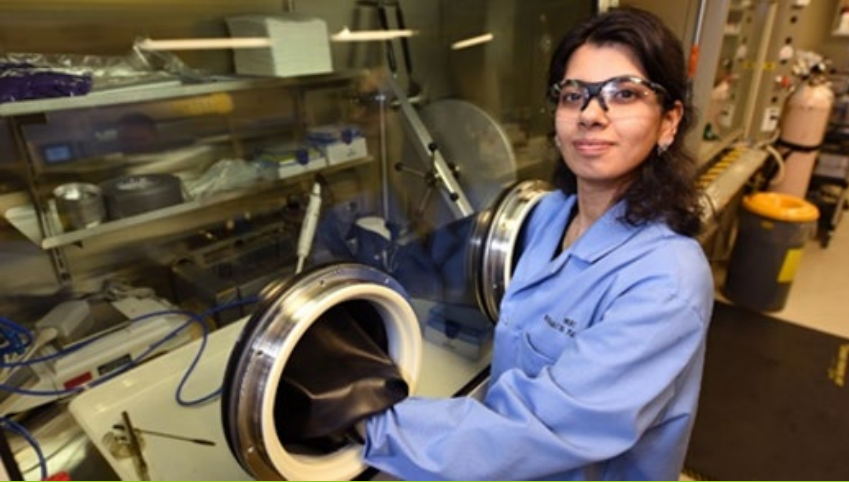


GAIN-Industry INL Site Visit

June 7, 2022

Dr. Jess Gehin  
Associate Lab Director



# Nuclear Science & Technology Overview

INL is managed by Battelle Energy Alliance  
for the US Department of Energy



Idaho National Laboratory

## VISION

INL will change the world's energy future and secure our critical infrastructure.

## MISSION

Discover, demonstrate and secure innovative nuclear energy solutions, clean energy options and critical infrastructure.

## VALUES



### EXCELLENCE

We do our best work every day



### INCLUSIVITY

We commit to building an empowered workforce that's inclusive and diverse; where everyone feels they belong



### OWNERSHIP

We take pride, accountability and responsibility for actions that drive laboratory success



### SAFETY

We demonstrate world leading safety behaviors and safety performance, while accomplishing the mission



### TEAMWORK

We treat others with dignity and respect and promote collaboration



### INTEGRITY

We demonstrate honesty, professionalism and equity in every decision and action

# Creating a secure and resilient clean energy future



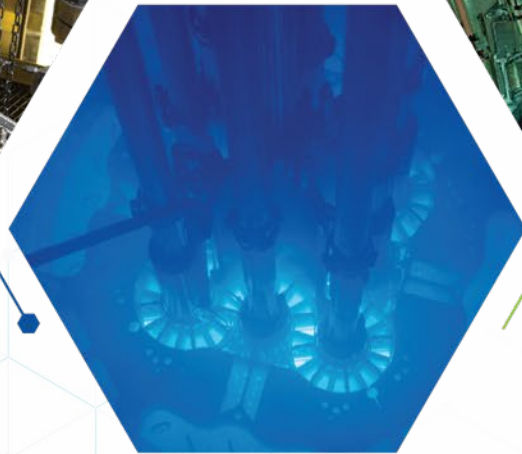
Advanced  
Test Reactor  
Complex



Energy &  
Environment  
Science &  
Technology



Nuclear Science  
& Technology



Materials and  
Fuels Complex



National &  
Homeland  
Security Science  
& Technology

# INL is addressing the world's most challenging problems

## Nuclear Science & Technology

- Nuclear fuels and materials
- Reactor systems design and analysis
- Fuel cycle science and technology
- Nuclear safety and regulatory research
- Advanced scientific computing

## Advanced Test Reactor Complex

- Steady-state neutron irradiation of materials and fuels
  - Naval Nuclear Propulsion Program
  - Industry
  - National laboratories and universities

## Materials and Fuels Complex

- Transient testing
- Analytical laboratories
- Post-irradiation examination
- Advanced characterization
- Fuel fabrication
- Space nuclear power and isotope technologies

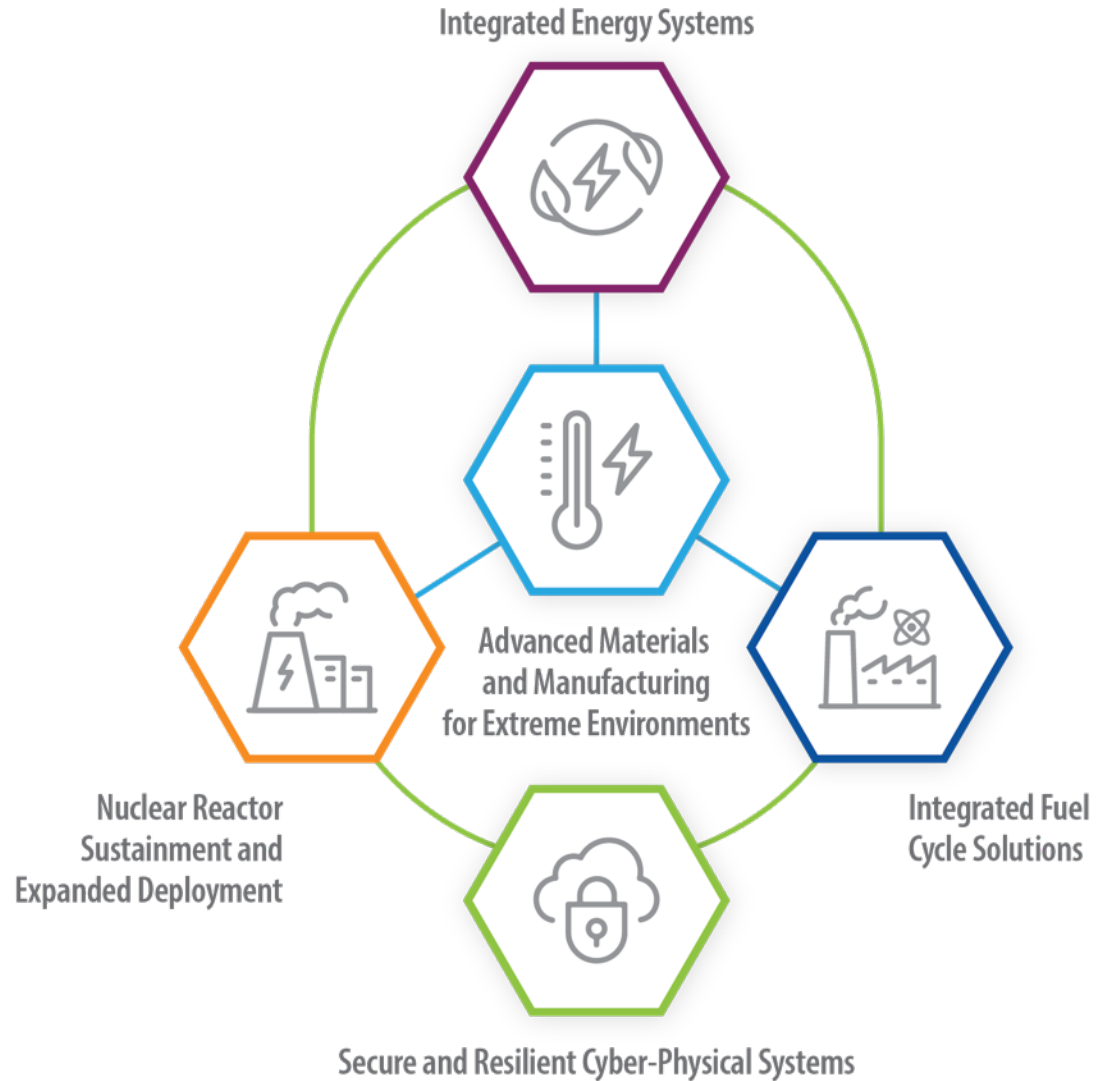
## Energy & Environment Science & Technology

- Advanced transportation
- Environmental sustainability
- Clean energy
- Advanced manufacturing
- Biomass

## National & Homeland Security Science & Technology

- Critical infrastructure protection and resiliency
- Nuclear nonproliferation
- Physical defense systems

# Low-carbon energy future



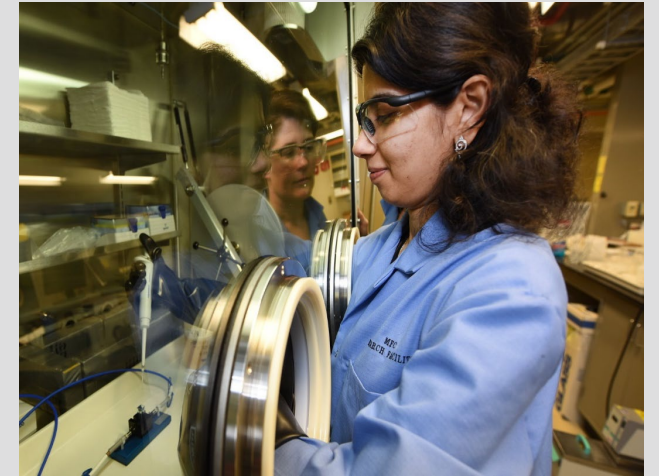
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*INL Strategic  
Science &  
Technology  
Initiatives:  
Advancing energy  
& security goals for  
the nation*

---

# Nuclear S&T supports INL's vision, mission, and priorities

- Our Vision: INL will change the world's energy future and secure our critical infrastructure.
- Our Mission: Discover, demonstrate, and secure innovative nuclear energy solutions and clean energy options, and secure critical infrastructure.
- Our Priorities for Nuclear Energy:
  - Enable the success of advanced reactor demonstrations to deploy cost-competitive nuclear energy.
  - Expand and deploy national nuclear energy strategic assets.
  - Enable INL to achieve net-zero carbon emissions by 2031.
  - Transform our work processes and work culture.



# Core Capabilities

- Nuclear Reactor Design & Analysis
- Integrated Energy Systems
- Reactor Safety
- Regulatory Support
- Human Factors
- Test Beds and Demonstrations
- Aqueous & Pyrochemical Processing
- Modeling & Simulation
- Irradiation Experiments
- Fuels & Materials R&D
- Post-Irradiation Examination

# Strategic focus and key objectives

- Sustain and optimize the light-water reactor fleet for national energy security and low-carbon energy production
- Design, demonstrate, and rapidly deploy advanced reactors
- Accelerate the development and qualification of nuclear fuels and materials
- Design, demonstrate, and rapidly deploy innovative and sustainable integrated fuel cycle solutions
- Realize the Next-level INL and foster a high-performing research organization





# Nuclear S&T leverages its unique capabilities to lead high-impact research



# Nuclear S&T Leadership



**NS&T Associate Laboratory Director**  
Jess Gehin

**NS&T Chief Scientist**  
Vacant



**NS&T Chief Operations Officer**  
Pete Wells



**Reactor Systems Design  
& Analysis – C100**  
Youssef Ballout, Director



**Nuclear Safety &  
Regulatory Research –  
C200**  
Curtis Smith, Director



**National Reactor  
Innovation Center  
(NRIC) – C300**  
Ashley Finan



**Fuel Cycle Science &  
Technology – C400**  
Michael Norato, Director



**Advanced Scientific  
Computing – C500**  
Eric Whiting, Director



**Nuclear Fuels &  
Materials – C600**  
Steven Hayes, Director



**Senior Advisor, Strategic Programs**  
Steve Aumeier



**Gateway for Accelerated Innovation  
in Nuclear (GAIN)**  
Christine King



**Naval Reactors Programs**  
Casey Stengel



**NE Senior Technical Advisor**  
Jon Carmack



**Integrated Fuel Cycle Solutions**  
Monica Regalbuto



**Nuclear Safeguards, Security, &  
Nonproliferation Strategies**  
Aaron Weston



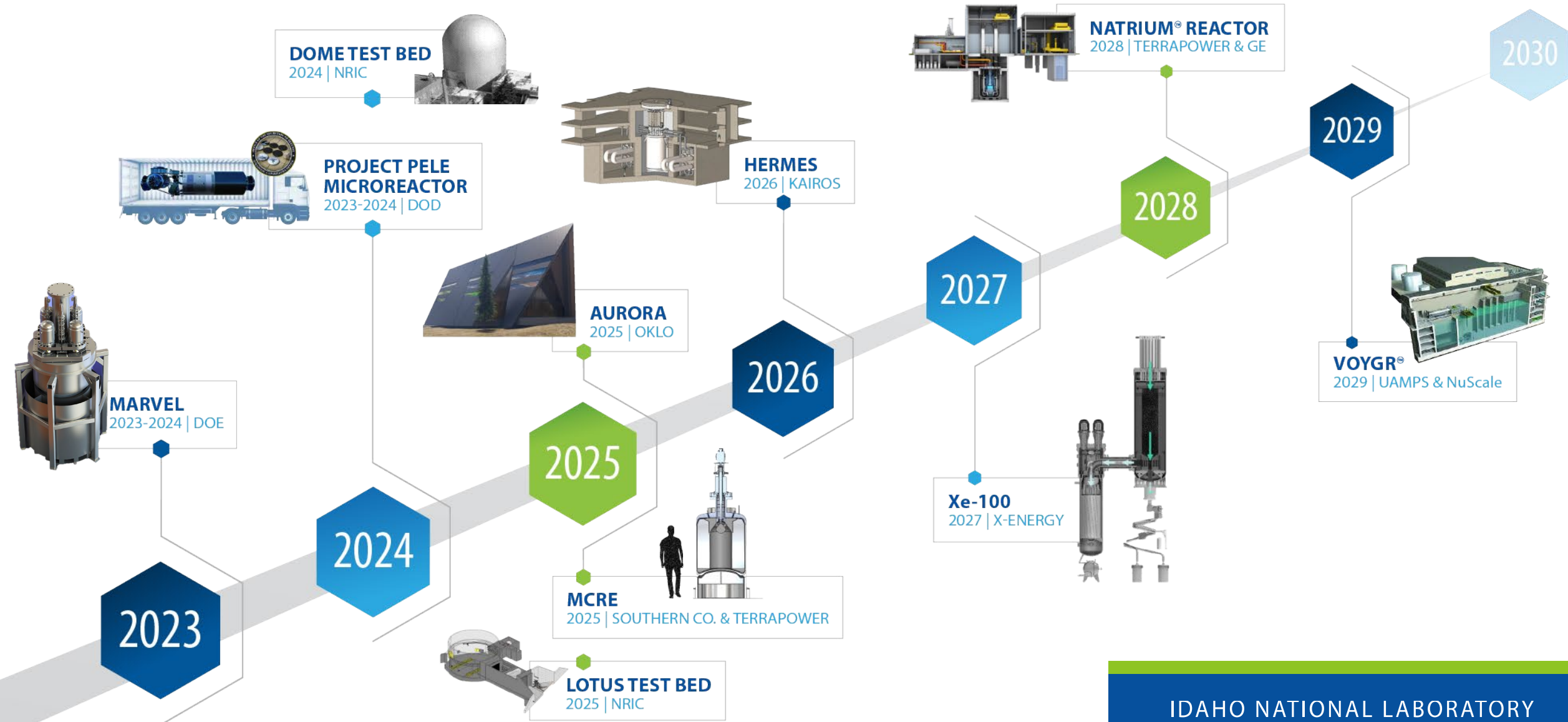
**International Programs**  
Bonnie Hong



**Strategic Planning and  
Transformation**  
Erin Searcy

**NS&T Talent Development**  
Vacant

# Accelerating advanced reactor demonstrations



# Nuclear Science & Technology

- Advancing nuclear energy technologies through broad R&D leadership and impactful outcomes
- Developing and applying unique INL nuclear R&D capabilities for the nation
- Partnering with the private sector to enable advanced reactor development, demonstration, and deployment





# 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, and also performs research in each of DOE's strategic goal areas: energy, national security, science and the environment.*