

Webinar Agenda

Advanced Sensors and Instrumentation (ASI) FY22 Annual Program Review meeting

Monday, October 24, 2022

Session 1: Introduction

Moderator: Daniel Nichols (DOE)/Patrick Calderoni (INL)

- 10:30 am *Welcome and opening remarks / ASI Program Overview* Daniel Nichols, DOE
- 10:50 am *ASI Research Activities Overview* Patrick Calderoni, INL
- 11:10 am *NRC Perspective on Advance Sensors for Nuclear* Raj Iyengar, NRC
- 11:30 am *Nuclear Energy Sensor Database* Timothy Downing, PNNL

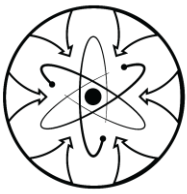
Session 2: Sensors for Irradiation Experiments

Moderator: Patrick Calderoni, INL

- 12:00 pm *Irradiation Test - NRAD, TREAT, OSURR & Retractable System* Joe Palmer, INL
- 12:30 pm *Irradiation Test - Gamma Thermometer* Tony Birri, ORNL
- 1:00 pm ----- **Break** -----
- 2:00 pm *Passive Monitors - Silicon Carbide* Malwina Wilding, INL
- 2:30 pm *Passive Monitors - Melt Wires* Malwina Wilding, INL
- 3:00 pm *LVDT* Kurt Davis (INL), William Spirnock (University of Pittsburgh), Zhangxian Deng (BSU)
- 3:30 pm *Mechanical Properties - Strain Gauges* Mike McMurtrey, INL
- 4:00 pm *Deployment and In-Reactor Test of an Instrument for Real-Time Monitoring Thermal Conductivity Evolution of Nuclear Fuels¹* Zilong Hua, INL
- 4:15 pm *Boise State University - Supporting Activities* Brian Jaques, BSU
- 4:45pm *Moderator-led discussion of “Sensors for Irradiation Experiments”* Patrick Calderoni, INL
- 5:00 pm ----- **Adjourn** -----

¹ NSUF project

*All Times are Eastern Daylight Time (UTC - 04:00)

**ASI****Advanced Sensors
and Instrumentation**

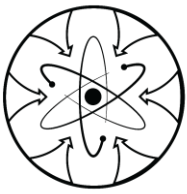
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**Advanced Sensors and Instrumentation (ASI)
FY22 Annual Program Review meeting****Tuesday, October 25, 2022****Session 3: Sensors for Advanced Reactors****Moderator: Chris Petrie, ORNL**

- 10:30 am *High temperature embedded/integrated sensors (HiTEIS) for remote monitoring of reactor and fuel cycle systems*
Nicholas Garcia, NCSU
- 11:00 am *Development of Microwave Resonant Cavity Transducer for Flow Sensing in Advanced Reactor High Temperature Fluids*
Alexander Heifetz, ANL
- 11:30 am *Acousto-optic Smart Multimodal Sensors for Advanced Reactor Monitoring and Control*
Michael Larche, PNNL
- 12:00 pm *Acoustic Sensors*
Josh Daw, INL
- 12:30 pm *Neutron Flux*
Kevin Tsai, INL
- 1:00 pm ----- **Break** -----
- 2:00 pm *Optical Fiber*
Austin Fleming, INL
- 2:30 pm *Irradiation of optical components of in-situ laser spectroscopic sensors²*
Igor Jovanovic, University of Michigan
- 2:45 pm *High Fluence Active Irradiation and Combined Effects Testing of Sapphire Optical Fiber Distributed Temperature Sensors²*
Kelly McCary, INL
- 3:00 pm *Irradiation Behavior of Piezoelectric Materials for Nuclear Reactor Sensors²*
Ryan Chesser, OSU
- 3:15 pm *Nuclear Thermocouples*
Richard Skifton (INL)/Scott Riley (BSU)
- 3:45 pm *Irradiation of Sensors and Adhesive Couplants for Application in LWR Primary Loop Piping and Components²*
James Wall, EPRI
- 4:00 pm Moderator-led discussion of “Sensors for Advanced Reactors”
Chris Petrie, ORNL
- 4:15 pm ----- **Adjourn** -----

² NSUF Project

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**Advanced Sensors
and Instrumentation**

Webinar Agenda

**Advanced Sensors and Instrumentation (ASI)
FY22 Annual Program Review meeting**

Wednesday, October 26, 2022

Session 4: Sensor Integration

Moderator: Craig Primer, INL

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| 10:30 am | <i>Process Constrained Data Analytics for Sensor Assignment and Calibration</i> | Rick Vilim, ANL |
| 11:00 am | <i>Design of Risk-informed Autonomous Operation for Advanced Reactors</i> | Michael Golay, MIT |
| 11:30 am | <i>Cost-Benefit Analysis through Integrated Online Monitoring and Diagnostics</i> | Dave Grabaskas, ANL |
| 12:00 pm | <i>Development of a Radiation-Tolerant Front-End Digitizer</i> | Callie Goetz, ORNL |
| 12:30 pm | <i>Advanced Online Monitoring and Diagnostic Technologies for Nuclear Plant Management, Operation, and Maintenance</i> | Daniel Cole, University of Pittsburgh |
| 1:00 pm | ----- Break ----- | |
| 2:00 pm | <i>Context-Aware Safety Information Display for Nuclear Field Workers</i> | Pingbo Tang, Carnegie Mellon University |
| 2:30 pm | <i>Gallium Nitride-based 100-Mrad Electronics Technology for Advanced Nuclear Reactor Wireless Communications</i> | Kyle Reed, ORNL |
| 3:00 pm | <i>Understanding Irradiation Behaviors of Ultrawide Bandgap Ga₂O₃ High Temperature Sensor Materials for Advanced Nuclear Reactor Systems³</i> | Ge Yang, NCSU |
| 3:15pm | <i>Research plan for advanced controls development as part of ASI</i> | Jake Farber, INL |
| 3:45 pm | <i>Design and Prototyping of Advanced Control Systems for Advanced Reactors Operating in the Future Electric Grid</i> | Roberto Ponciroli, ANL |
| 4:15 pm | <i>Analytics-at-scale of Sensor Data for Digital Monitoring in Nuclear Plants</i> | Vivek Agarwal, INL |
| 4:45 pm | Moderator-led discussion of “Sensors Integration” | Craig Primer, INL |
| 5:00 pm | ----- Adjourn ----- | |

³ NSUF Project

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