



# ASME CARD 2023

Conference for Advanced  
Reactor Deployment

CONFERENCE  
February 22 – 23, 2023

Anneberg Presidential  
Conference Center  
College Station, TX

# Program

<https://event.asme.org/CARD>



**NICHOLAS McMURRAY,**  
*CONFERENCE CHAIR*

Dear Distinguished Attendees:

Welcome to the inaugural 2023 ASME Conference for Advanced Reactor Deployment (CARD) at Texas A&M University in College Station, TX!

Nearly three years ago, Conference Co-Chair Bob Stakenborghs envisioned an ASME conference focused on the next generation of nuclear reactors. However, due to the pandemic, that effort was put on hold. Since then, there has been a wave of new developments. Over the past several years, robust bipartisan policy support for nuclear energy in the United States has kick-started several demonstration projects. Other countries, such as Canada, are equally supportive of new nuclear and are building their own demonstration projects. Furthermore, individual private companies are moving ahead with their own first-of-a-kind nuclear reactors in North America and abroad. More recently, the role of nuclear energy for energy security has been highlighted – emphasizing the need for these new technologies to be available sooner.

When initially deciding what to call CARD, the Organizing Committee knew that we wanted to focus on more than just demonstrating the first few new reactors. We wanted to focus on what it would take to achieve widespread deployment. ASME has a key role to play in the deployment of new technologies, making it all the more important for ASME to be at the forefront of enabling the construction of new nuclear technologies – not just in the United States, but globally.

ASME and its volunteer members have an important role in developing new construction techniques and technologies like additive manufacturing. Our hope for CARD was to bring together those working on these new technologies to discuss not only their progress, but what more needs to be done to enable widespread deployment. Similarly, by hosting the inaugural CARD at Texas A&M University, we hope that CARD will help attract future scientists and engineers to ASME's important mission.

The CARD program was a true team effort – every member of the Organizing Committee and every ASME staff member played a significant role in setting the event up for success. This event would not be taking place without their time, effort, and belief that now is the time to focus on the deployment of advanced nuclear reactors.

Our goal is that this initial meeting of CARD brings together those who are ready to build. We are excited for you to join us!

Thank you all for your attendance and participation.

Sincerely,

A handwritten signature in black ink that reads "Nicholas McMurray". The signature is written in a cursive, flowing style.

Nicholas McMurray

Conference Chair

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# General Information



## REGISTRATION HOURS AND LOCATION

Registration will be located in the lobby of the Annenberg Presidential Conference Center.

The hours are as follows:

### Wednesday

February 22 8:00 AM – 5:00 PM

### Thursday

February 23 8:00 AM – 4:00 PM

## REGISTRATION POLICIES

1. Conference registration fees include admission to all sessions and meals provided at the conference.
2. All attendees, including member, non-members, authors, panelists, chairs, and co-chairs, must pay the appropriate registration fee.
3. One-day registration allows access to the conference activities only on that particular day.
4. No one will be allowed to attend the technical sessions or exhibits without first registering and obtaining the official CARD badge.

## SHUTTLE INFORMATION

ASME will provide a complimentary shuttle service to/from the Cavalry Court Hotel and the Annenberg Presidential Conference Center in the mornings and evenings during the conference.

**In order to park at the Annenberg a parking permit is required. Please don't park in lot 43 without a permit as you will risk getting a ticket.**





## WEDNESDAY, FEBRUARY 22

**TIME** 7:30AM - 9:30AM

**FROM CAVALRY COURT HOTEL TO ANNENBERG CENTER**

**TIME** 5:45PM - 7:15PM

**FROM THE ANNENBERG CENTER TO THE HOTEL**

## THURSDAY, FEBRUARY 23

**TIME** 7:45AM - 9:30AM

**FROM CAVALRY COURT HOTEL TO ANNENBERG CENTER**

**TIME** 5:00PM - 6:30PM

**(2 DROP OFF POINTS) TO CAVALRY COURT HOTEL AND CASMR LAB**

**TIME** 6:30PM - 7:45PM

**FROM CASMR LAB TO CAVALRY COURT HOTEL**



# Schedule at a Glance

## CARD 2023 SCHEDULE

### WEDNESDAY, FEBRUARY 22

*Timing in CST*

8:30am – 9:15am

**Breakfast**

9:15am – 10:15am

**Welcome and Keynote Session**

*Rita Baranwal & Oded Doron*

10:15am – 10:30am

**Break**

10:30am – 12:00pm

**Advanced Reactor Research Panel (Session 1)**

and

**Digital Twin Workshop (Session 1)**

12:00pm – 1:00pm

**Networking Lunch**

1:00pm – 2:30pm

**Reactor Technologies (Session 1)**

2:30pm – 2:45pm

**Break**

2:45pm – 4:30pm

**Code Development + Harmonization**

and

**Advanced Reactor Research Panel (Session 2)**

4:30pm – 4:45pm

**Break**

4:45pm – 5:30pm

**Harnessing the Power of Storytelling in the Digital Age**

5:30pm – 7:00pm

**Opening Reception**

### THURSDAY, FEBRUARY 23

*Timing in CST*

8:30am – 9:15am

**Breakfast**

9:15am – 10:15am

**Plenary Session**

*Dr. Jess C. Gehin & Kenneth Michael (Mike) Goff*

10:15am – 10:30am

**Break**

10:30am – 12:00pm

**Reactor Technologies (Session 2)**

12:00pm – 1:00pm

**Networking Lunch**

1:00pm – 2:30pm

**Modular Construction Panel**

and

**Digital Twin Workshop (Session 2)**

2:30pm – 2:45pm

**Break**

2:45pm – 3:30pm

**Navigating the Nuclear Narrative with HuffPost**

3:30pm – 3:45pm

**Break**

3:45pm – 5:15pm

**Advanced Reactor Research Panel (Session 3)**

5:45pm – 7:15pm

**Center for Advanced Small Modular and Micro Reactors (CASMR)**

**Tour and Networking Event**



## SHAPING TOMORROW'S ENERGY WITH ADVANCED REACTORS

WEDNESDAY, FEBRUARY 22

9:15AM – 9:45AM

ANNENBERG CENTER



**Rita Baranwal,**  
*Chief Technology Officer*  
Westinghouse Electric Company

**Biography:** Dr. Rita Baranwal is Chief Technology Officer at Westinghouse Electric Company. In this role, she leads the company's global research and development investments and spearheads a technology strategy to advance the company's innovative nuclear solutions. She brings nearly 25 years of experience to this role, which she has held since January 2022.

This role marks a return for Rita to Westinghouse, where she worked for nearly a decade in senior leadership positions for the Global Technology Development, Fuel Engineering and Product Engineering groups.

During her career, Rita served as Assistant Secretary for Nuclear Energy in the U.S. Department of Energy (DOE) in a U.S. President-appointed and Senate-confirmed role. She led efforts to promote R&D on existing and advanced nuclear technologies that sustain the U.S. fleet of nuclear reactors and enable the deployment of advanced nuclear energy systems.

Rita also has held senior leadership roles with the Idaho National Laboratory as Director of the Gateway for Accelerated Innovation in Nuclear (GAIN) initiative and, most recently, the Electric Power Research Institute (EPRI) as Chief Nuclear Officer and Vice President of Nuclear. Earlier in her career, she led and conducted R&D in advanced nuclear fuel materials for U.S. Naval Reactors at Bechtel Bettis, Inc.

Rita holds advanced degrees in materials science and engineering, including a Ph.D. from the University of Michigan. She is distinguished as an American Nuclear Society Fellow.

## KEYNOTE SESSION

WEDNESDAY, FEBRUARY 22

9:45AM – 10:15AM

ANNENBERG CENTER



**Oded Doron,**  
*Senior Director, Reactor Systems*  
Kairos

**Biography:** Dr. Oded Doron is the Senior Director of Reactor Systems Design at Kairos Power. In this role, he directs teams for the development of the design and analysis for the Reactor Systems of the Kairos Power Fluoride-Salt-Cooled High-Temperature Reactor (KP FHR). His focus is on developing a design that is inherently safe, cost competitive, and can be built and licensed.

Dr. Doron has a wide range of engineering experience and knowledge. He is the third generation in his family to be involved in steel fabrication and engineering. He previously owned the responsibility for the design of several in core components for TerraPower's traveling wave reactor. He managed his family's steel fabrication business and he engineered and stamped the structural steel designs and drawings the company was fabricating. He also worked at Sandia National Laboratory in nuclear forensics, where he worked in the development of sensor technology for the detection of nuclear detonations in urban environments, was awarded an Outstanding Innovation award for a US patent application from his work and was co-inventor on a patent. Dr. Doron also worked in the shielding group at Knolls Atomic Laboratory. Dr. Doron earned his Ph.D. at The University of Texas at Austin (UT) in nuclear engineering in 2007, and his B.S. at UT in mechanical engineering in 2002. He is a Professional Engineer registered in Texas with a dual competence in Mechanical and Nuclear Engineering.

# Plenary Speakers

## IDAHO NATIONAL LABORATORY RESEARCH AND DEVELOPMENT TO ENABLE ADVANCED REACTOR DEMONSTRATIONS AND DEPLOYMENT

THURSDAY, FEBRUARY 23  
9:15AM – 9:45AM  
ANNENBERG CENTER



**Dr. Jess C. Gehin,**  
*Associate Laboratory Director,  
Nuclear Science and Technology  
Idaho National Laboratory*

**Abstract:** As the Department of Energy's Nuclear Energy Laboratory, Idaho National Laboratory (INL) performs research across a broad range of areas enabling the demonstration and deployment of advanced nuclear reactors. Over the course of the next decade, this work will lead to the demonstration of several reactors on and off the INL site that includes the MARVEL microreactor with a planned initial criticality in late 2023, the Department of Defense PELE microreactor in 2024, and working with Southern and TerraPower, the Molten Chloride Reactor Experiment (MCRE) in 2025. In addition, INL is working with other companies, such as Oklo Inc., TerraPower, X-energy, Kairos, Westinghouse and others on their reactor development and demonstrations. This work is supported by INL's unique nuclear energy research and development expertise and capabilities as well as leadership of DOE Office of Nuclear Energy programs, such as the National Reactor Innovation Center (NRIC). Dr. Gehin will provide an INL overview and an update on the capabilities being developed at INL to support reactor development and demonstrations..

**Biography:** Jess Gehin became associate laboratory director for INL's Nuclear Science & 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 DOE Microreactor Program. He expanded NS&T's strategic direction and helped develop and establish key projects to build advanced reactors at INL, such as the Department of Defense's demonstration microreactor Project Pele, and the Microreactor Applications Research Validation and Evaluation (MARVEL) Project. Previously, he held research and leadership positions at Oak Ridge National Laboratory (ORNL) in nuclear reactor core physics, reactor core and system technologies, reactor modeling and simulation, and fuel cycle reactor applications. While at ORNL, 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. His 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.

## ADVANCED NUCLEAR TECHNOLOGY IN DOE'S OFFICE OF NUCLEAR ENERGY

THURSDAY, FEBRUARY 23  
9:45AM – 10:15AM  
ANNENBERG CENTER



**Kenneth Michael (Mike) Goff,**  
*Principal Deputy Assistant Secretary  
U.S. Department of Energy - Office of Nuclear Energy*

**Biography:** Dr. Michael Goff is the Principal Deputy Assistant Secretary for the U.S. Department of Energy's Office of Nuclear Energy. Dr. Goff has more than 30 years of professional experience working in the national laboratories and across the federal government. He served three separate terms as senior advisor to NE and previously worked as assistant director for nuclear energy and senior policy advisor in the Office of Science and Technology Policy for the President of the United States.

Dr. Goff held several research and management positions over his career at Idaho and Argonne national laboratories and has authored more than 70 publications related to the nuclear fuel cycle, including separations technology, high-level waste development, and safeguards.

Dr. Goff has a bachelor's degree, Master of Science, and Ph.D. in nuclear engineering from Georgia Tech.



## WEDNESDAY, FEBRUARY 22

### BREAKFAST

ROOM: 1011C

8:30AM - 9:15AM

### WELCOME AND KEYNOTE PRESENTATIONS

ROOM: HAGLER AUDITORIUM

9:15AM - 10:15AM

Welcome by **Robert Stakenborghs**, *Senior VP of the Technical & Engineering Communities (TEC) Sector* and **Thomas Costabile, P.E.**, *Executive Director and CEO, ASME*.

#### PRESENTERS:



**Thomas Costabile, P.E.**, *Executive Director and CEO, ASME*



**Robert Stakenborghs**, *Senior VP of the Technical & Engineering Communities (TEC) Sector*



**Rita Baranwal**, *Chief Technology Officer, Westinghouse Electric Company*



**Oded Doron**, *Senior Director, Reactor Systems, Kairos*

### REFRESHMENT BREAK

ROOM: LOBBY

10:15AM - 10:30AM

## WEDNESDAY, FEBRUARY 22

### ADVANCED REACTOR RESEARCH PANEL (SESSION 1)

ROOM: 1011B

10:30AM - 12:00PM

#### PRESENTERS:



**Yasir Arafat**, MARVEL



**Paolo Ferroni**, Westinghouse



**Prashant Jain**, Oak Ridge National Laboratory



**Joshua Parker**, BWX Technologies, Inc.

### DIGITAL TWIN WORKSHOP (SESSION 1)

ROOM: HAGLER AUDITORIUM

10:30AM - 12:00PM

**MODERATOR:** Scott Stallard, Twinify

#### PRESENTERS:



**Cormac Ryan**, AVEVA



**Muthu Sivanantham**, Dassault Systems



**Chris Ritter**, Idaho National Lab



**G. Scott Sidener**, Westinghouse

# Schedule

## WEDNESDAY, FEBRUARY 22

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### NETWORKING LUNCH

ROOM: 1011C

12:00PM - 1:00PM

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### REACTOR TECHNOLOGIES (SESSION 1)

ROOM: HAGLER AUDITORIUM

1:00PM - 2:30PM

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#### PRESENTERS:



**Oded Doron**, Kairos



**John Strumpell**, Framatome



**Mark Feltner**, Dow Chemical



**Ian Davis**, X-Energy



**Ramon Serrano**, Westinghouse



**Craig Stover**, EPRI

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### REFRESHMENT BREAK

ROOM: LOBBY

2:30PM - 2:45PM

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## WEDNESDAY, FEBRUARY 22

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### CODE DEVELOPMENT + HARMONIZATION

ROOM: HAGLER AUDITORIUM

2:45PM - 4:30PM

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#### PRESENTERS:



**Thomas Vogan**, Chair, ASME Board on Nuclear Codes & Standards



**William Windes**, Idaho National Laboratory



**Ting-Leung (Sam) Sham**, Idaho National Laboratory



**Kathryn Hyam**, ASME Director of Nuclear Codes and Standards



**Rick Grantom**, CRG Risk



**Marc Albert**, EPRI

## WEDNESDAY, FEBRUARY 22

**ADVANCED REACTOR RESEARCH PANEL (SESSION 2)**  
**ROOM: HAGLER AUDITORIUM 2:45PM - 4:30PM**

**PRESENTERS:**



**Joshua Kaizer**, Nuclear Regulatory Commission



**Ted Garrish**, Deep Borehole Demonstration Center



**Piyush Sabharwall**, Idaho National Laboratory



**Francesco Saverio D'Auria**, University of Pisa

**STRETCH BREAK**  
**ROOM: LOBBY 4:30PM - 4:45PM**

**HARNESSING THE POWER OF STORYTELLING IN THE DIGITAL AGE**  
**ROOM: 1011B 4:45PM - 5:30PM**

**PRESENTERS:**



**Bonita Chester**, Oklo



**Mike Mueller**, US Department of Energy

**OPENING RECEPTION**  
**ROOM: LOBBY 5:30PM - 7:00PM**

Join us for the opening reception and network with your colleagues.

## THURSDAY, FEBRUARY 23

**BREAKFAST**  
**ROOM: 1011C 8:30AM - 9:15AM**

**PLENARY PRESENTATIONS**  
**ROOM: HAGLER AUDITORIUM 9:15AM - 10:15AM**

**PRESENTERS:**

**IDAHO NATIONAL LABORATORY RESEARCH AND DEVELOPMENT TO ENABLE ADVANCED REACTOR DEMONSTRATIONS AND DEPLOYMENT**



**Dr. Jess C. Gehin**, Associate Laboratory Director, Nuclear Science and Technology, Idaho National Laboratory

**ADVANCED NUCLEAR TECHNOLOGY IN DOE'S OFFICE OF NUCLEAR ENERGY**



**Kenneth Michael (Mike) Goff**, Principal Deputy Assistant Secretary, U.S. Department of Energy - Office of Nuclear Energy

**REFRESHMENT BREAK**  
**ROOM: LOBBY 10:15AM - 10:30AM**



# Schedule

## THURSDAY, FEBRUARY 23

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**BREAKFAST**  
ROOM: 1011C 8:30AM - 9:15AM

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**PLENARY PRESENTATIONS**  
ROOM: HAGLER AUDITORIUM 9:15AM - 10:15AM

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### PRESENTERS:

#### IDAHO NATIONAL LABORATORY RESEARCH AND DEVELOPMENT TO ENABLE ADVANCED REACTOR DEMONSTRATIONS AND DEPLOYMENT

**Dr. Jess C. Gehin**  
*Associate Laboratory Director, Nuclear Science and Technology*  
Idaho National Laboratory

#### ADVANCED NUCLEAR TECHNOLOGY IN DOE'S OFFICE OF NUCLEAR ENERGY

**Kenneth Michael (Mike) Goff**  
*Principal Deputy Assistant Secretary*  
U.S. Department of Energy - Office of Nuclear Energy

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**REFRESHMENT BREAK**  
ROOM: LOBBY 10:15AM - 10:30AM

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**REACTOR TECHNOLOGIES PANEL (SESSION 2)**  
ROOM: HAGLER AUDITORIUM 10:30AM - 12:00PM

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### PRESENTERS:



**JJ Arthur**, NuScale



**Bonita Chester**, Oklo



**Edward McGinnis**, Curio



**Steven Unikewicz**, TerraPower

## THURSDAY, FEBRUARY 23

### PRESENTERS (CONTINUED):



**Raj Iyengar**, USNRC



**Guoqiang Wang**, PNNL

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**NETWORKING LUNCH**  
ROOM: 1011C 12:00PM - 1:00PM

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**MODULAR CONSTRUCTION PANEL**  
ROOM: 1011B 1:00PM - 2:30PM

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### PRESENTERS:



**Amit Varma**, Purdue University



**Bradley Tomer**, Idaho National Laboratory



**Kai Zhang**, Bechtel



**Bret Tegeler**, Westinghouse



**Add Mark Albert**, EPRI

## THURSDAY, FEBRUARY 23

### DIGITAL TWIN WORKSHOP (SESSION 2)

ROOM: HAGLER AUDITORIUM

1:00PM - 2:30PM

MODERATOR: Scott Stallard, Twinify

#### PRESENTERS:



Steven Unikewicz, TerraPower



Raj Iyengar, USNRC



Hasan Charkas, EPRI



Ralph Hill, ASME



Kathryn Hyam, ASME

### REFRESHMENT BREAK

ROOM: LOBBY

2:30PM - 2:45PM

### NAVIGATING THE NUCLEAR NARRATIVE WITH HUFFPOST

ROOM: 1011B

2:45PM - 3:30PM

#### PRESENTERS:



Bonita Chester, Oklo



Alexander Kaufman, HuffPost

## THURSDAY, FEBRUARY 23

### STRETCH BREAK

ROOM: LOBBY

3:30PM - 3:45PM

### ADVANCED REACTOR RESEARCH PANEL (SESSION 3)

ROOM: 1011B

3:45PM - 5:15PM

#### PRESENTERS:



Steve Herring, Pathfinder Energy Developments



Jordan Robison, Natura Resources, LLC



Tanaka Masaaki, Japan Atomic Energy Agency



DeLeah Lockridge, Oak Ridge National Laboratory

### TOUR AND NETWORKING EVENT

ROOM: CASMR

5:45PM - 7:15PM

\*\*Shuttle service from lobby to the lab and hotel

**Description:** Attendees will visit the Center for Advanced Small Modular and Micro Reactors (CASMR). The center conducts and promotes research and development and innovation and education, and identifies the cross-cutting technologies that support the deployment of small modular reactors and microreactors for clean and safe energy. This focus benefits industry, regulation, national labs, NASA and the U.S. Department of Defense.

## Sponsors

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# Westinghouse

### WESTINGHOUSE

Westinghouse Electric Company is the world's pioneering nuclear energy company and a leading supplier of nuclear plant products and technologies to utilities throughout the world. Westinghouse supplied the world's first commercial pressurized water reactor in 1957. Today, Westinghouse technology is the basis for approximately one-half of the world's operating nuclear plants.

For more information please visit our website:

<https://westinghouse.com/>



## THANK YOU TO OUR VOLUNTEERS!

Thank you to our volunteers! Without their dedication and time commitment, CARD could not be a successful conference.

### ASME 2022 CARD CONFERENCE ORGANIZERS

Conference Chair	Nicholas McMurray
Conference Co-Chair	Robert Stakenborghs
Technical Program Co-Chair	Yassin Hassan
Technical Program Co-Chair	Guoqiang Wang
Technical Program Co-Chair	Asif Arastu

### ASME 2022 CARD CONFERENCE ORGANIZERS

Chair, Communication Panels	Bonita Chester
Conference Advisor	Nicole Dyess
Chair, Digital Twins Workshop	Richard Laudenat
Conference Advisor	Kelly McGrath
Conference Advisor	Frank Michell
Conference Advisor	Ying-Feng Pang
Co-Chair, Reactor Technology	Maury Pressburger
Conference Advisor	Michael Roy
Chair, Modular Construction Panel	Craig Stover
Chair, Code Development Panels	Tom Vogan



The background is a green-tinted photograph of an industrial facility, likely a power plant, featuring several large cooling towers and smokestacks emitting plumes of smoke. A white network diagram with nodes and connecting lines is overlaid on the image. A thick white horizontal line is positioned above the main text.

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**See you  
in 2024!**

<https://event.asme.org/CARD>