

**Advanced Sensors  
and Instrumentation**

## **Meeting Agenda**

### **Advanced Sensors and Instrumentation (ASI) FY23 Annual Program Review meeting**

**Monday, October 30, 2023**

**Session 1: Introduction**

***Moderators: Daniel Nichols (DOE)/Patrick Calderoni (INL)***

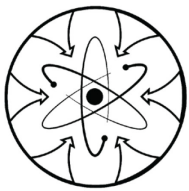
10:00 am	Welcome, Opening Remarks, and ASI Program Overview	Suibel Schuppner/Daniel Nichols, DOE
10:40 am	ASI Program Roadmap	Patrick Calderoni, INL
11:00 am	NRC Research Status Update	Chris Cook, NRC

**Session 2 (part 1): Sensors for Advanced Reactors**

***Moderator: Chris Petrie, ORNL***

11:20 am	Neutron Flux – INL	Kevin Tsai, INL
11:40 am	Neutron Flux – ORNL	Tony Birri/Pat Mulligan, ORNL
12:00 pm	[SBIR] Commercialization of the Micro Pocket Fission Detector (MPFD)	Taylor Ochs, Radiation Detection Technologies, Inc.
12:20 pm	----- <b>Break</b> -----	
12:50 pm	Optical Fiber – INL	Austin Fleming, INL
1:10 pm	Optical Fiber – ORNL	Chris Petrie, ORNL
1:30 pm	Non-Contact Strain and Displacement Monitoring via Single Crystal Sapphire Based Interferometry	Daniel Homa, Virginia Tech
1:50 pm	[NSUF] Irradiation of Optical Components of In-Situ Laser Spectroscopic Sensors	Igor Jovanovic, University of Michigan
2:10 pm	----- <b>Lunch</b> -----	
2:40 pm	[NSUF] High Fluence Active Irradiation and Combined Effects Testing of Sapphire Optical Fiber Distributed Temperature Sensors	Kelly McCary/Josh Daw, INL
3:00 pm	[SBIR] Fiber-optic Sensor System for Multi-Point Pressure and Temperature Measurement	Qiwen Sheng, Nusenics, LLC
3:10 pm	[SBIR] Scaled Reduced Mode Sapphire Fiber Production Towards High Temperature Radiation Resilient Sensors	Derek Rountree, Luna Innovations, Inc.
3:30 pm	[SBIR] Fiber-Embedded Wireless Sensors	Joseph Pegna, Free Form Fibers
3:40 pm	[SBIR] Optical Fiber Based Distributed Radiation Detection	Chris Westcott, Luna Innovations, Inc.
3:50 pm	[SBIR] Fiber-Optic Multifunctional Sensor for Crack Monitoring in Harsh Environments	George Boggs, Luna Innovations, Inc.
4:10 pm	----- <b>Wrap Up</b> -----	

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



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## **Meeting Agenda**

### **Advanced Sensors and Instrumentation (ASI) FY23 Annual Program Review meeting**

**Tuesday, October 31, 2023**

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**Session 2 (part 2): Sensors for Advanced Reactors**

***Moderator: Chris Petrie, ORNL***

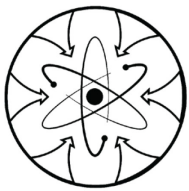
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|----------|---|--|
| 10:30 am | Nuclear Thermocouples – INL   | Richard Skifton, INL                         |
| 10:50 am | Acoustic Sensors – INL  | Josh Daw, INL                                |
| 11:10 am | [NEUP] Development of Microwave Resonant Cavity Transducer for Flow Sensing in Advanced Reactor High Temperature Fluids | Alexander Heifetz, ANL                       |
| 11:30 am | [NSUF] Irradiation of Sensors and Adhesive Couplants for Application in LWR Primary Loop Piping and Components          | James Wall, EPRI                             |
| 11:50 am | [SBIR] Advanced Laser Ultrasonic Sensor for Fuel Rod Characterization   | Brad Bobbs, Intelligent Optical Systems, Inc |
| 12:10 pm | ----- <b>Break</b> -----  |  |
| 12:50 pm | [SBIR] Ultrasonic Sensors for Nuclear Reactor Applications  | Dan Xiang, X-wave Innovations, Inc.          |

**Session 3 (part 1): Sensors for Irradiation Experiments**

***Moderator: Austin Fleming, INL***

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|---------|---|--------------------------------------|
| 1:20 pm | LVDT – INL  | Kurt Davis, INL                      |
| 1:40 pm | Boise State University – Supporting Activities  | Brian Jaques, Boise State University |
| 2:00 pm | ----- <b>Lunch</b> -----  |                                      |
| 2:30 pm | Passive Monitors – INL  | Malwina Wilding, INL                 |
| 2:50 pm | Material Properties – INL   | Mike McMurtrey, INL                  |
| 3:10 pm | [NSUF] Deployment and In-Reactor Test of an Instrument for Real-Time Monitoring Thermal Conductivity Evolution of Nuclear Fuels | Zilong Hua, INL                      |
| 3:30 pm | [NEUP] An Innovative Monitoring Technology for the Reactor Vessel of Micro-HTGR   | Lesley Wright, Texas A&M             |
| 3:50 pm | [SBIR] Printed Sensors for Monitoring Reactor Health  | Richard Fink, Applied Nanotech, Inc. |
| 4:10 pm | ----- <b>Wrap Up</b> -----  |                                      |

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## **Meeting Agenda**

**Advanced Sensors and Instrumentation (ASI)  
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**Wednesday, November 1, 2023**

**Session 4: Sensor Integration**

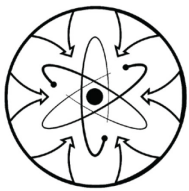
***Moderator: Craig Primer, INL***

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|----------|--|---|
| 10:30 am | Advance Controls – ANL   | Rick Vilim, ANL                                     |
| 10:50 am | Advanced Controls / Digital Twin – INL   | Ahmad Al Rashdan, INL                               |
| 11:10 am | Communication – Develop Multi-Band Wireless  | Vivek Agarwal, INL                                  |
| 11:30 am | [NEUP] Design and Prototyping of Advanced Reactor Operating in the Future Electric Grid  | Roberto Ponciroli, ANL                              |
| 11:50 am | [NEUP] Advanced Online Monitoring and Diagnostic Technologies for Nuclear Plant Management, Operation, and Maintenance                       | Daniel Cole, University of Pittsburgh               |
| 12:10 pm | ----- <b><i>Break</i></b> -----  |   |
| 12:40 pm | [IFOA] Machine Learning for Enhanced Diagnostic and Prognostic Capabilities of NPP Assets  | Tom Gruenwald, Bluewave                             |
| 1:00 pm  | Radiation-Hardened Electronics – ORNL  | Callie Goetz, ORNL                                  |
| 1:20 pm  | [NEUP] Gallium Nitride-based 100-Mrad Electronics Technology for Advanced Nuclear Reactor Wireless Communications                            | Kyle Reed, ORNL                                     |
| 1:40 pm  | [NSUF] Understanding Irradiation Behaviors of Ultrawide Bandgap Ga203 High Temperature Sensor Materials for Advanced Nuclear Reactor Systems | Ge Yang, North Carolina State University            |
| 2:00 pm  | ----- <b><i>Lunch</i></b> -----  |   |
| 2:30 pm  | [SBIR] Video Camera for Harsh Environments in Nuclear  | Esen Salcin, Alphacore, Inc.                        |
| 2:50 pm  | [SBIR] Advanced Process Instrumentation System for Next-Generation Nuclear Reactors  | Ryan O'Hagan, Analysis & Measurement Services Corp. |
| 3:10 pm  | ----- <b><i>Wrap-Up</i></b> -----  |   |

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U.S. DEPARTMENT OF  
**ENERGY**

Office of  
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## **Meeting Agenda**

**Advanced Sensors and Instrumentation (ASI)  
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**Thursday, November 2, 2023**

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**Session 3 (part 2): Sensors for Irradiation Experiments**

***Moderator: Austin Fleming, INL***

10:30 am	Nuclear Energy Sensor Database – PNNL	Shan Osborn/Jeanne Morgan, PNNL
10:50 am	Irradiation Test – INL	Austin Fleming, INL
11:10 am	Irradiation Test – ORNL (Gamma Thermometer)	Tony Birri, ORNL

**Session 5: Program Synergies & Irradiation Facilities**     ***Moderators: Daniel Nichols (DOE)/Patrick Calderoni (INL)***

11:30 am	ARPA-E Projects with ASI Synergies	Jen Shafer, ARPA-E
11:50 am	----- <b><i>Break</i></b> -----	
12:20 pm	FRP Projects with ASI Synergies	Chris Grandy, Fast Reactor Program
12:40 pm	MSR Projects with ASI Synergies	Janelle Eddins, Molten Salt Program
1:00 pm	MRP Projects with ASI Synergies	John Jackson, Micro Reactor Program
1:20 pm	NSUF Utilization for Sensor Testing and Validation	J. Keith Jewell, INL
1:40 pm	Capabilities of the INL Irradiation Facilities	Troy Unruh, INL
2:00 pm	----- <b><i>Lunch</i></b> -----	
2:30 pm	Capabilities of the ORNL Irradiation Facilities	Dianne Ezell, ORNL
2:50 pm	Capabilities of the MITR Irradiation Facilities	Gordon Khose, MITR
3:10 pm	Capabilities of the OSURR Irradiation Facilities	Andrew Kauffman, OSURR
3:30 pm	Capabilities of the PULSTAR Irradiation Facilities	Nina Colby Fleming, PULSTAR
3:50 pm	----- <b><i>Wrap-Up</i></b> -----	

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