



# Nuclear Science User Facilities (NSUF) Annual Program Review

Tuesday April 15 to Thursday April 17, 2025

**Objective:**

- Provide program overview including recent accomplishments.
- Provide technical highlights from recently completed and active NSUF-supported user access projects.
- Engage with program stakeholders and obtain feedback.

Hybrid Meeting

**Tuesday April 15 Morning Session - Program Review**

*Center for Advanced Energy Studies (CAES) Auditorium & Hybrid*

MDT

|       |   |  |
|-------|---|--|
| 9:00  | Welcome and Introductions .....             | Brenden Heidrich<br><i>NSUF Director</i>               |
| 9:10  | DOE-NE Perspective and FY 2025 Outlook..... | Christopher Barr<br><i>DOE-NE NSUF Program Manager</i> |
| 9:25  | NSUF Overview.....                          | Brenden Heidrich<br><i>NSUF Director</i>               |
| 10:10 | Break                                       |  |
| 10:30 | CINR Experiment Awards and Status .....     | Derek Whipple<br><i>NSUF Program Administrator</i>     |
| 11:00 | RTE Experiment Awards and Status .....      | Anna Podgorney<br><i>NSUF Program Administrator</i>    |



11:30 NSUF PIE Work at Westinghouse Churchill .....Catherine Cmar  
*Westinghouse Churchill*

12:00 Lunch

**Tuesday, April 15 Afternoon Panel Session - NSUF User Access Awards: Structural Materials**

*Panel Chair – Rongjie Song, Chief Scientist*

1:00 Session Introduction – Structural Materials Related R&D under NSUF

1:10 Investigation of intergranular cracking of highly irradiated austenitic stainless steels materials of pressurized water reactors in ambient conditions..... Maxim Gussev  
*Oak Ridge National Laboratory*

1:30 Irradiation-Corrosion of Alumina-Forming Austenitic Stainless Steels in Static Lead..... Janelle Wharry  
*University of Illinois*

1:50 Effect of Neutron Irradiation on Microstructure and Mechanical Properties of Nanocrystalline Nickel .....Ramprashad Prabhakaran  
*Pacific Northwest National Laboratory*

2:10 Co-Location of Solute Clusters and Dislocations in Additively Manufactured 316L Stainless Steels ..... Timothy Lach  
*Oak Ridge National Laboratory*

2:30 Stability of VN, TaN, and TaC MX-type Precipitates in Ferritic Steels under Neutron Radiation.....Emily Proehl  
*Oak Ridge National Laboratory*

2 :50 Wrap-up and Discussion

3:00 Adjourn

**Wednesday, April 16 NSUF Program Update**

*Center for Advanced Energy Studies (CAES) Auditorium & Hybrid*

MDT

9:00 NSUF User Organization Overview .....Maria Okuniewski  
*NSUF User Organization Chair*

9:20 Nuclear Fuels and Materials Library .....Kelly Cunningham  
*NSUF Program Administrator*

9:40 Activated Materials Laboratory ..... Xuan Zhang  
*Argonne National Laboratory*



10:00 TREAT Fuel Motion Monitoring System ..... Scott Thompson  
*Idaho National Laboratory*

**Wednesday, April 16 NSUF Program Capabilities and Instrument Scientists**

10:20 Break

10:40 Advanced Mechanical Testing System for Highly Irradiated Materials  
..... Sriram Praneeth Isanaka  
*Missouri University of Science and Technology*

10:55 Development of Modern and Easy-to-Use XRD Analysis Tools for NSUF Users  
..... Mehmet Topsakal  
*Brookhaven National Laboratory*

11:10 NSUF at LANSCE: Elevating Neutron resonance Imaging Techniques for Next  
Generation Nuclear Materials Research..... Alexander Long  
*Los Alamos National Laboratory*

11:25 Data Acquisition and Analysis Techniques for X-ray Computer Tomography  
..... William Chuirazzi  
*Idaho National Laboratory*

11:40 Assessment of Miniaturized Fracture Toughness Testing Technology for  
Evaluation Of High-Temperature Reactor Materials  
..... TS Byun  
*Oak Ridge National Laboratory*

11:55 Lunch

**Wednesday, April 16 Panel Session – NSUF User Access Awards: Fuel and  
Cladding Materials**

*Panel Chair – Keith Jewell, Chief Scientist*

1:00 Session Introduction – Fuel Related R&D under NSUF

1:10 Irradiation of Advanced Neutron Absorbing Material to Support Accident Tolerant  
Fuel..... Matthieu Aumand  
*Framatome*

1:30 Thermal Conductivity Measurements of Irradiated Annular Low Burnup U-10Zr  
Fuel..... Mary Severt  
*University of Florida*

1:50 In Situ Irradiation of Uranium Carbide ..... Lingfeng He  
*North Carolina State University*



- 2:10 Irradiation Performance of Defective Uranium Mononitride ..... Maria Kosmidou  
*Los Alamos National Laboratory*
- 2:30 Correlative Atom Probe Tomography of the Buffer-IPyC Interlayer Region of  
TRISO-coated Particles ..... Tanner Mauser  
*Idaho National Laboratory*
- 2:50 Investigation of Degradation Mechanisms of Cr coated Zirconium alloy cladding in  
Reactive Initiate Accidents (RIA) ..... WooHyun Jung  
*University of Wisconsin*
- 3:10 Wrap-Up and Discussion
- 3:20 Adjourn

### **Thursday, April 17 NSUF Program Update – High Performance Computing**

*Center for Advanced Energy Studies (CAES), Auditorium & Hybrid*

MDT

- 9:00 High Performance Computing Accomplishments ..... Matthew Anderson  
*Idaho National Laboratory*
- 9:45 Advanced Characterization Techniques on Nuclear Fuels and Materials.....  
..... Donna Post Guillen  
*Idaho National Laboratory*
- 10:00 Nuclear Research Data System (NRDS).....Bradlee Jensen  
*Idaho National Laboratory*
- 10:30 Break
- 11:00 Automated Regions of Interest (ROI) Detection in Irradiated U-Zr Metallic Fuel  
Using Deep Learning Method ..... TK Yao  
*Idaho National Laboratory*
- 11:30 Cost-Effective Light Water Reactor In-Pile Testing .....Eric Schwarz  
*Nuclear Applications Technology Company*
- 11:50 Lunch



**Thursday, April 17 Panel Session – NSUF User Access Awards, Sensor Materials**

*Panel Chair – Keith Jewell, Chief Scientist*

- 1:00 Session Introduction – Sensor Related R&D under NSUF
  
- 1:10 High Fluence Active Irradiation and Combined Effects Testing of Sapphire Optical Fiber Distributed Temperature Sensors.....Kelly McCary  
*Idaho National Laboratory*
  
- 1:30 EPRI Led Nuclear Nondestructive Evaluation NSUF Industry Projects  
..... James Wall  
*EPRI*
  
- 1:50 Irradiation of GaN HEMTs and SiC JFETs for Near Core Rad-hard Electronics  
..... Kyle Reed  
*Oak Ridge National Laboratory*
  
- 2:10 Reliability Assessment of Integrated Silicon Carbide Pressure/  
Temperature Sensors for Lunar Fission Surface Power Reactor  
..... Robert Okojie  
*NASA Glenn Research Center*
  
- 2:30 Wrap-Up Discussion and Meeting Closeout
  
- 3:00 Adjourn