M University.

Michael Houts, Ph.D.

NASA (retired)

Houts has a doctorate in nuclear engineering from the Massachusetts Institute of Technology. He was employed at Los Alamos National Laboratory for 11 years, serving in various positions including team leader for Criticality, Reactor and Radiation Physics, and deputy group leader of the 70-person Nuclear Design and Risk Analysis group. Houts also worked 24 years at NASA's Marshall Space Flight Center prior to retiring in 2025. There, Houts served in various positions including nuclear research manager and principal investigator for NASA's Space Nuclear Propulsion project. Awards for his work on advanced nuclear systems include a NASA Distinguished Service Medal, a NASA Exceptional Service Medal, a NASA Exceptional Engineering Achievement Medal, and being selected as an associate fellow of the American Institute of Aeronautics and Astronautics.



Lisa Hudston

Manager, Advanced Nuclear Technology

Los Alamos National Laboratory

Hudston holds a bachelor's degree in chemistry. At Los Alamos National Laboratory, she worked in nuclear analytical measurements, including radiometric detection instrumentation and data analysis. She used alpha, beta, and gamma counting analysis methods to support national security initiatives and international collaborations in nuclear forensics, with much of the work also requiring extensive sample preparation. More recently, she joined the management team in the Advance Nuclear Technology group, where she supports scientists and engineers in research, development, training, and operation in the application of passive and active nuclear measurement techniques as well as nuclear criticality experiments. She routinely travels to National Criticality Experiments Research Center to participate in a wide variety of work activities with core staff members and visitors. While maintaining her mission-centric approach, her career focus has shifted from analysis and program development to interpersonal and team dynamics. These aspects are crucial in any work environment, particularly in the rapidly advancing fields of Star*Fire.



Stephen Johnson, Ph.D.

*Division Director, Space Nuclear Power & Isotope Technologies
Idaho National Laboratory*

Johnson is director of the Space Nuclear Power and Isotope Technologies division at INL's Materials and Fuels Complex. Most recently this division fueled, tested and delivered the multi-mission radioisotope thermoelectric generator (MMRTG) for NASA's Mars 2020 Perseverance rover. The division is currently preparing to fuel, test and deliver a customized MMRTG for NASA's Dragonfly mission to Saturn's moon Titan, slated for a 2028 launch. The division also helps produce Pu-238 using the Advanced Test Reactor for NASA applications as well as cobalt-60 and neptunium-236 for DOE's Office of Science. Johnson has served as the national technical director for Space Nuclear Power for DOE since 2019. He holds a bachelor's degree with a double major in mathematics and chemistry from Lake Superior State University (1984) and a doctorate in physical chemistry from Iowa State University (1990).

Cole Kostelac

Los Alamos National Laboratory

Bio to come

Ross Kunz

Idaho National Laboratory

Bio to come

Bhavya Lal, Ph.D.

RAND Corporation

Lal is one of the nation's leading authorities on space nuclear power and propulsion, with more than three decades of experience at the intersection of nuclear engineering, space technology and national policy. She has shaped the modern U.S. space nuclear enterprise, translating hard technical realities into the strategy, policy and executive decisions that move programs from concept to flight.

At NASA, Lal served as associate administrator for Technology, Policy and Strategy, and became the first woman to serve as the agency's chief technologist. She restored national momentum on space nuclear systems, securing the first inclusion of nuclear thermal propulsion in the president's budget in decades and redirecting NASA's surface fission power planning toward power levels capable of sustaining a lasting presence on the moon and Mars. Earlier, at the IDA Science and Technology Policy Institute, she led the analysis behind National Security Presidential Memorandum-20 — the first comprehensive overhaul of U.S. nuclear launch safety policy in more than 40 years — replacing vague legacy guidance with a performance-based, quantitative framework that unlocked long-stalled pathways for radioisotope power, fission surface power and nuclear propulsion, including credible roles for the commercial sector.

Lal has given the field strategic coherence. She served on the National Academies committee on space nuclear propulsion for Mars exploration, co-founded and co-chaired the policy track of the American Nuclear Society's Nuclear and Emerging Technologies for Space conference, and authored a national space nuclear strategy that has influenced NASA programs and White House direction. As senior strategy

advisor at Idaho National Laboratory, she co-authored the Department of Energy's 2026 assessment of the U.S. space reactor industrial base. She continues to advise NASA, the Department of Defense, the Department of Energy, and international bodies on nuclear strategy, mission planning, and governance.

Her work has earned the NASA Distinguished Service Medal — the agency's highest honor — and the 2025 AIAA Public Service Award. She holds bachelor's and master's degrees in nuclear engineering from MIT and a doctorate in public policy from George Washington University, and is a professor at the RAND School of Public Policy.



Noah J. McFerran, Ph.D.

Program Group Leader, Nuclear Detection Operations, N-Program 29B

Lawrence Livermore National Laboratory

McFerran is the program group leader for Nuclear Detection Operations, within Global Security's Nuclear Threat Reduction program. McFerran is also Lawrence Livermore's point of contact for near-field detection research and development. In these roles, he supports a diverse team of scientists, engineers and programmers in developing new detector materials, algorithms and system designs.

McFerran leads multiple projects that use machine learning and data fusion to improve radiation detection and analysis capabilities. He leads the development of radiation detection algorithms that significantly improve deployed radiation portal monitor performance. McFerran also supports the lab's student pipeline efforts.

Prior to joining the lab, McFerran was an NNSA fellow at the NNSA Livermore Field Office. In this role he supported Lawrence Livermore's Global Security N-Program and was the acting defense nuclear nonproliferation liaison for the office.

Suzanne Nowicki, Ph.D.

Project Leader

Los Alamos National Laboratory

Nowicki is a distinguished scientist at Los Alamos National Laboratory, renowned for her pioneering contributions to radiation monitoring instrumentation for space nuclear reactors. With a deep expertise in nuclear physics and engineering, Nowicki has dedicated her career to advancing technologies that ensure the safety and reliability of nuclear systems in some of the most challenging environments known to science. Her work addresses the unique challenges posed by extreme vacuum, temperature fluctuations and intense radiation exposure — factors that render conventional Earth-based neutron detectors unsuitable for space applications. By leveraging her extensive experience, Nowicki has proposed innovative solutions, including the adaptation of fission chambers and the integration of chemical vapor deposition diamond detector materials. These technologies offer exceptional thermal and mechanical robustness, high radiation hardness and superior spectroscopic properties, making them ideal for monitoring neutron flux. Currently a project leader at Los Alamos, Nowicki manages multimillion-dollar research projects, including the design and implementation of advanced radiation monitors for space nuclear reactors. Her leadership extends to mentoring graduate and undergraduate students, fostering the next generation of scientists in the field of space-based sensor systems.

Nowicki's research career began at NASA Goddard Space Flight Center, where she developed neutron-induced gamma-ray instruments for planetary soil composition analysis and astrophysics. Her work contributed to the Dragonfly mission to Titan, leading to significant geochemical discoveries. She holds a doctorate in applied physics and a master's degree in nuclear engineering from the University of Michigan.



Jeffrey (Jeff) Phillips, Ph.D.

*Manager, Reactor Technology & Integration
Idaho National Laboratory*

Phillips is the manager of Reactor Technology and Integration at INL. With more than 40 years of experience in advanced materials manufacturing and development, he specializes in advanced ceramics, coatings and TRISO fuel manufacturing. Before returning to INL, Phillips held engineering and operations leadership roles at CoorsTek and GE Aviation. He earned a doctorate in materials science from the Colorado School of Mines and has led TRISO fuel fabrication efforts supporting the Advanced Gas Reactor and Pele fuel programs in collaboration with BWXT and Oak Ridge National Laboratory.



Simon M. Pimblott, Ph.D.

*Laboratory Fellow and Chief Scientist, Nuclear Science & Technology
Idaho National Laboratory*

Pimblott has over 40 years of experience in nuclear energy sciences, working closely with the U.S. Department of Energy and the U.K. Nuclear Decommissioning Authority. Currently a laboratory fellow at INL, Pimblott is the chief scientist for the Nuclear Science and Technology directorate. Prior to joining INL in 2017, he chaired the Radiation Chemistry department and was the founding director for the Dalton Cumbrian Facility (DCF) at the University of Manchester. The DCF was established to address the engineering, decommissioning and scientific challenges associated with the U.K. nuclear industry, particularly the Sellafield site.

Pimblott has held leadership in multiple professional societies. He is a fellow of the Royal Society of Chemistry and the American Nuclear Society, where he is also the immediate past chair of the Materials Science and Technology division. From 2007 to 2012, he was the energy research chair in radiation chemistry for the U.K. Engineering and Physical Sciences Research Council. In 1999, Pimblott was awarded the Michael Fry Radiation Research Award, recognizing the most accomplished radiation scientist under 40. In 2011, Pimblott and the DCF helped the Dalton Nuclear Institute earn the Queen's Anniversary Prize for Higher and Further Education for excellence in nuclear energy research and education.

He has acted as technical lead for major research programs throughout the field of nuclear energy research, including fuel performance, management and disposition; radiation effects in nuclear materials and fuels; light water reactor chemistry and corrosion processes; chemistry of nuclear reprocessing systems; and radioactive waste management and decommissioning.

DV Rao

Idaho National Laboratory

Bio to come

Everett Redmond

Oklo Inc.

Bio to come



Bailey Reichelt

Founder and Attorney

Aegis Space Law

Reichelt is a founding member and partner at Aegis Space Law, a boutique firm serving the commercial space industry. She specializes in international trade law, including International Traffic in Arms Regulations, Export Administration Regulations, and Office of Foreign Assets Control compliance, with additional expertise in U.S. launch regulations and nuclear space policy.

Beyond her legal practice, Reichelt is a board member and founding team member of the Association of Commercial Space Professionals, a nonprofit organization established to democratize access to space. Through the nonprofit, she helps entrepreneurs navigate complex regulatory frameworks by providing compliance training and advocacy resources.

Reichelt's passion for teaching and empowering entrepreneurs also led her to become president and lead instructor of the Export Compliance Training Institute, which focuses on practical international trade education.

Earlier in her career, she designed and managed international trade compliance programs for major multinational aerospace and defense manufacturers. She also advised on government and commercial contracting and anti-bribery compliance. Before moving into the private sector, Reichelt served as a public defender in Texas. She earned her juris doctor from the University of Mississippi School of Law, where she completed a concentration in air and space law.



Piyush Sabharwall, Ph.D.

Nuclear Engineer

Idaho National Laboratory

Sabharwall is a distinguished staff nuclear research scientist at INL with more than 22 years of experience in nuclear and thermal engineering. Recognized as the 2022 Asian American Engineer of the Year, he led gas cooled fast reactor cartridge loop development under DOE's Versatile Test Reactor program, spent six years as the technical area lead for the DOE Office of Nuclear Energy's Microreactor R&D program and is currently leading the development of Holtec SMR-300 under the DOE Advanced Reactor Demonstration program. He has advanced INL's leadership in verification and validation, experimental programs, small modular and molten salt reactors, and integrated energy systems, and has authored two books and over 400 peer-reviewed publications. His strategic guidance spans DOE programs, industry partnerships, and

university collaborations, and he holds adjunct faculty appointments at Texas A&M University and the University of Michigan. He earned his doctorate in nuclear engineering, along with master's degrees in renewable energy and sustainability systems, engineering management, and nuclear engineering, and a bachelor's degree in mechanical engineering.

Dawn Scates

Idaho National Laboratory

Bio to come

Shervin Taghavi

California Institute of Technology

Bio to come



Stefano Terlizzi

Professor

Penn State University

Terlizzi is the John and Jean M. Brennan Clean Energy Early Career professor at Penn State University and a joint appointee at the Idaho National Laboratory. He is the principal investigator of the Computational Reactor Engineering and Analysis research group at Penn State, which specializes in computational methods for reactor physics and multiphysics analysis of fission reactors.

Prior to joining Penn State, he was a staff scientist at INL, where he led multiple projects on advanced reactor analysis supporting several U.S. Department of Energy programs, NASA and the Nuclear Regulatory Commission.

Terlizzi holds a doctorate in nuclear engineering from the Georgia Tech, as well as a bachelor's degree in energy engineering and a master's degree in energy and nuclear engineering from the Polytechnic University of Turin. He was a Deslonde De Boisblanc distinguished postdoctoral research associate at INL and a fellow in the Sam Nunn Security Program at Georgia Tech.

James Tompkins

Lightbridge Corporation

Bio to come



Dean Wang, Ph.D.

*Associate Professor
The Ohio State University*

Wang is an associate professor in the nuclear engineering program at The Ohio State University. He earned his doctorate in reactor physics and fuel management from MIT in 2003. Wang has extensive expertise in nuclear reactor analysis and in developing advanced computational methods and software for reactor modeling and simulation. His research group focuses on developing and applying state-of-the-art computational techniques for neutron transport, thermal hydraulics and multiphysics coupling. Wang has played a significant role in reactor transient and safety analysis through coupled thermal-hydraulics and neutronics methodologies (TRACE/PARCS), in support of regulatory activities for the U.S. NRC. Wang is currently leading a multiyear NASA-funded project on centrifugal nuclear thermal rocket neutronics. This research aims to develop advanced neutronics modeling and simulation capabilities for next-generation liquid-fueled nuclear thermal propulsion systems, targeting propellant temperatures on the order of 5,000 Kelvin and specific impulses up to 1,800 seconds. Such performance represents a substantial advancement over chemical propulsion and conventional solid-core nuclear thermal propulsion concepts and could significantly enhance the feasibility of future crewed Mars missions and deep-space exploration. His earlier work includes a master's thesis on reactivity control and designing the HTR-10 high-temperature gas-cooled reactor, as well as a doctoral dissertation focused on core optimization and fuel cycle analysis for thorium–uranium fuel cycles. In recognition of his contributions to the U.S. Department of Energy's technical response to the Fukushima Daiichi nuclear accident, Wang received the 2011 ORNL Significant Event Award. He has been an active member of the American Nuclear Society since 1999.

Vince Wang, Ph.D.

*Assistant Professor and Senior Reactor Operator
University of Utah*

Wang is an assistant professor in the nuclear engineering program at the University of Utah and a senior reactor operator for the university's TRIGA reactor. The University's nuclear engineering program is uniquely housed within the Department of Civil and Environmental Engineering, fostering interdisciplinary collaboration across multiple engineering disciplines.

Wang's research focuses on nuclear reactor physics, particle transport simulation, and computational methods for reactor analysis and design. His work spans reactor modeling, advanced simulation techniques and applications of reactor physics to emerging nuclear technologies, with particular interests in microreactor systems and space nuclear power.

His involvement in space nuclear engineering began in 2015 during an internship at INL, where he worked on designing and analyzing low-enriched uranium nuclear thermal propulsion systems. That early experience sparked a lasting interest in applying reactor physics to space exploration and laid the foundation for his continuing work in this area.

Before joining the University of Utah, Wang worked in the microreactor industry, where he contributed to the development of key technologies. Many of the challenges encountered in terrestrial microreactor development closely align with those of space nuclear systems, particularly for Department of War and lunar applications that demand compact, reliable, and highly resilient reactor designs.

Today, Wang's research examines how advanced reactor physics and particle transport simulations can support the next generation of space nuclear technologies, including lunar fission surface power reactor concepts. These systems must operate under some of the most demanding conditions imaginable — from extreme lunar temperature cycles to strict mass, shielding and reliability requirements. Solving these problems requires integrating reactor physics, thermal analysis, materials science and systems engineering.

Through his research, reactor operations and teaching, Wang is passionate about preparing the next generation of nuclear engineers to tackle these multidisciplinary challenges. He believes that advances in computational modeling and reactor physics play a critical role in enabling sustainable human exploration beyond Earth, making space nuclear power one of the most exciting frontiers in nuclear engineering today.

Bryan Zilka

Thermal Hydraulics Research Engineer

BWX Technologies

Zilka is a thermal hydraulics research engineer at BWXT Advanced Technologies LLC. In his current role, Zilka leads teams developing numeric and experimental methods that enable the design of space and terrestrial nuclear power systems. Over the last seven years, he has served as the thermal-hydraulic design lead for four separate space nuclear programs, most recently leading internal R&D efforts to develop novel space nuclear propulsion systems. A strong believer in the development of new talent, Zilka regularly engages with junior engineers to provide career mentoring and training in the thermal-hydraulics discipline. As the world experiences a renewed interest in sustained human presence in space, Zilka remains certain that nuclear technologies will play a pivotal role in humanity achieving its aspirations and looks forward to inspiring the next generation of scientists and engineers considering this exciting field.

STARFIRE

Space Technology for Advanced Reactors Fueling Innovation in
Research and Exploration

Organized by:



Contact Information:

Jackson Harter
Jackson.harter@inl.gov
503-568-4272

Katrina Lott
Katrina.lott@inl.gov
208-852-6877

Brenda Monson
brenda.monson2@inl.gov
208-521-2055



<https://inl.gov/events/star-fire/>

