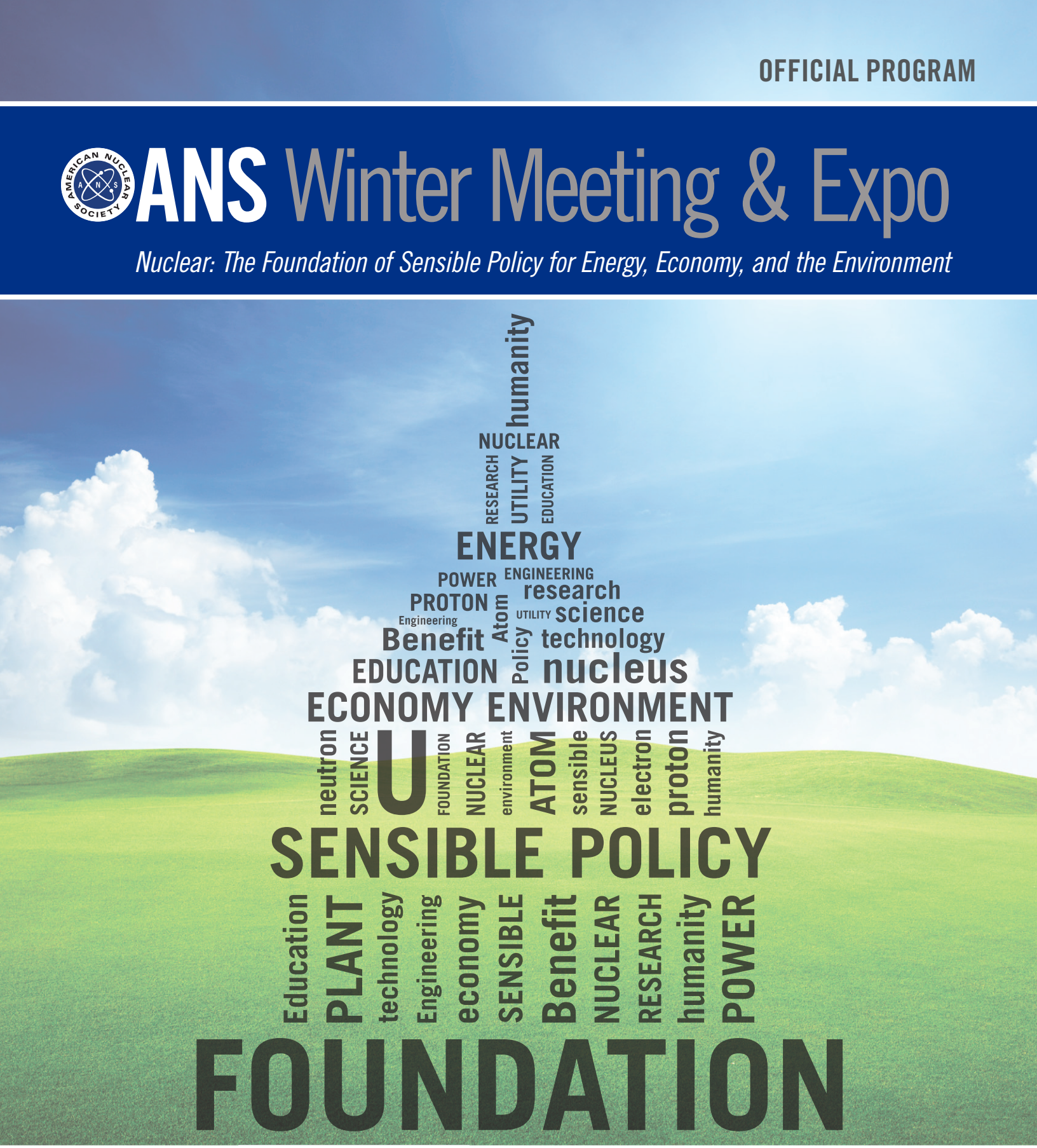
OFFICIAL PROGRAM

ANS Winter Meeting & Expo

Nuclear: The Foundation of Sensible Policy for Energy, Economy, and the Environment



November 8-12, 2015
Marriott Wardman Park
Washington, DC

ANS National Meeting

2015 Winter Meeting and Technology Expo

Elite Sponsorship

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2015 ANS Winter Meeting

"Nuclear-The Foundation of Sensible Policy for Energy, Economy and the Environment"

General Chair:
Donald R. Hoffman
EXCEL Services Corporation

Assistant General Chair:
James W. Behrens
U.S. Navy (Retired)

Assistant General Chair:
Paul T. Dickman
Argonne National Laboratory

Technical Program Chair:
Jim Byrne
Byrne and Associates, LLC

Assistant Technical Program Chair:
Sue Aggarwal
NMNTI

Assistant Technical Program Chair:
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Idaho National Laboratory

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Howard - Johnson Associates

Finance Co-Chair:
Tom Snow
Consultant (Dominion Retiree)

Media Co-Chair:
Mimi Holland Limbach
Potomac Communications Group

Media Co-Chair:
Jud Simmons
BWXT

Technical Tour Co-Chair:
Robert E. McMahon
AFRRI

Technical Tour Co-Chair:
Jonathan K. Witter
Babcock & Wilcox

Student Program Co-Chair:
Nicole Waugh
Virginia Commonwealth University

Student Program Co-Chair:
Travis C. Dietz
University of Maryland

SATURDAY, NOVEMBER 7

7:00 a.m.-4:00 p.m.	Registration
7:30-8:30 a.m.	Continental Breakfast
7:30 a.m.-5:30 p.m.	Workshop for Science Teachers
8:30 a.m.-5:30 p.m.	Young Professionals Congress: Sessions

SUNDAY, NOVEMBER 8

7:00 a.m.-7:00 p.m.	Registration
1:00-1:30 p.m.	First-Time Attendee Orientation
4:00-5:00 p.m.	Student Program Q & A Meeting
5:00-6:00 p.m.	Mentoring Program
6:00-8:00 p.m.	ANS President's Reception in Technology Expo *(Sponsored by: Entergy)*
6:00-8:00 p.m.	ANS Nuclear Technology Expo

MONDAY, NOVEMBER 9

7:00 a.m.-5:30 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast in Technology Expo *(Sponsored by: Southern Nuclear)*
7:00 a.m.-5:00 p.m.	ANS Nuclear Technology Expo
7:30-9:30 a.m.	Spouse/Guest Hospitality
8:00-11:30 a.m.	Opening Plenary Session: *Nuclear: The Foundation of Sensible Policy for Energy, Economy, and the Environment (Sponsored by: EXCEL Services Corporation)*
11:30 a.m.-1:00 p.m.	Luncheon in Technology Expo
1:00-4:00 p.m.	ANS Winter Meeting: Technical Sessions
1:00-4:00 p.m.	ANS Technical Poster Session in Technology Expo
4:00-4:30 p.m.	Afternoon Break in Technology Expo *(Sponsored by: Duke Energy)*
4:30-6:30 p.m.	ANS President's Special Session: *Long-Term Operation of the U.S. Commercial Nuclear Fleet - Sustaining a National Asset*
6:30-9:00 p.m.	Operations & Power Division Dinner

TUESDAY, NOVEMBER 10

7:00 a.m.-5:30 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast in Technology Expo *(Sponsored by: GE Hitachi)*
7:00 a.m.-5:00 p.m.	ANS Nuclear Technology Expo
7:30-9:30 a.m.	Spouse/Guest Hospitality
8:00 a.m.-12:00 p.m.	ANS Winter Meeting: Technical Sessions
11:00 a.m.-1:00 p.m.	Student Poster Session in Technology Expo
11:30 a.m.-1:00 p.m.	Luncheon in Technology Expo
1:00-4:00 p.m.	ANS Winter Meeting: Technical Sessions
4:00-4:30 p.m.	Afternoon Break in Technology Expo *(Sponsored by: National Nuclear Laboratory)*
4:30-7:00 p.m.	General Chair's Special Session: *Nuclear Energy: The Federal and State Approach to Compliance with the Clean Power Plan (CPP)*
6:30-8:30 p.m.	ANS Speakers Bureau Workshop
8:00-10:00 p.m.	Special Evening Event with The Capitol Steps *(Compliments of the 2015 General Chair, Donald R. Hoffman)*

AccApp '15 Schedule

7:00-8:00 a.m.	Continental Breakfast in Technology Expo
8:30-11:30 a.m.	AccApp '15: Plenary Session—I
11:30 a.m.-1:00 p.m.	Luncheon in Technology Expo
1:00-3:15 p.m.	AccApp '15: Technical Sessions
4:00-4:30 p.m.	Afternoon Break in Technology Expo *(Sponsored by: National Nuclear Laboratory)*
3:30-6:00 p.m.	AccApp '15: Technical Sessions

Schedule at a Glance

WEDNESDAY, NOVEMBER 11

7:00 a.m.-5:30 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
7:30-9:30 a.m.	Spouse/Guest Hospitality
8:00 a.m.-12:00 p.m.	ANS Winter Meeting: Technical Sessions
11:30 a.m.-1:00 p.m.	Luncheon
1:00-4:00 p.m.	ANS Winter Meeting: Technical Sessions
4:00-4:30 p.m.	Afternoon Break *(Sponsored by: Pacific Gas and Electric Company)*
4:00-6:00 p.m.	ANS Communications Workshop: *Talking about Nuclear Energy with Policy Makers - Please note: If you intend to participate in Storm the Hill Day, the ANS Communications Workshop is required. (Sponsored by: Exelon Generation)*
4:30-7:00 p.m.	ANS Winter Meeting: Technical Sessions

AccApp '15 Schedule

7:00-8:00 a.m.	Continental Breakfast
8:30-11:30 a.m.	AccApp '15: Plenary Session—II
11:30 a.m.-1:00 p.m.	Luncheon
1:00-3:15 p.m.	AccApp '15: Technical Sessions
4:00-4:30 p.m.	Afternoon Break *(Sponsored by: Pacific Gas and Electric Company)*
3:30-6:00 p.m.	AccApp '15: Technical Sessions

THURSDAY, NOVEMBER 12

7:00 a.m.-3:00 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
8:00 a.m.-12:00 p.m.	ANS Winter Meeting: Technical Sessions
8:30-11:30 a.m.	Technical Tour: Armed Forces Radiobiology Research Institute (AFRRI)
8:30-11:30 a.m.	Technical Tour: NRC Operations Center
1:00-4:00 p.m.	ANS Winter Meeting: Technical Sessions

Young Professionals Congress

9:00 a.m.-3:00 p.m.	Young Professionals Congress - Capitol Hill Visit: Storm the Hill - *Please note: To participate in Storm the Hill Day, attendees are required to attend the ANS Communications Workshop on Wednesday*

AccApp '15

7:00-8:00 a.m.	Continental Breakfast
8:30-11:30 a.m.	AccApp '15: Plenary Session—III
1:00-3:15 p.m.	AccApp '15: Technical Sessions
3:30-6:00 p.m.	AccApp '15: Technical Sessions
6:30-9:30 p.m.	AccApp '15: Poster Session

FRIDAY, NOVEMBER 13

AccApp '15

7:30 a.m.-3:00 p.m.	Registration
7:30-8:30 a.m.	Continental Breakfast
8:30-11:00 a.m.	AccApp '15: Technical Sessions
10:45-11:00 a.m.	Morning Break
11:00 a.m.-1:30 p.m.	AccApp '15: Technical Sessions
2:30-4:30 p.m.	AccApp '15: Closing Plenary Session

Saturday and Sunday, November 7-8		Location
Saturday		
7:00 a.m.-4:00 p.m.	**Registration**	Registration Desk, Lobby Level
7:30 a.m.-5:30 p.m.	**Workshop for Science Teachers**	Lincoln 2
Sunday		
7:00 a.m.-7:00 p.m.	**Registration**	Registration Desk, Lobby Level
1:00-1:30 p.m.	**First-Time Attendee Orientation**	Washington 5
4:00-5:00 p.m.	**Student Program Q&A Meeting**	Virginia A
5:00-6:00 p.m.	**Mentoring Program**	Marriott Balcony A *(Mezzanine Level)*
6:00-8:00 p.m.	**ANS President's Reception in Technology Expo** *(Sponsored by: Entergy)*	Exhibit Hall A
6:00-8:00 p.m.	**ANS Nuclear Technology Expo**	Exhibit Hall A

Monday, November 9		Location
7:00 a.m.-5:30 p.m.	**Registration**	Registration Desk, Lobby Level
7:00-8:00 a.m.	**Continental Breakfast in Technology Expo** *(Sponsored by: Southern Nuclear)*	Exhibit Hall A
7:00 a.m.-5:00 p.m.	**ANS Nuclear Technology Expo**	Exhibit Hall A
7:30-9:30 a.m.	**Spouse/Guest Hospitality**	Park Tower 8206
8:00-11:30 a.m.	**Opening Plenary Session:** *Nuclear: The Foundation of Sensible Policy for Energy, Economy, and the Environment (Sponsored by: EXCEL Services Corporation)*	Marriott Ballroom
11:30 a.m.-1:00 p.m.	**Luncheon in Technology Expo**	Exhibit Hall A
1:00-4:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• International Perspective of Electrochemical Recycling–Panel	Delaware A
	• Current Issues in Computational Methods–Roundtable	Delaware B
	• Nuclear Techniques for Material Analysis	Maryland B
	• Special Panel Session—The Legacy of NCS Pioneer Joe Thomas	Maryland C
	• Continuing the Commitment to Ethics–Panel	Madison A
	• Accident Tolerant Fuels	Madison B
	• Two-Phase Flow	Washington 2
	• Focus on Communications: Communicating with Policy Makers–Panel	Washington 3
	• Focus on Communications: Meet the Media–Panel	Washington 3
	• Nuclear Fission: A Reliable and Clean Energy Source, Essential to Sustainable Development and to Reducing GHG Emissions–Panel	Washington 4
	• Reactor Physics Design, Validation, and Operating Experience—I	Washington 5
	• Latest Advancements in Aerospace Nuclear Science and Technology	Washington 6
	• The 2015 Dwight D. Eisenhower Award Special Session–Panel	Maryland A
1:00-4:00 p.m.	**ANS Technical Poster Session in Technology Expo**	Exhibit Hall A
4:00-4:30 p.m.	**Afternoon Break in Technology Expo** *(Sponsored by: Duke Energy)*	Exhibit Hall A
4:30-6:30 p.m.	**ANS President's Special Session:** *Long-Term Operation of the U.S. Commercial Nuclear Fleet - Sustaining a National Asset*	Marriott 2 & 3
6:30-9:00 p.m.	**Operations & Power Division Dinner**	Stone's Throw Restaurant

ANS Winter Meeting Daily Schedule

Tuesday, November 10		Location
7:00 a.m.-5:30 p.m.	**Registration**	Registration Desk, Lobby Level
7:00-8:00 a.m.	**Continental Breakfast in Technology Expo** *(Sponsored by: GE Hitachi)*	Exhibit Hall A
7:00 a.m.-5:00 p.m.	**ANS Nuclear Technology Expo**	Exhibit Hall A
7:30-9:30 a.m.	**Spouse/Guest Hospitality**	Park Tower 8206
8:00 a.m.-12:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Re-Establishing Plutonium-238 Production in the United States	Delaware A
	• Current Topics in Probabilistic Risk Analysis	Delaware B
	• Robotics and Remote Systems: General	Maryland A
	• Decommissioning and Environmental Sciences: General	Maryland A
	• Radiation Protection and Shielding: Computational Methods and Applications	Maryland B
	• Data Analysis and Operations in Nuclear Criticality Safety	Maryland C
	• Thermal Hydraulics Education–Panel	Madison A
	• Nuclear Structural Materials	Madison B
	• Thermal Hydraulics: General—I	Washington 2
	• Student Design Competition	Washington 3
	• All Energy Forum	Washington 4
	• Reactor Physics Design, Validation, and Operating Experience—II	Washington 5
	• Advances in Fast Reactor Designs and Concepts	Washington 6
	• Nuclear Data Needs for National Security–Panel	Washington 1
	• University Consortia for Nuclear Nonproliferation Research and Development–Panel	Washington 1
10:00 a.m.-12:00 p.m.	**ANS Winter Meeting: Technical Session**	
	• Enhancement of Risk-Informed Decision Making Against External Natural Events - Major Issues and R&Ds for the Enhancement–Panel	Marriott 2 & 3
11:00 a.m.-1:00 p.m.	**Student Poster Session in Technology Expo**	Exhibit Hall A
11:30 a.m.-1:00 p.m.	**Luncheon in Technology Expo**	Exhibit Hall A
1:00-4:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Collaborative R&D for Future Nuclear Energy–Panel	Delaware A
	• Nuclear Installations Safety: General	Delaware B
	• Decommissioning Regulatory Requirements for Nuclear Power Plants–Panel	Maryland A
	• Advances in Radiation Detection and Measurement	Maryland B
	• Innovations in Fuel Cycle Research—A Student Competition	Maryland C
	• Fusion Energy—Devices and Applications	Madison A
	• Overview of National Lab Facilities for Radioactive Material	Madison B
	• Experimental Thermal Hydraulics—I	Washington 2
	• Education and Training: General—I	Washington 3
	• New Nuclear Construction Around the World—Status Report–Panel	Washington 4
	• Reactor Analysis Methods—I	Washington 5
	• Reactor Physics: General—I	Washington 6
	• Rationalizing Recycling in a Nonproliferation World: An ANS Public Policy Track–Panel	Washington 1
4:00-4:30 p.m.	**Afternoon Break in Technology Expo** *(Sponsored by: National Nuclear Laboratory)*	Exhibit Hall A
4:30-7:00 p.m.	**General Chair's Special Session:** *Nuclear Energy: The Federal and State Approach to Compliance with the Clean Power Plan (CPP)*	Marriott 2 & 3
6:30-8:30 p.m.	**ANS Speakers Bureau Workshop**	Marriott 1
8:00-10:00 p.m.	**Special Evening Event with The Capitol Steps** *(Compliments of the 2015 General Chair, Donald R. Hoffman)*	Marriott 2 & 3

Wednesday, November 11		Location
7:00 a.m.-5:30 p.m.	**Registration**	Registration Desk, Lobby Level
7:00-8:00 a.m.	**Continental Breakfast**	
7:30-9:30 a.m.	**Spouse/Guest Hospitality**	Park Tower 8206
8:00 a.m.-12:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Updates on Nuclear Waste Repository Projects	Delaware A
	• Progress in U.S. DOE's Fuel Cycle R&D Program–Panel	Delaware B
	• Nuclear Politics: Perspectives from ANS Congressional Fellows and Nuclear Advocates–Panel	Maryland A
	• Student Conference Proposal Writing and Planning–Panel	Maryland A
	• Transport Methods: Monte Carlo and Radiative Transfer	Maryland B
	• Uncertainty Quantification and Sensitivity Analysis Methods	Maryland B
	• Recent Nuclear Criticality Safety Program Accomplishments (Dedicated to Adolf Garcia)	Maryland C
	• Radiation Protection and Shielding of Fusion and Fission Power Systems	Madison A
	• Radiation Protection and Shielding–Roundtable	Madison A
	• Nuclear Fuels, Performance Testing, and Disposition	Madison B
	• Young Professional Thermal Hydraulics Research Competition	Washington 2
	• Computational Fluid Dynamics (CFD) V&V	Washington 2
	• Patents for Nuclear Professionals–Panel	Washington 3
	• The Importance of Professional Engineering Licensure in the Nuclear Industry–Panel	Washington 3
	• Operations and Power: General	Washington 4
	• Reactor Analysis Method—II	Washington 5
	• Reactor Physics: General—II	Washington 6
	• Proliferation Risk and Sustainability of Nuclear Energy Systems–Panel	Washington 1
11:30 a.m.-1:00 p.m.	**Luncheon**	
1:00-4:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Public Perception of Risk: Strategies to Address the "Perception Gap" with Nuclear Technologies–Panel	Delaware A
	• Integrated Spent Nuclear Fuel Management Analysis Capabilities—I	Delaware B
	• Human Factors, Instrumentation, and Controls: General	Maryland A
	• Transport Methods: Deterministic	Maryland B
	• NDA Issues Affecting Nuclear Criticality Safety–Panel	Maryland C
	• Thermal-Hydraulic Challenges and Opportunities in the Licensing of Advanced Reactors–Panel	Madison A
	• MOX Fabrication and Performance	Madison B
	• Computational Thermal Hydraulics—I	Washington 2
	• Education and Training: General—II	Washington 3
	• Policy Issues for New Reactors, a Retrospective–Panel	Washington 4
	• Reactor Analysis Methods—III	Washington 5
	• Reactor Physics: General—III	Washington 6
	• Nuclear Nonproliferation Policy: General–Panel	Washington 1
4:00-4:30 p.m.	**Afternoon Break** *(Sponsored by: Pacific Gas and Electric Company)*	
4:00-6:00 p.m.	**ANS Communications Workshop:** *Talking about Nuclear Energy with Policy Makers - Please note: If you intend to participate in Storm the Hill Day, the ANS Communications Workshop is required. Sponsored by Exelon Generation*	Marriott 1
4:30-7:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Recycle and Reuse of Used Nuclear Fuel Resources	Delaware A

Wednesday, November 11 (continued)		Location
	• Integrated Spent Nuclear Fuel Management Analysis Capabilities—II	Delaware B
	• Computational Methods: General	Maryland B
	• Operator Interactions and Control Room Support Systems	Maryland C
	• Computational Tools for Radiation Protection and Shielding	Madison A
	• Young Members Group: General	Madison B
	• Computational Thermal Hydraulics—II	Washington 2
	• Small Modular Reactors	Washington 4
	• Isotopes and Radiation: General	Washington 5
	• Nuclear Data Experiments, Evaluations, and Benchmarks	Washington 6
	• Nuclear Power Under the Clean Power Plan–Panel	Washington 3

Thursday, November 12		Location
7:00 a.m.-3:00 p.m.	**Registration**	Registration Desk, Lobby Level
7:00-8:00 a.m.	**Continental Breakfast**	
8:00 a.m.-12:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Fuel Cycle and Waste Management: General—I	Washington 1
	• Postdoctoral Experience at a National Laboratory: A Nuclear Engineering Perspective–Panel	Delaware B
	• Nuclear Power Plant Condition Monitoring	Delaware A
	• ANS-8 Standards–Forum	Virginia B
	• Transient Fuel Performance and Testing–Panel	Madison B
	• Experimental Thermal Hydraulics—II	Washington 2
	• Research by U.S. DOE NEUP-Sponsored Students—I	Washington 3
	• Advanced/Gen-IV Reactors—I	Washington 4
	• Physics in Fusion and Sub-Critical Systems	Washington 5
	• Reactor Physics: General—IV	Washington 6
8:30-11:30 a.m.	**Technical Tour: Armed Forces Radiobiology Research Institute (AFRRI)**	Armed Forces Radiobiology Research Institute
8:30-11:30 a.m.	**Technical Tour: NRC Operations Center**	Nuclear Regulatory Commission Center
12:00-1:00 p.m.	**Lunch Break (Lunch not provided)**	
1:00-4:00 p.m.	**ANS Winter Meeting: Technical Sessions**	
	• Fuel Cycle and Waste Management: General—II	Washington 1
	• Unstructured Mesh with MCNP–Tutorial	Madison A
	• Thermal Hydraulics: General—II	Washington 2
	• Research by U.S. DOE NEUP-Sponsored Students—II	Washington 3
	• Advanced/Gen-IV Reactors—II	Washington 4

Saturday, November 7	Young Professionals Congress	Location
Saturday		
7:00 a.m.-4:00 p.m.	**Registration**	Registration Desk, Lobby Level
7:30-8:30 a.m.	**Continental Breakfast**	Lincoln 3 Foyer
8:30-9:00 a.m.	**Young Professionals Congress: Opening Remarks**	Lincoln 3
9:00-9:45 a.m.	**Young Professionals Congress: Keynote Speeches I and II**	Lincoln 3
10:00-11:45 a.m.	**Young Professionals Congress: Sessions**	
	• Exchanging Ideas: How to Communicate Effectively	Lincoln 3
	• Work Life Balance Wisdom	Lincoln 3
12:00-1:00 p.m.	**Lunch Break (Lunch not provided)**	
1:15-2:45 p.m.	**Young Professionals Congress: Sessions**	
	• Influencing the Industry	Lincoln 4
	• Making a Difference at the Labs: a DOE, Congress and IAEA Perspective	Lincoln 3
	• Staying in School: Graduation in Postdoc and Beyond	Taft
3:00-4:45 p.m.	**Young Professionals Congress: Sessions**	
	• The Cacophony of Codes: Understanding the Landscape	Lincoln 4
	• Acquaint Yourself with Nuclear Advocacy	Lincoln 3
	• Accomplish More with ANS	Taft
5:00-5:30 p.m.	**Young Professionals Congress: Closing Remarks**	Lincoln 3

Thursday, November 12	Young Professionals Congress	Location
9:00 a.m.-3:00 p.m.	**Young Professionals Congress-Capitol Hill Visit: Storm the Hill Day** - *Please note: ANS Communications Workshop on Wednesday is required.*	Capitol Hill

AccApp '15 Daily Schedule

Tuesday, November 10	Embedded Topical: AccApp '15 Schedule	Location
7:00-8:00 a.m.	**Continental Breakfast in Technology Expo**	Exhibit Hall A
8:30-11:30 a.m.	**AccApp '15: Plenary Session—I**	Virginia A
11:30 a.m.-1:00 p.m.	**Luncheon in Technology Expo**	Exhibit Hall A
1:00-3:05 p.m.	**AccApp '15: Technical Sessions**	
	• Accelerator Design & Technology—I	Virginia A
	• Materials Research with Accelerators—I	Virginia B
	• Accelerators for the Life Sciences—I	Viginia C
4:00-4:30 p.m.	**Afternoon Break in Technology Expo** *(Sponsored by: National Nuclear Laboratory)*	Exhibit Hall A
3:30-6:00 p.m.	**AccApp '15: Technical Sessions**	
	• Accelerator Design & Technology—II	Virginia A
	• Materials Research with Accelerators—II	Virginia B
	• Accelerators for the Life Sciences—II	Virginia C

Wednesday, November 11	Embedded Topical: AccApp '15 Schedule	Location
7:00-8:00 a.m.	**Continental Breakfast**	
8:30-11:30 a.m.	**AccApp '15: Plenary Session—II**	Virginia A
11:30 a.m.-1:00 p.m.	**Luncheon**	
1:00-3:05 p.m.	**AccApp '15: Technical Sessions**	
	• Accelerator Production of Radioisotopes—I	Virginia A
	• Accelerator Facilities—I	Virginia B
	• Accelerators for ADS—I	Virginia C
4:00-4:30 p.m.	**Afternoon Break** *(Sponsored by: Pacific Gas and Electric Company)*	
3:30-6:00 p.m.	**AccApp '15: Technical Sessions**	
	• Accelerator Production of Radioisotopes—II	Virginia A
	• Accelerator Facilities—II	Virginia B
	• Accelerators for ADS—II	Virginia C

Thursday, November 12	Embedded Topical: AccApp '15 Schedule	Location
7:00-8:00 a.m.	**Continental Breakfast**	
8:30-11:30 a.m.	**AccApp '15: Plenary Session—III**	Virginia A
1:00-3:05 p.m.	**AccApp '15: Technical Sessions**	
	• High-Power Accelerators and High-Power Spallation Targets—I	Virginia A
	• Accelerators for Monitoring the Environment—I	Virginia B
	• Nuclear Data—I	Virginia C
3:30-6:00 p.m.	**AccApp '15: Technical Sessions**	
	• High-Power Accelerators and High-Power Spallation Targets—II	Virginia A
	• Materials Research with Accelerators—III	Virginia B
	• Nuclear Data—II	Virginia C
6:30-9:30 p.m.	**AccApp '15: Poster Session–All Tracks**	Delaware AB

Friday, November 13	Embedded Topical: AccApp '15 Schedule	Location
7:30-8:30 a.m.	**Continental Breakfast**	Virginia Foyer
7:30 a.m.-3:00 p.m.	**Registration**	Lobby Registration Desk
8:30-10:35 a.m.	**AccApp '15: Technical Sessions**	
	• High-Power Accelerators and High-Power Spallation Targets—III	Virginia A
	• Accelerators for the Life Sciences—III	Virginia B
	• Industrial Applications—I	Maryland A
	• Accelerator Design & Technology—III	Maryland B
10:45-11:00 a.m.	**Morning Break**	
11:00 a.m.-1:30 p.m.	**AccApp '15: Technical Sessions**	
	• High-Power Accelerators and High-Power Spallation Targets—IV	Virginia A
	• Accelerators for Monitoring the Environment—II	Virginia B
	• Industrial Applications—II	Maryland A
	• Accelerator Facilities—III	Maryland B
2:30-4:30 p.m.	**AccApp '15: Closing Plenary**	Virginia A

Registration

Meeting registration and the speaker check-in desk will be located on the Lobby Level near the Marriott Ballroom, at the Marriott Wardman Park, Saturday, November 7-Friday, November 13.

Meeting registration is required for all attendees and presenters. Name badges must be worn during all technical sessions and events.

Registration Hours:

- **Saturday, November 7:00 a.m.-4:00 p.m.**
- **Sunday, November 8: 7:00 a.m.-7:00 p.m.**
- **Monday, November 9: 7:00 a.m.-5:30 p.m.**
- **Tuesday, November 10: 7:00 a.m.-5:30 p.m.**
- **Wednesday, November 11: 7:00 a.m.-5:30 p.m.**
- **Thursday, November 12: 7:00 a.m.-3:00 p.m.**
- **Friday, November 13: 7:30 a.m.-3:00 p.m.**

Notice for Speakers

All speakers and session chairs must sign in at the Speaker/Ribbon Desk, located in the ANS Registration Area of the hotel during registration hours.

ANS Technology Expo Hours:

Sunday: 6:00-8:00 p.m. *(reception)*
Monday: 7:00 a.m.-5:00 p.m. *(breakfast, lunch, breaks)*
Tuesday: 7:00 a.m.-5:00 p.m. *(breakfast, lunch, breaks)*

Additional information can be found on page 80

ANS Conference Office

Sunday, November 8, through Thursday, November 12 from 8:00 a.m.- 5:00 p.m. Location: Park Tower 8211

About ANS

To view the ANS Bylaws, Mission and Code of Ethics make sure to visit www.ans.org/about.

OUR EVENT HAS GONE MOBILE!

See page 86 for the QR Code

ANS Member Business Center

Saturday - Wednesday
8:00 a.m.-5:00 p.m.

Thursday - Friday
8:00 a.m.-3:00 p.m.

Location:
Park Tower 8212

ANS Media Center

Monday
8:00 a.m.-5:00 p.m.

Tuesday
8:00 a.m.-5:00 p.m.

Wednesday
8:00 a.m.-5:00 p.m.

Location:
Park Tower 8205

Attendee Meal Functions

Breakfast, breaks and lunches will be provided to all registered attendees, Monday - Wednesday.

Please note: Monday & Tuesday - All offered meals will be in the Expo Hall.

First-Time Attendee Orientation

The ANS Membership Committee will offer an orientation session for first-time ANS meeting attendees.

Learn what goes on at national meetings, how the national organization works, and how to get involved at the national and local levels.

Whether you are a member or not, student or professional, if this is your first ANS national meeting, the Membership Committee invites you to attend this session, which will be held on Sunday, November 8, 1:00-1:30 p.m. Location: Washington 5

Student Program

Attendance at the 2015 ANS Winter Meeting is an exciting professional opportunity for college and graduate students.

For information on the Student Program, see the Student Program Instructions document on the Winter Meeting web page. The Student Program Q&A Meeting will be held Sunday, November 8, 4:00-5:00 p.m. Location: Virginia A.

Student Office is located in Park Tower 8210.

Mentoring Program

A special mentoring program will be held from 5:00-6:00 p.m. on Sunday.

ANS Members who serve as mentors hold a variety of positions within the Society, serving on governance committees and working within the divisions. The mentors encompass a wide range of careers and technical specialties, all of which they hope to share with first-time attendees, student members, new members and those seeking career advancement and networking opportunities. Location: Balcony A, Mezzanine Level.

Spouse/Guest Hospitality

Continental breakfast will be served 7:30-9:30 a.m., Monday through Wednesday.

Spouse/Guest registration is required for admittance to the Spouse/Guest breakfast and President's Reception. No other events are included. Location: Park Tower 8206

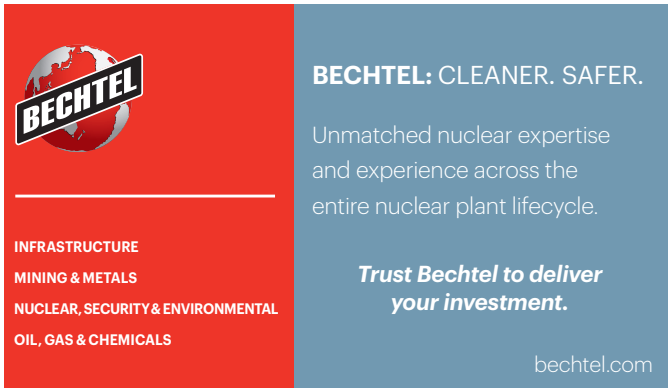
Attention Runners: ANS Fun Run

On Tuesday, November 10 there will be a noncompetitive run starting at 6:00 a.m. from the lobby entrance of the hotel.

We hope you can join us. Bring shoes and a big smile.

Consent To Use Photographs And Videos

All attendance of registered participants, attendees, exhibitors, sponsors and guests ("you") at American Nuclear Society ("ANS") meetings, courses, conventions, conferences, or related activities ("Events") constitutes an agreement between you and ANS regarding the use and distribution of your image, including but not limited to your name, voice and likeness ("Image"). By attending the ANS Events, you acknowledge and agree that photographs, video, and/or audio recordings may be taken of you and you grant ANS the right to use, in perpetuity, your Image in any electronic or print distribution, or by other means hereinafter created, both now and in the future, for media, art, entertainment, promotional, marketing, advertising, trade, internal use, educational purposes or any other lawful purpose.
For any questions or concerns about the use of your Image, please contact the ANS Meetings & Exhibits Department at meetings@ans.org.



ANS PRESIDENT'S RECEPTION

Location: Technology Expo - Exhibit Hall A
Sunday, November 8 • 6:00-8:00 p.m.

All attendees are invited to enjoy an evening of networking.
This event is included in your full meeting registration and the full guest fee.
Additional tickets for guests may be purchased for $85. A badge is required to enter the Exhibit Hall.

Sponsored by: Entergy

OPENING PLENARY SESSION

NUCLEAR: THE FOUNDATION OF SENSIBLE POLICY FOR ENERGY, ECONOMY, AND THE ENVIRONMENT

Location: Marriott Ballroom
Monday, November 9 • 8:00-11:30 a.m.

Chair: Donald R. Hoffman *(EXCEL Services Corporation)*

Nuclear's recognized contribution to the nation's energy, economy, and environment, varies according to Federal and State governing policies. Senior industry and government leaders will discuss current policies, their impact and the significance of new policies for the benefit of the nation's energy, economy and environment.

Speakers:

- Stephen G. Burns - Chairman *(U.S. Nuclear Regulatory Commission)*
- Thomas Countryman - Assistant Secretary of State for International Security and Nonproliferation
- Joyce L. Connery - Chairman *(Defense Nuclear Facilities Safety Board)*
- Susan Eisenhower - Chairman, *(Eisenhower Institute)*
- Andrew Kambour, Senior Policy Analyst *(Environment, Energy & Transportation Division National Governors Association)*

ATTENTION: In honor of Veterans Day, all active, retired or veteran members of the Uniformed Services will be recognized at the plenary, including a group photo to follow. Wearing of badges, medals, insignia or uniforms is encouraged.

Sponsored by: EXCEL SERVICES CORPORATION NUCLEAR ENGINEERING CONSULTING

ANS PRESIDENT'S SPECIAL SESSION

LONG-TERM OPERATION OF THE U.S. COMMERCIAL NUCLEAR FLEET - SUSTAINING A NATIONAL ASSET

Location: Marriott 2 & 3
Monday, November 9 • 4:30-6:30 p.m.

Session Organizers: Kathryn McCarthy *(INL)* and Angelina Howard *(Howard - Johnson Associates)*
Cochairs: Eugene S. Grecheck *(ANS President)* and Kathryn McCarthy *(INL)*

Nuclear energy has safely, reliably, and economically contributed almost 20% of electrical generation in the U.S. over the past two decades. It remains the single largest contributor (more than 60%) of non-greenhouse-gas-emitting power. If nuclear power plants do not operate beyond their current license periods (and new plants are not built quickly enough to replace them), the total fraction of electrical energy from clean nuclear power will rapidly decline.
Senior nuclear industry leaders and energy policy experts will discuss policy issues associated with long-term operation of the U.S. commercial nuclear fleet, including second license renewal.

Panelists:

- Judd Gregg, Former U.S. Senator of New Hampshire
- Joseph Dominguez, Executive Vice President, Governmental and Regulatory Affairs and Public Policy *(Exelon Corporation)*
- David A. Heacock, President and Chief Nuclear Officer *(Dominion Nuclear)*
- John Kotek, Acting Assistant Secretary for the Office of Nuclear Energy *(U.S. Department of Energy)*

OPERATIONS & POWER DIVISION DINNER

Location: Stone's Throw Restaurant
Monday, November 9 • 6:30-9:00 p.m.

This event is not included in your registration fee. The ticket price is $50.00.
Tickets may be purchased at the registration desk.

STUDENT POSTER SESSION

Location: Technology Expo - Exhibit Hall A
Tuesday, November 10 • 11:00 a.m.-1:00 p.m.

Please see page 30-32 for more information.

GENERAL CHAIR'S SPECIAL SESSION

NUCLEAR ENERGY: THE FEDERAL AND STATE APPROACH TO COMPLIANCE WITH THE CLEAN POWER PLAN (CPP)

Location: Marriott 2 & 3
Tuesday, November 10 • 4:30-7:00 p.m.

Chair: Donald R. Hoffman *(EXCEL Services Corporation)*

The CPP requires individual states reduce their power plant emissions rate 32% by 2030—an improbable target unless nuclear energy plays a pivotal role. In this special session, state leaders and legislators, state energy officers, and national organization leaders will discuss the issues surrounding compliance with the CPP.

Speakers and Panel:

- Donald R. Hoffman - President/CEO *(EXCEL Services Corporation)*, ANS Past President; Chair, Virginia Nuclear Energy Consortium Authority Co-Chair; ANS Special Committee on Nuclear in the States
- Edward Kee - CEO and Principal Consultant *(Nuclear Economics Consulting Group)*
- Jessica Lovering - Senior Analyst *(Breakthrough Institute)*
- Melissa Savage - Senior Director *(National Associations of State Energy Officials)*
- Donald R. van der Vaart – Secretary, *(Department of Environmental Quality, State of North Carolina)*
- Michael Richard- Deputy Chief of Staff *(Energy and Natural Resources, State of Maryland)*
- Hayes Framme- Advisor for Infrastructure and Development, and Chief Energy Efficiency Officer (*Office of Commonwealth, State of Virginia)*

ANS SPEAKERS BUREAU WORKSHOP

Location: Marriott 1
Tuesday, November 10 • 6:30–8:30 p.m.

Please join us for the second workshop for ANS members interested in being part of the Speakers Bureau. We'll review speaker responsibilities; ANS outreach tools, and public communications techniques.

Pre-registration is required by 5 p.m., Monday, November 9. Space is limited.
To register, contact Tracy Marc at tmarc@ans.org or stop by the Media Center, Park Tower 8205.

Compliments of the 2015 General Chair, Donald R. Hoffman: SPECIAL EVENING EVENT WITH THE CAPITOL STEPS

Location: Marriott 2 & 3
Tuesday • 8:00-10:00 p.m.

For more than twenty-five years, the Capitol Steps have recorded dozens of albums and appeared on *"Good Morning America,"* the *"Today Show," "20/20," "EntertainmentTonight," "Nightline," CNN's "Inside Politics,"* and dozens of times on National Public Radio's *"All Things Considered."*

This event is included in the full registration fee. Additional tickets for guests may be purchased for $25.
Tickets include: *(2)* drink tickets and light snacks.
Doors open at 8:00 p.m. Event begins at 8:30 p.m.

ANS COMMUNICATIONS WORKSHOP

TALKING ABOUT NUCLEAR ENERGY WITH POLICY MAKERS**

Location: Marriott 1

Wednesday, November 11 • 4:00-6:00 p.m.

Whether you'll be Storming the Hill or simply want to learn how to more effectively talk about nuclear energy, please join us for this helpful and entertaining workshop. ANS Washington Rep. Craig Piercy and Potomac Communications Group Managing Partner Mimi Limbach will discuss the current political landscape for nuclear energy and nuclear science along with some proven techniques for developing and delivering compelling messages and elevator speeches to the public and policy makers. The session will begin with a Capitol Hill pre-briefing and will quickly move into the workshop. Complimentary beer, wine and light snacks will be provided.

Sponsored by: ***Exelon Generation***

****Please note: If you intend to participate in Storm the Hill Day, the ANS Communications Workshop is required.**

TECHNICAL TOURS

*SOLD OUT

ARMED FORCES RADIOBIOLOGY RESEARCH INSTITUTE (AFRRI)

Thursday, November 12 • 9:30-10:30 a.m.

Departing from the hotel lobby at 8:30 a.m. – arriving back at the hotel at 11:30 a.m.

The AFRRI mission is to preserve the health and performance of U.S. military personnel and to protect humankind through research that advances understanding of the effects of ionizing radiation. To these ends, the institute collaboratively researches the biological effects of ionizing radiation and provides medical training and emergency response to manage incidents related to radiation exposure. The AFRRI laboratories comprise facilities totaling 200,000 sq. ft. AFRRI is a fully equipped research facility with the capability of performing state of the art molecular, cellular, microbiology, genetic and biochemical research. Tour will include a 1.1 MW TRIGA Research Reactor. The 1.1 MW TRIGA *(Training, Research, Isotope, General Atomics)* Mark-F nuclear research reactor is capable of delivering a mixed linear energy transfer field of fission neutrons and gamma rays to a number of experimental targets. Other experimental facilities include a pneumatic transfer system, removable beam port, in-core experiment tube, and grid plate sample holders.

Tour participants should plan to arrive at the Wardman Park hotel lobby for shuttle pick-up and drop-off.

Photo ID is required to gain entry.

Tickets can be purchased at the ANS Registration desk *(if available)*. The cost is $25.00. Space is limited.

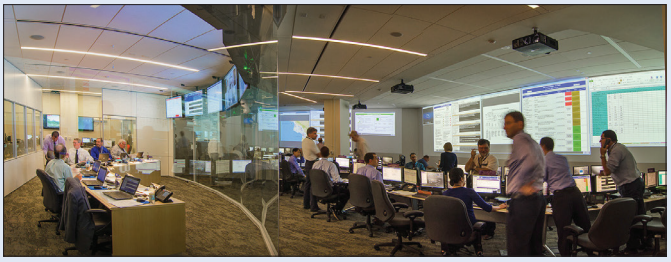
TECHNICAL TOURS

*SOLD OUT

NRC OPERATIONS CENTER

Thursday, November 12 • 9:30-10:30 a.m.

Departing from the hotel lobby at 8:30 a.m. – arriving back at the hotel at 11:30 a.m.



Attendees are invited to experience the inner workings of the newly constructed NRC Operations Center, which serves as the focal point for coordination of events involving NRC licensed facilities or materials. This tour will emphasize select incident response assets, including Radiological Assessment System for Consequence Analysis (RASCAL 4.3) and Web-Based Emergency Operations Center (Web-EOC). It will also address the roles and responsibilities of various teams that compose the NRC response organization when it is staffed during an emergency. This tour will further address the resources that the NRC utilizes when communicating information to external stakeholders and receiving information from the licensees during an emergency.

Tour participants should plan to arrive at the Wardman Park hotel lobby for shuttle pick-up and drop-off.

Photo ID is required upon arrival at NRC headquarters.

Tickets can be purchased at the ANS Registration desk *(if available)*. The cost is $25.00. Space is limited.

Winter Meeting Technical Sessions by Division

(Asterisks indicate special sessions. Parentheses indicate cosponorship.)

Special Sessions

*Opening Plenary: Nuclear: The Foundation of Sensible Policy for Energy, Economy, and the Environment, Mon. a.m. (8:00-11:30 a.m.)

*ANS President's Special Session: Long-Term Operation of the U.S. Commercial Nuclear Fleet - Sustaining a National Asset, Mon. p.m. (4:30-6:30 p.m.)

*General Chair's Session: Nuclear Energy: The Federal and State Approach to Compliance with the Clean Power Plan (CPP), Tues. p.m. (4:30-7:00 p.m.)

Accelerator Applications (AAD)

(Nuclear Data Experiments, Evaluations, and Benchmarks), Wed. p.m.

(Physics in Fusion and Sub-Critical Systems), Thurs. a.m.

Aerospace Nuclear Science and Technology (ANST)

Latest Advancements in Aerospace Nuclear Science and Technology, Mon. p.m.

(Re-Establishing Plutonium-238 Production in the United States), Tues. a.m.

Biology and Medicine (BMD)

(Nuclear Techniques for Material Analysis), Mon. p.m.

(Advances in Radiation Detection and Measurement), Tues. p.m.

(Isotopes and Radiation: General), Wed. p.m.

Decommissioning and Environmental Sciences (DESD)

Nuclear Fission: A. Reliable and Clean Energy Source, Essential to Sustainable Development and to Reducing GHG Emission–Panel, Mon. p.m.

Decommissioning and Environmental Sciences: General, Tues. a.m.

Decommissioning Regulatory Requirements for Nuclear Power Plants–Panel, Tues. p.m.

Education, Training, and Workforce Development (ETWDD)

Focus on Communications: Communicating with Policy Makers–Panel, Mon. p.m.

Focus on Communications: Meet the Media–Panel, Mon. p.m.

Student Design Competition, Tues. a.m.

Innovations in Fuel Cycle Research—A Student Competition, Tues p.m.

Education and Training: General—I, Tues p.m.

Education and Training: General—II, Wed. p.m.

Patents for Nuclear Professionals–Panel, Wed. a.m.

The Importance of Professional Engineering Licensure in the Nuclear Industry–Panel, Wed. a.m.

Research by U.S. DOE NEUP-Sponsored Students—I, Thurs. a.m.

Research by U.S. DOE NEUP-Sponsored Students—II, Thurs. p.m.

Fuel Cycle and Waste Management (FCWMD)

International Perspective of Electrochemical Recycling–Panel, Mon. p.m.

Re-Establishing Plutonium-238 Production in the United States, Tues. a.m.

Collaborative R&D for Future Nuclear Energy–Panel, Tues. p.m.

Updates on Nuclear Waste Repository Projects, Wed. a.m.

Progress in U.S. DOE's Fuel Cycle R&D Program–Panel, Wed. a.m.

Public Perception of Risk: Strategies to Address the "Perception Gap" with Nuclear Technologies–Panel, Wed. p.m.

Integrated Spent Nuclear Fuel Management Analysis Capabilities—I, Wed. p.m.

Integrated Spent Nuclear Fuel Management Analysis Capabilities—II, Wed. p.m.

Recycle and Reuse of Used Nuclear Fuel Resources, Wed. p.m.

Fuel Cycle and Waste Management: General—I, Thurs. a.m.

Fuel Cycle and Waste Management: General—II, Thurs. p.m.

Fusion Energy (FED)

Fusion Energy—Devices and Applications, Tues. p.m.

(Physics in Fusion and Sub-Critical Systems), Thurs. a.m.

Human Factors, Instrumentation, and Controls (HFICD)

Human Factors, Instrumentation, and Controls: General, Wed. p.m.

Operator Interactions and Control Room Support Systems, Wed. p.m.

Nuclear Power Plant Condition Monitoring, Thurs. a.m.

Isotopes and Radiation (IRD)

Nuclear Techniques for Material Analysis, Mon. p.m.

Advances in Radiation Detection and Measurement, Tues. p.m.

Isotopes and Radiation: General, Wed. p.m.

Materials Science and Technology (MSTD)

Accident Tolerant Fuel, Mon. p.m.

Nuclear Structural Materials, Tues. a.m.

Overview of National Lab Facilities for Radioactive Material, Tues. p.m.

Nuclear Fuels, Performance Testing, and Disposition, Wed. a.m.

MOX Fabrication and Performance, Wed. p.m.

Transient Fuel Performance and Testing–Panel, Thurs. a.m.

Mathematics and Computation (MCD)

Current Issues in Computational Methods–Panel, Mon. p.m.

(Reactor Analysis Methods—I), Tues. p.m.

(Reactor Analysis Methods—II), Wed. a.m.

(Reactor Analysis Methods—III), Wed. p.m.

Transport Methods: Monte Carlo and Radiative Transfer, Wed. a.m.

Uncertainty Quantification and Sensitivity Analysis Methods, Wed. a.m.

Transport Methods: Deterministic, Wed. p.m.

Computational Methods: General, Wed. p.m.

Nuclear Criticality Safety (NCSD)

Special Panel Session—The Legacy of NCS Pioneer Joe Thomas, Mon. p.m.
Data Analysis and Operations in Nuclear Criticality Safety, Tues. a.m.
Recent Nuclear Criticality Safety Program Accomplishments (Dedicated to Adolf Garcia), Wed. a.m.
NDA Issues Affecting Nuclear Criticality Safety–Panel, Wed. p.m.
ANS-8 Standards–Forum, Thurs. a.m.

Nuclear Installations Safety (NISD)

Current Topics in Probabilistic Risk Analysis, Tues. a.m.
Nuclear Installations Safety: General, Tues. p.m.

Nuclear Nonproliferation Policy (NNPD)

The 2015 Dwight D. Eisenhower Award Special Session–Panel, Mon. p.m.
Nuclear Data Needs for National Security–Panel, Tues. a.m.
University Consortia for Nuclear Nonproliferation for Nuclear Nonproliferation Research and Development–Panel, Tues. a.m.
Rationalizing Recycling in a Nonproliferation World: An ANS Public Policy Track–Panel, Tues. p.m.
Proliferation Risk and Sustainability of Nuclear Energy Systems–Panel, Wed. a.m.
Nuclear Nonproliferation Policy: General, Wed. p.m.
(Nuclear Data Experiments, Evaluations, and Benchmarks), Wed. p.m.
(Postdoctoral Experience at a National Laboratory: A Nuclear Engineering Perspective–Panel, Thurs. a.m.)

Operations and Power (OPD)

All Energy–Forum, Tues. a.m.
New Nuclear Construction Around the World—Status Report–Panel, Tues. p.m.
Operations and Power: General, Wed. a.m.
Policy Issues for New Reactors, a Retrospective, Wed. p.m.
Small Modular Reactors, Wed. p.m.
Advanced/Gen-IV Reactors—I, Thurs. a.m.
Advanced/Gen-IV Reactors—II, Thurs. p.m.

Radiation Protection and Shielding (RPSD)

Continuing the Commitment to Ethics–Panel, Mon. p.m.
Radiation Protection and Shielding: Computational Methods and Applications, Tues. a.m.
Radiation Protection and Shielding of Fusion and Fission Power Systems, Wed. a.m.
Radiation Protection and Shielding–Roundtable, Wed. a.m.
Computational Tools for Radiation Protection and Shielding, Wed. p.m.
Unstructured Mesh with MCNP–Tutorial, Thurs. p.m.

Reactor Physics (RPD)

Reactor Physics Design, Validation, and Operating Experience—I, Mon. p.m.
Reactor Physics Design, Validation, and Operating Experience—II, Tues. a.m.
Advances in Fast Reactor Designs and Concepts, Tues. a.m.
Reactor Analysis Methods—I, Tues. p.m.
Reactor Analysis Methods—II, Wed. a.m.
Reactor Analysis Methods—III, Wed. p.m.
Reactor Physics: General—I, Tues. p.m.
Reactor Physics: General—II, Wed. a.m.
Reactor Physics: General—III, Wed. p.m.
Reactor Physics: General—IV, Thurs. a.m.
Nuclear Data Experiments, Evaluations, and Benchmarks, Wed. p.m.
Physics in Fusion and Sub-Critical Systems, Thurs. a.m.

Robotics and Remote Systems (RRSD)

Robotics and Remote Systems: General, Tues. a.m.

Thermal Hydraulics (THD)

Two-Phase Flow, Mon. p.m.
Thermal Hydraulics Education–Panel, Tues. a.m.
Thermal Hydraulics: General—I, Tues. a.m.
Thermal Hydraulics: General—II, Thurs. p.m.
Experimental Thermal Hydraulics—I, Tues. p.m.
Experimental Thermal Hydraulics—II, Thurs. a.m.
Young Professional Thermal Hydraulics Research Competition, Wed. a.m.
Computational Fluid Dynamics (CFD) V&V, Wed. a.m.
Thermal Hydraulic Challenges and Opportunities in the Licensing of Advanced Reactors–Panel, Wed. p.m.
Computational Thermal Hydraulics—I, Wed. p.m.
Computational Thermal Hydraulics—II, Wed. p.m.

Young Members Group (YMG)

(Thermal Hydraulics Education–Panel), Tues. a.m.
Nuclear Politics: Perspectives from ANS Congressional Fellows and Nuclear Advocates–Panel, Wed. a.m.
Student Conference Proposal Writing and Planning–Panel, Wed. a.m.
Young Members Group: General, Wed. p.m.
Postdoctoral Experience at a National Laboratory: A Nuclear Engineering Perspective–Panel, Thurs. a.m.

ANS Technical Poster Session

Poster Session, Mon. p.m.

Technical Sessions – 1:00-4:20 p.m.

International Perspective of Electrochemical Recycling–Panel

Sponsored by FCWMD
Session Organizer and Chair: Patricia D. Paviet *(DOE)*

Delaware A: 1:00-4:00 p.m.

The 2014 DOE-NE sponsored report entitled "Nuclear Fuel Cycle Evaluation and Screening" indicated that among all possible fuel cycles, the fuel cycles involving continuous recycle of U/Pu or U/TRU with new natural-U fuel in both fast and thermal reactors offer the best performance potential for improvements in waste minimization and resource utilization compared to the current U.S. once -through fuel cycle. Since recycling technologies may contribute to the sustainability of nuclear fuel cycle, this panel session will feature presentations from international experts on the latest progress in electrochemical recycling including but not limited to scientific as well as strategic/policy developments.

Panelists:

- Fiona Rayment *(NNL)*
- Mark Williamson *(ANL)*
- Luc Van Den Durpel *(Nuclear-21)*
- Rushan Lin *(China Inst of Atomic Energy)*
- Do Hee *(Korean Atomic Energy Research Inst)*
- Jean-Paul Glatz *(Inst of Transuranics)*

Current Issues in Computational Methods–Roundtable

Sponsored by MCD
Session Organizer and Chair: Patrick S. Brantley *(LLNL)*

Delaware B: 1:00-4:00 p.m.

Exascale Computing: Algorithmic Challenges and Progress

Enabling increasingly predictive modeling and simulation in the nuclear engineering community requires continued growth in computational capability. Scaling current petascale computing architectures to exascale computing would require impractical power consumption. As a result, proposed exascale computing platforms utilize advanced computing architectures such as general purpose GPUs and many integrated core (MIC) coprocessors. The effective use of these advanced architectures will likely entail significant algorithm development and either evolving or rewriting simulation codes. This panel session will investigate the technical requirements driving exascale computing architectures and the algorithmic challenges these architectures pose to numerical algorithms encountered in nuclear engineering applications. The panelists will discuss research progress in algorithm development.

Panelists:

- Randal Baker *(LANL)*
- Douglas Kothe *(ORNL)*
- Andrew Siegel *(ANL)*
- George Xu *(RPI)*

Nuclear Techniques for Material Analysis

Sponsored by IRD; cosponsored by BMD
Session Organizer: Kenan Unlu *(Penn State)*
Chair: R. Gregory Downing *(NIST)*

Maryland B: 1:00-3:30 p.m.

1:00 p.m.

Fissile Material Assay Using Short-Lived Fission Product Measurements, Justin Knowles, Steven Skutnik *(Univ of Tennessee)*, Roger Kapsimalis, David Glasgow *(ORNL)*

1:25 p.m.

Use of PFTNA for On-Line Coal Analysis, Uner Colak *(Istanbul Tech Univ)*, Nizametin Erduran *(Istanbul S. Zaim Univ)*, Iskender A. Reyhancan *(Istanbul Tech Univ)*

1:50 p.m.

Neutron Activation Analysis with a Monte Carlo Simulation for Kidney Stones, Huseyin Sahiner, Anjali Srivastava, Xin Liu *(Missouri Univ of Science and Technology)*, Cynthia H. McCollugh *(Mayo Clinic)*

2:15 p.m.

Experimental Performance of the Multi Isotope Process Monitor, Nathan Shoman, Jamie Coble *(Univ of Tennesee, Knoxville)*, David Meier *(PNNL)*

2:40 p.m.

Implementation of an FPGA-Based Digital Coincidence Doppler Broadening Spectrometer for PAS Measurements, S. Saxena, M. Liu, A. I. Hawari *(NCSU)*

3:05 p.m.

Long-term 500 C Testing of High Temperature 4H-SiC Schottky Diode Alpha Particle Detectors for Pyroprocessing, Benjamin Reinke, Joshua Jerrell, Max Chaiken, Brandon A. Wilson, Thomas E. Blue, Wolfgang Windl, Bryan D. Esser, Lei Cao *(Ohio State)*

Special Panel Session—The Legacy of NCS Pioneer Joe Thomas

Sponsored by NCSD
Session Organizer: Peter L. Angelo *(Y-12 NSC)*
Chair: Douglas G. Bowen *(ORNL)*

Maryland C: 1:00-4:00 p.m.

Joe Thomas, nuclear criticality safety pioneer, passed away in January 2014 at age 87. His contributions in nuclear criticality safety spanned over 5 decades at all three Oak Ridge Facilities, as well as at national and international sites. He was a past Chair of the NCSD, and recipient of the NCSD Distinguished Service Award, as well as ANS Fellow. The work and memory of Joe is marked by a special panel session where individuals have been sought to provide a brief account of their recollections with Joe and/or the impact of his work on modern criticality safety practice.

Panelists

- Joe Thomas–"In his own words"
- Doug Bowen *(ORNL)*
- Calvin Hopper *(ORNL)*
- Tom McLaughlin *(Retired)*
- Richard Taylor *(C. S. Engineering)*
- Mike Westfall *(ORNL)*

Continuing the Commitment to Ethics–Panel

Sponsored by RPSD
Session Organizer and Chair: Robert B. Hayes *(NCSU)*

Madison A: 1:00-4:00 p.m.

Panelists:

- Gail H. Marcus *(ANS Past President)*, Ethics and Safety Culture
- Gale E. Hauck *(Westinghouse)*, The Connection Between Ethics and Quality
- Robert C. Fine *(ANS)*, Is there an Ethical Obligation to give back to your Profession?
- Steven R. Biegalski *(University of Texas)*, How to Handle Questionable Ethics in Others
- Robert P. Addis *(SRNL)*, Ethical Leadership
- Jack S. Brenizer *(Penn State)*, Teaching Ethics to the Next Generation
- Vic Uotinen *(Past ANS ethics chair)*, The Relationship Between Professional Ethics and Ethics in Daily Life
- Yousry Y. Azmy *(NCSU)*, Student Ethics in the Electronic Age
- Eugene S. Grecheck *(ANS President)*, The ANS Code of Ethics

Accident Tolerant Fuels

Sponsored by MSTD
Session Organizer: Kenneth J. Geelhood *(PNNL)*
Chair: Cynthia A. Papesch *(INL)*

Madison B: 1:00-4:00 p.m.

1:00 p.m.

High Temperature Testing of Geometrically Relevant, Nuclear Grade Silicon Carbide Joints, George M. Jacobsen, Hesham E. Khalifa, Yi Kearns, Oscar Guitierrez, Christian P. Deck *(General Atomics)*

1:25 p.m.

Improvements to Coding of Lanthanide Behaviors in Metal Fuel, C. W. Arnold, Jack Galloway *(NEN-5)*, N. Carlson *(CCS-2 LANL)*, C. Unal *(NEN-5)*

1:50 p.m.

Oxidation States of Advanced Steel Alloys Exposed to Super-Heated Water, Mohamed Elbakhshwan, Simerjeet Gill, Abdul Rumaiz *(BNL)*, Raul Rebak *(General Electric)*, Lynne Ecker *(BNL)*

2:15 p.m.

Protection of Zirconium Fuel Cladding with Chromium Surface Coating, James Carr, Gokul Vasudevamurthy *(VCU)*

2:40 p.m.

Thermal Shock Analysis of Silicon Composites for LWR Cladding, Pierre Guenoun, Gregory Daines, Thomas McKrell *(MIT)*, Ed Lahoda *(Westinghouse)*, Christian Deck *(General Atomics)*, Mujid Kazimi*(MIT)*

3:05 p.m.

Current Status of FeCrAl Alloys as an Accident Tolerant Cladding Alloy Class for Commercial Light Water Reactors, Kevin G. Field, Yukinori Yamamoto, Bruce Pint, Richard Howard, Lance L. Snead, Kurt A. Terrani *(ORNL)*

3:30 p.m.

Fuel Performance Calculations for FeCrAl Cladding in BWRs, Nathan N. George, Ryan T. Sweet, G. Ivan Maldonado, Brian D. Wirth *(Univ of Tennessee, Knoxville)*, Jeffrey J. Powers, Andrew Worrall *(ORNL)*

Two-Phase Flow

Sponsored by THD
Session Organizer: Bao-wen Yang *(Xi'an Jiaotong Univ)*
Cochairs: Bao-Wen Yang *(Xi'an Jiaotong Univ),* Seungjin Kim*(Penn State Univ)*

Washington 2: 1:00-4:20 p.m.

1:00 p.m.

Local Measurement of Adiabatic Two-Phase Flow in an Annulus under Low-Frequency Vibration, Guanyi Wang *(Purdue Univ)*, Xiu Xiao *(Purdue Univ, Tsinghua Univ)*, Qingzi Zhu, Xiaohong Yang *(Purdue Univ)*, Shao-Wen Chen *(Purdue Univ, National Tsing Hua Univ)*, Mamoru Ishii *(Purdue Univ)*

1:25 p.m.

Experiments in Horizontal Bubbly-to-Plug and Bubbly-to-Slug Transition in Two-Phase Flow, R. Kong, S. Kim *(Penn State)*

1:50 p.m.

Identification of Bubble Interaction Mechanisms Using Image Processing Technique, Yucheng Fu, Yang Liu *(Virginia Tech)*

2:15 p.m.

Multidimensional Modeling of Two-Phase Flow in PWRs with Mixing Vane Spacer Grids, B. M. Waite, D. R. Shaver, M. Z. Podowski *(RPI)*

2:40 p.m.

Interfacial Area Transport through Vertical Elbows in Air-Water Two-Phase Flow, S. Qiao, D. Mena, S. Kim *(Penn State)*

3:05 p.m.

Prediction of Base Film Thickness of Vertical Upward Co-current Annular Flow in Pipes, Peng Ju *(Purdue Univ)*, Yang Liu *(Virginia Tech)*, Mamoru Ishii *(Purdue Univ)*

3:30 p.m.

Sensitivity Study of X-Ray Line Detector for Void Fraction Measurement, Kyle Song, Yang Liu *(Virginia Tech)*

3:55 p.m.

Modeling of Interfacial Forces for Bubbly Flows in Subcooled Boiling Conditions, D. R. Shaver, M. Z. Podowski *(RPI)*

Focus on Communications: Communicating with Policy Makers–Panel

Sponsored by ETWDD
Session Organizer and Chair: Laura Hermann *(Potomac Communications Group)*

Washington 3: 1:00-2:30 p.m.

The ANS Winter meeting in DC gives members a regular opportunity to meet the key staffers advising elected officials on nuclear science and technology policy. Learn about how to effectively communicate with members of Congress by learning more about who's who on the Hill. Gain insight on the differing roles of science fellows, legislative directors and committee staff from the quiet partners in the legislative process themselves.

Panelists:

- Alisa Carrigan *(fellow with House Science Committee)*
- Jeremy Pearson *(ANS Congressional Fellow)*
- Erin Harbaugh *(Dept of State)*

Focus on Communications: Meet the Media–Panel

Sponsored by ETWDD
Session Organizer and Chair: Mimi H. Limbach *(Potomac Communications Group)*

Washington 3: 2:30-4:00 p.m.

Today's media operate in many formats - print, broadcast and digital. Most Americans receive much of their information about nuclear science and technology through these channels. With deadlines looming every few hours, how do journalists understand the nuances of nuclear science, technology advances and foreign policy events to accurately report on them? And, how can ANS members help them? Major journalists who cover the relevant NS&T topics will share their perspectives about nuclear energy as well as those areas in which ANS members can assist with their coverage of the industry and its news.

Panelists:

- Rod Adams *(Atomic Insights)*
- Matt Wald *(formerly New York Times)*
- Darius Dixon *(POLITICO)*
- Roberta Rampton *(Reuters)*

Nuclear Fission: A Reliable and Clean Energy Source, Essential to Sustainable Development and to Reducing GHG Emissions–Panel

Sponsored by DESD
Session Organizers: Yoon Chang *(ANL),* Franck Carre *(CEA),* Jan B. Van Erp *(Consultant)*

Washington 4: 1:00-4:00 p.m.

Session dedicated to the memory of Georges Vendryes, Leonard Koch and Jacques Bouchard

The session highlights the important role being played today by nuclear energy in many areas, including the current worldwide reduction in GHG emissions by about two billion tons of CO2 per year. Nuclear fission is a clean, reliable energy source that is economically viable and fully sustainable, both environmentally and as regards the available resource base.

The session is dedicated to the memory of three recently departed nuclear pioneers, who have made major contributions during a lifetime career in nuclear reactor development and in particular in the area of fast-neutron fission technology.

Memorial Part:

Cochairs: Franck Carre *(CEA)* and John Kelly *(DOE)*

Panelists:

- Yves Brechet *(CEA)*
- Pierre Zaleski *(Consultant)*
- William Hannum *(Consultant)*
- John Sackett *(Consultant)*

Technical Part:

Cochairs: Franck Carre *(CEA)* and Yoon Chang *(ANL)*
Keynote address by Peter Lyons *(Former Assistant Secretary for Nuclear Energy, DOE):* "Nuclear Energy: Essential for Reduction of GHG Emissions"

Keynote address by Yves Brechet *(High Commissioner for Nuclear Energy, CEA):* "Nuclear for Climate"

Panelists:

- John Kelly *(DOE)*
- Valerie Faudon *(SFEN)*
- Massimo Morichi *(AREVA)*
- John Sackett *(Consultant)*
- Eric Loewen *(GEH)*
- William Hannum *(Consultant)*

Reactor Physics Design, Validation, and Operating Experience—I

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: David W. Nigg *(INL)*

Washington 5: 1:00-3:05 p.m.

1:00 p.m.

Analysis of a Generic Small Modular Integral Pressurized Water Reactor: Burnable Absorber Rod Materials, Evans Kitcher, Sunil Chirayath *(Texas A&M)*

1:25 p.m.

MCNP5 Validation with a High-Reactivity Experiment in the Advanced Test Reactor Criticality Facility, Joseph W. Nielsen, David W. Nigg *(INL)*, Jeong Sik Yim *(KAERI)*

1:50 p.m.

A Systematic Core Design Optimization of the Purdue Novel Modular Reactor (NMR-50), F. Odeh, W. S. Yang *(Purdue Univ)*

2:15 p.m.

Neutronic Modeling of Additively Manufactured HFIR Control Elements, J. R. Burns *(Georgia Tech, ORNL)*, D. Chandler *(ORNL)*, Bojan Petrovic *(Georgia Tech)*, Kurt A. Terrani *(ORNL)*

2:40 p.m.

Development of In-Core Detector Devices for Steady-State and Transient Measurements, Jan Vermaak, Marvin Adams *(Texas A&M)*

Latest Advancements in Aerospace Nuclear Science and Technology

Sponsored by ANSTD
Session Organizer: Robert C. O'Brien *(Center for Space Nuclear Research)*
Chair: Shannon M. Bragg-Sitton *(INL)*

Washington 6: 1:00-2:40 p.m.

1:00 p.m.

Americium Oxide Space Radioisotope Power Systems: Cerium-Neodymium Oxide Surrogate Studies, Emily Jane Watkinson, Richard Ambrosi, Hugo Williams *(Univ of Leicester)*, Mark Sarsfield, Keith Stephenson *(NNL)*

1:25 p.m.

The Importance of Doppler Broadened Cross Sections in Nuclear Thermal Rocket Design, Vishal Patel *(Center for Space Nuclear Research, Texas A&M)*

1:50 p.m.

SCCTE: An LEU NTP Concept with Tungsten Cermet Fuel, Michael Eades *(Ohio State, Center for Space Nuclear Research)*, Wesley Deason *(Center for Space Nuclear Research)*, Vishal Patel *(Center for Space Nuclear Research, Texas A&M)*

2:15 p.m.

Legacy Potassium Worth Measurement, and Its Associated Calculational Bias, in a Mockup of UO_2, Beryllium-Reflected Space Reactor, Margaret A. Marshall, John D. Bess *(INL)*

The 2015 Dwight D. Eisenhower Award Special Session–Panel

Sponsored by NNPD
Session Organizer: James W. Behrens *(US Navy)*
Chair: Jeffrey A. Chapman *(ORNL)*

Maryland A: 1:00-4:00 p.m.

The ANS's newest division, the Nuclear Nonproliferation Policy Division (NNPD), introduced the new Dwight D. Eisenhower Award this year to acknowledge and honor individuals who have made outstanding contributions to the field of nuclear nonproliferation. The first honorees are Former U.S. Secretary of State George P. Shultz and Distinguished Physicist Dr. Sidney D. Drell, both from the Hoover Institution, Stanford University. This technical session honors and reviews the past three decades of their achievements. The discussion will continue with current day situations, an outlook for the future of nuclear nonproliferation, suggestions for what the American public should know, and how ANS can provide this information.

Panelists:

- The Honorable George P. Shultz *(Hoover Inst)*
- Sidney D. Drell *(Hoover Inst)*
- Susan Eisenhower *(Eisenhower Inst)*
- James Hoagland *(Hoover Inst)*
- Eugene Grecheck *(ANS President)*
- Eric Loewen *(ANS Past President 2011-2012)*
- Sharon Squassoni *(Center for Strategic and International Studies)*
- Matthew Bunn *(Harvard's Belfer Center)*
- Joseph Cirincione *(Ploughshares Fund)*

Together with other distinguished panelists

ANS Technical Poster Session

Technology Expo - Exhibit Hall A: 1:00-4:00 p.m.

1. Investigating the Thermal Behavior of Lifetime for a DSS Through CFD, Y. S. Tseng *(NSTDC)*, C. H. Chu, Y. H. Ferng *(ESS, NTHU)*, C. K. Shih *(NES, NTHU)*
2. Spectral Advanced Radiological Computer System Applications, Sanjoy Mukhopadhyay, Richard J. Maurer, Henry Adams, James Butler, Rica Salcedo *(National Security Technologies, LLC)*
3. A Nodal Kinetics Model for a Subcritical Advanced Burner Reactor, A. T. Bopp, W. M. Stacey *(Georgia Tech)*
4. Analysis of Electrochemical Impedance Spectra Using Constant Phase Element for $SmCl_3$ in LiCl-KCl Eutectic, Dalsung Yoon, Supathorn Phongikaroon *(VCU)*, Michael Shaltry *(INL)*
5. Development of Multi-Dimensional Core Transient Analysis 1. Code System, Jin-Woo Park, Guen-Tae Park, Min-Ho Park, Seok-Hee Ryu, Kil-Sup Um, Jae-Il Lee *(KEPCO)*
6. CUDA-Accelerated Algorithm in 3D Neutron Diffusion Calculation at the VR-1, Ing. Filip Fejt *(Czech Tech Univ in Prague)*
7. Parameterization of Macroscopic Cross Section in Burn-up Cycles, Thiago Freitas Belo, João Claudio Batista Fiel *(Military Institute of Engineering)*
8. A Spectroelectrochemical Study of Samarium Ions in the Molten LiCl-KCl Eutectic, A. R. Lee, H. J. Han, B. K. Kim, B. G. Park *(Soonchunhyang Univ)*
9. Firebrick Resistance-Heated Energy Storage: Existing Technology Base, Richard T. Ibekwe, Charles Forsberg *(MIT)*
10. Development of a Baseline Assessment of TREAT for Modeling and Analysis Needs, John D. Bess, Mark D. DeHart *(INL)*
11. Experimental Uncertainty Analysis for Critical Assemblies of HEU (93.14 wt.%) Metal Annuli with Internal Graphite Cylinder, Liu Ziaobo *(Institute of Nuclear Physics and Chemistry)*, John D. Bess *(INL)*
12. Nuclear Forensics Exercises and Development of Training Aids, Sangjun Lee, Seungmin Lee, Hobin Yim, Jaekwang Kim *(Korea Inst Nucl Nonproliferation and Control)*
13. Calculating Gamma Heating in the I^2S-LWR Radial Steel Reflector, Timothy Flaspoehler, Bojan Petrovic *(Georgia Tech)*
14. Evaluation of Heat Treatment for U-bend Steam Generator Tubes, Manuel Umanzor, Gokul Vasudevamurthy *(VCU)*, Mica Baquera *(NRC)*
15. Modeling Small Pebble Bed Reactor Fuel Loading Concepts with PEBBED, Hans D. Gougar, R. Sonat Sen *(INL)*
16. Effects of Relative Heights for SMRs' Performance, Youngjin Kim, Kunwoo Yi, Changkyu Chung *(KEPCO)*
17. Design of a Board Type Breed and Burn Reactor Core, Meiyin Zheng, Wenxi Tian, Guanghui Su *(Xi'an Jiaotong Univ)*
18. The Remote Compositional Analysis of Molten Salt (KF-LiF-10wt%ZrF4) by Probe Assisted In-Situ LIBS System, Seunghyun Kim *(VCU)*, Jonghyeon Lee *(Chungnam National Univ)*, Supathorn Phongikaroon *(VCU)*
19. First Update on a Real-time Tumor Localization and Guidance Platform for Radiotherapy Using US and MRI, Bryan Bednarz *(Univ of Wisconsin, Madison)*
20. BWR Core Degradation: MELCOR Analysis of CORA-33 Experiment, Eugenia Contreras Zamora, Michael L. Corradini *(Univ of Wisconsin, Madison)*
21. Development of a Methodology to Assess the On-Line Maintenance Risk, Jaeho Kim, Moosung Jae *(Hanyang Univ)*
22. Artificial Neural Network for Prediction of 90Sr Soil to Plant Transfer Factor, Bary N. da Silva, Anna Karla G. dos Santos, Márcio Henrique da Silva, Carlos A. S. Lima Jr *(IEN/CNEN)*, J.C. Wasserman *(REMADS-UFF)*, Antonio Carlos de A. Mol, Celso Marcelo F. Lapa, Maria Angélica, V. Wasserman *(IEN/CNEN)*

Technical Sessions – 8:00 a.m.-12:00 p.m.

Re-Establishing Plutonium-238 Production in the United States

Sponsored by FCWMD; cosponsored by ANSTD
Session Organizer: Robert M. Wham *(ORNL)*
Cochairs: Robert M. Wham *(ORNL)*, John Bess *(INL)*

Delaware A: 8:00-10:55 a.m.

8:00 a.m.

Enabling Space Missions with Radioisotope Power Systems, Rebecca Onuschak *(DOE)*

8:25 a.m.

Re-establishing the Supply of Plutonium-238, R. M. Wham, D. W. DePaoli, R. W. Hobbs *(ORNL)*

8:50 a.m.

Potential Improvements to ^{238}Pu Production Targets for the High Flux Isotope Reactor, R. W. Hobbs, D. Chandler *(ORNL)*, C. J. Hurt *(Univ of Tennessee, Knoxville)*, J. D. Freels, R. S. Owens, C. D. Bryan, R. W. Wham *(ORNL)*

9:15 a.m.

Verification of the ^{238}Np Fission Cross Section for HFIR ^{238}Pu Production, Riley D. Hunley *(ORNL)*, Justin R. Knowles *(Univ of Tennessee, Knoxville)*, David C. Glasgow *(ORNL)*

9:40 a.m.

The Role of the Department of Energy in Assembly, Test, and Launch Operations to Support a Nuclear-Enabled NASA Mission, Stephen Guy Johnson, Kelly L. Lively, Carla C. Dwight *(INL)*

10:05 a.m.

Radioisotope Power Systems Launch Safety Process, Daniel J. Clayton, Ronald J. Lipinski *(SNL)*, Ryan D. Bechtel *(DOE)*

10:30 a.m.

Idaho National Laboratory: Improving Equipment Reliability and Increasing Capability, Kelly L. Lively, Eric S. Clarke, Stephen G. Johnson, Carla C. Dwight *(INL)*

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Current Topics in Probabilistic Risk Analysis

Sponsored by NISD
Session Organizer and Chair: Virginia D. Cleary-Ivanoff *(Bechtel National: WTP)*

Delaware B: 8:00-10:30 a.m.

8:00 a.m.

Generation and Use of Reduced Order Models for Safety Applications Using RAVEN, D. Mandelli, A. Alfonsi, C. Smith, Cristian Rabiti *(INL)*

8:25 a.m.

Functional Failure Probability Estimation of Passive Cooling System in ACP1000 Using Surrogate Models, Chen Wang, Jingquan Liu, Yuyun Zeng *(Tsinghua Univ)*

8:50 a.m.

On-Line Configuration Risk Management of NPP with RISMC, Anqi Xu, Zhijian Zhang *(Harbin Engineering Univ)*

9:15 a.m.

Development and Application of Reliability and Probabilistic Safety Assessment Program RiskA5.0, Fang Wang, Jin Wang, Pengcheng Long, Liqin Hu, Shanqi Chen, Jiaqun Wang, Miao Nie, Dagui Wang, Run Yuan, Yinlong Xu, Yican Wu, FDS Team *(Chinese Academy of Sciences)*

9:40 a.m.

A New Methodology to Evaluate Severe Accident Management Strategies Using Decision Tree, Moosung Jae, Yongjin Lee *(Hanyang Univ)*, Dong Wook Jerng *(Chung-Ang Univ)*

10:05 a.m.

The Revised IAEA Safety Guide on Accident Management—A Critical Review, George Vayssier *(NSC Netherlands)*

Robotics and Remote Systems: General

Sponsored by RRSD
Session Organizer: Mark W. Noakes *(ORNL)*
Chair: William C. Eason *(Souriau)*

Maryland A: 8:00-8:50 a.m.

8:00 a.m.

Automated Industrial Manufacturing in Hazardous Glovebox Environments, Clinton Peterson, Mitch Pryor *(NNL)*, Brian O'Neil *(LANL)*

8:25 a.m.

Unmanned Aerial Vehicle Technology for the Nuclear Industry, Michael Johnson, Khamel Abdulai *(Excelsior College)*

Decommissioning and Environmental Sciences: General

Sponsored by DESD
Session Organizer: James J. Byrne *(Byrne & Assoc LLC)*
Chair: Nadia S. Glucksberg *(Haley & Aldrich)*

Maryland A: 8:50-11:00 a.m.

8:50 a.m.

Decommissioning Waste Classification of Bioshield Concrete for CANDU Reactor, Young-kyu Jung, Chang Lak Kim *(KEPCO)*

9:15 a.m.

An Assessment System to Reduce Abnormal Hazards from Human Errors in Virtual Decommissioning Environments, KwanSeong Jeong, ByungSeon Choi, JeiKwon Moon, Dongjun Hyun, Jonghwan Lee, IkJune Kim, GeunHo Kim *(KAERI)*

9:40 a.m.

The Status and Prospect of Regulatory Procedures for Permanently Shut-down Nuclear Power Plants in Korea, Yong Ki Chi, Chang-ju Lee, Bong Hyun Kim *(Korea Inst Nucl Safety)*

10:05 a.m.

Nuclear Security Risk Analysis in Nuclear Power Plant Decommissioning Phase, Mbazor Jeremiah Chinonso, David S. Kessel *(KEPCO)*

Radiation Protection and Shielding: Computational Methods and Applications

Sponsored by RPSD
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Shaheen Azim Dewji *(ORNL)*

Maryland B: 8:00-10:55 a.m.

8:00 a.m.

Radiological Toolbox 3.0.0, Nolan E. Hertel, Keith F. Eckerman *(ORNL)*, Caspar Sun *(NRC)*

8:25 a.m.

Virtual Reality-Based Simulation of ADS Spallation Target Maintenance, Tao He, Zihui Yang, Shaoheng Zhou, Jinbo Zhao, Tongqiang Dang, FDS Team *(Chinese Academy of Sciences)*

8:50 a.m.

CADIS Weight Windows using a Memory Efficient Adapted Mesh Structure, Bojan Petrovic, Timothy Flaspoehler *(Georgia Tech)*

9:15 a.m.

The Solid Angle for a Spherical Surface Source and a Detector with an Arbitrary Aperture, Jeffrey A. Favorite *(LANL)*

9:40 a.m.

Developing a Mathematical Scheme to Combine Single-Parameter Perturbation Results in Radiation Transport Calculations to Predict Joined Parameter Perturbations, Caroline L. Hughes, Aakanchha Chirayath, Sunil Chirayath *(Texas A&M)*

10:05 a.m.

The Solid Angle for a Spherical Surface Source and a Point Detector, Jeffrey A. Favorite *(LANL)*

10:30 a.m.

Federal Guidance Report 15: External Exposure to Radionuclides in Soil, Air, and Water, N. E. Hertel *(Georgia Tech)*, K. F. Eckerman, M. B. Bellamy *(ORNL)*, C. E. Easterly *(Easterly Scientific)*, R. W. Leggett *(ORNL)*, J. C. Ryman *(Private Consultant)*, D. J. Stewart *(ORNL)*, M. Boyd *(US EPA)*

Data, Analysis and Operations in Nuclear Criticality Safety

Sponsored by NCSD
Session Organizer: Deborah Ann Hill *(NNL)*
Chair: Jason J. McCall *(Y-12 National Security Complex)*

Maryland C: 8:00-10:30 a.m.

8:00 a.m.

Reflector Worth of Dry Chemical and Powder Fire Extinguishing Agents, A. R. Wysong, B. S. Chapman *(LANL)*

8:25 a.m.

ANSI/ANS-8.12 Revision: Selection of MOX Critical Experiments and Preliminary Validation Results, Christopher S. Tripp, Debdas Biswas *(LLNL)*

8:50 a.m.

A Note on Boundary Conditions and Sources for Analytical Benchmarks, Barry Ganapol *(Univ of Arizona)*, Forrest Brown *(LANL)*

9:15 a.m.

The 2015 Edition of the ICSBEP Handbook, John D. Bess *(INL)*, Jim Gulliford *(OECD NEA)*

9:40 a.m.

Results of Partially-Reflected Critical Experiments in Square-Pitched Arrays of Water-Moderated 6.9 Percent Enriched Fuel Rods, Gary A. Harms, John T. Ford, Rafe D. Campbell *(SNL)*

10:05 a.m.

Reactivity Worth Studies Associated with a Rossi-α Measurement System, George E. McKenzie, Theresa E. Cutler, Travis J. Grove, William L. Myers, Rene G. Sanchez *(LANL)*

Thermal Hydraulics Education–Panel

Sponsored by THD; cosponsored by YMG
Session Organizer: Sama Bilbao y León *(Virginia Commonwealth Univ)*
Cochairs: Sama Bilbao y León *(Virginia Commonwealth Univ),* Kurshad Muftuoglu *(GE Hitachi Nuclear Energy)*

Madison A: 8:00-11:00 a.m.

This session will explore the challenges and opportunities faced by nuclear engineering programs worldwide in the area of nuclear reactor thermal-hydraulics education. Nuclear Thermal-Hydraulics continues to be one of the core areas of expertise in nuclear engineering. At the same time, as other key fields relevant to nuclear engineering, the advances seen in recent decades in instrumentation and computational tools have substantially changed the way we approach the study of nuclear thermal-hydraulics. Nuclear engineering programs need to continuously grow and adapt to be able to provide their students with the knowledge and skills they need to support the nuclear industry.

Panelists:

- Michael Corradini *(Univ of Wisconsin-Madison)*
- Wade Marcum *(Oregon State Univ)*
- Kurshad Muftuoglu *(GE-Hitachi)*
- David Aumiller *(BAPL)*
- Other panelists to be announced.

TAA Award Ceremony

Madison A: 11:00 a.m.-12:00 p.m.

The Thermal Hydraulics Division Award Ceremony will immediately follow the Thermal Hydraulics Education Panel session. Technical Achievement Award Lecture, to be presented by Professor Mohamed El-Genk, "A Journey with Thermal-Hydraulics: LWRs, VHTRs, SMRs and Space Reactors"

Nuclear Structural Materials

Sponsored by MSTD
Session Organizer: Kenneth J. Geelhood *(PNNL)*
Chair: Gokul Vasudevamurthy *(Virginia Commonwealth Univ)*

Madison B: 8:00-11:20 a.m.

8:00 a.m.

Full-Field Strain Measurements at Extreme Temperatures using Ultraviolet Digital Image Correlation (UV-DIC), Ryan B. Berke *(Utah State Univ)*

8:25 a.m.

Models of Multi-Layered Compositions of Steel Fuel Claddings for UO_2 Elements, A. I. Ksenofontov, E. I. Kurbatova, Alalaween Hamdi Abdel Ruhman *(Moscow Engineering Physics Institute)*, N. A. Mould, J. L. Regens *(Univ of Oklahoma)*

8:50 a.m.

A Fast Spectrum Neutron Source for Material Irradiation using a Superconducting Electron Linac, T. L. Grimm, S. S. Barnard, C. H. Boulware, A. K. Grimm *(Niowave, Inc.)*, F. J. Harmon *(Idaho Accelerator Center)*, J. L. Hollister, E. S. Maddock *(Niowave, Inc.)*, S.A. Maloy *(LANL)*, M. Mamtimin, V. N. Starovoitova *(Niowave, Inc.)*, and K. A. Woloshun *(LANL)*

9:15 a.m.

Diffusion Bonding of 316 SS Tube-to-Tube Sheet Joints using a Commercial Tube Expander, Nils Haneklaus, Rony Reuven, Cristian Cionea, Peter Hosemann, Per F. Peterson *(Univ of California, Berkeley)*

9:40 a.m.

Development of Environmental Barrier Coatings for Operational Conditions of SiC Cladding in Light Water Reactors, C. Ang, J. Kiggans *(ORNL)*, C. Kemery *(NEO Industries)*, J. Thomson, Y. Katoh, Kurt Terrani *(ORNL)*

10:05 a.m.

Comparison Between Thermal Aging And Low Dose Neutron Irradiation Effects On Ferrites in a Duplex Structure Stainless Steel, Zhangbo Li *(Univ of Florida)*, Yiren Chen *(ANL)*, Yong Yang *(Univ of Florida)*

10:30 a.m.

Compact and Flexible Neutron Source for Fast and Fusion Neutron Irradiation Applications, G. Longoni, D. Wootan, K Burns, R. Gates, B. Schmitt *(PNNL)*

10:55 a.m.

Demonstration of Advanced Manufacturing Techniques for Production of Nuclear Core Structures: Ultrasonic Additive Manufacturing of Hybrid Structures Resembling HFIR Control Plates, Kurt Terrani *(ORNL)*, S. Suresh Babu *(ORNL, Univ of Tennessee, Knoxville)*, Chris Bryan, James Kiggans, Daniel Pinkston *(ORNL)*, Niyanth Sridharan, Maxim Gussev *(Univ of Tennessee, Knoxville)*, Mark Norfolk *(Fabrisonic LLC)*

Thermal Hydraulics: General—I

Sponsored by THD
Session Organizer: Si Young Lee *(SRNL)*
Cochairs: Paolo Ferroni *(Westinghouse),* DuWayne Schubring *(Univ of Florida)*

Washington 2: 8:00 a.m.-12:00 p.m.

8:00 a.m.

Simulation of BWR Mark I Station Black-Out Accident Using GOTHIC: An Initial Demonstration, Han Bao *(NCSU)*, Haihua Zhao, Hongbin Zhang, Ling Zou, Ronaldo H Szilard *(INL)*, Nam Dinh *(NCSU)*

8:25 a.m.

A Heat Transport Analytical Benchmark Problem for Sensitivity Analysis, Uncertainty Quantification and Predictive Modeling: I: Verification of the FLUENT Adjoint Solver, Dan G. Cacuci, Ruixian Fang, Madalina C. Badea, Milica Ilic *(Univ of South Carolina)*

8:50 a.m.

A Heat Transport Analytical Benchmark Problem for Sensitivity Analysis, Uncertainty Quantification and Predictive Modeling—II: Best Estimate Predictions with Reduced Uncertainties, Dan G. Cacuci, Madalina C. Badea *(Univ of South Carolina)*

9:15 a.m.

A Heat Transport Analytical Benchmark Problem for Sensitivity and Uncertainty Analysis. III: Using the 2nd-ASAM to Quantify the Impact of Second-Order Sensitivities and Uncertainties, Dan G. Cacuci *(Univ of South Carolina)*

9:40 a.m.

Design of an Advanced Intermediate Heat Exchanger for Supercritical CO2 Brayton Cycle, X. Zhang, X. Sun, R. N. Christensen *(Ohio State)*

10:05 a.m.

Preliminary Safety Analyses on a Conceptual LEU Fueled Research Reactor at NIST, Zeyun Wu *(NIST, Univ of Maryland)*, Robert E. Williams, J. Michael Rowe *(NIST)*

10:30 a.m.

Development of Core Analysis Model for Evaluating DNBR Power Operating Limit in OASIS, Shane Park, Wi-Soo Jeong, Hae-Chan Lee, Young Ho Park *(KEPCO)*

10:55 a.m.

Preliminary 2D Analysis of the AHTR Fuel Assembly Removal Transient, Pietro Avigni, Bojan Petrovic *(Georgia Tech)*

11:20 p.m.

The Study of Cesium Iodide Transportation in Containment of a Generation III+ Boiling Water Reactor under Bypass Condition, Pinsurang Kittiwarapon, Somboon Rassame *(Chulalongkorn Univ)*, Kampanart Silva *(Thailand Inst of Nuclear Technol)*

Student Design Competition

Sponsored by ETWDD
Session Organizer and Chair: Travis W. Knight *(Univ of South Carolina)*

Washington 3: 8:00-11:00 a.m.

The following undergraduate and graduate entries have been selected by a panel of judges from industry as finalists in the 2015 Student Design Competition. Oral presentations will be made by students in front of a second panel of judges who will determine the undergraduate and graduate winner.

Undergraduate Category

8:00 a.m.

Sodium-Cooled Integral Supercritical Carbon-Dioxide Reactor (SCISCOR), Kazi Ahmed, Ian Jentz, Richard Rolland *(Univ of Wisconsin, Madison)*

8:30 a.m.

Production of ^{99}Mo Using a Photon-Neutron Interaction With Mo-100 Targets, Matthew Schaper, Eden Marroquin, Talal Harahsheh, Miltiadis Kennas, Yousif Almaazmi, Gamal Akabani *(Texas A&M)*

Graduate Category

9:30 a.m.

Neutron Activated Fluoride Salt Test Loop at The Ohio State University, Max Chaiken, Andrew Clark, Brian Cohn, James Cutright, Michael Kurth, Richard Shawger, Raymond Cao *(OSU)*

10:00 a.m.

Zero Knowledge Active Interrogation of Nuclear Warheads, Crystal Green, Brianne Heisinger, Kyle Kondrat, Matthew Krupcale, Jennifer Nguyen *(Univ of Michigan)*

All Energy Forum

Sponsored by OPD
Session Organizer: James (Vince) V. Gilbert *(EXCEL Services Corp)*
Session Chair: James Conca *(UFA Ventures)*

Washington 4: 8:00 a.m.-12:00 p.m.

This session will provide a unique opportunity to see, perhaps for the first time, an apples-to-apples comparison featuring all major forms of electric generation including coal, gas, hydro, wind, solar and nuclear power. In order to achieve valid comparisons and insights a uniform speaking agenda and comparative metrics are utilized. An official industry representative or a knowledgeable expert from the academic community will address each aspect of the program.

Panelists:

- Vince Gilbert *(EXCEL Services Corp)*
- Richard Somerville *(UCSD Retired)*
- Carey King *(Univ of Texas)*
- Richard Meyer *(AGA)*
- David Zayas *(NHA)*
- Marvin S. Fertel *(NEI)*
- Stu Bresler *(PJM)*
- Bruce Lacy *(Lacy Consulting)*

Reactor Physics Design, Validation, and Operating Experience—II

Sponsored by RPD
Session Organizer and Chair: Alexander Stanculescu *(INL)*

Washington 5: 8:00-10:30 a.m.

8:00 a.m.

Extreme Performance Multibatch Research Reactor Based on Simple Plate Fuel, Paolo Venneri, Yonghee Kim *(KAIST)*

8:25 a.m.

Criticality Benchmarks for Validation of SERPENT as an ATR-LEU Conversion Reactor Physics Tool, Jorge Navarro, Mark D. DeHart *(INL)*

8:50 a.m.

A Pre-Conceptual Neutronic Design Study on Nuclear Hydrogen Production Reactor, Chang Joon Jeong, Chang Keun Jo, and Min Hwan Kim *(KAERI)*

9:15 a.m.

Mapping of Biases and Uncertainties from Fresh Fuel Experiments to Depleted Fuel, Dongli Huang, Hany S. Abdel-Khalik *(Purdue Univ)*

9:40 a.m.

Requalification and Experimental Validation of the Epithermal Neutron Beam Facility for Radiotherapy Research at Washington State University, David W. Nigg *(INL)*, Kaitlyn R. Restis, Sara M. Dickens, C. Corey Hines, Mathew D. King, Alexandra Bartkoski, Donald E. Wall *(Washington State Univ)*

10:05 a.m.

Development of Hodoscope-Reactor Core Model for TREAT Transient Testing, Logan Michael Scott, Samuel E. Bays *(INL)*

Advances in Fast Reactor Designs and Concepts

Sponsored by RPD
Session Organizer: Florent Heidet *(ANL)*
Chair: Won Sik Yang *(Purdue Univ)*

Washington 6: 8:00-10:55 a.m.

8:00 a.m.

An Optimized Core Design of Passively Safe Liquid Fuel Reactor SLFFR for TRU Burning, T. Jing, G. Yang, Y. S. Jung, W. S. Yang *(Purdue Univ)*

8:25 a.m.

Physics Study of Sodium Cooled Ultra-Long-Life Core using New Driver-Blanket Burnup Strategy, HaeRi Hyun, Ser Gi Hong, Wusueng You *(Kyung Hee Univ)*

8:50 a.m.

Design of a Low-Enriched Uranium Fast Reactor for Maximum Fuel Resource Utilization, Ching-Sheng Lin, Jacob S. Hader, Tongkyu Park, Won Sik Yang *(Purdue Univ)*

9:15 a.m.

The Potential Impact of FFTF Passive Safety Tests on the Design of New LMRs, D. W. Wootan *(PNNL)*

9:40 a.m.

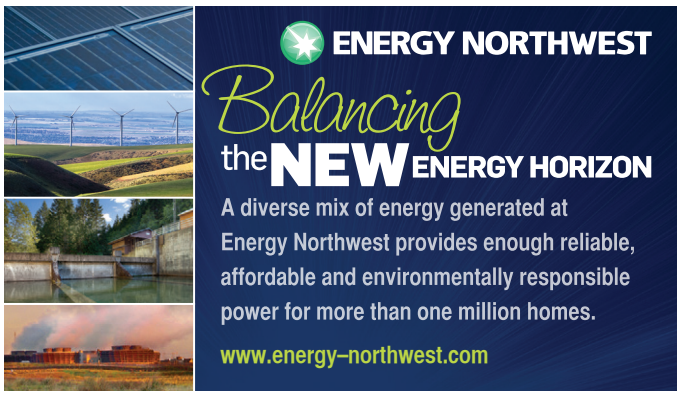
A Preliminary Study on the Self-Sustainability of a Sodium-cooled Breed-and-Burn Fast Reactor (B&BR), Donny Hartanto, Yonghee Kim *(KAIST)*

10:05 a.m.

Fast Spectrum Material's Testing Reactor with Variable Energy Spectra to Support Advanced Reactors Program and Light Water Reactor Sustainability Program R&D, Jonathan B. Scherr, Pavel V. Tsvetkov *(Texas A&M)*

10:30 a.m.

Compact Sodium-Cooled Fast Reactor with Thorium Breed and Burn Blanket, Guanheng Zhang, Massimiliano Fratoni, Jasmina Vujic, Ehud Greenspan *(Univ of California, Berkeley)*



Nuclear Data Needs for National Security–Panel

Sponsored by NNPD; cosponsored by IRD
Session Organizer: Rian M. Bahran *(LANL)*
Chair: Bethany Goldblum *(Univ of California, Berkeley)*

Washington 1: 8:00-10:00 a.m.

High fidelity nuclear data are important in their application to radiation transport calculations used for predicative simulations serving a large array of national security needs. The amount of currently available application-ready nuclear datasets is vast and covers hundreds of nuclides and spans large energy ranges. In general, all of the major nuclear data libraries can exhibit differences among their evaluations which vary in magnitude and are widespread across many isotopes. This panel will discuss the various nuclear data deficiencies affecting national security applications and current efforts aimed at bridging these gaps. It will also summarize the results of a recently concluded workshop that was organized by the United States Nuclear Data Program (USNDP) together with the Nuclear Science and Security Consortium (NSSC) at Berkeley titled "Nuclear Data Needs and Capabilities for Applications". One of the main purposes of the workshop was to prioritize the nuclear data needs of the applications community (including national security) in a whitepaper that will be used by the DOE Office of Science/ Nuclear Physics office to help inform priorities for possible funding of future targeted experimental efforts.

Panelists:

- Lee Bernstein *(LLNL)*
- Avneet Sood *(LANL)*
- Sara Pozzi *(Univ of Michigan)*
- John Mattingly *(NC State)*
- Tom Sutton *(BMPC)*
- David Brown *(BNL)*
- Cathy Romano *(ORNL)*

University Consortia for Nuclear Nonproliferation Research and Development–Panel

Sponsored by NNPD; cosponsored by IRD, ETWDD
Session Organizer: Rian M. Bahran *(LANL)*
Chair: David LaGraffe *(NNSA)*

Washington 1: 10:00 a.m.-12:00 p.m.

The National Nuclear Security Administration's (NNSA) Office of Defense Nuclear Nonproliferation Research and Development has established three large University-led multi-institution consortia for cutting edge multi-disciplinary research and development, education and training in nuclear nonproliferation. The three consortia include the Nuclear Science and Security Consortium (NSSC) led by University of California at Berkeley, the Consortium for Verification Technology (CVT) led by the University of Michigan, and the Consortium for Nonproliferation Enabling Capabilities (CNEC) led by North Carolina State University. This panel will feature a representative from each leading University that will briefly describe the makeup and mission of each consortium and provide progress updates on some of the technical accomplishments to date.

Panelists:

- Robin Gardner *(NCSU)*
- Sara Pozzi *(Univ of Michigan)*
- Bethany Goldblum *(Univ of California, Berkeley)*

Enhancement of Risk-Informed Decision Making Against External Natural Events - Major Issues and R&Ds for the Enhancement–Panel

Moderator: Prof. George Apostolakis *(Head of Nuclear Risk Research Center)*

Marriott Ballroom: 10:00 a.m.–12:00 p.m.

After the Fukushima Daiichi accident, external natural events have been recognized as important factors for nuclear safety. In the past special sessions (2013 Nov., 2014 June, 2014 Nov.), the current situation and major issues of seismic safety of nuclear power plants in Japan were shared and discussed by U.S. and Japanese experts. During those discussions, the subjective and conservative decision-making approaches were strongly pointed out as the major barriers for improving the nuclear safety assessment, and the barriers are highly expected to be eliminated by adopting Risk-Informed Decision Making (RIDM) approaches.

In this panel discussion, U.S. and Japanese experts will mainly discuss how to orchestrate the way to the implementation of the RIDM against external natural events. Furthermore, major impediments for implementation (e.g. Technical issues, lack of obvious Safety goal) and necessary R&Ds for enhancing the RIDM will be discussed.

Panelists:

- Dr. Robert J. Budnitz *(Lawrence Berkeley National Laboratory)*
- Dr. Nilesh Chokshi *(Consultant, Retired from USNRC)*
- Prof. Tsuyoshi Takada *(University of Tokyo)*
- Prof. Akira Yamaguchi *(University of Tokyo)*
- Prof. Muneo Hori *(University of Tokyo)*

Student Poster Session

Technology Expo - Exhibit Hall A: 11:00 a.m.–1:00 p.m.

Accelerator Applications

1. Extension of Pulse Shape Discrimination to Lower Energies Using a Thin EJ301 Detector, Amanda M. Lewis *(Rensselaer Polytechnic Institute)*, E. Blain, A. M. Daskalakis, Y. Danon

Aerospace Nuclear Science and Technology

2. Analysis of S-CO_2 Brayton Cycle Configurations for the Long-Term Colonization of Mars, Kurt E. Harris *(Utah State University)* Yayu M. Hew, Kevin J. Schillo, Akansha Kumar, Steven D. Howe

Education, Training, and Workforce Development

3. The Walthousen Reactor Criticality Facility: A Unique Tool for Education, Jaron Senecal *(Rensselaer Polytechnic Institute)*

Fuel Cycle and Waste Management

4. Algorithms and Methods for Optimizing Used Nuclear Fuel Allocation Strategy, Gordon M. Petersen *(University of Tennessee)*

Fusion Energy

5. Designing an Electro-Thermal Launcher for the Study of Various Types of Pellet Injection Pertaining to Fusion Tokamak Reactors, James K. Hippler *(University of Florida)*, Leigh Winfrey

Human Factors, Instrumentation, and Controls

6. I2S-LWR Design Control, Benjamin Neff *(Brigham Young University)*

Isotopes and Radiation

7. Characterization of a Fast Neutron Imager Based on Lithium Doped PVT, Richard E. Shawger *(The Ohio State University)*, Lei Cao, Nerine Cherepy

Materials Science and Technology

8. Effect of High Temperature Exposure on Low Temperature (850°C) Pyrolysis Bonded Silicon Carbide, Mehrad Mehr *(University of Florida)*, Mohamed Elbakhshwan, David Sprouster, Simerjeet Gill, Lynne Ecker, Ghatu Subhash, Juan C. Nino
9. Enhancing the Accident Tolerance of Zirconium Fuel Cladding by Surface Modification, James Carr *(Virginia Commonwealth University)*, Gokul Vasudevamurthy
10. Thermodynamic Analysis of Lanthanide-HFAC Complexes Using Isothermal TGA Method, Shayan Shahbazi *(University of Tennessee)*
11. Fabrication of Diffusion Bonded SiC-V-SiC Joints for Fusion Applications, Caleb Massey *(Virginia Commonwealth University)*, James Carr, Gokul Vasudevamurthy
12. Techniques for Thermophysical Characterization of Nuclear Materials, Levi D. Gardner *(Utah State University)*, Changhu Xing, Troy Munro, Zhuorui Song, Luke Scoggins, Chris Martinez, Zilong Hua, Jesse Spackman, Nathaniel Scheelke, Heng Ban

Mathematics and Computation

13. Implementing Delta-tracking in the GPU-accelerated WARP Monte Carlo Neutron Transport Code, Kelly L. Rowland *(University of California, Berkeley)*, Ryan M. Bergmann, Rachel N. Slaybaugh, Jasmina L. Vujic
14. An Iterative Optimization Strategy Using Genetic Algorithms and Gaussian Process Based Regression in Nuclear Reactor Design, Akansha Kumar *(Texas A&M University)*, Pavel V. Tsvetkov

Nuclear Nonproliferation

15. Rapid Analysis of Nuclear Detonation Debris using Thermochromatography, Adam Stratz *(University of Tennessee)*, Colton J. Oldham, Austin D. Mullen, Howard L. Hall
16. Developing Accurate Fallout Mapping for Urban Detonations, Jerrad Phillip Auxier *(University of Tennessee)*, Loraine C. Ilia, Dr. John D. Auxier, Dr. Howard L. Hall
17. Validation of a Bayesian Algorithm for Broad Area Search Applications Using a UAV, Emilie Fenske *(University of Tennessee)*, James Ghawaly, Howard Hall
18. Development of a Radioisotope Identification Algorithm for Gamma Spectra with a Low Energy Signal-to-noise Ratio, James M. Ghawaly, Jr. *(University of Tennessee Knoxville)*, Howard Hall
19. Fresh Fuel Measurements with the Differential Die-Away Self-Interrogation Instrument, Alexis C. Trahan *(University of Michigan)*, A. P. Belian, M. T. Swinhoe, H. O. Menlove, M. Flaska, and S. A. Pozzi
20. Simulation of Activation Product Gamma-Ray Spectra for Nuclear Forensics, John J. Goodell *(University of Maryland)*, Christine M. Egnatuk, Bryan B. Bandong
21. Verification of Minimum Detectable Activity for Radiological Threat Source Search, Hannah Gardiner *(University of Florida)*, Mitchell Myjak, James Baciak, Rebecca Detwiler, Carolyn Seifert
22. Safeguards-by-Design Guidance for Molten Salt Reactors, Dane de Wet *(University of Tennessee, Knoxville)* Cancelled
23. General-use Differential Die-Away Instrument Designs for Spent Nuclear Fuel Characterization, Alison Goodsell *(Texas A&M University)*, Martyn Swinhoe, Vladimir Henzl, Estevan Trujillo

Operations and Power

24. The Future of Nuclear Desalination, Jessica L. Bishop *(Virginia Commonwealth University)*, Ibrahim Khamis
37. Preliminary Design of a Thermal Storage System for Use with a Current Light Water Reactor, James Richards *(Brigham Young University)*, Richard Fitzhugh, Matthew Memmott

Reactor Physics

25. Uncertainty Quantification of the Benchmark for Evaluation and Validation of Reactor Simulations, Miriam A. Rathbun *(University of Pittsburgh)*, Benoit Forget
26. The NESTLE 3D Nodal Core Simulator, Travis J. Labossiere-Hickman *(University of Tennessee, Knoxville)*, Nicholas P. Luciano, Keith E. Ottinger, Cole Gentry, A.J. Pawel, Ondrej Chvala, G. Ivan Maldonado Cancelled
27. Sensitivity Analysis of the Experimental Breeder Reactor II, Bilguun Byambadorj *(Idaho State University)*, Shawn Seegmiller
28. Exploration into Disruptive Technologies for Nuclear Energy, Kristina Yancey Spencer *(Texas A&M University)*, Gwyn Rosaire, Akansha Kumar, Charles Stratton, Jonathan Scherr, Pavel V. Tsvetkov
29. EBR II Benchmarking Project, Mary Toston *(Idaho State University)*, Quinton Beaulieu, Matthew Thiel

Thermal Hydraulics

30. Development of Thermal Hydraulic Simulation Models for TAMU Water-Cooled RCCS, Timothy M. Crook *(Texas A&M University)*, Rodolfo Vaghetto, Yassin Hassan
31. A Mesh of the Conic End Reduction of the Rods in the MATiS-H Facility, Jesse E. Latimer *(Texas A&M University)*, Elia Merzari, Yassin Hassan

Student Poster Sessions *continued on page 32*

Student Poster Sessions *continued from page 31*

32. Development of Baseline Flow Profiles for Turbulent Twin Jet Simulations Using the Spectral Element Code Nek5000, John P. Mulloy *(Texas A&M University)*, E.Merzari, Y. A.Hassan
33. Positron Emission Particle Tracking in Pulsatile Flow, Nitant P. Patel *(University of Tennessee at Knoxville)*, Seth Langford, Matthew Buttrey, Cody Wiggins, Roque Santos, Arthur Ruggles
34. Jet Flow Validation of Positron Emission Particle Tracking (PEPT) Utilizing High Speed Video (HSV), Seth T. Langford (*University of Tennessee-Knoxville)*, Nitant Patel, Cody Wiggins, Matthew Buttrey, Roque Santos, Arthur Ruggles

Co-op or Internship Experience and Results

35. Reactivity Management: More than Just Reactor Engineers, Kathryn Mummah *(University of Illinois at Urbana-Champaign)*

Best Practices for Student Sections

36. Establishing a New Yet Strong Student Section, Shane Gallagher *(Brigham Young University)*, Trent Lai

Technical Sessions – 1:00-4:20 p.m.

Collaborative R&D for Future Nuclear Energy–Panel

Sponsored by FCWMD
Session Organizer and Chair: Fiona E. Rayment *(NNL)*

Delaware A: 1:00-4:00 p.m.

This panel session will discuss the collaborative Research & Development that is currently underway with regard to future nuclear energy systems. Consisting of a number of recognized experts and senior nuclear professionals, consideration will be given to the importance of collaborations between National Laboratories and Universities and will have both a national and international focus. Consideration will also be given on why more collaboration is happening together with the benefits being delivered on future Nuclear Energy Systems. Topics being discussed will include European Framework R&D (H2020), DOE, NE, University funded R&D, National Lab Collaborations at an international level, and the development of skills and facilities through sharing of resources.

Panelists:

- Andrew Griffith *(US DOE)*
- Andrew Sherry *(UK National Nuclear Lab)*
- Luc Van Den Durpel *(Nuclear-21.Net)*
- Terry Todd *(INL)*

Nuclear Installations Safety: General

Sponsored by NISD
Session Organizer: Virginia D. Cleary-Ivanoff *(Bechtel National: WTP)*
Chair: William C. Horak *(BNL)*

Delaware B: 1:00-4:20 p.m.

1:00 p.m.

Facilitating International Licensing for Small Modular Reactors (World Nuclear Association), Kristiina Söderholm *(Fortum)*

1:25 p.m.

Applications of PCTRAN for URG Evaluations Under SBO Conditions in Chinshan BWR/4, T. Y. Wang, Y. T. Hsu, S. W. Chen *(National Tsing Hua Univ)*

1:50 p.m.

Advanced Licensing and Safety Engineering Method - ADLAS™, Kristiina Söderholm, Pekka Nuutinen *(Fortum)*

2:15 p.m.

Conceptual Design for a Primary Containment Capture System (PCCS), Hyungjooh Na, Robert M. Field *(KEPCO)*

2:40 p.m.

Development and Initial Validation of Core Meltdown Progression Accident Simulation Software (COMPASS), D. H. Kim, J. H. Bae *(KAERI),* R. M. Podowski *(Podowski Engineering Consulting),* M. Z. Podowski *(Podowski Engineering Consulting, RPI)*

3:05 p.m.

Transient Hydraulic Response of a PWR Steam Generator to a Feed Water Line Break, Jong Chull Jo *(Korea Inst Nucl Safety)*

3:30 p.m.

Design Concept on the 4th and 5th Layers Defense-In Depth Risk Monitor to Cope with Severe Accident, Hidekazu Yoshikawa *(Harbin Engineering Univ, Symbio Community Forum)*, Ming Yang, Zhijian Zhang *(Harbin Engineering Univ)*

3:55 p.m.

Investigation of Foam-Based Removal of Gaseous Iodine, Irfan Younus, Man Sung Yim *(KAIST)*

Decommissioning Regulatory Requirements for Nuclear Power Plants–Panel

Sponsored by DESD
Session Organizers and Cochairs: Brooke Traynham *(PricewaterhouseCoopers LLP),* James Clark *(Vanderbilt Univ)*

Maryland A: 1:00-4:00 p.m.

Given the premature shutdown of several nuclear plants in recent years, there is an increased attention to the efficiency of current decommissioning regulations and guidance. Many of the current regulations are designed for operating reactors and therefore, do not precisely consider the state of the reactor once it goes into permanent shutdown and defueling. This panel will bring together industry and government representatives to discuss regulatory issues surrounding the closure of plants with a focus on the license amendment actions to reflect changes in the plant, as well as exemptions to emergency planning and security requirements, and decommissioning funding considerations.

Panelists:

- Pam Cowen *(Exelon)*
- Peter Swigart *(Entergy)*
- Eric Leeds *(Talisman)*
- Tom Palmisano *(SONGS)*
- Tom Magette *(PwC)*

Advances in Radiation Detection and Measurement

Sponsored by IRD; cosponsored by BMD
Session Organizer and Chair: Igor Jovanovic *(Penn State)*

Maryland B: 1:00-3:05 p.m.

1:00 p.m.

A Convolution Method for Identification of Moving Radiation Sources, Thomas E. Albert *(Dept of Homeland Security)*

1:25 p.m.

Sb-doped BiI3—Developing the Next Room Temperature Spectrometer, Paul M. Johns *(Univ of Florida)*, Mary Bliss *(PNNL)*, Juan C. Nino *(Univ of Florida)*

1:50 p.m.

Studying Environmental Effects on Radiation Detectors Response, Braden Goddard, George W. Hitt, Alexander A. Solodov *(Khalifa Univ)*

2:15 p.m.

A Real-Time Personal Neutron Dosimeter using Microstructured Solid-State Neutron Detectors, A. Weltz, I. Bhat, R. Dahal, Y. Danon *(RPI)*

2:40 p.m.

Uranium Enrichment Measurements Simulations Using MCBEND Monte Carlo Code for Nuclear Safeguards and Security Education, Alexander A. Solodov *(Khalifa Univ, Gulf Nuclear Energy Infrastructure)*, Braden Goddard *(Khalifa Univ)*

Innovations in Fuel Cycle Research—A Student Competition

Sponsored by ETWDD
Session Organizer: Cathy S. Dixon *(West Texas A & M Univ)*
Chair: Patricia D. Paviet *(DOE)*

Maryland C: 1:00-3:30 p.m.

1:00 p.m.

Controlled Crystallization of Non-Radioactive Salts from Legacy Nuclear Waste, Daniel Griffin, Martha A. Grover, Yoshiaki Kawajiri, Ronald W. Rousseau *(Georgia Tech)*

1:25 p.m.

Electrochemical Monitoring of Nuclear Material in Molten Salts, Devin Rappleye, Milan Štika, Michael F. Simpson *(Univ of Utah)*

1:50 p.m.

Functionalization and Oxo Ligand Substitution of Uranyl (UO_2^{2+}) via Reductive Silylation, Elizabeth A. Pedrick, Guang Wu, Trevor W. Hayton *(Univ of California, Santa Barbara)*

2:15 p.m.

Program Optimization and Improved Workflow Synthesis for the OpenMOC Neutron Transport Code, William Boyd, Samuel Shaner, Benoit Forget, Kord Smith *(MIT)*

2:40 p.m.

Irradiation Accelerated Corrosion of 316L Stainless Steel in PWR Conditions, Stephen S. Raiman, Gary. S. Was *(Univ of Michigan)*

3:05 p.m.

Hedging Strategies in Fuel Cycle Decision-making, Urairisa Phathanapirom, Erich Schneider *(Univ of Texas at Austin)*

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Fusion Energy—Devices and Applications

Sponsored by FED
Session Organizer: Arnold Lumsdaine *(ORNL)*
Cochairs: Blair P. Bromley *(Canadian Nuclear Laboratories),* Arnold Lumsdaine *(ORNL)*

Madison A: 1:00-3:55 p.m.

1:00 p.m.

Estimation of Transient Effects of >2 mm Radii in Electrothermal Plasma Launchers for Fusion Fueling, Micah J. Esmond *(Virginia Tech)*, A. Leigh Winfrey *(Univ of Florida)*

1:25 p.m.

Thermal, Hydraulic, and Structural Analysis of the Wendelstein 7-X Divertor Scraper Element, Arnold Lumsdaine *(ORNL)*, Emily Clark *(Univ of Tennessee, Knoxville)*, Jean Boscary *(Max Planck Institute for Plasma Physics)*, Kivanc Ekici *(Univ of Tennessee, Knoxville)*, Jeffrey Harris, Dean McGinnis, Jeremy Lore *(ORNL)*, Jörg Tretter *(Max Planck Institute for Plasma Physics)*

1:50 p.m.

Design and Analysis of Miter Bends for High Power Electron Cyclotron Heating Transmission Lines, Arnold Lumsdaine, Greg Hanson *(ORNL)*, Joseph Tipton *(Lipscomb Univ)*, Alex Melin, Charles Schaich, Ira Griffith *(ORNL)*

2:15 p.m.

Computational Design of Short Pulse Laser Driven Iron Opacity Measurements, Madison E. Martin *(LLNL, Univ of Florida)*, Richard London *(LLNL)*, Sedat Goluoglu *(Univ of Florida)*, Heather Whitley *(LLNL)*

2:40 p.m.

Activation Analysis of Lithium-based Ternary Alloys in IFE Blankets, Alejandra Jolodosky, Massimiliano Fratoni *(Univ of California, Berkeley)*, Wayne Meier, James Demuth, Susana Reyes *(LLNL)*

3:05 p.m.

Measurement and Modeling of Mechanical Behavior of V-SiC Interfacial Joints for Fusion Applications, Yomna H. Abdelmoaty, Gokul Vasudevamurthy *(VCU)*

3:30 p.m.

Development of High Intensity D-T Fusion Neutron Generator (HINEG), Yican Wu, Gang Song, Yongfeng Wang, Taosheng Li, Chao Liu, Jieqiong Jiang, FDS Team *(Chinese Academy of Science)*

Overview of National Lab Facilities for Radioactive Material

Sponsored by MSTD
Session Organizer and Chair: J. Rory Kennedy *(INL)*

Madison B: 1:00-4:20 p.m.

1:00 p.m.

Mechanical Testing and Post Irradiation Examination in the Wing 9 Hot Cells at Los Alamos National Laboratory, Tarik A. Saleh, Stuart A. Maloy, Matthew E. Quintana, Tobias J. Romero *(LANL)*

1:25 p.m.

LAMDA: A Facility for Advanced Characterization of Irradiated Materials at Oak Ridge National Laboratory, Keith J. Leonard, Kevin G. Field, Chad M. Parish, Philip D. Edmondson, Maxim N. Gussev, Xunxiang Hu, Chinthaka M. Silva, Anne A. Campbell, N.A.P. Kiran Kumar, Kurt A. Terrani, Jeremy T. Busby, Yutai Katoh *(ORNL)*

1:50 p.m.

Radioactive Materials Characterization at the National Synchrotron Light Source-II, Lynne E. Ecker, David J. Sprouster, Eric Dooryhee *(BNL)*

2:15 p.m.

Fuels and Materials Characterization Capabilities at the Idaho National Laboratory and the Center for Advanced Energy Studies, James I. Cole, Assel Aitkaliyeva *(INL)*, Yaqiao Wu, Jatuporn Burns *(BSU)*, Joanna Taylor *(Univ of Idaho)*

2:40 p.m.

The Radiochemical Processing Laboratory at the Pacific Northwest National Laboratory, Walter Luscher *(PNNL)*

3:05 p.m.

Irradiation Assisted Stress Corrosion Cracking Testing Capability at INL, S. Teysseyre. J. H. Jackson, M. Heighes *(INL)*

3:30 p.m.

Advanced Postirradiation Examination Facilities at the Idaho National Laboratory, Mitchell K. Meyer, Collin Knight *(INL)*

3:55 p.m.

Argonne Capabilities for Radioactive Materials Characterization in the Irradiated Materials Laboratory (IML), M.C. Billone, Y. Chen *(ANL)*

Experimental Thermal Hydraulics—I

Sponsored by THD
Session Organizer: Wade R. Marcum *(Oregon State Univ)*
Cochairs: Wade R. Marcum *(Oregon State Univ)*, Yassin Hassan *(Texas A&M)*

Washington 2: 1:00-4:20 p.m.

1:00 p.m.

Two-Phase Swirling Flow in a Gas-Liquid Separator, Hayato Funahashi, Kosuke Hayashi, Shigeo Hosokawa, Akio Tomiyama *(Kobe Univ)*

1:25 p.m.

Low Pressure Contact Resistance Characterization for HTTF Graphite Interfaces, M. A. Hertel, B. G. Woods, G. C. Blake *(Oregon State Univ)*

1:50 p.m.

Particle Image Velocimetry on a Single Buoyant Plume of the Very High Temperature Gas-Cooled Reactor, Jae-Hyung Park, Anas Alwafi, Saya Lee, Yassin A. Hassan, N. K. Anand *(Texas A&M)*

2:15 p.m.

Ultrasonic Inspection Technique for Fuel Debris Combining Ultrasonic Velocity Profiler and Aperture Synthesis Methods, Takuya Kawachi, Tomonori Ihara, Hiroshige Kikura *(Tokyo Inst Technol)*

2:40 p.m.

PWR Fuel Bundle Response to Earthquake Motions in Still Water, Noah A. Weichselbaum, S. Hussain, M. Rahimi Abkenar, M. T. Manzari, P. M. Bardet *(George Washington Univ)*

3:05 p.m.

Three Dimensional Phase Averaged Velocity in PWR Fuel Bundles under External Forcing, Noah A. Weichselbaum, S. Hussain, M. Rahimi Abkenar, M. T. Manzari, P. M. Bardet *(George Washington Univ)*

3:30 p.m.

Integral Effect Test on Operational Performance of the PAFS for a SGTR Accident, Yusun Park, Byoung-Uhn Bae, Seok Kim, Kyoung-Ho Kang *(KAERI)*

3:55 p.m.

Development of Two-color/Two-dye Planar Laser Induced Fluorescence (PLIF) Using a Single Color Camera, Saya Lee, Yassin A. Hassan *(Texas A&M)*

Education and Training: General—I

Sponsored by ETWDD
Session Organizer: John S. Bennion *(GE Hitachi Nuclear)*
Chair: Lisa M. Marshall *(NCSU)*

Washington 3: 1:00-3:55 p.m.

1:00 p.m.

Regional, Educational and Strategic: the Gulf Nuclear Energy Infrastructure Institute (GNEII) in Year 5, Adam D. Williams *(SNL)*, Alexander Solodov *(Khalifa Univ)*, David R. Boyle *(Texas A&M)*, Amir H. Mohagheghi *(SNL)*, Philip A. Beeley *(Khalifa Univ)*

1:25 p.m.

Nuclear Security Curriculum Development for Academic Programs of Moroccan Universities—Status and Progress, Oum Keltoum Aziza Bouhelal *(ENSMR Engineering School)*

1:50 p.m.

Integral Nonproliferation Introductory Teaching and Learning (INITIAL) Module for Nuclear Engineering Courses at U.S. Universities, Alexis Trahan, Rian Bahran *(LANL)*, Catherine Snow *(Sno Consulting LLC)*, Sean Morrell *(INL)*

2:15 p.m.

Social Engineering: A Cybersecurity Threat, Jane LeClair *(National Cybersecurity Institute)*

2:40 p.m.

Integrating Leadership into Nuclear Engineering Technology Degree Programs, Michael Johnson, Khamel Abdulai *(Excelsior College)*

3:05 p.m.

Regional Cooperative Nuclear Engineering Summer Schools in Western Pacific Basin, T. K. Yeh, J. H. Liang, C. Shih *(National Tsing Hua Univ)*

3:30 p.m.

Role of Nuclear in the Future Energy Production System (Scandinavia Case Study), Kristiina Söderholm, Ville Lestinen *(Fortum)*

New Nuclear Construction Around the World—Status Report–Panel

Sponsored by OPD
Session Organizers and Cochairs: Edward L. Quinn *(Technology Resources)*, Corey K. McDaniel *(INL)*

Washington 4: 1:00-4:00 p.m.

This panel provides the latest information on the status and progress in new nuclear construction around the world including government, regulatory, owner-operator, and vendor input. Speakers address the latest in key issues that have an impact on the selection of new designs and the status of construction activities.

Panelist:

- U.S. DOE International Programs, Edward McGinnis *(Nuclear Energy)*
- Doug Walters *(NEI)*
- Lixin Shen *(Chinese Nuclear Society, CNNC)*
- Kristiina Soderholm *(FORTRUM)*
- Ron Cameron *(British Embassy)*

Reactor Analysis Methods—I

Sponsored by RPD; cosponsored by MCD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Temitope A. Taiwo *(ANL)*

Washington 5: 1:00-2:40 p.m.

1:00 p.m.

Is 3-D Resonance Self-shielding Calculation Necessary for the Direct Transport Method in LWR Analysis?, Yuxuan Liu, William R. Martin *(Univ of Michigan)*

1:25 p.m.

Analysis of LEU Pincell and Assembly Benchmark using VISWAM Code, Arvind K. Mathur, Suneet Singh *(Indian Institute of Technology)*, Suhail Ahmad Khan, V. Jagannathan *(BARC)*, L. Thilagam *(Safety Research Institute)*

1:50 p.m.

GeN-Foam: A Novel Multi-Physics Solver for Reactor Analysis – Status and Ongoing Developments, Carlo Fiorina *(EPFL)*, Konstantin Mikityuk *(Paul Scherrer Institut)*, Andreas Pautz *(EPFL, Paul Scherrer Institut)*

2:15 p.m.

Impact of 3D Modeling and Homogenization of Control Rods on Reactivity in CFV-type SFR Cores, Mikael Andersson *(Chalmers Univ, CEA)*, David Blanchet *(CEA)*, Henrik Nylén *(Chalmers Univ)*, Robert Jacqmin *(CEA)*

Reactor Physics: General—I

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Piero Ravetto *(Politecnico di Torino)*

Washington 6: 1:00-2:20 p.m.

1:00 p.m.

Implementation of Unionized Energy Grid and Woodcock Tracking in RMC Code, Shichang Liu, Jingang Liang, Kan Wang *(Tsinghua Univ)*

1:25 p.m.

Theoretical Expression of Area Ratio Method Using Detected-Neutron Multiplication Factor, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

1:50 p.m.

Assessment of the Validation Domain of Reduced Order Modeling, Mohammad G. Abdo, Hany S. Abdel-Khalik *(Purdue Univ)*

Rationalizing Recycling in a Non-Proliferation World: An ANS Public Policy Track–Panel

Sponsored by NNPD
Session Organizer and Chair: Paul T. Dickman *(ANL)*

Washington 1: 1:00-4:00 p.m.

With the recent change of control in Congress, and a presidential election looming ahead, there are significant changes in nuclear policy that may occur in the next couple of years. This track brings together some of Washington's foremost policy experts within Capitol Hill, the executive branch, and the DC nuclear policy community to discuss the future of nuclear policy at the federal level, including the advanced reactors, nuclear fuel cycles, climate change policy, nonproliferation policy, and nuclear exports.

Panelists:

- Dan Lipman, Panel Moderator *(NEI)*
- Dr. Peter B. Lyons *(former Assistant Secretary for DOE/NE)*
- Sharon Squassoni *(CSIS)*
- Dr. Man-Sung Yim *(KAIST)*
- Charles D. Ferguson *(Federation of American Scientists)*
- Eric Loewen *(General Electric)*
- Sven Bader *(AREVA)*

Technical Sessions – 8:00 a.m.-12:00 p.m.

Updates on Nuclear Waste Repository Projects

Sponsored by FCWMD

Session Organizer and Chair: Jean-Francois Lucchini *(LANL)*

Delaware A: 8:00-10:05 a.m.

8:00 a.m.

Recovery of the Waste Isolation Pilot Plant following the February 2014 Underground Release Event, Tim Runyon, Dana Bryson *(DOE, Carlsbad Field Office)*

8:25 a.m.

The French Geological Disposal Project, Cigéo, Bernard Faucher, Gérald Ouzounian *(ANDRA)*

8:50 a.m.

Status and Prospects of LILW and SNF Management in Korea, Jong-In Lee *(Korea Radioactive Waste Agency)*

9:15 a.m.

Mechanical Analysis of Wheeled Canisters and Slant-path Boreholes for Disposal of Nuclear Spent Fuel, Roberto Formento Cavaier *(Politecnico di Torino)*, Michael J. Driscoll *(MIT)*

9:40 a.m.

Thermal Analysis for DWPF Glass Waste Storage Building Double Stacking, J. E. McAllister, Jr., M. R. Yeung, P. A. LaVigne, D. C. Thoman, J. E. Owen *(AECOM URS Professional Solutions)*

Progress in U.S. DOE's Fuel Cycle R&D Program–Panel

Sponsored by FCWMD

Session Organizer and Chair: Jack D. Law *(INL)*

Delaware B: 8:00 a.m.-12:00 p.m.

The objective of this session is to disseminate information and stimulate discussion regarding recent research and development (R&D) progress by early to mid career researchers in the U.S. Department of Energy's (DOE's) Fuel Cycle Research and Development (FCR&D) program. The session will consist of technical presentations provided by researchers in several technical areas of the FCR&D program. Talks will cover a broad range of subjects, including but not limited to: separation technologies, waste form development, innovative fuels, systems analysis, used fuel disposition, material protection and control, and modeling/simulation. The researchers will also be recognized for their contributions to the FCR&D Program.

Panelists:

- Stephanie Bruffey *(ORNL)*
- Amanda Casella *(PNNL)*
- Kevin Field *(ORNL)*
- Jason Harp *(INL)*
- Ed Hoffman *(ANL)*
- Eric Rauch *(LANL)*
- Laura Maggos *(ANL)*
- Nick Klymyshyn *(PNNL)*

Nuclear Politics: Perspectives from ANS Congressional Fellows and Nuclear Advocates–Panel

Sponsored by YMG

Session Organizer and Chair: Harsh S. Desai *(BMPC - Naval Nuclear Lab)*

Maryland A: 8:00-10:00 a.m.

The objective of this session is to discuss the ANS Congressional Fellowship experience, the need for public policy engagement on nuclear issues, and highlight career development opportunities in public policy. The panel members will discuss and interact with the audience on their involvement in the nuclear policy efforts, their experience working with policy makers, and the benefits of fellowship experience to their current and future endeavors.

1st Panel:

- Harsh S. Desai *(Naval Nuclear Laboratory)* - 2014 ANS Congressional Fellow
- Jeremy Pearson *(Current ANS Congressional Fellow with Senator Hatch)*
- Timothy E. Valentine *(ORNL)* - 2003 ANS Congressional Fellow
- Eric P. Loewen *(GE Hitachi Nuclear Energy)* - 2005 ANS Congressional Fellow
- Chad J. Boyer *(CB&I)* - 2012 ANS Congressional Fellow
- Vincent Esposito *(Univ of Pittsburgh)* - 2013 ANS Congressional Fellow
- Craig H. Piercy *(ANS Washington Representative)*

2nd Panel:

- Harsh Desai *(Naval Nuclear Laboratory)*
- Lenka Koller *(Nuclear Undone)*
- Craig H. Piercy *(ANS Washington Representative)*
- Remy Devoe *(Univ of Tennessee)*
- Art Wharton *(Westinghouse)*

Student Conference Proposal Writing and Planning–Panel

Sponsored by YMG
Session Organizer and Chair: Catherine M. Perego *(Westinghouse)*

Maryland A: 10:00 a.m.-12:00 p.m.

The objective of the Planning a Student Conference Panel is to share experiences, expertise, and lessons learned from past conference organizers with student sections considering writing a proposal to host an ANS National Student Conference as well as those daunted by or unfamiliar with the bid process. This panel consists of a short overview of the proposal writing process, key lessons learned over the years, and some important aspects that winning proposals have in common. The session will also contain ample time for Q&A, allowing the audience to ask questions specific to their section, city, venue, etc. The overarching goal of the session is to encourage more student sections to submit bids, and show that sections, big and small, in cities all across the country, can host a successful and engaging student conference.

Panelists:

- Timothy Crook *(Texas A&M Univ)*
- Catherine Perego *(Westinghouse)*
- Brett Rampal *(NuScale)*
- Rachel Slaybaugh *(Univ of California, Berkeley)*
- Alexis Trahan *(LANL)*

Transport Methods: Monte Carlo and Radiative Transfer

Sponsored by MCD
Session Organizer and Chair: Ryan G. McClarren *(Texas A&M)*

Maryland B: 8:00-10:30 a.m.

8:00 a.m.

Analysis of α-Approximation for Nonlinear Radiative Transfer Problems, Pedram Ghassemi, Dmitriy Y. Anistratov *(NCSU)*

8:25 a.m.

Improved Monte Carlo Tallying of Multi-Group Scattering Moments Using the NDPP Code, Adam G. Nelson, William R. Martin *(Univ of Michigan)*

8:50 a.m.

Deterministic Fission Matrix Acceleration of Monte Carlo Calculations, Steven Hamilton, Tom Evans *(ORNL)*

9:15 a.m.

The Temperature Zoning Method for the On-the-Fly Thermal Scattering Sampling Procedure, Andrew T. Pavlou, Wei Ji *(RPI)*

9:40 a.m.

Doppler Broadening by Linear Combination of Reference Temperature Cross Sections—L2 Kernel Minimization Cross Section Temperature Interpolation Methods, Pablo Ducru, Colin Josey *(MIT)*, Vladimir Sobes *(ORNL)*, Benoit Forget, Kord Smith *(MIT)*

10:05 a.m.

A Monte Carlo Algorithm for Fission Chain Analysis of Dynamic Stochastic Systems, Travis J. Trahan, Steven Nolen, Terry Adams, Jeremy Sweezy *(LANL)*

Uncertainty Quantification and Sensitivity Analysis Methods

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Zeyun Wu *(NIST)*

Maryland B: 10:30-11:20 a.m.

10:30 a.m.

Adjoint-Based Sensitivity Analysis for Flux Limited Diffusion, Kelli Humbird, Ryan McClarren *(Texas A&M)*

10:55 a.m.

Improvement of the Fast Fourier Transform Based Method for Thermal-Hydraulic System-Code Accuracy Quantification, Tae Wook Ha *(Pusan National Univ)*, Ki Yong Choi *(KAERI)*, Jae Jun Jeong *(Pusan National Univ)*

Recent Nuclear Criticality Safety Program Accomplishments (Dedicated to Adolf Garcia)

Sponsored by NCSD
Session Organizer: Nichole Ellis *(Ellis Nuclear Eng LLC)*
Chair: Jerry N. McKamy *(DOE)*

Maryland C: 8:00-10:30 a.m.

8:00 a.m.

New NCSP Contributions to ICSBEP and DICE, David Heinrichs *(LLNL)*, Ian Hill *(OECD/NEA)*

8:25 a.m.

Design of Two New Critical Experiments, C. Percher, S. Kim, D. Heinrichs *(LLNL)*

8:50 a.m.

MCNP Progress and Performance Improvements, Forrest B. Brown, Jeffrey S. Bull, Michael E. Rising *(LANL)*

9:15 a.m.

Analysis of Thermal Neutron Scattering in Polymethyl Methacrylate (Lucite), A. I. Hawari, A. Petersen, Y. Zhu, J. L. Wormald *(NCSU)*, D. P. Heinrichs *(LLNL)*, M. L. Zerkle *(BAPL)*

9:40 a.m.

SAMINT: A New Evaluation Tool to Perform Resonance Parameter Data Adjustments based on Integral Experiment Data, Vladimir Sobes, Luiz Leal, Goran Arbanas, Marco Pigni *(ORNL)*

10:05 a.m.

The DOE Criticality Safety Support Group—A Retrospective Perspective, Fitz Trumble *(URS Corporation)*, David Erickson *(Savannah River Nuclear Solutions)*

Radiation Protection and Shielding of Fusion and Fission Power Systems

Sponsored by RPSD; cosponsored by FED
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Arkady Serikov *(KIT)*

Madison A: 8:00-9:40 a.m.

8:00 a.m.

Neutronics for Diagnostic Systems of ITER Port Plugs, A. Serikov *(KIT)*, R. Barnsley, L. Bertalot, M. De Bock, R. O'Connor *(ITER)*, U. Fischer *(KIT)*, R. Thenevin *(ITER)*

8:25 a.m.

Estimating Radionuclide Dose from Contaminated Surfaces of the Piping Systems at Nuclear Power Plants, A. I. Ksenofontov, E. I. Kurbatova, Alalaween Hamdi Abdel Ruhman *(Moscow Engineering Physics Institute)*, N. A. Mould, J. L. Regens *(Univ of Oklahoma)*

8:50 a.m.

Preliminary Analysis of Source Term and Consequence Assessment of Hypothetical Fuel Assembly Meltdown Accident for CLEAR-I, Tongqiang Dang, Ming Jin, Pengcheng Long, Chufeng Jin, Yican Wu, FDS Team *(Chinese Academy of Sciences)*

9:15 a.m.

Coupling of MCNP5 to ORIGEN to Support ATR NSUF Experiments, Joseph W. Nielsen *(INL)*, G. Robert Odette *(Univ of California, Santa Barbara)*, Michael Sprenger, Thomas Maddock *(INL)*

Radiation Protection and Shielding–Roundtable

Sponsored by RPSD
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Hatice Akkurt *(EPRI)*

Madison A: 9:40 a.m.-12:00 p.m.

Everyone is invited to give a short presentation on any radiation protection and shielding topic of interest. Ten-minute time slots will be allotted on first-come/first-serve basis. This session is meant to be fast, informal, and fun.

Nuclear Fuels; Performance, Testing, and Disposition

Sponsored by MSTD
Session Organizer: Kenneth J. Geelhood *(PNNL)*
Chair: Yong Yang *(Univ of Florida)*

Madison B: 8:00-10:55 a.m.

8:00 a.m.

Corrosion and Radiation Damage of Single Layer Coatings on Steel for High Level Waste Packages, Michael Fusco, Yasar Ay *(NCSU)*, Abigail Casey *(Univ of Florida)*, Mohamed Bourham *(NCSU)*, Leigh Winfrey *(Univ of Florida)*

8:25 a.m.

Evaluation of Mechanical Properties of Coated Steel for HLW Packages, Abigail H.M. Casey *(Univ of Florida)*, Caroline A. Campbell *(Virginia Tech)*, Michael A. Fusco, Mohamed A. Bourham *(NCSU)*, A. Leigh Winfrey *(Univ of Florida)*

8:50 a.m.

Status of the B-14 Experiment Modeling Using BISON, Pavel G. Medvedev *(INL)*

9:15 a.m.

Innovative Coating of Vanadium Carbide on the F/M Stainless Steel for Mitigating Fuel Cladding Chemical Interaction, Kookhyun Jeong, Shaosong Huang, Yong Yang *(Univ of Florida)*

9:40 a.m.

Case Comparison between FRAPTRAN and BISON for an Idealized Reactivity-Initiated Accident of a Light Water Reactor Fuel, Rod C. Folsom *(Utah State Univ)*, P. Raynaud *(NRC)*, A. Zabriskie *(Oregon State)*, R. Williamson *(INL)*, H. Ban *(Utah State Univ)*, D. Wachs *(INL)*

10:05 a.m.

Out-of-pile Study of Constituents Migration in U-Zr and U-Zr-Ce Alloys under Thermal Gradients, Yeon Soo Kim, T. Wiencek, E. O'Hare, J. Fortner *(ANL)*, B. O. Lee, J. S. Cheon *(KAERI)*

10:30 a.m.

Physical Property Model for Advanced Oxide Fuels, Masato Kato *(JAEA)*, Kenneth J. McClellan *(LANL)*

Young Professional Thermal Hydraulics Research Competition

Sponsored by THD
Session Organizer: Annalisa Manera *(Univ of Michigan)*
Cochairs: Rui Hu *(ANL)*, Piyush Sabharwall *(INL)*

Washington 2: 8:00-9:40 a.m.

8:00 a.m.

Measurements of Boric Acid Concentration in PASTA Experimental Facility, M. Childs, P. Jones, R. Vaghetto, Y.A. Hassan *(Texas A&M)*

8:25 a.m.

Fluid Structure Interaction Measurements of a PWR Fuel Bundle with Seismic Forcing, Noah Weichselbaum, P. M. Bardet, S. Hussain, M. Rahimi Abkenar, M. Manzari *(George Washington Univ)*

8:50 a.m.

Sensitivity of Boundary Conditions and Flow Domain for Pressure Drop Estimation for Molten Salts in a Crossflow Tube Bundle, L. B. Carasik *(Texas A&M)*, D. R. Shaver *(RPI)*, Yassin A. Hassan *(Texas A&M)*

9:15 a.m.

Newton-Krylov Methods in Solving Phase Appearance Problem Due to Phase Change, Ling Zou, Haihua Zhao, Hongbin Zhang *(INL)*

Computational Fluid Dynamics (CFD) V&V

Sponsored by THD

Session Organizer: Igor A. Bolotnov *(NCSU)*
Cochairs: Elia Merzari *(ANL)*, David Pointer *(ORNL)*

Washington 2: 9:40-11:20 a.m.

9:40 a.m.

Separate Effects Characterization of the NSTF to Support Computational Modeling, D. Lisowski, A. Kraus, M. Bucknor, R. Hu *(ANL)*

10:05 a.m.

CFD Analysis for the PWR Rod Bundle with Split-Type Mixing Vanes, Shin K. Kang, Yassin A. Hassan *(Texas A&M)*

10:30 a.m.

Interfacial Forces Evaluation on a Single Bubble in Shear Flows Using Interface Tracking Approach, Jinyong Feng, Igor Bolotnov *(NCSU)*

10:55 a.m.

Interface Tracking Simulation of Boiling Phenomena—Single Bubble Verification, Mengnan Li, Igor A. Bolotnov *(NCSU)*

Patents for Nuclear Professionals–Panel

Sponsored by ETWDD
Session Organizer and Chair: Jay Z. James *(Univ of California, Berkeley)*

Washington 3: 8:00-10:00 a.m.

Many nuclear professionals, and especially nuclear engineering graduate students, find themselves developing patentable devices in the course of their research. This panel points out the value of patents to nuclear careers, shows how universities and companies can help prospective inventors, gives ideas on how to recognize and move into research areas that are more conducive to patents, and discusses how to monetize a patent by licensing it from its owner (typically the inventor's university or employer).

Panelists:

- Patricia Paviet *(DOE)*
- Howard N. Shipley *(Gordon and Rees, LLP)*
- Ivelina Metcheva *(VCU)*
- Kimberly E. Coghill *(Buchanan, Ingersoll and Rooney, PC)*

The Importance of Professional Engineering Licensure in the Nuclear Industry–Panel

Sponsored by ETWDD; cosponsored by YMG
Session Organizers: John S. Bennion *(GE Hitachi Nuclear)*, Rebecca Steinman *(Tetra Tech)*
Chair: David Orr *(Duke Energy)*

Washington 3: 10:00 a.m.-12:00 p.m.

Professional engineering registration and licensure laws have been enacted by all 50 states and 5 U.S. jurisdictions to safeguard life, health and property, and promote the public welfare. Despite the undeniable and well-known benefits that nuclear power contributes to public welfare and economic development, perhaps no other field of engineering endeavor has the potential to profoundly impact public safety and property as can the nuclear power industry or the notoriety among antinuclear activists as being inimical to the common health and safety of the public and the environment. In this session, a distinguished panel of experts will provide personal insights from various legal, practical, commercial and regulatory perspectives regarding the importance of professional engineering licensure in the nuclear enterprise and its role in promoting public confidence and acceptance of nuclear power generation.

Panelists:

- Arthur Schwartz *(National Society of Professional Engineers)*
- Tim Groover *(Wiley/Wilson)*
- Steven Arndt *(NRC)*
- Robert Busch *(Univ of New Mexico)*

Operations and Power: General

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: Rita N. Patel *(Univ of Pittsburgh)*

Washington 4: 8:00-10:30 a.m.

8:00 a.m.

Development of a Simplified Estimation Method on Severe Accident Progression in PWR for Education, Shohei Otsuki, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

8:25 a.m.

Impact of Firebrick Resistance-Heated Energy Storage (FIRES) on Electricity Prices in a Nuclear Renewable Grid, Daniel C. Stack, Charles Forsberg *(MIT)*

8:50 a.m.

The Best Value Procurement by Applying the Plant Risk Information and Historical Data, Jinseok Yang, Sunkoo Kang *(KEPCO)*

9:15 a.m.

Evaluation of Carbon Recycling Energy Process Driven by Nuclear Power, Yukitaka Kato *(Tokyo Inst Technol)*

9:40 a.m.

Benchmarking of Coupling Approaches for Modeling of a Whole Nuclear Power Plant, Josh C. Pack, Zheng Fu, Fatih Aydogan *(Univ of Idaho)*

10:05 a.m.

MTBF Estimation of a New Design RCP, Yang Ming, Lu Hongxin, Wang Wenlin, Yoshikawa Hidekazu *(Harbin Engineering Univ)*

Reactor Analysis Method—II

Sponsored by RPD; cosponsored by MCD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Nicolas E. Stauff *(ANL)*

Washington 5: 8:00-10:55 a.m.

8:00 a.m.

ATR MCNP Model Axial Xenon Oscillation-Free Validation, G. S. Chang, J. W. Nielsen, John D. Bess *(INL)*

8:25 a.m.

Uncertainty Estimation of Analysis Model using the Data Assimilation Method, Kuniharu Kinoshita, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

8:50 a.m.

3D Power Shape Matching Method for Power Adaptation in the Online Core Monitoring System, Joo Il Yoon, Hae Chan Lee, Young Ho Park *(KEPCO)*

9:15 a.m.

Fission Probability Density Functions for Kinetic Analysis in Weakly Coupled Fuel Debris, Toru Obara, Delgersaikhan Tuya, Hiroki Takezawa *(Tokyo Inst Technol)*

9:40 a.m.

Underestimation of Statistical Uncertainty of Monte Carlo Method with Non-Analog of Fission Source Sampling, Koji Hayashi, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

10:05 a.m.

Kinetic Analysis of Weakly Coupled Fuel Debris by Integral Kinetic Model, Delgersaikhan Tuya, Toru Obara, Hiroki Takezawa *(Tokyo Inst Technol)*

10:30 a.m.

Application of Partially-Converged Solution of Assembly Calculation for Core Sensitivity Analysis based on Reduced Order Modeling, Ryota Katano, Akio Yamamoto, Tomohiro Endo *(Nagoya Univ)*

Reactor Physics: General—II

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Florent Heidet *(ANL)*

Washington 6: 8:00-10:55 a.m.

8:00 a.m.

Sensitivity and Uncertainty Analysis of Modeled Pu and Cs Isotope Ratios in a Test Pressurized Water Reactor, Andrew Conant, Anna Erickson *(Georgia Tech)*, Martin Robel *(LLNL)*

8:25 a.m.

Power Density Uncertainties in 2D Full Core Serpent Simulations, Kyle M. Ramey, Bojan Petrovic *(Georgia Tech)*

8:50 a.m.

2D Serpent Model for I²S-LWR Radial Reflector Studies, Kyle M. Ramey, Bojan Petrovic *(Georgia Tech)*

9:15 a.m.

Uncertainty Analysis of Th-Fueled Sodium-cooled Fast Reactor, Gerardo Aliberti, Florent Heidet, Nicolas E. Stauff, Taek K. Kim, Temitope A. Taiwo *(ANL)*

9:40 a.m.

The Optimization of Subgroup Levels with the Simulated Annealing Method, Hansol Park, Han Gyu Joo *(Seoul National Univ)*

10:05 a.m.

Generation of KARMA Library with MCNP-GenP Code System and Its Verification, Jeong-yeup Lee, Hae-chan Lee, Chan-oh Park, Hae-seuk Woo *(KEPCO)*

10:30 a.m.

Numerical Application of the Sjöstrand Method without the Pulses Superimposition Methodology, A. Talamo, Y. Gohar *(ANL)*

Proliferation Risk and Sustainability of Nuclear Energy Systems–Panel

Sponsored by NNPD; cosponsored by FCWMD
Session Organizer: Luc G.G. Van Den Durpel *(Nuclear-21.net)*
Chair: Robert A. Bari *(BNL)*

Washington 1: 9:00 a.m.-12:00 p.m.

Nuclear energy as part of sustainable energy futures will only be able to fulfill such role when ensuring international safeguards and avoiding the risk of nuclear proliferation 'wherever, whenever'. Multiple methodologies have been studied and proposed to provide an assessment framework aimed at investigating various options towards nuclear energy systems and seeking to provide indications on where further reduction of potential proliferation risks are primarily to be addressed. The panelists will provide an overview the various facets in assessing the proliferation risk of nuclear energy systems and the path forward to support nuclear energy's continued use as a nonproliferant sustainable option for the future. Subsequent to addressing some of the features of assessment methodologies and results, this panel will discuss those options being considered as prime paths forward such as regional nuclear fuel cycle centers.

Panelists:

- Fiona Rayment *(NNL)*
- Swen Bader*(AREVA)*
- Matt Bowen *(DOE NNSA)*
- Michael Golay *(MIT)*
- Luc G.G. Van Den Durpel *(Nuclear-21.net)*

Technical Sessions – 1:00-4:00 p.m.

Public Perception of Risk: Strategies to Address the "Perception Gap" with Nuclear Technologies–Panel

Sponsored by FCWMD
Session Organizer and Chair: Steve Eugene Skutnik *(Univ of Tennessee)*

Delaware A:1:00-4:00 p.m.

The disparity in how members of the public perceive risks compared to their relative statistical prevalence is a well-known phenomenon termed the "perception gap." In few places is this gap wider than when it comes to nuclear technology, wherein nuclear-related risks are frequently overestimated compared to commonly accepted societal risks, especially those associated with other energy sources.

From where does this "perception gap" arise, and what can nuclear professionals do to address this issue? This panel of experts will discuss the root factors that shape public perception of risk, along with best practices in risk communication and how nuclear professionals can help to narrow the "perception gap."

Panelists:

- David Ropeik *(Ropeik & Associates)*
- Dan Kahan *(Yale Univ)*
- Daniel Mussatti *(NRC)*
- Margaret Harding *(4Factor Consulting)*
- Katherine Rowan *(Georgetown Univ)*

Integrated Spent Nuclear Fuel Management Analysis Capabilities—I

Sponsored by FCWMD
Session Organizer and Chair: John M. Scaglione *(ORNL)*

Delaware B: 1:00-3:30 p.m.

1:00 p.m.

ORIGAMI: A New Scale Interface for Fuel Assembly Characterization With ORIGEN, Steven E. Skutnik *(Univ of Tennessee, Knoxville)*, Mark L. Williams, Robert A. Lefebvre, William A. Wieselquist *(ORNL)*

1:25 p.m.

A Proposed Spent Nuclear Fuel Storage and Transportation Licensing Approach Using As-loaded Analysis, Kaushik Banerjee, John M. Scaglione, John C. Wagner *(ORNL)*

1:50 p.m.

Shielding Analysis Capability of UNF-ST&DARDS, Georgeta Radulescu, Robert A. Lefebvre, Kaushik Banerjee, Paul L. Miller, John M. Scaglione *(ORNL)*

2:15 p.m.

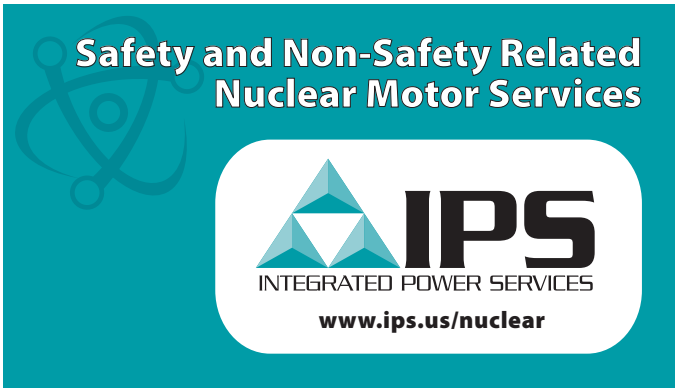
Evaluation of Simplified Models for Estimating Public Dose from Spent Nuclear Fuel Shipments, Kevin John Connolly, Georgeta Radulescu *(ORNL)*

2:40 p.m.

Containment Analysis Capability of UNF-ST&DARDS, Georgeta Radulescu, Robert A. Lefebvre, Paul L. Miller, Adam B. Thompson, Kaushik Banerjee, John M. Scaglione *(ORNL)*

3:05 p.m.

Thermal Modeling Sensitivities with COBRA-SFS for Vertical Dry Casks with Limited Internal Convection, Kevin R. Robb *(ORNL)*



Human Factors, Instrumentation, and Controls: General

Sponsored by HFICD
Session Organizer: Sean M. Smith *(Lockheed Martin)*
Chair: Hash Hashemian *(Analysis and Measurements Services Corp.)*

Maryland A: 1:00-3:55 p.m.

1:00 p.m.

Integrated Approach in Preparation for a Feedwater Control System Upgrade, Cristina Corrales, Fernando Páigoso, Luis Fernandez, Fernando Ortega *(Tecnatom)*

Cancelled

1:25 p.m.

Safety Evaluation of Safety Grade Smart Transmitter in Nuclear Power Plants using Simulation Test Bed, Yeong Jin Yu *(Korea Inst Nuclear Safety, Hanbat National Univ)*, Hyung Tae Kim, Jaeyul Choo, Choong Heui Jeong *(Korea Inst Nucl Safety)*, Jae Heung Lee *(Hanbat National Univ)*

1:50 p.m.

Estimation of Software CCFs for the Safety-Critical Digital Systems in Nuclear Power Plant, Koheun Kim, Jonghyun Kim *(KEPCO)*

2:15 p.m.

Modelling Radiation-Induced Failures in FPGAs Using the Dynamic Flowgraph Methodology, P. McNelles, Z. C. Zeng, G. Renganathan *(Canadian Nucl Safety Comm)*

2:40 p.m.

Simulation and Control of a Two-Loop Liquid Metal Reactor, Austin O'Connor, Jamie Coble *(Univ of Tennessee, Knoxville)*

3:05 p.m.

Simulation of Advanced High Temperature Reactor Control System using MATLAB, I. Skavdahl, V. Utgikar *(Univ of Idaho)*, P. Sabharwall *(INL)*, M. Chen, X. Sun, R.N. Christensen *(Ohio State)*

3:30 p.m.

Integrated Platform for Analysis and Design of Physical Protection System, Zou Bowen, Yang Ming, Song Mengchu *(Harbin Engineering Univ)*

Transport Methods: Deterministic

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Steven P. Hamilton *(ORNL)*

Maryland B: 1:00-4:00 p.m.

1:00 p.m.

A High-Order Nonlinear Diffusion Acceleration for the S_N Equations Discretized with the Discontinuous FEM I: Theory and Numerical Results, Sebastian Schunert, Yaqi Wang, Javier Ortensi, Frederick Gleicher, Mark DeHart, Richard Martineau *(INL)*

1:25 p.m.

A High-Order Nonlinear Diffusion Acceleration for the S_N Equations Discretized with the Discontinuous FEM II: Fourier Analysis, Sebastian Schunert, Yaqi Wang, Javier Ortensi, Frederick Gleicher, Mark DeHart, Richard Martineau *(INL)*

1:50 p.m.

Fourier Stability Analysis of 1-D/1-D Fusion Method and 1-D/1-D Hybrid Method in Two-Dimensional Transport Problems, Seungsu Yuk, Nam Zin Cho *(KAIST)*

2:15 p.m.

Non-Oscillatory Reweighted Least Square Finite Element Method for S_N Transport, Weixiong Zheng, Ryan G. McClarren *(Texas A&M Univ)*

2:40 p.m.

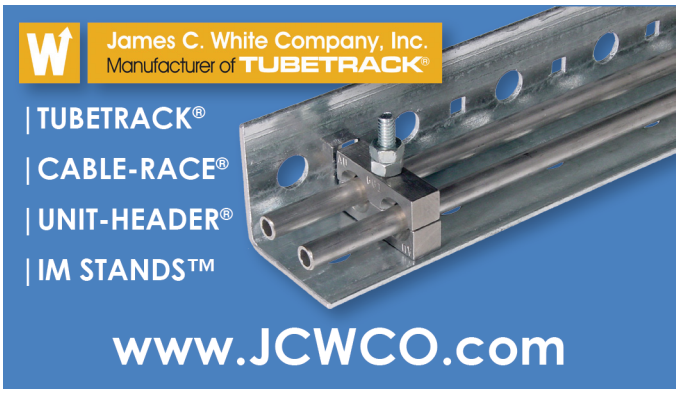
Non-Oscillatory Reweighted Least Square Finite Element for Solving P_N Transport, Weixiong Zheng, Ryan G. McClarren *(Texas A&M Univ)*

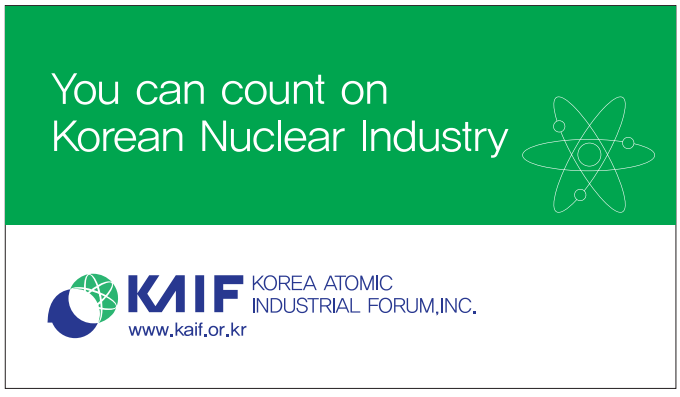
3:05 p.m.

Solution of Neutron Transport Equation for Criticality Estimation Using Lattice Boltzmann Method, Gaurav Agarwal *(Nuclear Power Corp of India LTD)*, Suneet Singh *(Indian Inst Technol Bombay)*, Hitesh Bindra *(Kansas State Univ)*, Surendra Mishra *(Nucl Power Corp of India LTD)*

3:30 p.m.

On-Node, Parallel Performance of 2-D Discrete-Ordinates Sweeps, Wenkai Fu, Jeremy A. Roberts *(Kansas State Univ)*





NDA Issues Affecting Nuclear Criticality Safety–Panel

Sponsored by NCSD
Session Organizer: Robert Michael Westfall *(ORNL)*
Chair: Robert E. Wilson *(DOE)*

Maryland C: 1:00-4:00 p.m.

The session topic will be the non-destructive assay (NDA) issues that affect the criticality safety of fissile material operations. The structure will be presentations by NDA specialists on current issues with modelling schemes to estimate the amount of fissile material from in-situ measurements and presentations from criticality safety specialists on how they handle the uncertainty in NDA measurements in determining safety limits and controls. Recent examples of NDA non-conservative measurements and how these complicated the evaluation process will be discussed. The presenters will then form a panel to discuss issues and propose solutions.

Panelists:

- Bob Wilson *(DOE/EM)*
- Jeff Chapman *(ORNL)*
- Doug Bowen *(ORNL)*
- David Dolin *(SRNL)*
- John Winkel *(CMH2-Hill, Hanford)*
- Jeff Sanders *(INL)*

Thermal-Hydraulic Challenges and Opportunities in the Licensing of Advanced Reactors–Panel

Sponsored by THD
Session Organizer: Maria N. Avramova *(NCSU)*
Cochairs: W. David Pointer *(ORNL)*, Fatih Aydogan *(Univ of Idaho)*

Madison A: 1:00-4:00 p.m.

The newest nuclear power plant currently being built in the United States is a Generation III+ concept based on a design that originated in the 1980s. This provides little incentive to drive the development of innovative new capabilities in thermal fluid science and technology—capabilities that impact technologies well beyond nuclear reactors. Is there a need for continued innovation in thermal hydraulics methods and understanding to support the continued licensing and deployment of these Generation III+ designs? What innovations are required to enable the deployment of Generation IV reactor technologies? Is there a need to maintain a national capability in nuclear thermal hydraulics at all? What conditions need to exist in the industry and in public policy to encourage those innovations to occur and that capability to be maintained? What would happen to Boeing or GM if they were trying to sell their 1980's designs? This panel will discuss the reactor thermal hydraulics challenges and opportunities associated with licensing and deployment of these advanced reactor designs, from both the technical and policy points of view.

Panelists:

- Steve Bajorek *(NRC)*
- Tom Fanning *(ANL)*
- George Flanagan *(ORNL)*
- Hans Gougar *(INL)*
- Chris Hamilton *(NGNP Alliance)*
- Stefano Monti *(IAEA)*

MOX Fabrication and Performance

Sponsored by MSTD
Session Organizer and Chair: Andrew T. Nelson *(LANL)*

Madison B: 1:00-3:30 p.m.

1:00 p.m.

Sintering Behavior of (U,Ce)O_2 and (U,Pu)O_2, S. Nakamichi, S. Hirooka, T. Sunaoshi, M. Kato *(JAEA)*, A. T. Nelson, K. J. McClellan *(LANL)*

1:25 p.m.

Early-in-Life Fuel Restructuring Behavior of Am-Bearing MOX Fuels, Kosuke Tanaka, Shinji Sasaki, Kozo Katsuyama, Shin-ichi Koyama *(JAEA)*

1:50 p.m.

Fuel Restructuring Behavior Analysis of MA-Bearing MOX Fuels Irradiated in a Fast Reactor, T. Ozawa, Y. Ikusawa, M. Kato *(JAEA)*

2:15 p.m.

Thermochemistry and Phase Equilibria of the U-Ce-O System, Jacob W. McMurray *(ORNL)*

2:40 p.m.

Thermophysical Properties of (U,Ce) O2±x, J. T. White *(LANL)*, S. Hirooka, T. Murakami *(JAEA)*, A. T. Nelson, K. J. McClellan *(LANL)*, M. Kato *(JAEA)*

3:05 p.m.

Evaluate the Thermal Conductivity of Off-Stoichiometry Cerium Oxide, Yuedong Wu, Yong Yang *(Univ of Florida)*

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Computational Thermal Hydraulics—I

Sponsored by THD
Session Organizer: Donna P. Guillen *(INL)*
Cochairs: Yang Liu *(Virginia Tech)*, David Aumiller *(BAPL)*

Washington 2: 1:00-3:55 p.m.

1:00 p.m.

Applications of the Lattice Boltzmann Method to Nuclear Thermal Hydraulics Problems, Shin K. Kang, Yassin A. Hassan *(Texas A&M)*

1:25 p.m.

Demonstration of BEPU Analysis of LBLOCA with RELAP5-3D for High Burnup Fuel, Hongbin Zhang, Paul Bayless, Ling Zou, Haihua Zhao, Ronaldo Szilard *(INL)*

1:50 p.m.

Benchmarking Results for Small Column Ion Exchange Model, Si Young Lee, William D. King *(SRNL)*

2:15 p.m.

Spectral Cascade-Transport Model Implementation into Multiphase CFD Code, C. S. Brown *(NCSU)*, D. R. Shaver *(RPI)*, I. A. Bolotnov *(NCSU)*

2:40 p.m.

Model Establishment and Application of Kuosheng Nuclear Power Plant with RELAP5 MOD 3.3 Code through the SNAP Interface, H. C. Chang, J. R. Wang, C. Shih *(National Tsing-Hua Univ)*, S. C. Chiang, T. Y. Yu *(Taiwan Power Company)*

3:05 p.m.

Thermal-Hydraulic Simulation Framework for the NSTF and Preliminary Comparisons with Experimental Data, Adam Kraus, Darius Lisowski, Matthew Bucknor, Rui Hu *(ANL)*

3:30 p.m.

Natural Convection in a Rough Cavity, M. Yousaf, S. Usman *(Missouri Univ Sci Technol)*

Education and Training: General—II

Sponsored by ETWDD
Session Organizer: John S. Bennion (*GE Hitachi Nuclear)*
Chair: Marsha J. Bala *(INL)*

Washington 3: 1:00-3:05 p.m.

1:00 p.m.

Modernizing Computational Nuclear Engineering Education in the Open, Kathryn Huff *(Univ of California, Berkeley)*, Anthony M. Scopatz *(Univ of South Carolina)*

1:25 p.m.

Answering the Scientific National Security Call in Nuclear Forensics: The Prairie View A&M University Approach to the Nuclear Forensics for Minority Serving Institutions Partnership, Royal Elmore *(Texas A&M)*, Irvin Osborne-Lee, Richard Wilkins, Brad Gersey *(Prairie View A&M Univ)*, Craig Marianno *(Texas A&M)*

1:50 p.m.

A Simple Neutron-Physics Game to Assist Conceptual Learning of Nuclear Engineering, Robert W. Carlsen, Matthew J. Gidden *(Univ of Wisconsin)*

2:15 p.m.

Static and Dynamic Representation of Radiation Fields in Virtual Models Using Unity-3D and Oculus, Justin Joseph, Abhiniti Mahendrakar, Daniel Chun *(Univ of Illinois)*, Ye Li *(Johns Hopkins Univ)*, Gavin Mattingly, Eric Riewski, Nabeel Y. Rizwan *(Univ of Illinois)*, Yoshinori Satoh *(Toshiba Corp)*, Quansheng Tan, Xuefeng Zhu, Rizwan-uddin *(Univ of Illinois)*

2:40 p.m.

A 3D, Interactive and Virtual Dose Minimization Game for Education and Training, Gavin Mattingly, Eric Riewski, Quansheng Tan, Daniel Chun, Rizwan-uddin *(Univ of Illinois)*

Policy Issues for New Reactors, A Retrospective–Panel

Sponsored by OPD
Session Organizer and Chair: Chad J. Boyer *(CB&I)*

Washington 4: 1:00-4:00 p.m.

Starting with the success of EBR-1 and Atoms for Peace, through the troubled Clinch River and Integral Fast Reactor projects, the success of Nuclear Power 2010, and ending with the hope of the SMR program the evolution of power reactor technology like NGNP has been a product decisions made by policy makers. Technological advancements and market forces influenced those decisions but politics drove the history of the advancement of reactor design. This panel will explore this history on this influence and how current politics will direct the next new reactor design.

Panelists:

- William Hannum *(Consultant)*
- Jim Mahaffey *(Georgia Tech, retired)*
- Glen Tait *(INL)*
- Mark Haynes *(NGNP Industry Alliance)*

Reactor Analysis Methods–III

Sponsored by RPD; cosponsored by MCD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Tatjana Jevremovic *(Univ of Utah)*

Washington 5: 1:00-3:55 p.m.

1:00 p.m.

A Modified Piecewise Constant Approximation for Solution to the Point Kinetics Equations, Barry Ganapol, P. Picca *(Univ of Arizona)*

1:25 p.m.

Reactor Power Distribution Calculation in Research Reactors Using MCNP, Zeyun Wu *(NIST, Univ of Maryland)* Robert E. Williams *(NIST)*

1:50 p.m.

Position-Dependent Delayed-Neutron Fractions for IQS Calculations in the Diffusion Code DONJON and Application to PT-SCWR Reactors, Qingjie Liu, Eleodor Nichita *(Univ of Ontario Inst Technol)*

2:15 p.m.

Comparative Analysis of SBLOCA With and Without Fuel Behaviour Models, Amjad Nawaz, Hidekazu Yoshikawa, Ming Yang *(Harbin Engineering Univ)*, Anwar Hussain *(Pakistan Inst of Engineering and Applied Sciences)*

2:40 p.m.

Iterative Shannon Entropy Approach for Efficient Monte Carlo Source Convergence Diagnostics, Bojan Petrovic, David Koch *(Georgia Tech)*

3:05 p.m.

Multi-Physics Simulation of TREAT Kinetics using MAMMOTH, Mark DeHart, Frederick Gleicher, Javier Ortensi *(INL)*, Anthony Alberti, Todd Palmer *(Oregon State Univ)*

3:30 p.m.

Simulation Tools and Approaches for the Compliance with Performance-Based ECCS Cladding Acceptance Criteria (10 CFR 50.46C), A. Zoino *(Sapienza Univ of Rome)*, A. Alfonsi, C. Rabiti *(INL)*, F. Giannetti, G. Caruso *(Sapienza Univ of Rome)*

Reactor Physics: General—III

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Florent Heidet *(ANL)*

Washington 6: 1:00-3:30 p.m.

1:00 p.m.

Solution of the Hot Zero Power BEAVRS Using a Pin-Cell Homogenized Model, Javier Ortensi *(INL)*, Matthew Ellis *(MIT)*, Yaqi Wang *(INL)*, Hans R. Hammer, Jaron P. Senecal *(RPI)*, Frederick N. Gleicher, Sebastian Schunert, Mark D. DeHart *(INL)*, Kord Smith *(MIT)*, R. Martineau *(INL)*

1:25 p.m.

In Phase Xenon Oscillations- A Non Linear Study, Abhishek Chakraborty *(Nuclear Power Corp of India LTD)*, Suneet Singh *(Nuclear Inst of Technol Bombay)*, M. P. S. Fernando *(Nuclear Power Corp of India LTD)*

1:50 p.m.

Automated MCDancoff Factor Generation for Liquid Salt Cooled Reactor Parametric Studies, L. Michael Huang, Bojan Petrovic *(Georgia Tech)*

2:15 p.m.

A Hypothetical Molten Uranium Fueled Mixed Spectrum Nuclear Reactor, Neal L. Mann *(Consultant)*

2:40 p.m.

A Neutronics Study on Annular Fuel Filled with Burnable Absorber, Mohd-Syukri Yahya, Donny Hartanto, Yonghee Kim *(KAIST)*

3:05 p.m.

Burnable Poison Reactivity Control for the Advanced High Temperature Reactor, Cole Gentry, G. Ivan Maldonado, Ondrej Chvala *(Univ of Tennessee, Knoxville)*, Bojan Petrovic *(Georgia Tech)*

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Nuclear Nonproliferation Policy: General–Panel

Sponsored by NNPD
Session Organizer and Chair: Rian Bahran *(LANL)*

Washington 1: 1:00-3:00 p.m.

The newly established Nuclear Nonproliferation Policy Division (NNPD) within ANS is home to many nonproliferation professionals from government, academia, industry, and international organizations. This general session will include high-level discussions from panelists from each of these sectors. The variety of topics will be presented that include a review of U.S. federal regulations and attitudes, information collection and analysis capabilities for detection of undeclared nuclear activities, an examination of various approaches to proliferation risk assessment, and a discussion of "market-based" nonproliferation policies that would act through incentives in the nuclear materials and technology markets rather than by prescribing outcomes or behavior.

Panelists:

- Matthew Bowen *(DOE)*
- Tom Wood *(PNNL)*
- Regine Schuler *(IAEA)*
- Garill Coles *(PNNL)*

Technical Sessions – 4:30-7:25 p.m.

Recycle and Reuse of Used Nuclear Fuel Resources

Sponsored by FCWMD
Session Organizer and Chair: Guillermo Daniel DelCul *(ORNL)*

Delaware A: 4:30-6:10 p.m.

4:30 p.m.

R&D Progress on Recovery/Recycle of Zirconium from Used Fuel Cladding, E. D. Collins, Guillermo Daniel DelCul, B. B. Spencer, R. R. Brunson, R. D. Hunt *(ORNL)*

4:55 p.m.

Purification of Zirconium Tetrachloride (ZrC_{l4}) from UNF Cladding – A Progress Report, Craig Barnes *(Univ of Tennessee, Knoxville)*, Guillermo Daniel DelCul *(ORNL)*, David F. McLaughlin *(Westinghouse)*

5:20 p.m.

Opportunities to Reuse and Recycle Redundant Radioisotopes, Tim Tinsley, Dan Mathers *(NNL)*

5:45 p.m.

Laser-Induced Breakdown Spectroscopy (LIBS) of Lanthanides in Solid LiCl-KCl Salt Samples, K. C. Bryce, A. N. Williams, S. H. Kim, S. Phongikaroon *(VCU)*

Integrated Spent Nuclear Fuel Management Analysis Capabilities—II

Sponsored by FCWMD
Session Organizer and Chair: John M. Scaglione *(ORNL)*

Delaware B: 4:30-6:35 p.m.

4:30 p.m.

IAEA Project on Research Reactor Spent Fuel Management Options, Frances M. Marshall, Stefan J. Mayer *(IAEA)*

4:55 p.m.

Spent Fuel Dissolver Predictive Modeling: I. Application of the Adjoint Sensitivity Analysis Methodology for Nonlinear Systems with Operator-Type Responses, Dan G. Cacuci *(Univ of South Carolina)*, James J. Peltz, Aurelian F. Badea *(KIT)*, Madalina C. Badea *(Univ of South Carolina)*

5:20 p.m.

Spent Fuel Dissolver Predictive Modeling: II. Uncertainty Reduction via Experimental Data Assimilation, James J. Peltz, Aurelian F. Badea *(KIT)*, Madalina C. Badea, Dan G. Cacuci *(Univ of South Carolina)*

5:45 p.m.

Modernization of the Characteristics of Potential Repository Wastes Database, Josh Peterson, Bret van den Akker *(ORNL)*

6:10 p.m.

A Methodology for Fuel Assembly Design Characterization, Justin B. Clarity, Kaushik Banerjee, John M. Scaglione *(ORNL)*

Computational Methods: General

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Travis J. Trahan *(LANL)*

Maryland B: 4:30-6:10 p.m.

4:30 p.m.

Comparison of Novel Multiphysics Coupling Methods in MOOSE, Jaron P. Senecal, Wei Ji *(RPI)*

4:55 p.m.

Heterogeneous Variational Nodal Methods for Eliminating the Control Rod Cusping Effect, Yunzhao Li, Yongping Wang, Hongchun Wu, Liangzhi Cao *(Xi'an Jiaotong Univ)*

5:20 p.m.

Indirect Computation of Dominant Time-Eigenvalue of a Nuclear Reactor, Huayun Shen, Bin Zhong *(Inst of Applied Physics and Computational Mathematics)*

5:45 p.m.

Leveraging Intel's Embree Ray Tracing in the DAGMC Toolkit, Patrick C. Shriwise, Andrew Davis, Paul P. H. Wilson *(Univ of Wisconsin, Madison)*

Operator Interactions and Control Room Support Systems

Sponsored by HFICD
Session Organizer: Sean M. Smith *(Lockheed Martin)*
Chair: Joseph A. Naser *(EPRI)*

Maryland C: 4:30-6:10 p.m.

4:30 p.m.

Suggestion of Evaluation Method for Individual Competencies to Enhance Nuclear Safety Culture, Sang Min Han, Ar Ryum Kim, Poon Hyun Seong *(KAIST)*

4:55 p.m.

Experimental Comparison to Validate a Situation Awareness Assessment of Human Operators Responding to Normal and Abnormal Indicators in Nuclear Power Plants, Seongkeun Kang, Poong Hyun Seong *(KAIST)*

5:20 p.m.

Comparative Analysis of Communication Error between Conventional and Digitalized MCR Operators in NPPs, Seung Geun Kim, Ar Ryum Kim, Poong Hyun Seong *(KAIST)*

5:45 p.m.

Multilevel Flow Modeling for Operating Procedure Tasks of CVCS, Song Mengchu, Yang Ming, Zou Bowen *(Harbin Engineering Univ)*

Computational Tools for Radiation Protection and Shielding

Sponsored by RPSD
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Jason D. Haverkamp *(KAPL)*

Madison A: 4:30-6:10 p.m.

4:30 p.m.

MCNP Delayed-Particle Library—Release 5, T. A. Wilcox, G. W. McKinney *(LANL)*

4:55 p.m.

Validation of MCNP6 for Electron Energy Deposition in Extended Media, D. A. Dixon, H. Grady Hughes *(LANL)*

5:20 p.m.

PyNE: Usage for Automatic PARTISN Input File Generation from a CAD Geometry, Kalin R. Kiesling, Andrew Davis, Paul P.H. Wilson *(Univ of Wisconsin, Madison)*

5:45 p.m.

Advanced Variance Reduction Techniques for Shielding Calculation in Monte Carlo Simulation Program SuperMC, Lijuan Hao, Huaqing Zheng, Xinmei Li, Bin Wu, Jing Song, Juping Hu, Yican Wu, FDS Team *(Chinese Academy of Sciences)*

Young Members Group: General

Sponsored by YMG
Session Organizer and Chair: Brett D. Rampal *(NuScale Power, LLC)*

Madison B: 4:30-5:20 p.m.

4:30 p.m.

The Nuclear Energy Knowledge and Validation Center, Hans D. Gougar *(INL)*

4:55 p.m.

The Development of Nuclear Power Plant and Storage Power Plant in China, Hongjuan Ran, Dezhong Wang *(Shanghai Jiaotong Univ)*

Computational Thermal Hydraulics—II

Sponsored by THD
Session Organizer: Kurshad Muftuoglu *(GE Hitachi Nuclear)*
Cochairs: Igor Bolotnov *(NCSU)*, Ling Zou *(INL)*

Washington 2: 4:30-6:35 p.m.

4:30 p.m.

Application of Bubble Tracking Capability for Turbulent Two-Phase Flow Simulations of a PWR Subchannel, Jan Fang, Igor A. Bolotnov *(NCSU)*

4:55 p.m.

Multi-Physics Coupling for Optimization of Cyclotron Targetry, Ellen O'Brien, Matthew H. Stokely, Joseph M. Doster, Igor A. Bolotnov *(NCSU)*

5:20 p.m.

Computational Study of the Safety Injection Tank Performance, Jai Oan Cho, Jeong Ik Lee *(KAIST)*, Yacine Addad *(Khalifa Univ)*, Yohanes Setiawan Nietiadi *(KAIST)*

5:45 p.m.

Study on Coolant Temperature Distribution of Core Inlet for IP200, Lin Sun, Minjun Peng, Genglei Xia *(Harbin Engineering Univ)*

6:10 p.m.

Fuel Temperature Prediction of a Prismatic Gas-Cooled Reactor Using Pin-By-Pin Fuel Power, Nam-il Tak, Tae Young Han, Hyun Chul Lee *(KAERI)*

Small Modular Reactors

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: Piyush Sabharwall *(INL)*

Washington 4: 4:30-7:25 p.m.

4:30 p.m.

Mk1 Pebble-Bed Fluoride-Salt-Cooled High-Temperature Reactor Capital Cost Estimation, C. Andreades, P. F. Peterson *(Univ of California, Berkeley)*

4:55 p.m.

Mk1 Pebble-Bed Fluoride-Salt-Cooled High-Temperature Reactor Operating Cost Estimation, C. Andreades, P. F. Peterson *(Univ of California, Berkeley)*

5:20 p.m.

Low Boron Concentration Small PWR Core Designs using Advanced Particle Burnable Poisons, Hoseong Yoo, Ser Gi Hong *(Kyung Hee Univ)*

5:45 p.m.

Location Sensitivity Analysis of Small Modular Reactor Construction Cost, Giovanni Maronati, Bojan Petrovic, James W. Banner, Chelsea C. White III *(Georgia Tech)*, Matthew H. Kelley, Jurie Van Wyk *(Westinghouse)*

6:10 p.m.

Superconducting Subcritical Testbed for Near Term Demonstration of Small Modular Reactors, T. L. Grimm, S. S. Barnard, C. H. Boulware, A. K. Grimm, J. L. Hollister, E. S. Maddock, M. Mamtimin, V. N.Starovoitova *(Niowave, Inc.)*

6:35 p.m.

Impact of Regulatory Fee Structures on the Economic Viability of Small Modular Reactors, Benjamin Vegel, Jason C. Quinn *(Utah State Univ)*

7:00 p.m.

Small Modular Reactor Modeling Using Modelica for Nuclear-Renewable Hybrid Energy Systems Applications, Daniel Mikkelson, Chih-Wei Chang *(NCSU)*, Sacit M. Cetiner, A. Lou Qualls *(ORNL)*, J. Michael Doster, T. Nam Dinh *(NCSU)*

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Isotopes and Radiation: General

Sponsored by IRD; cosponsored by BMD
Session Organizer and Chair: Kenan Unlu *(Penn State)*

Washington 5: 4:30-7:00 p.m.

4:30 p.m.

Domestic Production of ^{99}Mo Using a Superconducting Electron Linac, T. L. Grimm, S. S. Barnard, C. H. Boulware, A. K. Grimm, J. L. Hollister, E. S. Maddock, M. Mamtimin, V. N. Starovoitova *(Niowave, Inc.)*

4:55 p.m.

Moderator Optimization in Neutron Backscattering Landmine Detection, Walid A. Metwally, Sara Y. Alawabdeh, Mohammed M. Ballaith *(Univ of Sharjah)*

5:20 p.m.

Development of a Realistic Model for Optimizing Betavoltaic Battery Design, Tariq R. Alam, Mark A. Pierson *(Virginia Tech)*

5:45 p.m.

Real-Time Digital Neutron Radiography and Tomography at the PULSTAR Reactor, A. Datta, A. I. Hawari *(NCSU)*

6:10 p.m.

Detecting ^{233}U Diversion using Antineutrinos, Oluwatomi A. Akindele, Eric B. Norman *(Univ of California, Berkeley)*, Adam Bernstein *(LLNL)*

6:35 p.m.

Radioactive Argon Measurements at the Nuclear Engineering Teaching Laboratory, S. R. Biegalski, E. Moll, E. Artnak *(Univ of Texas at Austin)*

Nuclear Data Experiments, Evaluations, and Benchmarks

Sponsored by RPD; cosponsored by AAD, NNPD
Session Organizer: Rian Bahran *(LANL)*
Chair: Avneet Sood *(LANL)*

Washington 6: 4:30-6:10 p.m.

4:30 p.m.

The New OECD-NEA Nuclear Data and Sensitivity Tool (NDaST), J. Dyrda, I. Hill, M. Bossant, J. Gulliford, N. Soppera *(OECD NEA)*

4:55 p.m.

Assessing Accuracy of Independent Fission Yield of ^{235}U by Aggregate Decay Properties, Satoshi Chiba *(Tokyo Inst Technol, National Astronomical Observatory of Japan)*, Ryohei Shioya, Chikako Ishizuka *(Tokyo Inst Technol)*

5:20 p.m.

Verification and Validation of New Unmodified SCALE PWR Lattice Templates, Nathan T. Shoman, Steven E. Skutnik *(Univ of Tennessee, Knoxville)*

5:45 p.m.

^{235}U Determination using an In-Beam Delayed Neutron Counting Technique at the NRU Reactor, M. T. Andrews *(LANL)*, G. Bentoumi *(Canadian Nuclear Laboratories)*, E. C. Corcoran *(Royal Military College of Canada)*, I. Dimayuga *(Canadian Nuclear Laboratories)*, D.G. Kelly *(Royal Military College of Canada)*, L. Li, B. Sur, R.B. Rogge *(Canadian Nuclear Laboratories)*

Nuclear Power Under the Clean Power Plan–Panel

Session Organizers: William E. Burchill *(Texas A&M)*, Michaele Brady-Rapp *(PNNL)*
Chair: William E. Burchill *(Texas A&M)*

Washington 3: 4:30-7:00 p.m.

The International Nuclear Societies Council (INSC) has organized this session *"Nuclear Power Under the Clean Power Plan"* as part of the ANS Winter Meeting and Nuclear Technology Expo, "Nuclear: The Foundation of Sensible Policy for Energy, Economy and the Environment. The purpose of the session is to host an informed panel to engage in discussion about the importance of the CPP in addressing carbon emissions thereby combating climate change and other harmful effects of carbon pollution. The discussion will include the potential role that nuclear energy can have under the plan. We believe that the final CPP is not biased toward nuclear energy but there are differences between nuclear and renewables cited in the plan. I think this would be a great opportunity to discuss the fact that the CPP does recognize both the role that existing nuclear has had in keeping U.S. emissions as low as they are and that nuclear energy remains an option moving forward. It would be beneficial to have your engagement to help communicate the rationale behind the treatment of nuclear in the CPP.

Panelists:

- Introductions, W. E. Burchill *(INSC Chair, ANS Past President)*
- Kathleen L. Barron *(Exelon)*
- John Quigley *(PA Department of Environmental Protection)*
- Janet McCabe *(EPA)*
- Jessica Lovering *(Breakthrough Inst)*

Technical Sessions – 8:00 a.m.-12:00 p.m.

Fuel Cycle and Waste Management: General—I

Sponsored by FCWMD
Session Organizer: Jean-Francois Lucchini *(LANL)*
Chair: Jared A. Johnson *(ORNL)*

Washington 1: 8:00-11:45 a.m.

8:00 a.m.

A Hybrid Optimization Method for Loading Pattern Search Used in COSINE Package, Jincheng Su, Changhui Wang, Su Wang, Hui Yu, Yixue Chen *(State Nuck Power Software Development Center)*

8:25 a.m.

Plutonium Disposition R&D within the United Kingdom, Fiona Rayment, Daniel Mathers, Tim Tinsley *(NNL)*

8:50 a.m.

Investigation of Economics of Nuclear Fuel Cycle Options in the Republic of Korea, Seok-ki Cho, Man-sung Yim *(KAIST)*

9:15 a.m.

Utility Fuel Assembly Qualification Evaluation for Transport Cask Design, Michael Smith, Brad Crotts *(AREVA)*, Jay Verbos *(Duke Energy)*, Sven Bader *(AREVA)*

9:40 a.m.

Preliminary Physics Analysis of the Accident Tolerant Fuels Loop Experiment, Wilson M. Cowherd *(INL)*

10:05 a.m.

Development of Attribute Framework and Tool to Support Evaluation of Attributes of Advanced Nuclear Systems, Andrea Resch Gardiner, Steven Krahn, Timothy Ault, Bethany Burkhardt, Allen Croff *(Vanderbilt Univ)*, Andrew Sowder *(EPRI)*

10:30 a.m.

Adsorption of Volatile Iodine from Off-Gas Stream using ETS-10 Supported Hollow Carbon Nanosorbent, Sachin U Nandanwar, Kai Coldsnow, Michael Green, Vivek Utgikar *(Univ of Idaho)*, Piyush Sabharwall *(INL)*, D. Eric Aston *(Univ of Idaho)*

10:55 a.m.

Electrochemical Detection and Analysis of a Molten LiCl-KCl Eutectic Containing Multiple Lanthanides, Seunghyun Kim, Dalsung Yoon, Supathorn Phongikaroon *(VCU)*

11:20 a.m.

Encapsulation of Graphene-Based Iodine-129 Sorbents Using Spark Plasma Sintering, Spencer M. Scott, Tiankai Yao, Jie Lian *(RPI)*

Postdoctoral Experience at a National Laboratory: A Nuclear Engineering Perspective–Panel

Sponsored by YMG; cosponsor NNPD
Session Organizer: Rian Bahran *(LANL)*
Chair: Melissa Einwechter *(née Scholz) (DOE NNSA)*

Delaware B: 8:00 a.m.-12:00 p.m.

The DOE National Laboratory Postdoctoral (Postdoc) Research program offers the opportunity for appointees to perform research in a robust scientific R&D environment, present and publish research, advance knowledge in basic and applied science, and strengthen national scientific and technical capabilities. This panel will include current and past postdocs from several national laboratories discussing their experiences.

Panelists:

- Vladimir Sobes *(ORNL)*
- James Miller *(LANL)*
- Cameron Bates *(LANL)*
- Florent Heidet *(ANL)*
- Chris Perfetti *(ORNL)*

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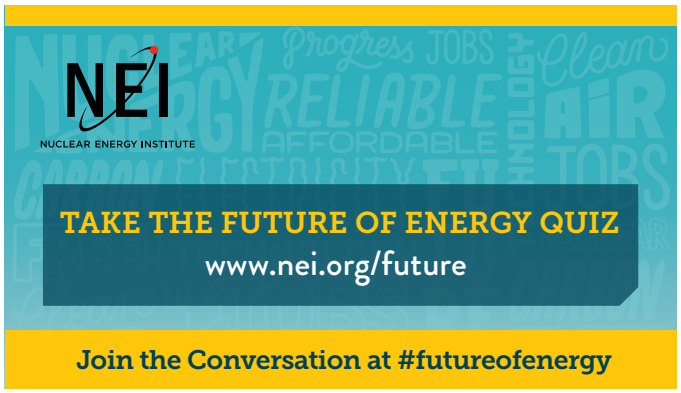

Nuclear Power Plant Condition Monitoring

Sponsored by HFICD
Session Organizer: Sean M. Smith *(Lockheed Martin)*
Chair: Jamie Baalis Coble *(Univ of Tennessee)*

Delaware A: 8:00-10:55 a.m.

8:00 a.m.

Online Fault Diagnosis and Prediction of Condenser in Nuclear Power Plant, Wang Hang, Peng Minjun, Cheng Shouyu *(Harbin Engineering Univ)*

8:25 a.m.

Condition Monitoring of Nuclear Power Plant with Hybrid Methods, Li Wei, Peng Minjun *(Harbin Engineering Univ)*

8:50 a.m.

A High Confidence Signal Validation Technique for Sensor Calibration Assessment in Nuclear Power Systems, Anjali Nair, Jamie Coble *(Univ of Tennessee, Knoxville)*

9:15 a.m.

Advanced Reactor System Modeling to Support Development of the Enhanced Risk Monitor, Xiaotong Liu, Chris Briere, Jamie Coble *(Univ of Tennessee, Knoxville)*

9:40 a.m.

Development of Knowledge-based Software Tools for Defense-in-Depth Risk Monitor System, Zhanguo Ma, Hidekazu Yoshikawa *(Harbin Engineering Univ)*, Takashi Nakagawa *(Prime Systems Laboratory, Co.)*

10:05 a.m.

Distributed Temperature Measurements using Optical Fiber in the OSU Nuclear Reactor, Brandon A. Wilson, Benjamin Reinke, Christian Petrie, Thomas E. Blue *(Ohio State Univ)*

10:30 a.m.

Development and Demonstration of Inferential Flow Characterization Techniques for Novel Advanced Reactors, Ryan Tarver, Greg Meinweiser, Brian Cady, Belle Upadhyaya, Wes Hines, Jamie Coble *(Univ of Tennessee, Knoxville)*

ANS-8 Standards–Forum

Sponsored by NCSD
Session Organizer and Chair: Brian O. Kidd *(Paschal Solutions, Inc.)*

Virginia A: 8:00 a.m.-12:00 p.m.

- Speakers to be announced.

Transient Fuel Performance and Testing–Panel

Sponsored by MSTD
Chair: Heng Ban *(Utah State Univ)*

Madison B: 8:00 a.m.-12:00 p.m.

Panelists:

- Rory Kennedy *(INL NSUF)*
- Patrick Raynaud *(NRC)*
- Ken Yueh *(EPRI)*
- Wolfgang Wiesenack *(HRP)*

Experimental Thermal Hydraulics—II

Sponsored by THD
Session Organizer: Cesare Frepoli *(FPoli Solutions, LLC)*
Cochairs: Philippe M. Bardet *(George Washington Univ)*, Rodolfo Vaghetto *(Texas A&M)*

Washington 2: 8:00-10:55 a.m.

8:00 a.m.

Molecular Tagging Velocimetry Development for In-Situ Measurement in High-Temperature Test Facility, Matthieu A. Andre, Philippe M. Bardet *(George Washington Univ)*, Ross A. Burns *(National Inst of Aerospace)*, Paul M. Danehy *(NASA)*

8:25 a.m.

Experimental Investigation of Approach Velocity Effect on the Fibrous Debris Penetration through a Containment Sump Strainer for Generic Safety Issue 191, Sero Yang, Vasileios Kyriakopoulos, Saya Lee, Rodolfo Vaghetto, Yassin A. Hassan *(Texas A&M Univ)*

8:50 a.m.

An Experimental Study on Injection Performance of Core Makeup Tank for the SMART Design, Hyun- Sik Park, Hwang Bae, Sung-Uk Ryu, Woo-Shik Kim, Sung-Jae Yi *(KAERI)*

9:15 a.m.

Quasi-Steady State Analysis of the Global Flow Behavior of a Reactor Cavity Cooling System (RCCS) using Water, Mike Gorman, Yassin A. Hassan *(Texas A&M)*

9:40 a.m.

Water Vapor Concentration Measurement with TDLAS during VHTR Steam Ingress, Michael C. Button, Philippe M. Bardet *(George Washington Univ)*

10:05 a.m.

Study of the Critical Heat Flux on Zircaloy Cladding Surfaces in the COSMOS Facilities, A. Miassoedov, C. Haas, S. Gabriel, G. Albrecht *(KIT)*

10:30 a.m.

Experimental Investigation on Single Phase Mixing Rate at Laminar and Turbulent Flow Condition in Simulated Subchannels of a Natural Circulation Pressure Tube Type BWR, M. P. Sharma *(Homi Bhabha National Inst)*, A. K. Nayak, R. Rajalakshmi *(BARC)*

Research by U.S. DOE NEUP-Sponsored Students—I

Sponsored by ETWDD
Session Organizer: Gregory Bala *(INL)*
Chair: Andrew E. Thomas *(INL)*

Washington 3: 8:00-11:20 a.m.

8:00 a.m.

Development of Creep-Dominant Creep-Fatigue Tests for Alloy 617, Fraaz Tahir, Yongming Liu *(Arizona State Univ)*

8:25 a.m.

Seismic Anchorage of Dry Storage Casks, Joel E. Parks, Chris P. Pantelides, Luis Ibarra *(Univ of Utah)*, David Sanders *(Univ of Nevada, Reno)*

8:50 a.m.

Temperature Effects on Piezoelectric Active Sensors, Linlin Ma, Howden Stephen, Lingyu Yu *(Univ of South Carolina)*

9:15 a.m.

Effect of Helium Pre-implantation on Void Nucleation and Growth in HT9, Anthony M. Monterrosa, Zhijie Jiao, Gary S. Was *(Univ of Michigan)*

9:40 a.m.

Comparison of Shaking Table Experimental Results for Different Aspect Ratios of Dry Storage Casks, Taylor M. Nielsen, A. Farghal Maree, David H. Sanders *(Univ of Nevada, Reno)*

10:05 a.m.

Characterization of Thermo-Mechanical Properties of the Nickel Based Super Alloy, Yang Zhang, Philipp Seiler, Vikas Tomar *(Purdue Univ)*

10:30 a.m.

Investigation of Accident Thermal Effects on Seismic Performance, Saahastaranshu R. Bhardwaj, Kadir C. Sener, Amit H. Varma *(Purdue Univ)*

10:55 a.m.

Decoupling the Functional Requirements of an Adsorbent for Harvesting Uranium from Seawater through the use of Shell Enclosures, Maha N. Haji *(MIT)*, Charles Vitry *(Univ of Cambridge)*, Alexander H. Slocum *(MIT)*

Advanced/Gen-IV Reactors—I

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: Andrew G. Sowder *(EPRI)*

Washington 4: 8:00-11:20 a.m.

8:00 a.m.

Optimization of Nuclear Steam Generation Systems via Multi-Parameter Sensitivity Analysis, Paul R. Wilding, Matthew J Memmott *(BYU)*

8:25 a.m.

Optimizing Nuclear Energy at a Refinery, Paul Marotta, Basil Antar *(Univ of Tennessee)*, Steve Krahn *(Vanderbilt Univ)*

8:50 a.m.

Design Optimization for Miniature Nuclear Reactors, Sal Rodriguez and David Ames *(SNL)*

9:15 a.m.

Burnup Analysis of Accumulative Fuel Loading Scheme Pebble Bed Reactor with Optimum Fuel Composition, Irwan Liapto Simanullang, Toru Obara *(Tokyo Inst of Technol)*

9:40 a.m.

Composition of ROX Fuel for High-Burnup Pebble Bed Reactor, Hai Quan Ho, Toru Obara *(Tokyo Inst of Technol)*

10:05 a.m.

Application of the Melt and Refining Procedure to the CANDLE Reactor Concept, Julia Abdul Karim, Jun Nishiyama, Toru Obara *(Tokyo Inst of Technol)*

10:30 a.m.

Mitsubishi Small Module High Temperature Gas-Cooled Reactor "MHR-100" System Design—An Optimization Study on MHR-100 Gas Turbine System (MHR-100GT), Isao Minatsuki, Sunao Oyama, Hiroki Tsukamoto, Masayuki Imoto *(Mitsubishi Heavy Industries)*

10:55 a.m.

Mitsubishi Small Module High Temperature Gas-cooled Reactor "MHR-100" Conceptual Design—Conceptualization, Improvement and Evolution, Isao Minatsuki, Sunao Oyama, Hiroki Tsukamoto, Masayuki Imoto *(Mitsubishi Heavy Industries)*

Physics in Fusion and Sub-Critical Systems

Sponsored by RPD; cosponsored by FED, AAD
Session Organizer and Chair: Alexander Stanculescu *(INL)*

Washington 5: 8:00-10:30 a.m.

8:00 a.m.

Neutronic Flux Analysis In Subcritical Systems Using The R/S And DFA Methods, Edson Henrice Jr. *(PEN/COPPE)*, Daniel A. P. Palma *(CNEN)*, Alessandro C. Gonçalves *(PEN/COPPE)*, Amir Z. Mesquita *(CDTN)*

8:25 a.m.

Monte Carlo Simulation Software SuperMC 2.2 for Fusion and Fission Applications, Jing Song, Yican Wu, FDS Team *(Chinese Academy of Sciences)*

8:50 a.m.

Conceptual Design of Fusion Blanket Test Module for Tritium Breeding, SeongHee Hong, YunSeo Park, Myung Hyun Kim *(Kyung Hee Univ)*

9:15 a.m.

Rapid Visualized Neutronics Modeling of Lead-based Research Reactor for ADS, Quan Gan, Shengpeng Yu, Bin Wu, Jing Song, Mengyun Cheng, Feng Wang, FDS Team *(Chinese Academy of Sciences)*

9:40 a.m.

Helicon Plasma Injection into an Inertial Electrostatic Confinement Fusion Device, G. Chen, G. H. Miley *(Univ of Illinois at Urbana-Champaign)*

10:05 a.m.

Transient Analysis of an ADS Burner in Industrial Scale, Liangzhi Cao, Mingtao He, Youqi Zheng, Hongchun Wu *(Xi'an Jiaotong Univ)*

Reactor Physics: General—IV

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Alberto Talamo *(ANL)*

Washington 6: 8:00-10:30 a.m.

8:00 a.m.

Development of a MCNP6—ANSYS FLUENT Multiphysics Coupling Capability, William Gurecky, Erich Schneider *(Univ of Texas at Austin)*

8:25 a.m.

Proposal of Accelerator-Driven System for Neutron Source in Kyoto University Research Reactor Institute, Cheol Ho Pyeon, Tadafumi Sano, Yasuyuki Fujihara, Hiroshi Yashima, Yasushi Saito, Yuji Kawabata *(Kyoto Univ)*

8:50 a.m.

Application of the Karhunen-Loève Transform to the C5G7 Benchmark in the Response Matrix Method, Richard L. Reed, Jeremy A. Roberts *(Kansas State Univ)*

9:15 a.m.

Application of Data Assimilation based on Bayesian Theory to Subcriticality Measurements using Area Ratio Method, Kensuke Maeno, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

9:40 a.m.

Impacts of Burn-up Measurement Errors on Discharge Burn-up of PB-HTR, Xia Bing, Li Fu *(Tsinghua Univ)*

10:05 a.m.

Assessment of Power and History Effects on Thorium-Based Fuels in Pressure-Tube Heavy Water Reactors, Blair P. Bromley *(Canada Nuclear Laboratories)*, P. Sambavalingam *(Univ of Ontario)*, G. W. R. Edwards *(Canada Nuclear Laboratories)*

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Technical Sessions – 1:00-4:45 p.m.

Fuel Cycle and Waste Management: General—II

Sponsored by FCWMD
Session Organizer and Chair: Jean-Francois Lucchini *(LANL)*

Washington 1: 1:00-4:45 p.m.

1:00 p.m.

Managing Stakeholder Acceptance for Socially Controversial Projects, Michael Golay, Adam D. Williams *(MIT)*

1:25 p.m.

Performance Specifications for Standardized Transportation, Aging, and Disposal Canister Systems, A. A. Alsaed *(Enviro Nuclear Services)*, J. A. Blink *(Beckman and Associates)*, J. J. Jarrell, R. L. Howard *(ORNL)*, E. L. Hardin, C. R. Bryan *(SNL)*

1:50 p.m.

Benefits of Thermal Energy Storage at Nuclear Plants Using ERCOT as Case Study, Rachel Morneau, Erich Schneider *(Univ of Texas at Austin)*, Charles Forsberg *(MIT)*

2:15 p.m.

Thermal Analysis for wheeled Canisters and Slant-path Boreholes for Disposal of Nuclear Spent Fuel, Roberto Formento Cavaier *(Politecnico di Torino)*, Michael J. Driscoll *(MIT)*, Massimo Zucchetti *(Politecnico di Torino)*

2:40 p.m.

Thermal Resistance Reduction in Cast Metal Filled Used Nuclear Fuel Canisters, Yongsoo Park, Thomas J. McKrell, Michael J. Driscoll *(MIT)*

3:05 p.m.

A Socio-Economic Model of Multinational Nuclear Fuel Cycle, Viet Phuong Nguyen, Man-Sung Yim *(KAIST)*

3:30 p.m.

Fast Finding of Fast Transitions to Fast Reactor Fuel Cycles with Cyclus, Robert W. Carlsen, Paul P. H. Wilson *(Univ of Wisconsin, Madison)*

3:55 p.m.

Portable Reactor Data Library Interpolation via Self-Describing ORIGEN Libraries, Nicholas C. Sly, Steven E. Skutnik *(Univ of Tennessee, Knoxville)*, William A. Wieselquist *(ORNL)*

4:20 p.m.

Analysis of BORAL® Coupons from Zion Spent Fuel Pool, Hatice Akkurt *(EPRI)*, Spencer Feuerstein, Matt Harris, Ashleigh Quigley *(Curtiss-Wright Corp)*

Unstructured Mesh with MCNP–Tutorial

Sponsored by RPSD
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Kristofer J. Zieb *(RPI)*

Madison A: 1:00-4:00 p.m.

This tutorial will provide an introduction to the new unstructured mesh geometry modeling capabilities in MCNP6. We will discuss the requirements for mesh-based geometries to be imported into the MCNP input deck, the operation of the pre- and post-processing routines for mesh geometries, and the definition of tallies in mesh or hybrid input files. Participants wishing to follow along with the tutorial should bring their own computer and valid license for MCNP, as none will be provided.

Thermal Hydraulics: General—II

Sponsored by THD
Session Organizer: Paolo Ferroni *(Westinghouse)*
Chair: Si Young Lee *(SRNL)*, Steven Arndt *(NRC)*

Washington 2: 1:00-2:15 p.m.

1:00 p.m.

Sensitivity Study of 1F1 Type Accident by MELCOR Code, Kenta Saitoa, Akifumi Yamajia *(Waseda Univ)*

1:25 p.m.

Developments of a Modular Graphical Tool for RELAP5, Zhu Haishan, Peng Minjun, Tian Zhaofei *(Harbin Engineering Univ)*

1:50 p.m.

The SBO Analysis With URG Procedure For LUNGMEN ABWR Using TRACE/FRAPTRAN Codes, Y. T. Li, S. W. Chen, J. R. Wang, C. Shih *(National Tsing-Hua Univ)*

Research by U.S. DOE NEUP-Sponsored Students—II

Sponsored by ETWDD
Session Organizer: Gregory Bala *(INL)*
Chair: Andrew E. Thomas *(INL)*

Washington 3: 1:00-4:20 p.m.

1:00 p.m.

Multiscale Measurements on a Turbulent Jet and Refractive Index Matching for a Buoyant Jet in a Stratified Environment, Amy B. McCleney, Philippe M. Bardet *(George Washington Univ)*

1:25 p.m.

Experimental Modal Analysis and Static Testing for Numerical Validation of Unirradiated Fuel Rods, Shokoufeh Zargar, Ricardo A. Medina *(Univ of New Hampshire)*, Luis Ibarra *(Univ of Utah)*

1:50 p.m.

Kriging-based Surrogate Models for Calibration of Multiphysics Fuel Performance Simulations, Nghia T. Nguyen, Michael P. Rose, Thomas J. Downar *(Univ of Michigan)*

2:15 p.m.

Ab-initio Molecular Dynamics Study of the Solubility and Diffusion Coefficient of Cerium in Liquid Sodium, Xiang Li, Adib Samin, Jinsuo Zhang *(Ohio State Univ)*

2:40 p.m.

Development of Modern CANDU PHWR Cross-Section Libraries for SCALE, Nathan T. Shoman, Steven E. Skutnik *(Univ of Tennessee, Knoxville)*

3:05 p.m.

Hot Standby State Observers for Sensor Fault-Tolerance in Small Modular Reactors, Christopher J. D'Angelo, Daniel G. Cole *(Univ of Pittsburgh)*

3:30 p.m.

GCFR-PROTEUS Experimental Program Benchmark Analysis, Gareth R. Newman, Kelly A. Jordan *(Univ of Florida)*, Gregory Perret *(Paul Scherrer Institut)*

3:55 p.m.

In-Core Neutron Measurement System for Pulsed TRIGA Reactor Experiments, Sophit Pongpun *(Univ of Regina)*, Marvin L. Adams *(Texas A&M)*, Thomas J. Conroy *(Univ of Regina)*

Advanced/Gen-IV Reactors—II

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: Piyush Sabharwall *(INL)*

Washington 4: 1:00-3:55 p.m.

1:00 p.m.

Design Optimization of a Fluoride Salt Cooled High Temperature Test Reactor Capable of Testing Different Salt Coolants, Joshua Richard, Benoit Forget, Charles Forsberg, Kord Smith *(MIT)*

1:25 p.m.

A Model of Tritium Transport and Corrosion in Salt-Cooled Reactors, John D. Stempien, Ronald G. Ballinger, Charles W. Forsberg *(MIT)*

1:50 p.m.

Tritium Removal from Salt-Cooled Reactors Using Carbon, Charles Forsberg, John Stempien, Ron Ballinger *(MIT)*

2:15 p.m.

Basis for a Demonstration Fluoride-Salt-Cooled High-Temperature Reactor, Charles Forsberg, Lin-wen Hu, Joshua Richard, Rebecca Romatoski, Benoit Forget, John Stempien, Ron Ballinger, Kaichao Sun, David Carpenter *(MIT)*

2:40 p.m.

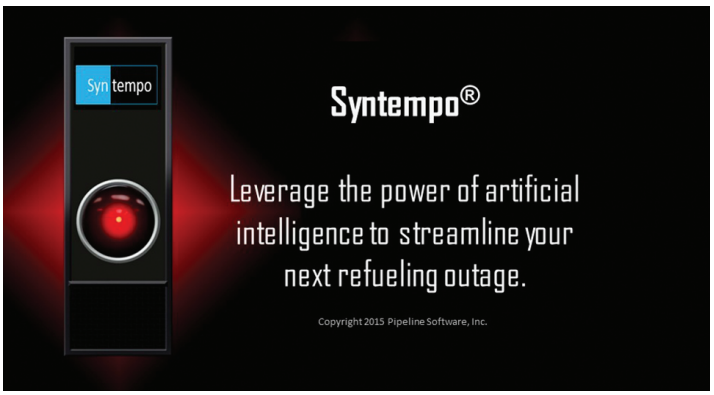
Air-Brayton Systems with Salt, Sodium, and Helium Base-Load Reactors with Variable Electricity, Steam and Hot-Air Output, Charles Forsberg *(MIT)*, Pat McDaniel *(Univ of New Mexico)*

3:05 p.m.

Nuclear Air-Brayton Combined Cycles for Sodium Cooled Fast Reactors, Charles Forsberg *(MIT)*, Pat McDaniel *(Univ of New Mexico)*

3:30 p.m.

Advanced Nuclear Energy System Options to Provide Flexible, Dispatchable, Very-Low-Carbon Electricity, Daniel Curtis, Charles Forsberg *(MIT)*



Young Professionals Congress 2015

General Co-Chair:
Allison Miller
Sandia National Laboratories

General Co-Chair:
Elia Merzari
Argonne National Laboratory

Program Chair:
Brett D. Rampal
NuScale Power, LLC

YOUNG PROFESSIONALS CONGRESS 2015

CAPITOL HILL VISIT: STORM THE HILL DAY**

Location: Capitol Hill
Thursday, November 12 • 9:00 a.m.-3:00 p.m.

Join your colleagues and visit Capitol Hill.
The meeting registration form includes a space to mark your intent to participate in the Capitol Hill visits.
You must include your home ZIP code to be assigned to the correct team and to visit your local legislators.

All registered meeting attendees are welcome to participate.

****Please note: To participate in Storm the Hill Day, attendees are required to attend the ANS Communications Workshop on Wednesday. Please see page 17 for more information.**

Young Professionals Congress Opening Remarks and Keynote Speeches

Lincoln 3: 8:45-9:45 a.m.

Donald R. Hoffman *(EXCEL Services Corporation, ANS Past President)*

Keynote 1

Dr. Jose Reyes *(NuScale Power, LLC)*

Keynote 2

Dr. Eric Loewen *(General Electric - Hitachi, ANS Past President)*

Exchanging Ideas: How to Communicate Effectively

Lincoln 3: 10:00-11:00 a.m.

- Rian Bahran *(LANL)*
- Craig Piercy *(ANS DC Representative)*
- Mimi Limbach *(Potomac Communications Group)*

Work Life Balance Wisdom

Lincoln 3: 11:00-11:45 a.m.

- Katy Huff *(UC Berkeley)*
- Brian Matthews *(NS-TS)*
- Heather Connaway *(ANL)*

Sessions – 1:15-2:45 p.m.

Influencing the Industry

Lincoln 4: 1:15-2:45 p.m.

- Sarah Gillham *(Southern Nuclear Company)*
- Laura Goossen *(Westinghouse Electric Company)*
- Brett Rampal *(NuScale Power)*

Making a Difference at the Labs: a DOE, Congress and IAEA Perspective

Lincoln 3: 1:15-2:45 p.m.

- Monica Regalbutto *(DOE - EM)*
- Patricia Paviet *(DOE - NE)*
- Brian Collins *(DOE - NE/PNNL)*
- Warren Stern *(BNL)*
- John Kelly *(DOE - NE)*

Staying in School: Graduation to Postdoc and Beyond

Taft: 1:15-2:45 p.m.

- Rachel Slaybaugh *(UC-Berkeley)*
- Leigh Winfrey *(UF)*
- Jamie Coble *(Univ of Tennessee)*

Sessions – 3:00-4:45 p.m.

The Cacophony of Codes: Understanding the Landscape

Lincoln 4: 3:00-4:45 p.m.

- Arthur DiGiovine *(Studsvik)*
- Will Boyd *(MIT)*
- Christopher Perfetti *(ORNL)*

Acquaint Yourself with Nuclear Advocacy

Lincoln 3: 3:00-4:45 p.m.

- Suzy Hobbs Baker *(INL)*
- Lenka Kollar *(IAEA)*
- Elizabeth McAndrews *(NEI)*

Accomplish More with ANS

Taft: 3:00-4:45 p.m.

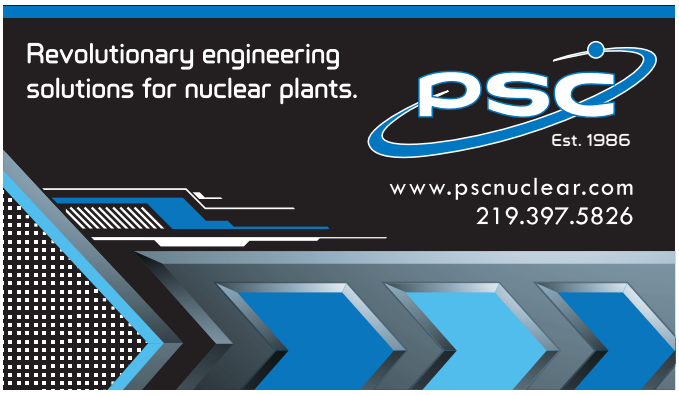
- Art Wharton *(Westinghouse)*
- Harsh Desai *(KAPL)*
- Ryan McClarren *(TAMU)*

Sessions – 5:00-5:30 p.m.

Closing Remarks

Lincoln 3: 5:00-5:30 p.m.

- Benjamin Holtzman *(ANS YMG Chairman, Westinghouse)*
- Gene Grecheck *(ANS President)*



2015 Topical Meeting

12th International Topical Meeting on Nuclear Applications of Accelerators (AccApp '15)

General Chair:
Philip L. Cole
Idaho State University

General Co-Chair:
Ralf Kaiser
International Atomic Energy Agency

General Co-Chair:
Bradley Micklich
Argonne National Laboratory

Technical Program Chair:
Andrei Afanasev
George Washington University

Technical Program Co-Chair:
Alexander Ryazanov
RRC Kurchatov Institute

Technical Program Co-Chair:
Alex C. Mueller
CNRS and Paris South University

AccApp '15 PLENARY SESSION—I

Location: Viginia A
Tuesday, November 10 • 8:30-11:30 a.m.

Session Organizer and Chair: Philip L. Cole *(Idaho State Univ)*
All are invited.

8:30 a.m.
NIH/DOE Initiatives to Support R&D of Particle Beam Therapy in the U. S.—DOE Perspective, E. Colby *(DOE)*, J. Capala *(National Institutes of Health, National Cancer Inst)*

8:50 a.m.
NIH/DOE Initiatives to Support R&D of Particle Beam Therapy in the U. S.—NCI Perspective, J. Capala *(National Cancer Inst)*, E. Colby *(DOE)*

9:10 a.m.
Novel Solutions to Accelerator and Beam Delivery Challenges in Light Ion Therapy, J. Welsh *(Loyola Univ)*, C. Johnstone *(Fermilab)*, R. Schulte *(Loma Linda Univ)*

9:55 a.m.
A Compact High-Frequency RFQ for Medical and Industrial Applications, M. Vretenar, A. Grudiev, A. M. Lombardi, S. Mathot, E. Montesinos *(CERN)*

10:40 a.m.
Use of Ion Irradiation as a Tool for Identifying Processes that Control the Swelling Resistance of Advanced Ferritic-Martensitic Alloys for Service in Displacive Neutron Environments, F. A. Garner *(Radiation Effects Consulting/Texas A&M)*, Lin Shao, T. Chen, J. Gigax *(Texas A&M)*, M. B. Toloczko *(PNNL)*, S. A. Maloy *(LANL)*, V. N. Voyevodin *(Kharkov Inst of Physics and Technology)*, S. Ukai *(Hokkaido Univ)*

AccApp '15 PLENARY SESSION—II

Location: Virginia A
Wednesday, November 11 • 8:30-11:30 a.m.
Session Organizer: Andrei Afanasev *(George Washington Univ)*
Chair: Alexander Ryazanov *(National Research Centre)*
All are invited.

8:30 a.m.
High-Power Proton Accelerators for ADS, J-L. Biarrotte *(CNRS/IN2P3 IPN)*

9:15 a.m.
Status and Challenges of the Future Circular Collider Study, M. Benedikt, F. Zimmermann *(CERN)*

10:00 a.m.
Medical Isotope Production with Electron Linacs and Accelerator Driven Subcritical Systems (ADSS), D. P. Wells *(South Dakota School of Mines and Technology)*

10:45 a.m.
Investigations of Irradiation by Fast Protons on NRC KI Cyclotron of Superconductor Materials Nb3Sn Properties for Magnets of Large Hadron Collider (CERN) and Future Fusion Reactors (ITER, DEMO), A. I. Ryazanov *(Kurchatov Inst)*, A. Ballarino, L. Bottura *(CERN)*, P. N. Degtyarenko *(Kurchatov Inst)*, R. Flükiger *(CERN)*, S. Yu. Gavrilkin *(Lebedev Physical Insti)*, S. T. Latushkin, A. E. Primenko *(Kurchatov Inst)*, C. Scheuerlein *(CERN)*, E. V. Semenov, S. V. Shavkin *(Kurchatov Inst)*, T. Spina *(CERN)*, A. L. Vasiliev, V. N. Unezhev, Ya.V. Zubavichus *(Kurchatov Inst)*

AccApp '15 PLENARY SESSION—III

Location: Virginia A
Thursday, November 12 • 8:30-11:30 a.m.
Session Organizer: Alexander Ryazanov *(National Research Centre)*
Chair: Bradley John Micklich *(ANL)*
All are invited.

8:30 a.m.
Design of the European Spallation Source Accelerator-Target Interface, E. Pitcher *(European Spallation Source ESS AB)*, H. Thomsen *(Aarhus Univ)*, T. Shea, R. Linande, S. Malloy *(European Spallation Source ESS AB)*

9:15 a.m.
Recent Trends in the Analysis of Atmospheric Aerosols with Accelerator-Based Techniques, M. Chiari *(INFN)*

10:00 a.m.
Present and Future Applications of Industrial Radiation Processing with High-Energy Electrons and X-Rays, Marshall R. Cleland, Richard A. Galloway *(IBA Industrial Inc.)*

10:45 a.m.
Accelerator-Based Nuclear Data Measurements for Nuclear Science and Technology, A. J. M. Plompen *(EC-JRC)*, M. B. Chadwick *(LANL)*

AccApp '15 POSTER SESSION

Location: Delaware AB
Thursday, November 12 • 6:30-9:30 p.m.
Session Organizer: Philip L. Cole *(Idaho State Univ)*
Chair: Andrei Afanasev *(George Washington Univ)*
See page 68-69 for details.

AccApp '15 CLOSING PLENARY SESSION

Location: Viginia A
Friday, November 13 • 2:30-4:30 p.m.
Session Organizer: Alex C. Mueller *(CNRS)*
Chair: Philip L. Cole *(Idaho State Univ)*
Close-Out Session for AccApp '15, Philip L. Cole *(Idaho State Univ)*

Technical Sessions – 1:00-3:05 p.m.

Accelerator Design & Technology—I

Session Organizer: Paul Collier *(CERN)*
Chair: Erik Iverson *(ORNL)*

Virginia A: 1:00-3:05 p.m.

1:00 p.m.

Target Insert Shielding Design for Mo-99 Production Facility, M. Mocko, Ch. T. Kelsey, G. E. Dale *(LANL)*

1:25 p.m.

Cancelled

CERN's AD Antiproton Source Design, Target Material Studies and Consolidation Plans, M. Calviani, A. Broche, M. Butcher, A. Dallocchio, T. Eriksson, T. Feniet, R. Folch, L. Gentini, D. Horvath, M. Garlasche, E. Lopez-Sola, A. Perillo-Marcone, B. Riffaud, C. Torregrosa *(CERN)*

1:50 p.m.

Radiation Safety Aspects of the LCLS-II Accelerator at SLAC, J. Blaha, J. Liu, S. Mao, L. Nicolas, S. H. Rokni, M. Santana, S. Xiao *(SLAC National Accelerator Lab)*

2:15 p.m.

Radiation Safety Studies for LCLS-II Experiment Systems, Shanjie Xiao, James Liu, Yiping Feng, Michael Rowen, Sayed Rokni *(SLAC National Accelerator Lab)*

2:40 p.m.

Radiation Source Terms for Shielding Design at Synchrotron Light Sources, B. J. Micklich *(ANL)*

Materials Research with Accelerators—I

Session Organizer and Chair: James F. Stubbins *(Univ of Illinois)*

Virginia B: 1:00-3:05 p.m.

1:00 p.m.

Transmission Electron Microscopy Study of Radiation-Induced Defects in Fluorite-Type Oxides, S. Matsumura, S. Takaki, A. S. I. Bhuian, K. Yasuda *(Kyushu Univ)*, N. Ishikawa *(JAEA)*

1:25 p.m.

Possible Links in Superconducting, Ferroelectric and Antiferrodistortive Instabilities in Pristine and Ion Implanted $SrTiO_3$ Crystals by Studying Jahn-Teller (JT) Lattice Distortions, Cubic to Tetragonal Phase Transition, Atomic Thermal Vibrational Amplitude and the Phonon Properties using Rutherford Backscattering Spectrometry (RBS)-Ion Channeling (ICh) and Raman Scattering, Kalyan Sasmal, Viktor Hadjiev, Quark Chen, Wei-Kan Chu *(Univ of Houston)*

1:50 p.m.

The Impact of Neutron-Atypical Variables on the Depth-Dependent Distribution of Void Swelling of Ferritic-Martensitic and ODS Alloys during Self-Ion Irradiation, F. A. Garner *(Radiation Effects Consulting/Texas A&M)*, Lin Shao, J. Gigax, T. Chen *(Texas A&M)*, J. Wang *(Texas A&M/PNNL)*, M. B. Toloczko, A. G. Certain *(PNNL)*, M. P. Short *(MIT)*

2:15 p.m.

Use of Self Ion Irradiation in Determining the Role of Alloy Variation on Microstructural Evolution of Ferritic Martensitic Steels, E. Getto, Z. Jiao, K. Sun, G. S. Was *(Univ of Michigan)*

2:40 p.m.

Solving Fusion Technology Problems with Accelerator Based Techniques, E. Alves, N. Catarino *(IPFN,IST)*, N. P.Barradas *(C2TN, IST)*, J. P. Coad *(CCFE)*, K. Heinola *(CCFE/Univ of Helsinki)*, A. Widdowson, A. Baron-Wiechec *(CCFE)*, M. Rubel *(KTH)*, A. Simons *(IAEA)*, JET Contributors

Accelerators for the Life Sciences—I

Session Organizer and Chair: Carol Johnstone *(Fermilab)*

Virginia C: 1:00-2:40 p.m.

1:00 p.m.

Proton Imaging—New Opportunities and Challenges for Accelerator Applications in Hadron Therapy, Reinhard W. Schulte, on behalf of the Proton CT Collaboration *(Loma Linda Univ)*, invited

1:25 p.m.

Future Plan of a Heavy Ion Radiation Therapy and Research Facility in Dallas, Texas, A. Pompos, S. Jiang, R. Timmerman, M. Story, H. Choy *(UT Southwestern Medical Center)*, invited

1:50 p.m.

Recent Development of Heavy-Ion Radiotherapy Technology with HIMAC, K. Noda *(National Ins of Radiological Sciences)*

2:15 p.m.

Hitachi Particle Therapy Solution and Its Related Technologies, Masumi Umezawa, Hiroshi Akiyama *(Hitachi)*

Technical Sessions – 3:30-6:00 p.m.

Accelerator Design & Technology—II

Session Organizer: Stuart D. Henderson *(ANL)*
Chair: Dirk Vandeplassche *(SCK-CEN)*

Virginia A: 3:30-6:00 p.m.

3:30 p.m.

Analysis and Characterization of Impedance-Matched Inductive Loop Coupling in a Cyclotron Dee Structure, Lewis Carroll *(Carroll & Ramsey Assoc)*

3:55 p.m.

Characterization of the Beam of a Neutron Generator, E. Borra, G. M. Contessa, N. Cherubini, A. Dodaro *(ENEA)*, L. Lepore *(Univ of Rome "Sapienza")*, G. A. Marzo, S. Sandri *(ENEA)*

4:20 p.m.

CHARM—A Dedicated Test Facility for Radiation Tolerance and Reliability Studies in Mixed Radiation Fields, Adam Thornton *(Univ of Surrey/CERN)*, Ruben Garcia Alia, Heinz Mekki, Markus Brugger *(CERN)*

Cancelled

4:45 p.m.

Electron Physics above 1 GeV in MCNP6, B. J. Micklich *(ANL)*, M. R. James *(LANL)*

5:10 p.m.

Experiments Supporting Predictive Photocathode Emission Models, E. J. Montgomery *(Univ of Maryland, College Park)*, K. L. Jensen *(Naval Rsch Lab)*, M. Rosenzweig, M. Tripepi *(Univ of Maryland, College Park)*, R. L. Ives, T. Bui *(Calabazas Creek Research, Inc.)*

5:35 p.m.

Modeling Delayed Emission Effects from Photocathodes for FEL's, K. L. Jensen *(Naval Rsch Lab)*, J. J. Petillo *(Leidos Corp)*, N. A. Moody *(LANL)*, D. Panagos, S. Ovtchinnikov *(Gnosys)*

Materials Research with Accelerators—II

Session Organizer: Victor Inozemtsev *(IAEA)*
Chair: Alexander Ryazanov *(National Research Centre)*

Virginia B: 3:30-6:00 p.m.

3:30 p.m.

Real Time and in Situ Studies of Materials in a Radiation Environment Beamline (MRE) at the National Synchrotron Light Source-II, M. Elbakhshwan, D. Popovich, S. Gill, E. Dooryhee, L. Ecker *(BNL)*

Cancelled

3:55 p.m.

Probing Materials Response to Extreme Environments, J. S. Custer, K. Hattar *(SNL)*

4:20 p.m.

Basic and Applied Research with Tunable Mono-Energetic Neutrons at Prague Van-de-Graaff Accelerator, C. Granja, M. Solar, S. Pospisil *(Czech Technical Univ in Prague)*, A. Owens *(European Space Agency)*, I. Wilhelm, Z. Kohout, P. Masek, J. Svejda, J. Cerny, J. Petrik *(Czech Technical Univ in Prague)*

4:45 p.m.

Irradiation-Induced Modifications on the Microstructure and Mechanical Properties of Ferritic/Martensitic Steels G91 and G92, Xiang Liu, Yinbin Miao *(Univ of Illinois)*, Peter Hosemann *(Univ of California, Berkeley)*, Meimei Li *(ANL)*, James F. Stubbins *(Univ of Illinois)*

5:10 p.m.

Effects of Metallization Variation on III-V HBTs under Ion Irradiation, B. A. Aguirre, B. Vaandrager, G. Grossetete, G. Vizkelethy, E. Bielejec, G. A. Patrizi, D. B. King *(SNL)*

5:35 p.m.

Effects of High Dose ion Irradiation and High Levels of He and H on Void Swelling in F/M Steels, Y. E. Kupriiyanova, O. V. Borodin, A. S. Kalchenko V. N. Voyevodin, , G. D. Tolstolutskaya *(Kharkov Inst of Physics and Technology)*, F. Garner *(Radiation Effects Consulting)*

Accelerators for the Life Sciences—II

Session Organizer and Chair: Stephane Lucas *(Univ of Namur)*

Virginia C: 3:30-5:45 p.m.

3:30 p.m.

Development Status of Line Scanning in Sumitomo Proton Therapy System, Toshiki Tachikawa, Hideki Nonaka, Daizo Amanno, Hiroki, Miyade, Toru Asaba, Takuya Miyashita, Kazuhiro Fujita, Kenzo Sasai, Nagaaki Kamiguchi *(Sumitomo Heavy Industries, Ltd.)*

3:55 p.m.

Update from the National Cancer Institute, Bhadrasain Vikram *(NIH/NCI)*, invited

4:20 p.m.

Compact, Iron-Free, Superconducting Cyclotrons for Proton Beam Radiotherapy and Other Nuclear Accelerator Applications, J. V. Minervini, A. Radovinsky, P. C. Michael, L. Bromberg *(MIT)*, V. Derenchuk, J. Matteo *(ProNova Solutions, LLC.)*

4:45 p.m.

A Cost Effective Hadrontherapy Installation Based on a Multi-Port Fixed-Field Accelerator, F. Méot *(BNL)*, C. Johnstone *(Fermilab)*

5:10 p.m.

A Variable-Energy, CW Compact Accelerator for Ion Therapy, C. Johnstone *(Particle Accelerator Corp.)*, R. Edgecock, Jordan Taylor *(Univ of Huddersfield)*, R. Schulte *(Loma Linda Univ)*

Technical Sessions – 1:00-3:05 p.m.

Accelerator Production of Radioisotopes—I

Session Organizer: Lia Merminga *(TRIUMF)*
Chair: Douglas Wells *(South Dakota School of Mines and Technology)*

Virginia A: 1:00-3:05 p.m.

1:00 p.m.

High Specific Activity e- LINAC Production of 67Cu, J. L. Stoner, A. W. Hunt, T. J. Gardner, F. J. Harmon *(Idaho State Univ)*

1:25 p.m.

Overview of Argonne Support for Accelerator Based Mo-99 Medical Isotope Production, S. D. Chemerisov, K. Alford, M. Bennett, D. Bowers, M. A. Brown, J. P. Byrnes, W. L. Ebbert, A. Gelis, R. G. Gromov, L. Hafenrichter, A. Hebden, T. Heltemes, J. Jerden, C. D. Jonah, M. Kalensky, J. Krebs, R. H. Lowers, V. Makarashvili, B. Micklich, K. J. Quigley, D. Rotsch, D. C. Stepinski, Z. Sun, P. Tkac, K. E. Wardle, K. A. Wesolowski, G. F. Vandegrift *(ANL)*

1:50 p.m.

LANL Research and Development Activities Assisting U.S. Accelerator Production of Mo-99 in the United States, Gregory Edward Dale, David J. Alexander, Scott A. Baily, Kip A. Bishofberger, Cynthia E. Buechler, Dale A. Dalmas, David S. Decroix, Michael A. Holloway, Charles T. Kelsey IV, Robert H. Kimpland, Steve K. Klein, Iain May, Michael Mocko, Angela C. Naranjo, Arthur Nobile, Brett S. Okhuysen, Eric R. Olivas, Maria I. Peña, Sean D. Reilly, Heidi Reichert, Daniel Rios, Frank P. Romero, Craig M. Taylor, Robert M. Wheat, Keith A. Woloshun *(LANL)*

2:15 p.m.

Development of Yttrium-88 as a Radiotracer for Fracing Applications, D. S. Dale, T. Forest, F. Harmon *(Idaho State Univ)*, V. Starovoitova, M. Mamtimin *(Niowave, Inc.)*, William Roggenthen, Foster Sawyer, Doug Wells, *(South Dakota School of Mines and Technology)*

2:40 p.m.

A Compact and High Current Accelerator for Radioisotope Production, D. Bruton, R. Barlow, R. Edgecock *(Univ of Huddersfield)*, C. J. Johnstone *(Particle Accelerator Corp.)*

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Accelerator Facilities—I

Session Organizer: Boris Sharkov *(FAIR)*
Chair: Andrei Afanasev *(George Washington Univ)*

Virginia B: 1:00-3:05 p.m.

1:00 p.m.

The Accelerator Facility of FAIR, O. Kester *(GSI)*

1:25 p.m.

An Overview of Normal Conducting Radio Frequency Cavities in Accelerator Applications, Dirk Vandeplassche *(SCK/CEN)*, invited

1:50 p.m.

An Overview of Accelerators Based on Superconducting Radio Frequency Cavities, Andrew Hutton *(Thomas Jefferson National Accelerator Facility)*

2:15 p.m.

Ionizing Radiation from Terawatt Lasers at SLAC, J. M. Bauer, J. Liu, S. Rokni *(SLAC National Accelerator Lab)*, T. Liang *(Georgia Tech)*

2:40 p.m.

Conceptual Design of the CERN's Search for Hidden Particles *(SHiP)* Experiment Target Complex, M. Calviani, M. Battistin, R. Betemps, J.-L. Grenard, D. Horvath, R. Jacobsson, P. Pacholek, A. Perez, A. Perillo-Marcone, A. Rakai, E. Ricci, S. Sgobba, C. Strabel, V. Venturi, H. Vincke *(CERN)*

Cancelled

Accelerators for ADS—I

Session Organizer and Chair: Maud A. Baylac *(LPSC, Université Grenoble-Alpes, CNRS/IN2P3)*

Virginia C: 1:00-3:05 p.m.

1:00 p.m.

China ADS Project, Y. He *(CAS)*

1:25 p.m.

The Strong Focusing Cyclotron for Accelerator-Driven Destruction of Actinides in a Molten Salt and Accelerator-Driven Neutron Damage Facilities, N. Pogue *(Paul Scherrer Inst)*, Saeed Assadi *(Hitek Technologies)*, P. McIntyre, K. Melconian, A. Sattarov *(Texas A&M)*

1:50 p.m.

Conceptual Designs of Accelerator-Driven Subcritical Systems to Burn the Minor Actinides, Yan Cao, Yousry Gohar, Elia Merzari, Adam R. Kraus *(ANL)*

2:15 p.m.

High Power from Fixed-Field Rings in the Accelerator-Driven Sub-Critical Reactor Application, F. Méot *(BNL)*, R. Barrie Appleby *(The Univ of Manchester and the Cockcroft Inst)*, M. Haj Tahar *(BNL)*, C. Johnstone *(Fermilab)*, S. Sheehy *(Rutherford Appleton Lab)*, N. Tsoupas *(BNL)*

Technical Sessions – 3:30-6:00 p.m.

Accelerator Production of Radioisotopes—II

Session Organizer and Chair: Daniel Stanton Dale *(Idaho State Univ)*

Virginia A: 3:30-6:00 p.m.

3:30 p.m.

Superconducting Electron Linac Development for Isotope Production, V. N. Starovoitova, S. S. Barnard, C. H. Boulware *(Niowave, Inc.)*, D. S. Dale *(Idaho State Univ)*, A. K. Grimm, T. L. Grimm *(Niowave, Inc.)*, F. J. Harmon *(Idaho State Univ)*, J. L. Hollister, E. S. Maddock, M. Mamtimin *(Niowave, Inc.)*

3:55 p.m.

Energy Recovery Linacs for Commercial Radioisotope Production, A. Sy *(Thomas Jefferson National Accelerator Facility)*, C. Boulware *(Niowave, Inc.)*, R. P. Johnson *(MuPlus, Inc.)*, G. Krafft, V. Morozov *(Thomas Jefferson National Accelerator Facility)*, V. Starovoitova *(Niowave, Inc.)*

4:20 p.m.

New Accelerator Technology for Isotope Production, P. McIntyre *(Texas A&M)*, N. Pogue *(Paul Sherrer Inst)*, S. Assadi *(Hitek Technologies)*

4:45 p.m.

Characterization of Radiation from Cyclotron Driven O-18 Enriched Water Targets, J. M. Gahl, J. Brockman, C. Herbold, J. W. Kwon, W. Miller, P. Norgard, B. Nullmeyer, L. A. Saale *(Univ of Missouri)*

5:10 p.m.

The Radionuclidic Purity of ^{99m}Tc Produced via Low-Energy Cyclotrons, L. F. Metello *(ESTSP.IPP /Univ. of Coimbra/IsoPor SA)*, P. Costa, L. Cunha *(ESTSP.IPP/IsoPor SA)*, R. R. Jonhson, L. Matei *(Best Cyclotron Systems Inc)*, W. Gelbart *(Advanced Systems Design Inc)*, C. Artner, J. Obermair, B. Dietl *(IASON GmbH)*, P. Lass *(Univ of Gdansk)*, G. Currie *(CSU)*, L. S. Craciun, D. Niculae *(Horia Hulubei National Inst of Physics &Nucl Eng)*, Carmo, F. Alves, M. F. Botelho *(Univ of Coimbra)*

5:35 p.m.

Feasibility of Production of Moly-99 via 1-Neutron Exchange Reaction 98Mo+100Mo→299Mo in Strong-Focusing Auto Collider ('EXYDER') of Natural Molybdenum Nuclei Based on T and He-3 Production Data from d+d Weak Focusing Auto-Collider MIGMA IV, Tim Hester, Bogdan C. Maglich *(California Science & Eng Corp)*

Accelerator Facilities—II

Session Organizer: Andrew Hutton *(Jefferson Lab)*
Chair: Oliver Karl Kester *(GSI Darmstadt)*

Virginia B: 3:30-6:00 p.m.

3:30 p.m.

IRRAD: The New 24 GeV/c Proton Irradiation Facility at CERN, Blerina Gkotse, Maurice Glaser, Michael Moll, Federico Ravotti *(CERN)*

3:55 p.m.

MIBL: A New Multi-Beam Facility for High Dose Radiation Damage Studies, O. Toader, F. Naab, P. Roy, T. Kubley, A. Flick, Z. Jiao, S. Dwaraknath, E. Getto, A. M. Monterrosa, S. Raiman, S. Taller, P. Wang, G. S. Was *(Univ of Michigan)*

4:20 p.m.

A Moderator Demonstration Facility at the Spallation Neutron Source, E. B. Iverson, M. J. Rennich, F. X. Gallmeier, A. V. Aleksandrov, W. Lu, Th. Hügle, R. C. Gillis *(ORNL)*

4:45 p.m.

A Next-Generation, Multi-Probe Facility for Matter-Radiation Interactions in Extremes, R. W. Garnett, R. L. Sheffield, C. W. Barnes *(LANL)*

5:10 p.m.

Radiation Characterization of the UNLV Accelerator Facility, Matthew S. Hodges, Alexander Barzilov, Daniel Lowe *(UNLV)*

5:35 p.m.

Low Energy Accelerator Facility Upgrade and Test, R. Gromov *(ANL)*, D. Brown *(MEVEX Corp.)*, S. Chemerisov *(ANL)*, S. Forknall, J. Gardner *(MEVEX Corp.)*, L. Hafenrichter, C. D. Jonah, K. Alford *(ANL)*, D. Macrillo *(MEVEX Corp.)*, R. Tafoya, K. Wesolowski *(ANL)*, A. Zulpo *(MEVEX Corp.)*

Accelerators for ADS—II

Session Organizer and Chair: Sama Bilbao y León *(Virginia Commonwealth Univ)*

Virginia C: 3:30-6:00 p.m.

3:30 p.m.

Operation of the Accelerator Driving the Low Power ADS GUINEVERE at SCK-CEN, M. Baylac , A. Billebaud, P. Boge, D. Bondoux, J. Bouvier, S. Chabod, G. Dargaud, E. Froidefond *(LPSC, Université Grenoble-Alpes, CNRS/IN2P3)*, A. Kochetkov *(SCK-CEN)*, E. Labusssié *(LPSC, Université Grenoble-Alpes, CNRS/IN2P3)*, F. Lecolley, J.-L. Lecouey, G. Lehout, N. Marie, *(LPC Caen, ENSI CAEN/Université de Caen)*, J. Mertens *(SCK-CEN)*, R. Micoud, S. Rey *(LPSC, Université Grenoble-Alpes, CNRS/IN2P3)*, F. Van Gestel, C. van Grieken, B. Van Houdt, G. Vittiglio *(SCK-CEN)*

3:55 p.m.

Alternate Fast Neutron Burst Option using LEU Fuel, Ross Radel, Eli Moll, David Ozburn *(Phoenix Nuclear Labs)*, Dave Schneider *(TechSource, Inc)*, Jon Fisher *(Fifth Gait Technologies)*

4:20 p.m.

Beam Stability Analysis for ADS, M. Haj Tahar, F. Meot, N. Tsoupas *(BNL)*

4:45 p.m.

The Future of Nuclear Energy: Chemistry is the Problem Accelerators the Solution, Charles D. Bowman *(ADNA Corp)*

5:10 p.m.

Thorium Fueled Reactors: Do They Need an Accelerator?, R. J. Barlow, R. Cywinski *(Univ of Huddersfield)*, T. R. Edgecock *(Univ of Huddersfield/STFC Rutherford Appleton Lab)*, C. Johnstone *(Fermilab)*, R. Seviour *(Univ of Huddersfield)*

5:35 p.m.

High-Power SC Proton Accelerators for Simplified Subcritical Energy Generation, R. Abrams, R. P. Johnson, T. J. Roberts *(Muons, Inc.)*, C. D. Bowman *(ADNA, Corp.)*, R. B. Vogelaar *(Virginia Tech)*

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Technical Sessions – 1:00-3:05 p.m.

High-Power Accelerators and High-Power Spallation Targets—I

Session Organizer: John D. Galambos *(ORNL)*
Chair: Eric J. Pitcher *(ESS AB)*

Virginia A: 1:00-3:05 p.m.

1:00 p.m.

The Accelerator-Target-Interface of High Intensity Proton Accelerator (HIPA) and the Swiss Spallation Neutron Source SINQ, M. Wohlmuther, R. Bergmann, B. Blau, S. Dementjevs, F. Heinrich, S. Jollet, D. Kiselev, A. Mezger, D. Reggiani, T. Reiss, R. Sobbia, V. Talanov, K. Thomsen, M. Seidel *(Paul Scherrer Inst),* invited

1:25 p.m.

Research and Development of High Intensity Beam Transport to the Target Facilities at J-PARC, S, Meigo *(JAEA)*, M. Ooi *(J-PARC)*, H. Fujimori *(KEK)*

1:50 p.m.

Experience with Accelerator/Target Interfaces at the SNS, John D. Galambos *(ORNL)*

2:15 p.m.

CSNS Accelerator-Target Interface, S. Fu, S. Wang, X. Jia, H. Qu *(CSNS)*

2:40 p.m.

New Concept for High Power Target: Gravity-Driven Dense Granular Flow Target, Lei Yang *(Chinese Academy of Science)*

Accelerators for Monitoring the Environment—I

Session Organizer: Aliz Simon *(IAEA)*
Chair: Massimo Chiari *(Istituto Nazionale di Fisica Nucleare (NFN) sezione di Firenze)*

Virginia B: 1:00-3:05 p.m.

1:00 p.m.

Efficiency of Using Calcium Oxalate for Protection of Monumental Limestone and Marble, Domagoj Mudronja *(Croatian Conservation Inst)*, S. Fazinic, I. Božičević Mihalić *(Rudjer Bošković Inst)*, A. Migliori, J. Leani, A. Karydas *(IAEA)*

1:25 p.m.

PIXE/PIGE Analysis of Metals, Glasses, Gems and Pigments, Ž Šmit *(Univ of Ljubljana)* **Cancelled**

1:50 p.m.

External-Beam IBA Measurements on Cultural Heritage Objects, M. Chiari, L. Castelli *(INFN)*, C. Czelusniak *(Univ of Florence/INFN)*, M. E. Fedi *(INFN)*, L. Giuntini, L. Liccioli, P. A. Mando *(Univ of Florence/INFN)*, M. Massi *(INFN)*, A. Mazzinghi *(Univ of Florence/INFN)*, L. Palla *(Univ of Pisa and INFN)*, C. Ruberto *(Univ of Florence and INFN)*, F. Taccetti *(INFN)*

2:15 p.m.

IBA Applications in Cultural Heritage at the Lebanese Accelerator, M. Roumie *(Lebanese Atomic Energy Commission)*

2:40 p.m.

Micro-PIXE and Micro-SR-XRF—Two Excellent Analytical Techniques for History and Art Studies, B. Constantinescu *(National Inst for Nuclear Physics and Eng)* **Cancelled**

Nuclear Data—I

Session Organizer: Mark B. Chadwick *(LANL)*
Chair: Boris Pritychenko *(BNL)*

Virginia C: 1:00-3:05 p.m.

1:00 p.m.

Measurement of Total Cross Section of Water and O-16 in the MeV Energy Range, Y. Danon, E. Blain, A. Daskalakis, B. McDermott, N. Thompson, A. Youmans *(RPI)*, R. C. Block, D. Barry, B.Epping, G. Leinweber, M.Rapp *(BMPC)*

1:25 p.m.

Improved Neutron Capture Measurements for Nuclear Data Evaluation, B. Baramsai, M. Jandel, T. A. Bredeweg, A. Couture, S. Mosby, G. Rusev, J. L. Ullmann, C. L. Walker *(LANL)*

1:50 p.m.

Progress on Using a Lead Slowing-Down Spectrometer to Measure Neutron Capture Cross Sections, N. W. Thompson, A. Lewis, J. Thai, A. Daskalakis, E. Blain, Y. Danon *(RPI)*

2:15 p.m.

Fast Neutron Scattering Measurements with Lead, Amanda E. Youmans, J. Brown, A. Daskalakis, N. Thompson, A. Welz, Y. Danon, B. McDermott *(RPI)*, G. Leinweber, M. Rapp *(BMPC)*

2:40 p.m.

Cross-Section Measurement of Spallation Products in Thorium Target Irradiated with Proton Beams of Intermediate Energies, R.Vespalec *(Joint Inst for Nuclear Research/Czech Technical Univ in Prague)*, J. Adam *(Joint Inst for Nuclear Research/Nuclear Physics Institute Rez near Prague)*, D. V. Filosofov *(Joint Inst for Nuclear Research)*, O. Huml *(Czech Technical Univ in Prague)*, D. V. Karaivanov, Y. Kish, Z. Khushvaktov, A. A. Solnyshkin, V. M. Tsoupko-Sitnikov *(Joint Inst for Nuclear Research)*, J. Vrzalova *(Joint Inst for Nuclear Research/Czech Technical Univ in Prague/Nuclerar Physics Inst Rez near Prague)*, L. Zavorka *(Joint Inst for Nuclear Research/Czech Technical Univ in Prague)*, M. Zeman *(Joint Inst for Nuclear Research/Brno Univ of Technology)*

Technical Sessions – 3:30-6:00 p.m.

High-Power Accelerators and High-Power Spallation Targets—II

Session Organizer: Eric J. Pitcher *(ESS AB)*
Chair: John D. Galambos *(ORNL)*

Virginia A: 3:30-6:00 p.m.

3:30 p.m.

Spallation Neutron Source Second Target Station, I. Remec, F. X. Gallmeier, M. J. Rennich, T. J. McManamy, W. Lu *(ORNL)*

3:55 p.m.

The Neutron Moderators for the European Spallation Source, L. Zanini, K. Batkov *(European Spallation Source ESS AB)*, E. Klinkby *(European Spallation Source/DTU Nutech/Technical Univ of Denmark)*, F. Mezei *(European Spallation Source/Wigner Research Center for Physics)*, T. Schoenfeldt *(European Spallation Source/DTU Nutech/Technical Univ of Denmark)*, A. Takibayev *(European Spallation Source)*

4:20 p.m.

Target Design Optimization of KIPT Neutron Source Facility, Zhaopeng Zhong, Yousry Gohar, Elia Merzari, Adam Kraus, Tanju Sofu *(ANL)*

4:45 p.m.

Design Study of the Windowless Granular Target Station for C-ADS, H. J. Cai, L. Yang *(Chinese Academy of Science)*

5:10 p.m.

Design, Analysis and Testing of a Helium Cooled Target for 99Mo Isotope Production, K. Woloshun, G.Dale, E. Olivas, F. Romero, M. Mocko *(LANL)*, S. Chemerisov *(ANL)*

5:35 p.m.

High Energy Beam Dump and Collimator for NorthStar, R. Gromov, J. Bailey, S. Chemerisov, V. Makarashvili, G. F. Vandegrift, M. Virgo *(ANL)*

Materials Research with Accelerators—III

Session Organizer and Chair: Alexander Ryazanov *(National Research Centre)*

Virginia B: 3:30-5:10 p.m.

3:30 p.m.

Effect of Internal Sink Strength on Diffusion Mass Transport in Alloys under High Dose Ion Irradiation, V. A. Pechenkin, A. D. Chernova, V. L. Molodtsov *(State Scientific Center of Russian Federation - The Inst for Physics & Power Eng)*, F. A. Garner *(Radiation Effects Consulting)*

3:55 p.m.

Radiation Response of ODS Ferritic-Martensitic Alloys after High-DPA Self-Ion-Irradiation, Tianyi Chen, Eda Aydogan, Jonathan G. Gigax, Di Chen, Jing Wang, Xuemei Wang *(Texas A&M)*, S. Ukai *(Hokkaido Univ)*, F. A. Garner *(Texas A&M/Radiation Effects Consulting)*, Lin Shao *(Texas A&M Univ)*

4:20 p.m.

X-Ray Diffraction, Annealing and Oxidation Studies of Proton Irradiated Beryllium, N. Simos, M. Elbakhshwan *(BNL)*

4:45 p.m.

IAEA Coordinated Research Project "Accelerator Simulation and Theoretical Modelling of Radiation Effects" (CRP SMoRE): Results and Perspectives + IAEA Round Table Discussion, Ian Swainson *(IAEA)*

Nuclear Data—II

Session Organizer: Arjan Plompen *(EC-JRC)*
Chair: Yaron Danon *(RPI)*

Virginia C: 3:30-6:00 p.m.

3:30 p.m.

Differentiation of Special Nuclear Materials by Observation of Fast Neutron Induced Fission, D. Koltick, H. Wang *(Purdue Univ)*

3:55 p.m.

Experimental S (α,β) Data for Moderators with Analysis of Current Evaluations, C. Wendorff, K. Ramic, E. Liu, Y. Danon *(RPI)*

4:20 p.m.

New (n,γ) Measurements on Elemental Iron from 850 to 2500 keV, B. McDermott, E. J. Blain, A. M. Daskalakis, N. Thompson, A. Youmans, H. J. Choun, W. Steinberger, Y. Danon *(RPI)*, R. C. Block, D. P. Barry, B. Epping, G. Leinweber, M. J. Rapp *(BMPC)*

4:45 p.m.

Precision Measurement of 56Fe(n,nγ) at 14.1 MeV as a Cross Section Calibration, H. Wang, D. Koltick *(Purdue Univ)*

5:10 p.m.

Separation of Neutron Inelastic and Elastic Scattering Contribution from Natural Iron using Detector Response Functions, A. M. Daskalakis, E. J. Blain, B. J. McDermott *(RPI)*, R. M. Bahran *(LANL)*, Y. Danon *(RPI)*, D. P. Barry, G. Leinweber, M. J. Rapp, R. C. Block *(BMPC)*

5:35 p.m.

Monte Carlo Methods for Uncertainly Analysis using the Bayesian R-Matrix Code SAMMY, M. J. Rapp, D. P. Barry, G. Leinweber, R. C. Block *(BMPC)*, Y. Danon *(RPI)*

Poster Session - 6:30-9:30 p.m.

Poster Session–All Tracks

Session Organizer: Philip L. Cole *(Idaho State Univ)*
Chair: Andrei Afanasev *(George Washington Univ)*

Delaware AB: 6:30-9:30 p.m.

1. Ion Irradiation Tolerance of AlN/TiN Multilayered Nanocomposites, M. Milosavljevic, D. Perusko *(VINCA Inst of Nuclear Sciences)*, V. A. Skuratov, A. Yu.Didyk *(JINR)*, K. P. Homewood *(Univ of Surrey)*
2. Detection of Explosives using Associated Particle Technique in Single-Sided Geometry, Tushar Roy, Y. Kashyap, A. Agrawal, M. Shukla, S. Bajpai, P. S. Sarkar, T. Patel, Amar Sinha *(BARC)*
3. Modeling and Measurement of Simultaneous Heavy and Light Ion Beam Injection, S. Taller, S. Dwaraknath, G. S. Was *(Univ of Michigan)*
4. Benchmark of Neutron Production Cross Sections with Monte Carlo Codes, Pi-En Tsai *(Univ of Tennessee)*, Bo-Lun Lai *(Natl Tsing Hua Univ)*, Lawrence Heilbronn *(Univ of Tennessee)*, Rong-JiunSheu *(Natl Tsing Hua Univ)*
5. Conceptual Design of a 3D-C High Intensity Positron Source, I. Silverman *(Soreq Nuclear Research Center)*, G. Ron *(Hebrew Univ)*, E. H. T. Teo *(Nanyang Technological Univ)*, A. Bolker, E. Grossman *(Soreq Nuclear Research Center)*
6. Separation of Neutron and Gamma Background in a Neutron Transmission Experiment, R. C. Block G. Leinweber, J. A. Burke, D. P. Barry, Michael J. Trbovich *(BMPC)*, Noel J. Drindak *(KAPL (retired))*
7. Facility for Study of Radiation Resistance Reactor Materials on Beams, Volodymyr, A. Baturin, P. A. Litvinov, S. A. Pustovoitov, S. A. Yeryomin, A. Yu. Karpenko, V. E. Storizhko *(NAS)*
8. Void Swelling of Alloy T91 Caused by 3.5 MeV Fe+ Irradiation up to 1000 Displacements per Atom, J. Gigax, T. Chen, Hyosim Kim, Lloyd Price, Xuemei Wang, F. A. Garner *(Texas A&M/ Radiation Effects Consulting)*, Lin Shao *(Texas A&M)*
9. The Brookhaven Linac Isotope Producer (BLIP) Raster Scanning Development, J. F. Mausshardt, P. Michnoff, C. Cullen, D. Raparia *(BNL)* **Cancelled**
10. Towards Development of Radiation Tolerant Metallic Glasses for Nuclear Energy Applications, Lloyd Price, Tianyi Chen, Di Chen, Xumei Wang, Lin Shao *(Texas A&M Univ)*
11. Estimated Release of Elements from the ESS Tungsten Target During Normal Operation, E. J. Pitcher *(European Spallation Source)*
12. Determination of the Spallation Neutron Flux with Co-59 Threshold Activation Detectors, M. Zeman *(Joint Inst for Nuclear Research/Brno Univ of Technology)*, A. Adam *(Joint Inst for Nuclear Research/ Nuclear Physics Inst ASCR)*, A. A. Baldin *(Joint Inst for Nuclear Research)*, V. V. Chilap *(CPTP "Energomash")*, P. Chudoba *(Nuclear Physics Inst ASCR/ Charles Univ in Prague)*, W. I. Furman *(Joint Inst for Nuclear Research)*, K. Katovsky *(Brno Univ of Technology)*, J. Khushvaktov *(Joint Inst for Nuclear Research)*, Yu. Kish *(Joint Inst for Nuclear Research/Uzhgorod National Univ)*, A. A. Solnyshkin *(Joint Inst for Nuclear Research)*, M. Suchopar *(Nuclear Physics Inst ASCR/Czech Technical Univ in Prague)*, V. M. Tsoupko-Sitnikov, S. I. Tyutyunikov *(Joint Inst for Nuclear Research)*, R. Vespalec *(Joint Inst for Nuclear Research/Czech Technical Univ in Prague)*, J. Vrzalova *(Joint Inst for Nuclear Research/ Czech Technical Univ in Prague/Nuclear Physics Inst ASCR)*, V. Wagner *(Nuclear Physics Inst ASCR/ Czech Technical Univ in Prague)*, L. Zavorka *(Joint Inst for Nuclear Research/ Czech Technical Univ in Prague)*, P. Zhivkov *(Inst of Nuclear Research/ Nuclear Energy of Bulgarian Academy of Science)*
13. Studies of MYRRHA using Thorium Fuel, R. J. Barlow *(The Univ of Huddersfield)*, H. Ait Abderrahim, G. van den Eynde, E. Malambu *(SCK-CEN)*
14. Nitrogen-15 Beam Measurement of the Hydration of Cementitious Materials, R. A. Livingston *(Univ of Maryland)*, J. S. Schweitzer *(Univ of Connecticut)*, C. Rolfs, H.-W. Becker *(Ruhr Univ Bochum)*, S. Kubsky *(SOLEIL)*
15. Plant Model Development for KIPT Neutron Source Facility Simulator, Yan Cao, Thomas Y. Wei, Yousry Gohar, Austin L. Grelle, Young Soo Park *(ANL)*
16. Neutron Irradiation Test Facility for Fusion Materials, Ross Radel *(Phoenix Nuclear Labs)*, Jerry Kulcinski *(Univ of Wisconsin, Madison)*
17. A Unique Concept for Using an Accelerator for Materials Studies, D. Wootan, K. Burns, G. Longoni, B. Schmitt, R. Gates *(PNNL)*
18. Investigation of Trace and Toxic Elements in Some Human Hard Tissues from Sudan using Van de Graaff Accelerator, Mohamed Eltayeb Eisa *(Sudan Univ of Science & Technology)*, C. A. Pineda-Vargas *(iThemba LABS)*, Sami. E. E. Salah *(Unive of Al Gedarif)*, Z. Mohammed *(Khartoum Univ)*, S. Naidoo *(Univ of the Western Cape)*
19. Sm k-Shell Ionization Cross Section by Impact of Electron, Near of Threshold, M. V. Manso Guevara *(Univ Estadual de Santa Cruz)*, V. R. Vanin *(Univ de Sao Paulo)*, J. M. Fernandez Varea *(Univ de Barcelona)*, M. Tabascnik, N. L. Maidana, M. N. Martins *(Univ de Sao Paulo)*
20. The Studying of Isotopic Content of Diamond Films Formed by CVD Method, V. V. Levenets, A. O. Shchur, O. P. Omelnik *(KIPT)*
21. Neutronic Calculations for a Chip-Irradiation Facility at the European Spallation Source, N. Borghi *(Univ dell'Insubria)*, G. Gorini, A. Milocco *(Univ Milano-Bicocca)*, E. Pitcher, L. Zanini *(European Spallation Source ESS AB)*
22. Flexural Strength Properties of an Electron Beam Radiation Crosslinked Wood Plastic Composite, M. S. Driscoll, A. Palm, J. Smith, L. Smith *(SUNY ESF)*, L. S. Larsen *(NYSERDA)*
23. Criticality and Depletion Analysis for Reactivity Variations in Hybrids Systems, Carlos E. Velasquez *(Univ Federal de Minas Gerais/ Inst Nacional de Ciência e Technologia de Reatores Nucleares Inovadores/Rede Nacional de Fusão)*, Graiciany de P. Barros *(CNEN)*, Claubia Pereira, Maria Auxiliadora F. Veloso, Antonella L. Costa *(Univ Federal de Minas Gerais/Inst Nacional de Ciência e Technologia de Reatores Nucleares Inovadores/Rede Nacional de Fusão)*

24. Neutronic Optimisation of the Moderators for ESS, K. Batkov *(European Spallation Source)*, E. Klinkby *(European Spallation Source/DTU Nutech, Technical Univ of Denmark)*, F. Mezei *(European Spallation Source/Wigner Research Centre for Physics)*, T. Schönfeldt *(DTU Nutech/Technical Univ of Denmark/European Spallation Source)*, A. Takibayev, L. Zanini *(European Spallation Source)*
25. In Beam Background Suppression Shield, V. Santoro, S. Ansell, P. M. Bentley *(European Spallation Source)*
26. Experimental Determination of the Excitation Function of 45Sc(p,n)^{45}Ti Reaction in Low Energy Cyclotrons, P. Costa *(ESTSP.IPP/CEMUC/ECT-UTAD),* L. F. Metello, L. Cunha *(ESTSP.IPP/IsoPor SA),* R. R. Jonhson *(Best Cyclotron Systems Inc),* W. Gelbart (Advanced Systems Design Inc), B. Cakir, C. Artner *(IASON GmbH),* S. Carmo, F. Alves *(ICNAS/Univ. of Coimbra),* M. Duarte Naia *(CEMUC/ECT-UTAD)*
27. The Beam Profile Monitoring System for the IRRAD Proton Facility at the CERN PS East Area, Kock Kiam Gan *(Ohio State)*, Maurice Glaser, Blerina Gkotse *(CERN)*, Harris Kagan *(Ohio State)*, Emanuele Matli *(CERN)*, Shane Smith *(Ohio State)*, Federico Ravotti *(CERN)*, Joseph Warner *(Ohio State)*
28. Modern Hadron Therapy Gantry Developments (15-17 January 2014), Dejan Trbojevic, Brett Parker, Holger Witte, Stephen Brooks, Nick Tsoupas *(BNL)*
29. Source Term Estimates for the Environmental Impact Assessment of ESS Facility, D. Ene *(European Spallation Source, ESS)*
30. PET Imaging using Titanium-45: Could it be Useful?, P. Costa *(ESTSP.IPP/CEMUC/ECT-UTAD)*, F. Alves *(Univ. of Coimbra)*, M. Duarte Naia *(CEMUC/ECT-UTAD)*, L. F. Metello *(ESTSP.IPP/IsoPor SA)*
31. ADS Spallation Target Optimization, Luis A. Castellanos, Lawrence H. Heilbronn, Ondrej Chvala *(Univ of Tennessee, Knoxville)*
32. Improvements to the Thermal Neutron Scattering Law using New and Existing Methods, K. Ramic, C. Wendorf, Y. Danon, L. Liu *(RPI)*
33. Development of the Nuclear Forensic Library and Application Program, Lee Seungmin, Yim Hobin, Hyung Sangcheol, Lee Sangjun, Hong Yunjeong, Kim Jaekwang *(Korea Inst of Nuclear Nonproliferation and Control)*
34. Feasibility Study of "Green" Aplutonic Fast-Double-Fission Reactor using Auto-Colliding 238u80+ +238u80+ →4 Ff+ 5n + 430 MeV with Direct Conversion of Fission Fragment Energy Into Electricity and/or Into Spaceship Rocket Propellant with High Specific Impulse 106,Bogdan C. Maglich, Tim Hester (*California Science & Engineering Corp.)*
35. Mo-99 Production via DT Fusion Driven Subcritical Assembly, Greg Piefer, Eric Van Abel, Katrina Pitas *(SHINE Medical Technologies)*, Ross Radel *(Phoenix Nuclear Labs)*

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Technical Sessions – 8:30-11:00 a.m.

High-Power Accelerators and High-Power Spallation Targets—III

Session Organizer: John D. Galambos *(ORNL)*
Chair: Eric J. Pitcher *(ESS AB)*

Virginia A: 8:30-10:35 a.m.

8:30 a.m.

Progress of Target System Operation at the Pulsed Spallation Neutron Source in J-PARC, H. Takada, K. Haga, T. Kai, H. Kogawa, T. Wakui, T. Naoe, S. Meigo, M. Futakawa *(JAEA)*

8:55 a.m.

CERN's n_TOF Neutron Spallation Target Operating Experience and Future Consolidation Plans, M. Calviani, O. Aberle, Y. Body, E. Chiaveri, D. Horvath, L. Marques Antunes Ferreira, R. Losito, Y. Lupkins, A. Perillo-Marcone, S. Sgobba, V. Venturi, V. Vlachoudis *(CERN)*

Cancelled

9:20 a.m.

SNS Target Reliability Improvements Program, M. W. Wendel, M. J. Dayton, B. W. Riemer, D. E. Winder *(ORNL)*

9:45 a.m.

Design of the Fifth-Generation Target-Moderator-Reflector-Shield Assembly at Los Alamos Neutron Science Center, S. F. Nowicki, M. Mocko *(LANL)*

10:10 a.m.

Catalytic Ortho To Para Conversion of Liquid Hydrogen, M. A. Hartl *(European Spallation Source ESS - AB)*, Th. Huegle, R. C. Gillis, L. L. Daemen, E. B. Iverson *(ORNL)*, Y. Lee, G. Muhrer *(European Spallation Source ESS-AB)*

Accelerators for the Life Sciences—III

Session Organizer: Carol J. Johnstone *(Fermilab)*
Chair: Reinhard W. Schulte *(Loma Linda University Medical Center)*

Virginia B: 8:30-10:35 a.m.

8:30 a.m.

In Vitro Radiobiology and Related Topics: Description of Research Performed with a Low Energy Particle Accelerator, Stephane Lucas *(Univ of Namur)*

8:55 a.m.

Low Dose Hypersensitivity and Bystander Effect in A549 Lung Adenocarcinoma Cells Exposed to High-LET Charged Particles are not Mutually Exclusive, Anne-Catherine Heuskin *(Univ of Namur)*, Anne-Catherine Wera *(Univ of Surrey)*, Héléne Riquier, Carine Michiels, Stéphane Lucas, *(Univ of Namur)*

9:20 a.m.

Small Superconducting and Permanent Magnet Gantries for Carbon and Proton Cancer Therapy, Dejan Trbojevic, Brett Parker, Holger Witte, Stephen Brooks, Nick Tsoupas *(BNL)*, invited

9:45 a.m.

A Compact Laser Accelerated Proton Therapy System, C. Johnstone *(Particle Accelerator Corp)*, A. Zigler *(Hebrew Univ)*, S. Eisenmann, S. Brink-Danan *(HIL Applied Medical Ltd)*

10:10 a.m.

Conceptual Design of a Novel 3-D Tomosynthesis Device Using a Compact Linear Accelerator for Low-Dose Hi-Definition Medical Imaging, C. O. Maidana *(Maidana Research/Idaho State Univ)*

Industrial Applications—I

Session Organizer and Chair: Sotirios Charisopoulos *(NCSR Demokritos)*

Maryland A: 8:30-10:35 a.m.

8:30 a.m.

Recent Developments in Electron Accelerators Applications for Environment Protection, A. G. Chmielewski *(Inst of Nuclear Chemistry and Technology)*

8:55 a.m.

Electron Beam Assisted Recycling of Carbon-Fiber-Reinforced Plastics, A. Palm, M. Driscoll, J. Smith *(SUNY ESF)*, L. S. Larsen *(NYSERDA)*, invited

9:20 a.m.

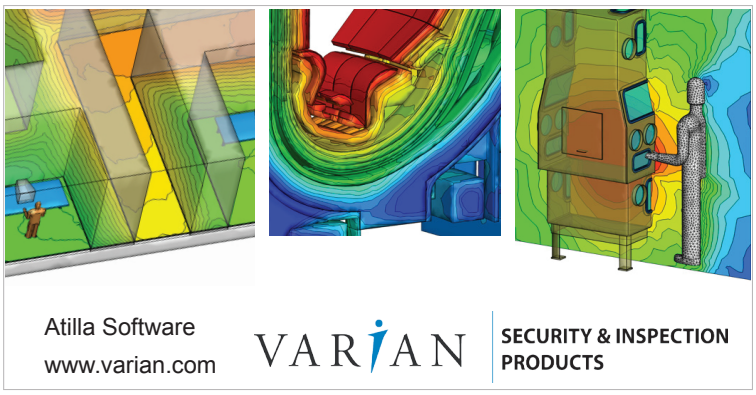
Electron Beam and a Wood Based Biorefinery, M. S. Driscoll, J. Smith *(SUNY ESF)*, L. S. Larsen *(NYSERDA)*

9:45 a.m.

Ultra-Compact RF Accelerator for Industrial Applications, S. Antipov, J. Qui, C. Jing, A. Kanareykin *(Euclid Techlabs LLC)*

10:10 a.m.

Magnetron RF Sources for Industrial Superconducting High-Power Accelerators, G. Kazakevich *(Euclid TechLabs LLC)*, R. Kephart, V. Yakovlev *(Fermi)*



Accelerator Design & Technology—III

Session Organizer: Paul Collier *(CERN)*
Chair: Kevin Jones *(ORNL)*

Maryland B: 8:30-11:00 a.m.

8:30 a.m.

A Modified Halbach Quadrupole for Nuclear Physics Applications, N. Tsoupas, S. Brooks, A. Jain, G. Mahler, F. Meot, V. Ptisyn, D. Trbojevic *(BNL)*, M. Severance *(Stony Brook Univ)*

8:55 a.m.

Design of the Application Specific Accelerator Control Systems, R. Hrovatin, R. Modic, M. Pleško, K. Strniša, S. Tuma, K. Zagar *(Cosylabd.d.)*

9:20 a.m.

Induced Activation in the Future Charge-Exchange Injection System of the PS Booster, R. Froeschl, C. Bertone, J. Borburgh, S. Burger, A. Dallocchio, T. Dobers, M. Garlasche, K. Hanke, J. Hansen, M. Hourican, C. Maglioni, B. Mikulec, A. Newborough, R. Noulibos, B. Riffaud, W. Weterings *(CERN)*

9:45 a.m.

Monte Carlo Analyses of the YALINA Thermal Facility with SERPENT Stereolithography Geometry Model, Alberto Talamo, Yousry Gohar *(ANL)*

10:10 a.m.

MuSim Graphical Interface to Numerical Simulation Programs, T. J. Roberts, R. P. Johnson, J. R. Rodriguez *(Muons Inc.)*

10:35 a.m.

Update Status of the J-PARC 3NBT Control System, M. Ooi, S. Meigo, A. Akutsu, T. Kawasaki, M. Nishikawa, S. Fukuta *(JAEA)*

Unlock The Power Of Simulation

Technical Sessions – 11:00 a.m.-1:30 p.m.

High-Power Accelerators and High-Power Spallation Targets—IV

Session Organizer: Eric J. Pitcher *(ESS AB)*
Chair: John D. Galambos *(ORNL)*

Virginia A: 11:00 a.m.-1:30 p.m.

11:00 a.m.

Simulation of Neutron Distributions for ADSRs, R. J. Barlow, A. Rummana *(The Univ of Huddersfield)*

11:25 a.m.

Neutronics Analyses for SNS Targets Disposal, I. Popova, I. Remec F. X. Gallmeier *(ORNL)*

11:50 a.m.

Determination of Spatial Distributions of Fast Neutrons in the Spallation Setups, Pavel Tichy, J. Vrzalova, J. Adam *(Joint Inst for Nuclear Research/Czech Academy of Sciences, A. A. Baldin, W. I. Furman (Joint Inst for Nuclear Research)*, P. Chudoba *(Czech Academy of Sciences)*, Yu. Kish *(Joint Inst for Nuclear Research/Uzhorod National Univ)*, J. Khushvaktov, A.A. Solnyshkin *(Joint Inst for Nuclear Research)*, M. Suchopar *(Czech Academy of Sciences)*, V. M. Tsoupko-Sitnikov, S. I. Tyutyunnikov, R. Vespalec *(Joint Inst for Nuclear Research/Czech Technical Univ)*, L. Zavorka *(Joint Inst for Nuclear Research)*, M. Zeman *(Joint Inst for Nuclear Research/Univ of Technology, Brno)*, P. Zhivkov *(Bulgarian Academy of Sciences)*, V. Wagner *(Czech Academy of Sciences)*

12:15 p.m.

Spallation Reaction Modeling after the IAEA Benchmark, A. Boudard *(CEA/Saclay)*, J. Cugnon *(Univ of Liège)*, J.-C. David, S. Leray, D. Mancusi *(CEA/Saclay)*

12:40 p.m.

MeV Neutron Production from Neutron Capture in 6Li using Geant4, V. Santoro, D. D. Di Julio, P. M. Bentley *(European Spallation Source)*

1:05 p.m.

Fertile ^{232}Th to fissile ^{233}U Converter, G. Myneni, F. Marhauser, R. Rimmer *(Jefferson Lab)*, A. Haghighat, R. B. Vogelaar *(Virginia Tech)*

Accelerators for Monitoring the Environment—II

Session Organizer and Chair: Richard C. Lanza *(MIT)*

Virginia B: 11:00 a.m.-1:05 p.m.

11:00 a.m.

Compact Quasi-Monoenergetic Photon Sources for Nuclear Applications using Laser-Plasma Accelerators, Cameron G. R. Geddes, Sven Steinke, Jeroen van Tilborg, Carlo Benedetti, Joost Daniels, Kelly Swanson, J.-L. Vay, Eric Esarey, Kei Nakamura, Carl B. Schroder, Csaba Toth, Bernhard Ludewigt, Brian J. Quiter, Paul Barton, Yigong Zhang, Kai Vetter *(LBNL)*, Marie-Anne Descalle, David Grote, Alex Friedman *(LLNL)*, Matt Kinlaw, Scott Thompson, David Chichester *(INL)*, Glen Warren *(PNNL)*, Wim P. Leemans *(LBNL/Univ of California, Berkeley)*

11:25 a.m.

Charged Particle Activation Analysis: Theory, Practice and Potential, M. Anwar Chaudhri *(Univ of Erlangen- Nuernberg/Pakistan Council of Scientific and Industrial Research)*, M. Nasir Chaudhri *(Pakistan Council of Scientific and Industrial Research)*

11:50 a.m.

Commercial Applications of High-Yield Accelerator-Based Neutron Generators, Ross Radel, Chris Seyfert, Arne Kobernik, Logan Campbell, Tye Gribb, Greg Piefer *(Phoenix Nuclear Labs)*

12:15 p.m.

Active Neutron Interrogation for Detection of Fissile Material, Amar Sinha, Y. Kashyap, A. Agrawal, Tushar Roy, P. S. Sarkar, M. Shukla, T. Patel *(BARC)*

12:40 p.m.

Neutron-Photon Computed Tomography of Cargo Containers in a Cone Beam Configuration, J. Hartman, A. Pour Yazdanpanah, A. Barzilov, E. Regentova *(UNLV)*

Industrial Applications—II

Session Organizer and Chair: Sotirios Charisopoulos *(NCSR Demokritos)*

Maryland A: 11:00 a.m.-12:40 p.m.

11:00 a.m.

Neutron Radiography using a High-Flux Compact Thermal Neutron Generator, Michael J. Taylor, Chris Seyfert, Eli Moll, Evan Sengbusch, Ross Radel *(Phoenix Nuclear Labs)*

11:25 a.m.

Innovative Methods for Production of High Volume Fraction Quantum Dots using MeV Ion Beam, Daryush Ila *(Fayetteville State Univ)*

11:50 a.m.

Design and Fabrication of Integrated Optical Elements in Glasses and Crystals by Various Ion Beam Techniques, I. Bányasz *(Hungarian Academy of Sciences)*, S. Pelli *(MDF-Lab/Enrico Fermi)*, G. Nunzi Conti *(MDF-Lab)*, G. C. Righini *(Enrico Fermi)*, S. Berneschi *(MDF-Lab)*, E. Szilágyi, A. Németh *(Hungarian Academy of Sciences)*, M. Fried, T. Lohner, P. Petrik, Z. Zolnai, N. Q. Khanh, I. Rajta, G.U.L. Nagy *(Hungarian Academy of Sciences)*, V. Havranek, V. Vosecek, V. Lavrentiev *(Nuclear Physics Inst)*, V. M. Veres, L. Himics *(Hungarian Academy of Sciences)*

12:15 p.m.

Focused Ion Beam Irradiations for Elucidation of TaOx Memristive FIlm Operation and Modification of Device Properties, Jose L. Pacheco, David R. Hughart, Edward S. Bielejec, Matthew Marinella *(SNL)*

Accelerator Facilities—III

Session Organizer and Chair: Andrew Hutton *(Jefferson Lab)*

Maryland B: 11:00 a.m.-1:30 p.m.

11:00 a.m.

Nuclear Physics Experiments with Cornell-BNL FFAG-ERL (Cβ), I. Bazarov, B. Dunham, G. Hoffstaetter, R. Patterson, M. Perelstein (Cornell Univ)

11:25 a.m.

The IAEA Accelerator Knowledge Portal, Aliz Simon *(IAEA)*, Julien Demarche *(IAEA/Univ of Surrey)*

11:50 a.m.

IAEA Initiative to Develop an Ion Beam Techniques Roadmap, Aliz Simon *(IAEA)*, Nuno Pessoa Barradasnunoni *(Unv de Lisboa Estrada Nacional)*, Massimo Chiari *(INFN)*, David Cohen *(ANSTO)*, Roger Webb *(Univ of Surrey)*, Ian Vickridge *(Univ de Pierre et Marie Curie et CCNR)*, invited

12:15 p.m.

The Licensing Procedure for a Linear Proton Accelerator in Italy According to the European Directives, S. G. Ottaviano, L. Picardi, C. Poggi, R. Concetta *(ENEA)*

12:40 p.m.

Ion Beam Lab at Texas A&M University: The Current Status and Future Growth, Lin Shao *(Texas A&M Univ)*

1:05 p.m.

GANIL-SPRIRAL2: Application Program with Present and Future Facilities, M-H. Moscatello, G.de France, X. Ledoux, M. Fadil, H. Frånberg-Delahaye, J. Grinyer, C. Stodel, F. de Oliveira, F. Faget, A-M. Frelin, E. Gueroult, A. Dubois, J. C. Foy, G. Voltolini, F. Legruel, C. Michel *(GANIL)*

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Presented to
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For his leadership in the nuclear industry thanks to the successful development of nuclear methodologies for reactor analysis of crucial importance for the operation of current and advanced light water reactors.

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Presented to
Andrew Kadak
Andrew Kadak's outstanding career contributions exhibit the character of an ANS Fellow. His MIT computer software thesis still serves as a model in nuclear power today. The eight years he served as CEO of Vermont Yankee and his many committee leadership positions within ANS more than exemplify his dedication to the nuclear industry.

Fellow

Presented to
Martin Plys
For his creation and management of models for the MAAP suite of computer codes for severe nuclear reactor accidents, notably completion of MAAP4, used for individual plant evaluations. He is also being recognized for his outstanding contributions to key nuclear facility cleanup projects in the US DOE complex and at Sellafield, UK.

Presidential Citation

Presented to
Jack Brenizer
For his dedication and lengthy service to the American Nuclear Society, including service on the Board of Directors and Finance Committee. In the past year, Jack has taken the lead for the Finance Committee to investigate and understand the ANS investment strategy and performance. His tireless efforts in this area are central to ANS efforts to preserve and grow assets necessary for important outreach and scholarship work vital to our ongoing mission.

Presidential Citation

Presented to
Kathryn McCarthy
For her leadership and guidance of the Light Water Reactor Sustainability effort at the Idaho National Laboratory. As Director of the Technical Integration Office, her staff, along with counterparts at EPRI, NEI and DOE-NE, has conducted and guided important research that has helped set the stage for US power companies to be able to make informed decisions regarding subsequent license renewal for their operating nuclear units, thus preserving the option to continue operating these vital national assets.

Presidential Citation

Presented to
Sherry Bernhoft
For her leadership of EPRI research programs supporting extended operation of the current fleet of US nuclear power units. In conjunction with counterparts at INL, NEI, and DOE, this research has helped set the stage for US power companies to be able to make informed decisions regarding subsequent license renewal for their operating nuclear units, thus preserving the option to continue operating these vital national assets.

Presidential Citation

Presented to
Jason Remer
For his leadership of NEI programs supporting extended operation and the regulatory framework for subsequent license renewal of the current fleet of US nuclear power units. In conjunction with work at INL, EPRI and DOE, these programs have helped set the stage for US power companies to be able to make informed decisions regarding subsequent license renewal, thus preserving the option to continue operating these vital national assets.

Presidential Citation

Presented to
Richard Reister
For his leadership at DOE-NE of the Light Water Reactor Sustainability program. His work to keep these efforts central to DOE-NE's nuclear programs, in conjunction with industry work at EPRI and NEI, has helped set the stage for US power companies to be able to make informed decisions regarding subsequent license renewal, thus preserving the option to continue operating these vital national assets.

Seaborg Medal

Presented to
Lance Snead
For his sustained scientific achievements in the area of nuclear materials science and for his career focus and impact on advancing safe nuclear power.

Mary Jane Oestmann Professional Women's Achievement Award

Presented to
Clair Sullivan
For her valuable research and contributions in the areas of nuclear nonproliferation, radiation detection, and homeland security. Also, for her teaching excellence in the classroom and her influence in shaping the nuclear engineering curriculum at the University of Illinois.

Alvin M. Weinberg Medal

Presented to
Peter Lyons
For championing science and technology education at the university level, providing a consistent voice for improving partnerships with international regulatory agencies, and serving as a trusted nuclear energy advisor to our nation for over five decades.

Radiation Science & Technology

Presented to
William Dunn
For his outstanding work over four decades in the development of notable radioisotope measurement applications, a new and efficient model for X-ray fluorescence analysis and several patented technologies that hold significant promise for detection of improvised explosive devices (IEDs).

Landis Young Member Engineering Achievement Award

Presented to
Tomasz Kozlowski
In recognition of his contributions to validation of space-time coupling of best-estimate coupled codes, successful application of coupled codes to BWR stability, and uncertainty analysis of coupled codes.

2014 Standards Service Award

Presented to
Steven Stamm
In recognition of sustained contributions to ANS standards for four decades that significantly contributed to the overall success of the standards program, initially through leadership of major standards development activities and recently by facilitating major reorganizations of the Standards Committee and leading important working groups to improve the clarity and usage of standards.

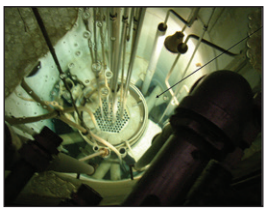
2015 Standards Service Award

Presented to
Jerry Hicks
In recognition of over thirty years of demonstrated leadership and participation on several standards committees leading to the development of many ANS nuclear criticality safety standards that have provided good engineering practice while balancing user need and cost for the nuclear industry.

2015 Standards Service Award

Presented to
Donald Wakefield
In recognition of leadership as chairman of the Low Power and Shutdown PRA Working Group from 2006 until 2014, perseverance in addressing a number of complex quantitative vs. qualitative risk management issues, and resolving over 1000 comments that resulted in a significant standards product.

Nuclear Historic Landmark Award



Presented to
UIUC Advanced Teaching Research Isotope General Atomic (TRIGA MARK II) Reactor
For 38 years of operation supporting the education of students in reactor operations, ground-breaking research in the areas of fission fragment physics, nuclear pumped lasers, nuclear batteries, neutron activation analysis, radioisotope production, nuclear reactor kinetics, coupled core kinetics, and neutron pulse propagation.

Distinguished Service Award

Presented to

Sekazi Mtingwa

For his distinguished leadership, contributions and service to Nuclear Engineering including motivating and chairing the influential APS POPA study on 21st century nuclear workforce needs.

Landis Public Communication and Education Award

Presented to

Margaret Harding

For her work in building a better understanding of nuclear science, technology and issues among the media, policy-makers and public by helping nuclear professionals become better communicators.

Octave J. Du Temple Award

Presented to

Betsy Tompkins

For over 35 years, Betsy Tompkins has applied her tremendous communication and publishing talents to the American Nuclear Society. She has served with distinction as Editor-in-Chief of Nuclear News, Publisher of Radwaste Solutions and Director of the Commercial Publications Department. Betsy fosters a collegial spirit that brings out the best in both staff and volunteer leaders alike. Her tireless efforts and dedication are an example of excellence to all of us who have had the privilege to know and work with her.

Rockwell Lifetime Achievement Award

Presented to

Bernadette Kirk

For her outstanding leadership in the promotion of computational tools and benchmarks in radiation protection and shielding.

Eugene P. Wigner Reactor Physicist Award

Presented to

Kord S. Smith

In recognition of far-reaching contributions to reactor physics analysis including advanced nodal and assembly homogenization methods and innovative techniques for accelerating full-core iterative solutions. These contributions, incorporated in the widely used CASMO/SIMULATE code package, reflect deep physical insights, sophisticated mathematical knowledge and exceptional creativity in engineering analysis.

Mark Mills Award

Presented to

Boopathy Kombaiah

For significant contributions to the field of material engineering and performance in published research on Zircaloy and the implications to reactor operation and spent fuel storage.

Student Design Competition

Presented to

- **The Ohio State University**
- **University of Michigan**
- **University of Wisconsin-Madison**
- **Texas A&M University**

W. Bennett Lewis Award

Presented to

Jorge Spitalnik

In recognition of his worldwide contributions to sustainable energy and his dedication to the advancement of reliable, safe and environmentally friendly nuclear fission energy.

Walter H. Zinn Award

Presented to

Brian K. Hajek

For his support of the regulatory branch of the nuclear industry in multiple capacities, including his commitment to educating students in nuclear engineering and to reactor operators by upholding the highest industry standards of excellence.

Dwight D. Eisenhower Award

Presented to

George Shultz and Sidney Drell

In recognition of their pivotal and historical leadership roles in nuclear nonproliferation and U.S. policies and technology over the decades. Their work symbolizes the spirit of Eisenhower's 'Atoms for Peace' speech, reinforcing the peaceful use of atomic energy, thereby making the world a safer place.

FCWMD Lifetime Achievement Award

Presented to

Emory Collins

In recognition of significant and sustained contributions in the field of nuclear fuel cycle and waste management.

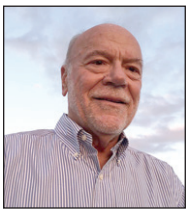
FCWMD Significant Contributions Award

Presented to

John Kessler

In recognition for John's leadership of the International Extended Storage Collaboration Program and his other accomplishments that have significantly advanced the scientific, engineering, societal, and regulatory aspects of the nuclear fuel cycle and nuclear waste management.

2014 Theos J. (Tommy) Thompson Award for Reactor Safety



Presented to

Theofanis Theofanous

For his commitment to risk assessment and management in complex technological and environmental systems. As professor at UCSB and founding director of the Center for Risk Studies and Safety (CRSS), his contributions have brought about integrative and systematic efforts towards understanding and optimizing real system behavior, assessing risks, and improving safety.

2015 Theos J. (Tommy) Thompson Award for Reactor Safety

Presented to

George Flanagan

For his distinguished career in probabilistic risk and safety assessment. Dr. Flanagan developed applications resulting in a significant impact on the nuclear industry. His work helped develop national and international initiatives that are instrumental in establishing acceptable safety practices and the development of safety analysis codes.

Robert L. Long Training Excellence Award

Presented to

Hash Hashemian and training team at Analysis and Measurement Services Corporation

For demonstrated excellence in nuclear plant instrumentation and controls training.

Robert L. Long Training Excellence Award

Presented to

Jane LeClair

For demonstrated excellence in higher education, commercial nuclear training, support to the IAEA and CONTE leadership.

Young Member Excellence Award

Presented to

Nicolas Stauff

For outstanding contributions to innovative nuclear developments and collaborative international efforts within the nuclear community. Also, for his many leadership roles amongst young member groups including the French Nuclear Society, the American Nuclear Society and the North American Young Generation in Nuclear.

NATIONAL COMMITTEES

Accreditation Policies & Procedures
Sunday, 11 a.m.-12 p.m.
Park Tower 8228

Board of Directors
Professional Division Reports
Wednesday, 4-5:30 p.m.
Marriott 3
Board of Directors
Thursday, 8 a.m.-3 p.m.
Marriott 3

Bylaws & Rules
Sunday, 4-5:30 p.m.
Park Tower 8209

Communications
Sunday, 4-6 p.m.
Washington 3

Finance
Tuesday, 2-7 p.m.
Park Tower 8209

Honors & Awards
Monday, 4-6 p.m.
Park Tower 8209

International
Sunday, 11:30 a.m.-2:30 p.m.
Virginia A

Local Section Workshop
Sunday, 9 a.m.-12 p.m.
Washington 6

Membership
Sunday, 10 a.m.-12 p.m.
Maryland C

National Program
NPC Screening
Sunday, 10 a.m.-12 p.m.
Virginia C
NPC National Meeting Sub Committee
Wednesday, 11:30 a.m.-1 p.m.
Park Tower 8226
NPC Program
Wednesday, 4-7 p.m.
Marriott 2

NEED
Sunday, 7:30-9:30 p.m.
Park Tower 8226

Planning
Sunday, 2-4 p.m.
Washington 2

President's Meeting w/Committee Chairs
Sunday, 8-9 a.m.
Delaware A/B

President's Meeting w/Division Chairs
Sunday, 9-10 a.m.
Delaware A/B

Professional Development Coordination
Tuesday, 4-5 p.m.
Park Tower 8226

Professional Divisions
Workshop
Saturday, 5:30-7 p.m.
Lincoln 4
Committee Meeting
Tuesday, 4-5:30 p.m.
Harding

Professional Engineering Exam
PEEC Workshop
Saturday, 5-10 p.m.
Tyler
PEEC Single Reference Development
Sunday, 12:30-2:30 p.m.
Washington 6
PEEC Committee Meeting
Sunday, 4-6 p.m.
Washington 6

Professional Women In ANS
Monday, 3-5 p.m.
Park Tower 8226

Public Policy
Wednesday, 11:30 a.m.-1:30 p.m.
Marriott 2

Publications Steering
Meetings, Proceedings & Transactions
Sunday, 9-10 a.m.
Washington 4
Nuclear Science & Engineering Advisory Committee
Sunday, 9-10 a.m.
Park Tower 8206
Book Publishing
Sunday, 11 a.m.-12:30 p.m.
Park Tower 8206
Technical Journals
Sunday, 1-4 p.m.
Park Tower 8206
Nuclear News Editorial Advisory
Sunday, 4-5:30 p.m.
Park Tower 8206
Nuclear Technology Advisory
Sunday, 4:30-5:30 p.m.
Park Tower 8217
Publications Steering
Monday, 4:30-6:30 p.m.
Hoover

Scholarship Policy & Coordination
Monday, 12-1 p.m.
Park Tower 8226

Student Sections
Executive
Monday, 6-7 p.m.
Delaware B
Reports
Monday, 7-8 p.m.
Delaware B

SPECIAL COMMITTEES

Special Committee on the Congressional Fellow Program
Tuesday, 3:30-4:30 p.m.
Park Tower 8228

Special Committee on Utility Engagement
Tuesday, 9-11 a.m.
Park Tower 8228

OTHER COMMITTEES

Christian Nuclear Fellowship
Monday, 7:00-10 p.m.
Park Tower 8226
Breakfast
Wednesday, 7:15-8:30 a.m.
Park Tower 8209

INL/NUC Collaborative Meeting
Monday, 7:00-9:00 p.m.
Park Tower 8209

International Nuclear Societies Council
Tuesday, 3-6 p.m.
Park Tower 8206

KNS-US Chapter Meeting
Monday, 4:30-6:30 p.m.
Delaware A

NEDHO
Sunday, 4-6 p.m.
Park Tower 8228

Pacific Nuclear Council
Sunday, 9-4 p.m.
Madison B

UWC Planning Committee
Sunday, 1:00-2:00 p.m.
Viginia C

DIVISION COMMITTEES

Accelerator Applications
Executive
Monday, 11:30 a.m.-1:30 p.m.
Park Tower 8206

Aerospace Nuclear Science & Technology
Sunday, 12-2 p.m.
Park Tower 8228

Biology and Medicine
Executive
Sunday, 4-5:30 p.m.
Park Tower 8218

Decommissioning & Environmental Sciences
Program
Sunday, 3:30-4:30 p.m.
Maryland C
Executive
Sunday, 4:30-5:30 p.m.
Maryland C

Education, Training & Workforce Development
Program
Sunday, 10:30 a.m.-12 p.m.
Madison A
Alpha Nu Sigma National Honor Society
Sunday, 1-2 p.m.
Park Tower 8219
University/Industry/Government Relations
Sunday, 1:30-2 p.m.
Madison A
Executive
Sunday, 2-4 p.m.
Madison A

Fuel Cycle & Waste Management
Program
Sunday, 12-1 p.m.
Washington 3
Executive
Sunday, 1-2:30 p.m.
Washington 3
Technical Operating & Standards Committee
Sunday, 2:30-3:30 p.m.
Washington 3

Fusion Energy
Executive
Sunday, 3-5 p.m.
Park Tower 8219

Human Factors, Instrumentation, & Controls
Program
Sunday, 11 a.m.-12 p.m.
Maryland A
Executive
Sunday, 12-2:30 p.m.
Maryland A

Isotopes & Radiation
Joint Program Committee-I&R/BM
Sunday, 1:30-2:30 p.m.
Park Tower 8226
Executive
Sunday, 2:30-6 p.m.
Park Tower 8226

Materials Science & Technology
Executive
Monday, 6:30-8:30 p.m.
Hoover

Mathematics & Computation
Program
Sunday, 1-2 p.m.
Park Tower 8209
Executive
Sunday, 2-4 p.m.
Park Tower 8209

Nuclear Criticality Safety
Education Meeting
Sunday, 1-2 p.m.
Delaware A/B
Program
Sunday, 2-3 p.m.
Delaware A/B
Executive
Sunday, 3-4:30 p.m.
Delaware A/B

Nuclear Installations Safety
Program
Sunday, 4-5:30 p.m.
Madison A
Executive
Sunday, 7:30-9:00 p.m.
Madison A

Nuclear Nonproliferation Policy
Special Advisory Committee
Sunday, 1:30-2:30 p.m.
Maryland B
Program
Sunday, 2:30-3:30 p.m.
Maryland B
Executive
Sunday, 3:30-4:30 p.m.
Maryland B
NNTG/IRD/FC&WM Integration Meeting
Sunday, 4:30-5 p.m.
Maryland B

Operations & Power
Program
Sunday, 2-3:30 p.m.
Virginia C
Executive
Sunday, 3:30-6 p.m.
Virginia C

Radiation Protection & Shielding
Program
Sunday, 2-4 p.m.
Virginia B
Executive
Sunday, 4-6 p.m.
Virginia B

Reactor Physics
Honors & Awards
Sunday, 10-11 a.m.
Washington 4
Goals & Planning
Sunday, 1-2 p.m.
Washington 4
Program
Sunday, 2-4 p.m.
Washington 4
Executive
Sunday, 4-6 p.m.
Washington 4

Robotics & Remote Systems
Executive
Sunday, 12-4 p.m.
Park Tower 8217

Thermal Hydraulics
Program
Sunday, 2:30-4:30 p.m.
Maryland A
Executive
Sunday, 4:30-6 p.m.
Maryland A

Young Members Group (TG)
Program
Monday, 10-11:30 a.m.
Hoover
Executive
Monday, 11:30 a.m.-1 p.m.
Hoover

STANDARDS COMMITTEES

ANS-2.6
Tuesday, 10 a.m.-12 p.m.
Park Tower 8217

ANS-8.1
Monday, 3:30-5:30 p.m.
Park Tower 8217

ANS-8.12
Tuesday, 4:30-6:30 p.m.
Park Tower 8228

ANS-8.20
Sunday, 9:00 a.m.-12:00 p.m.
Park Tower 8209

ANS-8.23
Monday, 8:00 a.m.-12:00 p.m.
Park Tower 8217

ANS-8.23
Tuesday, 1:00-5:00 p.m.
Park Tower 8217

ANS-8.26
Tuesday, 7:30-8:30 a.m.
Park Tower 8217

ANS-8.28
Tuesday, 1-3 p.m.
Park Tower 8206

ANS-18.1
Wednesday, 8:00 a.m.-12:00 p.m.
Park Tower 8217

ANS-20.X
Monday, 7:00-10:00 p.m.
Park Tower 8228

ANS-30.2
Wednesday, 10-11 a.m.
Park Tower 8228

LLWRCC
Wednesday, 8:30 a.m.-1:00 p.m.
(held offsite)

FWDCC
Monday, 12:30-2:30 p.m.
Park Tower 8228

NCSCC
Monday, 2:30-5:00 p.m.
Park Tower 8206

NRNFCC
Wednesday, 8:00-10:00 a.m.
Park Tower 8228

RARCC
Monday, 11:00 a.m.-12:00 p.m.
Park Tower 8228

Reactor Physics (ANS-19)
Monday, 8:30-10:30 a.m.
Park Tower 8228

RP3C
Monday, 2:30-6:00 p.m.
Park Tower 8228

SRACC
Sunday, 3:00-5:00 p.m.
Washington 5

Standards Board
Tuesday, 9:00 a.m.-5:00 p.m.
Marriott 1

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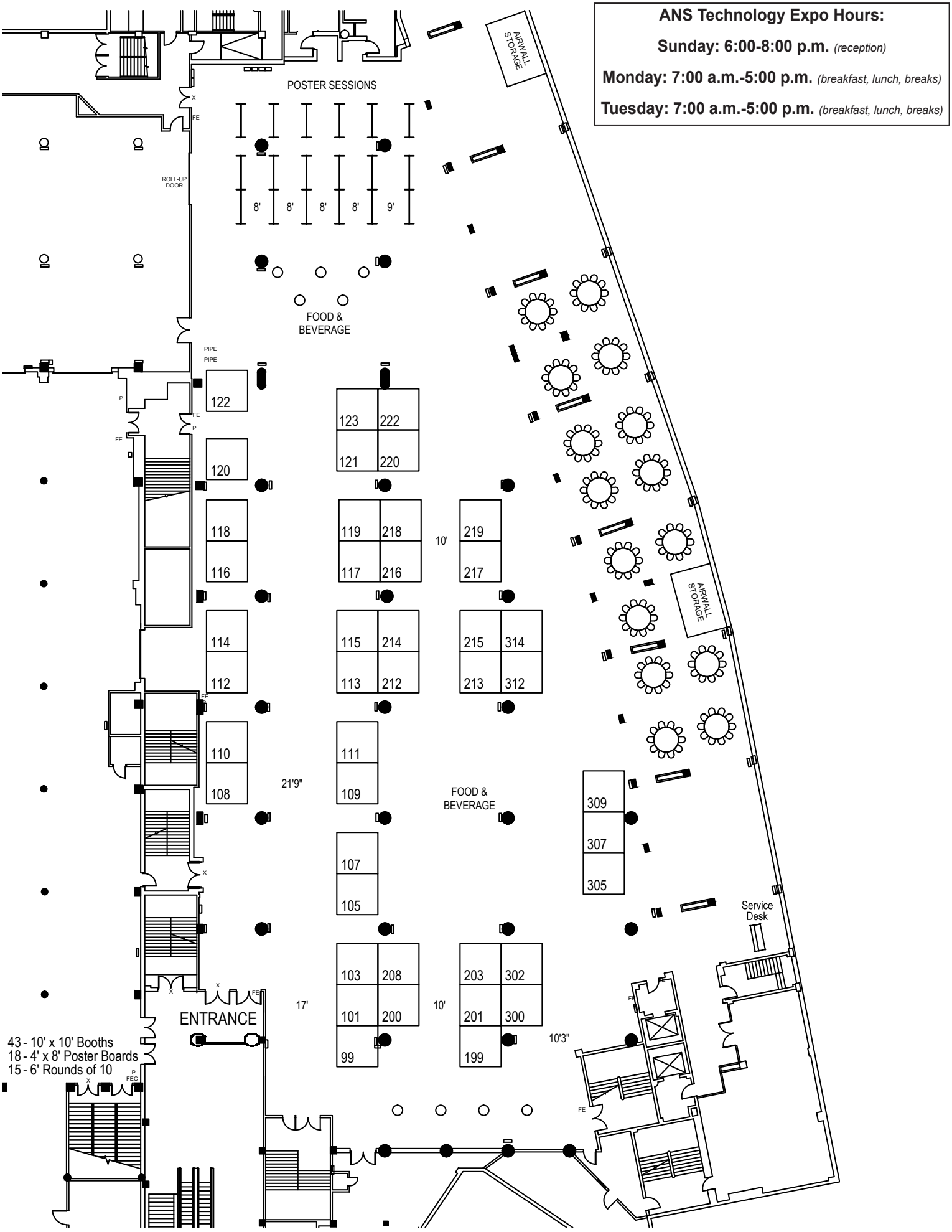
A SOUTHERN COMPANY

TALEN ENERGY

The Yankee Companies


ANS Technology Expo Hours:
Sunday: 6:00-8:00 p.m. (reception)
Monday: 7:00 a.m.-5:00 p.m. (breakfast, lunch, breaks)
Tuesday: 7:00 a.m.-5:00 p.m. (breakfast, lunch, breaks)
AIRWALL STORAGE
POSTER SESSIONS
ROLL-UP DOOR
8'
8'
8'
8'
9'
FOOD & BEVERAGE
PIPE
PIPE
122
120
118
116
114
112
110
108
123
222
121
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219
217
215
314
213
312
21'9"
FOOD & BEVERAGE
17'
10'
203
302
201
300
199
10'3"
309
307
305
AIRWALL STORAGE
Service Desk
ENTRANCE
43 - 10' x 10' Booths
18 - 4' x 8' Poster Boards
15 - 6' Rounds of 10
FE
P
X
FEC

Exhibitor List

Company	Booth Number
American Crane & Equipment Corporation	(115)
American Nuclear Society	(305, 307 & 309)
ANATECH, A Structural Integrity Company	(113)
Argonne National Laboratory	(216 & 218)
Bechtel Corporation	(116)
Bechtel Marine Propulsion Corporation	(121)
BROKK	(122)
Ceradyne, Inc., a 3M Company	(101 & 103)
Defense Nuclear Facilities Safety Board	(300)
Doosan HF Controls Corp.	(109)
EXCEL Services Corporation	(199, 201 & 203)
Goodnight Consulting	(217)
IAEA Careers	(111)
Idaho National Laboratory	(120)
Innovative Systems Software	(110)
Institute of Nuclear Energy Safety Technology, CAS	(215)
ITD USA	(119)
LND, Inc.	(208)
Luminant Generation Company, Power Optimization Center	(117)
Mirion Technologies (MGPI), Inc.	(118)
National Nuclear Laboratory (UK)	(219)
Niowave, Inc.	(99)
Nuclear Energy University Program (NEUP) / Idaho National Laboratory	(312)
Nuclear Plant Journal	(222)
Nuclear Science Users Facilities	(314)
Nuclear Three Inc.	(123)
Oak Ridge National Laboratory	(105 & 107)
Phoenix Nuclear Labs	(112)
Pipeline Software, Inc.	(200)
PleaseTech Ltd.	(108)
Thermo Fisher Scientific	(212)
University of Tennessee Department of Nuclear Engineering and Institute for Nuclear Security	(220)
Varian Security & Industrial Products	(114)
Virgina Commonwealth University	(213)

American Crane & Equipment Corporation
Douglassville, PA (Booth 115)

American Crane & Equipment Corporation (ACECO) is a leading provider of cranes, hoists, and specialized lift systems. ACECO has supplied numerous cranes and replacement trolleys/hoists for dry spent fuel storage and radioactive waste remediation. American Crane has performed upgrades of a variety of nuclear plant cranes, including reactor building and turbine cranes. ACECO has an ASME NQA-1 and 10CFR50, Appendix B QA Program. ACECO's service department performs crane maintenance and upgrades.

American Nuclear Society
La Grange Park, IL (Booths 305, 307 & 309)

ANS, the premier international society serving nuclear professionals, promotes nuclear science and technology to benefit humanity. Visit our booth to learn what we offer individuals, organizations, vendors, and educators, including venues for collaboration and leadership, news and publications like *Nuclear News* and *Radwaste Solutions,* industry standards, outreach efforts, and more. Explore the Center for Nuclear Science and Technology Information and other ANS Outreach initiatives. Update your member profile, place a book order or just chat with ANS staff.

ANATECH, A Structural Integrity Company
Huntersville, NC (Booth 113)

A wholly owned subsidiary of Structural Integrity Associates, Inc. since 2013, ANATECH offers unparalleled expertise in structural engineering and nuclear fuel and reactor technology. ANATECH is widely regarded as the foremost authority in nonlinear, predictive analysis of complex structures subjected to loading beyond their design basis. To learn more, contact us today at 877-4SI-POWER.

Argonne National Laboratory
Lemont, IL (Booths 216 & 218)

Argonne National Laboratory continues to advance the safe, sustained use of nuclear energy by integrating scientific and engineering breakthroughs in the design and operation of next generation energy systems. Stop by the Argonne booth to learn more and register to win a piece of history – a block of CP-1 graphite! www.ne.anl.gov

Bechtel Corporation
Reston, VA (Booth 116)

Bechtel is one of the most respected engineering, project management and construction companies in the world. In our Nuclear, Security and Environmental business, the demand for our expertise is growing as we deliver the entire project life cycle: from research and development to decontamination and decommissioning. Together with our customers, we deliver landmark projects that make the world cleaner and safer.

Bechtel Marine Propulsion Corporation
Niskayuna, NY (Booth 121)

Bechtel Marine Propulsion Corporation (BMPC) is responsible for developing advanced naval nuclear propulsion technology, providing technical support of our nation's naval nuclear reactors and training the sailors who operate those reactors in the Navy's submarine and aircraft carrier fleets. BMPC includes both the Bettis and Knolls Atomic Power Laboratories.

BROKK
Monroe, WA (Booth 214)

BROKK remotely operated machines are the nuclear industry standard for remote operations, used worldwide in the most challenging applications at nuclear facilities for over 30 years. With many innovative BROKK features such as our remote tool change interface, a single BROKK machine can safely deploy multiple high productivity tools. www.brokk.com/us

Ceradyne, Inc., a 3M Company
Quapaw, OK (Booths 101 & 103)

Ceradyne, Inc. (formerly Boron Products, LLC) is a leading manufacturer of enriched boron products. Our focus is on nuclear reactor sustainability by manufacturing optimized materials with emphasis on proprietary stable boron isotopes for criticality control in nuclear power operations, nuclear fuel management and control, and waste management technologies. www.3m.com/boron

Defense Nuclear Facilities Safety Board
Washington, DC (Booth 300)

The Board is an independent agency in the Executive branch of the government, charged with providing safety oversight of the Department of Energy's (DOE's) defense nuclear facilities. The Board provides the public with added assurance that DOE's defense nuclear facilities, required to maintain the nation's nuclear weapons stockpile, are being safely designed, constructed, operated, and decommissioned.

Doosan HF Controls Corp.
Carrollton, TX (Booth 109)

Doosan HF Controls is headquartered in Carrollton Texas USA is an I&C solutions provider that has supplied and serviced Instrumentation and Control (I&C) systems to American and International clients for over 50 years across the fossil and nuclear markets. Doosan HF Controls has become a major nuclear supplier as it expands its business portfolio. For more information: 1-866-501-9954 • www.hfcontrols.com

EXCEL Services Corporation
Rockville, MD (Booths 199, 201 & 203)

EXCEL Services Corporation specializes in providing operations, engineering, safety and regulatory services for energy and environmental projects worldwide. These specialized services include: License Renewal, Power Uprate, 24 Month Fuel Cycle Conversions, ITS Conversions, QA Solutions, Training, Spent Fuel Storage Licensing, New Plant Site Permitting and Combined License Support. EXCEL has worked with almost every nuclear plant and most nuclear facilities in the U.S., and has worked with many international facilities and organizations for 30 years.

Goodnight Consulting
Ashburn, CA (Booth 217)

Goodnight Consulting is a management consultancy that serves power industry clients around the world. Our consulting team includes experts with a wide range of technical, managerial, and executive experience. Goodnight Consulting has a strong and familiar brand in the global electric power industry.
We Assess, Plan, and Implement - You Improve, Save, and Comply.

IAEA Careers
Lemont, IL (Booth 111)

The International Atomic Energy Agency (IAEA) in Vienna, Austria is the world's center for cooperation in the nuclear field committed to promoting safe, secure and peaceful uses of nuclear technology. IAEA offers opportunities to engage current, meaningful issues of global peace, security and development while working in a multicultural workplace. http://international.anl.gov/careers.html

Idaho National Laboratory
Idaho Falls, ID (Booth 120)

Idaho National Laboratory is the U.S. Department of Energy's leading center of nuclear energy research and development where more than 4,100 researchers and support staff work with national and international governments, universities and industry partners to deliver energy and national security solutions and expand the frontiers of science and technology.
Mission: Discover, demonstrate, and secure innovative nuclear energy solutions, other clean energy options, and critical infrastructure.
Vision: INL will change the world's energy future and secure our critical infrastructure.

Innovative Systems Software
Ammon, ID (Booth 110)

Innovative Systems Software, LLC (ISS) a private, Limited Liability Company, is the developer of the RELAP/SCDAPSIM system thermal hydraulics and FUELSIM LWR fuel behavior codes. ISS manages the SCDAP Development and Training program (STDP), an international consortium of 90+ research, regulatory, and other organizations in 30 countries focused upon the development of improved reactor safety analysis and simulation technology. ISS provides technical support and training on thermal hydraulics and severe accident methods development & analysis.

Institute of Nuclear Energy Safety Technology, CAS
Hefei, China (Booth 215)

Institute of Nuclear Energy Safety Technology (INEST), Chinese Academy of Sciences (CAS) is the professional institute focusing on basic research of nuclear energy safety and the supporting institution of Key Laboratory of Neutronics and Radiation Safety, CAS. It is also the independent nuclear safety assessment and evaluation center with the aim of promoting the sustainable development of nuclear science and technology.

ITD USA
Knoxville, TN (Booth 119)

ITD USA has activities in the market of nuclear technical equipment and installation. Our main customers are manufacturers and users of radioactive materials, sealed sources, radiochemicals and radiopharmaceuticals. Our main production includes single cell, cell rows with special incell-equipment and Master-Slave Manipulators that control handling of objects and tools in cells. Our experienced staff guarantees the highest quality products, innovative solutions and product related personnel training in our service range.

LND, Inc.
Oceanside, NY (Booth 208)

Designers and Manufacturers of Nuclear Radiation Detectors for over 50 years. Since 1964, LND, Incorporated has been a leader in the design and manufacture of ionization chambers, Geiger tubes, X-ray proportional counters and neutron detectors. LND, INC. is an ISO 9001:2008 certified company.

Luminant Generation Company, Power Optimization Center
Dallas, TX (Booth 117)

The POC offers an advanced monitoring and diagnostics platform delivering 24x7 real-time operational support, leveraging power generation experience, proven software applications, and well-defined processes and procedures, enabling our customers to maximize the efficiency and reliability of their assets.

Mirion Technologies (MGPI), Inc.
Smyrna, GA (Booth 118)

Mirion Technologies is a world leader providing comprehensive radiation detection, measurement, and monitoring solutions. Through its' Radiation Monitoring Systems Division, Mirion incorporates the internationally recognized brands: MGP Instruments and MGPIH&B providing safety and non-safety radiation monitoring and digital proTK™ Neutron Flux monitoring instrumentation to valued customers. Please visit us in booth #118!

National Nuclear Laboratory (UK)
Cheshire UK (Booth 219)

We're the only UK organisation with the skills, facilities and expertise to provide technical support across the nuclear industry. What's more, we pride ourselves on offering quality, value and service to all of our customers.
With over 10,000 person-years of nuclear industry experience across the whole fuel cycle, our core business is to provide the experts and technologies to ensure the UK nuclear industry operates safely and cost-effectively today and for the future.

Niowave, Inc.
Lansing, MI (Booth 99)

At Niowave, Inc., superconducting electron linear accelerators are being built to tackle America's high-tech challenges in fields as diverse as health care and national security. Niowave is aggressively developing compact electron linacs for the following commercial markets: medical radioisotopes, free electron lasers, x-ray sources, and neutron sources.

Nuclear Energy University Program (NEUP)/Idaho National Laboratory
Idaho Falls, ID (Booth 312)

Nuclear Energy University Program funds nuclear research and equipment upgrades at U. S. colleges and universities, and student educational support. NEUP is helping the Department of Energy accomplish its mission of leading the nation's investment in the development and exploration of advanced nuclear science and technology. www.neup.gov

Nuclear Plant Journal
Downers Grove, IL (Booth 222)

Nuclear Plant Journal, a US publication now in its 33rd year, provides technical information exchange among managers and engineers in nuclear power industry worldwide. Circulation is 12,000 (BPA Worldwide audited). The Journal is published six-times per year and reaches every country in the world with a civilian nuclear energy program. The Journal is published in digital as well as printed version. The Products & Services Directory is published yearly in December. Online: nuclearPlantJournal.com; facebook.com/nuclearplantjournal; youtube.com/user/nuclearplantjournal; twitter.com/npjtweet. Representatives: Newal Agnihotri and Anu Agnihotri.

Nuclear Science Users Facilities
Idaho Falls, ID (Booth 314)

Nuclear Science User Facilities merges the national nuclear research infrastructure with intellectual capital to pair the best ideas with the needed capability. Users are provided no-cost access to world-class nuclear research facilities, technical expertise from experienced scientists and engineers, and assistance with experiment design, assembly, safety analysis and examination.

Nuclear Three Inc.
Stoddard, WI (Booth 123)

Nuclear Three Inc. has served nuclear energy since 1965. We offer reactor operations reviews, strategic planning, temporary executive support at CNO and CEO levels. Also we serve as an advisor to the financial industry on investment risk assessment for nuclear energy.
Call: 608-386-3287

Oak Ridge National Laboratory
Oak Ridge, TN (Booths 105 & 107)

Oak Ridge National Laboratory (ORNL) is a multi-program science and technology laboratory managed for the U.S. Department of Energy by UT-Battelle, LLC. Scientists and engineers at ORNL conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security. www.ornl.gov

Phoenix Nuclear Labs
Monona, WI (Booth 112)

Since its founding in 2005, Phoenix Nuclear Labs (PNL) has designed and manufactured the World's strongest commercial neutron generators. PNL's commitment to commercializing nuclear technologies has inspired our long-term goal of producing clean, fusion energy. PNL's technology is used across a variety of applications within the medicine, the defense, and the energy sectors.

Pipeline Software, Inc.
Santa Ana, CA (Booth 200)

PIPELINE is an industry leading software and services company providing solutions enabling asset-intensive organizations to optimize maintenance and capital work execution processes. PIPELINE solutions are found worldwide in fossil and nuclear utilities to improve maintenance and project controls for a combined global asset portfolio at over one trillion dollars. www.gopipeline.com

PleaseTech Ltd.
Wiltshire, UK (Booth 108)

PleaseReview by PleaseTech, the document review and co-authoring specialists, transforms the key process of producing quality, compliant documents.

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www.pleasetech.com
Contact Barry Lyne
877-205-4940
Barry.Lyne@pleasetech.com

Thermo Fisher Scientific
Liverpool, NY (Booth 212)

As the global leader in scientific and process instrumentation, Thermo Scientific offers an unmatched breadth of products and services which have served the nuclear power industry for decades including: radiation hardened Color and Monochrome CID cameras for inspection applications, radiation and personnel monitoring equipment, Class 1E nuclear instrumentation systems and related services.
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Phone: +1 (315) 451-9410
Email: sales.cidtec@thermoscientific.com
Web site: http://www.thermoscientific.com/cidtec

University of Tennessee Department of Nuclear Engineering and Institute for Nuclear Security
Knoxville, TN (Booth 220)

The University of Tennessee (UT) Nuclear Engineering is one of the prestigious programs in the United States. The UT Institute for Nuclear Security, in collaboration with Oak Ridge National Laboratory, the Y-12 National Security Complex, and Oak Ridge Associated Universities, is developing new multidisciplinary efforts for improving nuclear security globally.

Varian Security & Industrial Products
Las Vegas, NV (Booth 114)

Varian, Security & Industrial Products is the market leader for the supply of high-energy X-ray devices for cargo security, industrial inspection and non-destructive testing (NDT) applications worldwide. The Attila product line, one of Varian's offerings, is a CAD integrated, state-of-the-art software suite developed to improve radiation transport analysis productivity.
Contact: Greg Failla
Phone: 253.857.1056 x101
Email: Gregory.Failla@varian.com
Web: www.varian.com

Virginia Commonwealth University
Richmond, VA (Booth 213)

Virginia Commonwealth University (VCU) is Virginia's premier public research university, and currently the only university in Virginia to offer a full suite of graduate and ABET accredited undergraduate degrees in nuclear engineering, including BS, MS and PhD. The program currently enrolls 100 undergraduate students and 85 graduate students.

ANS Organization Membership

The American Nuclear Society salutes our Organization Members as sharing in our mission to promote nuclear science and technology to benefit humanity.*

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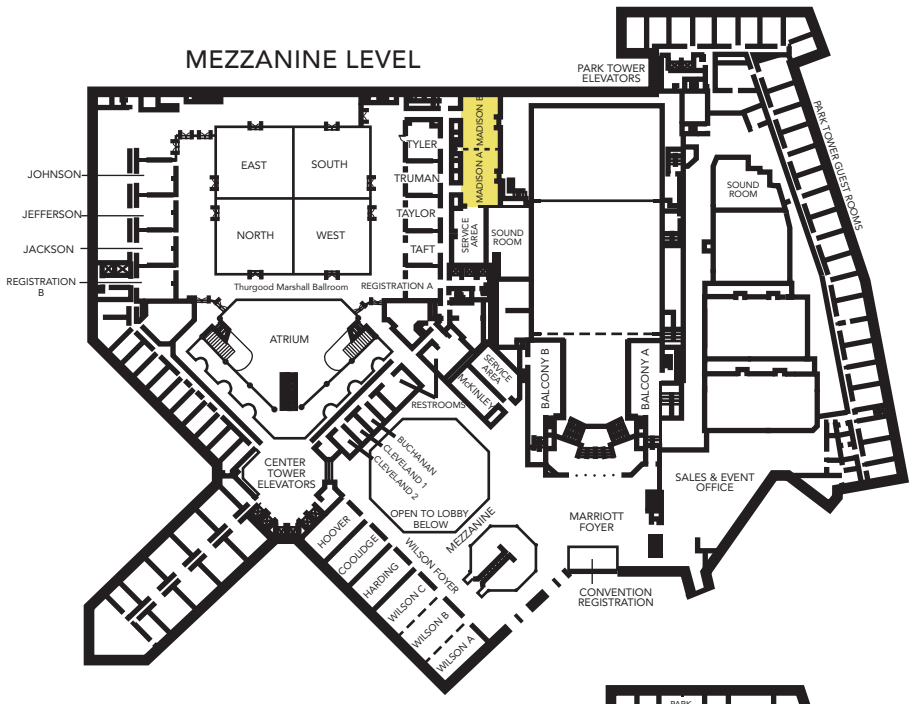

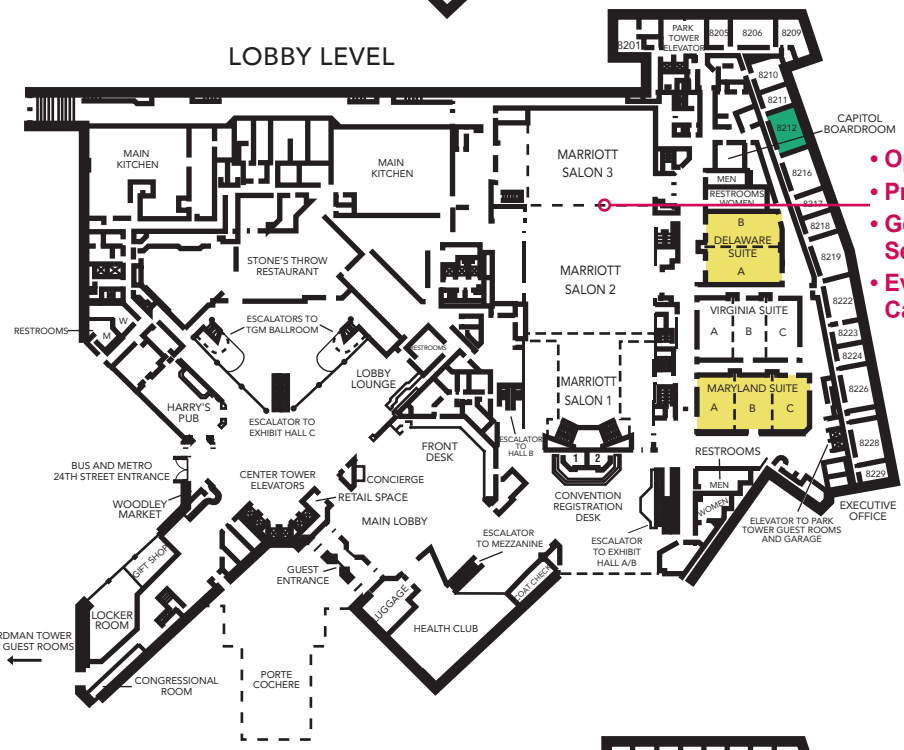

- Opening Plenary
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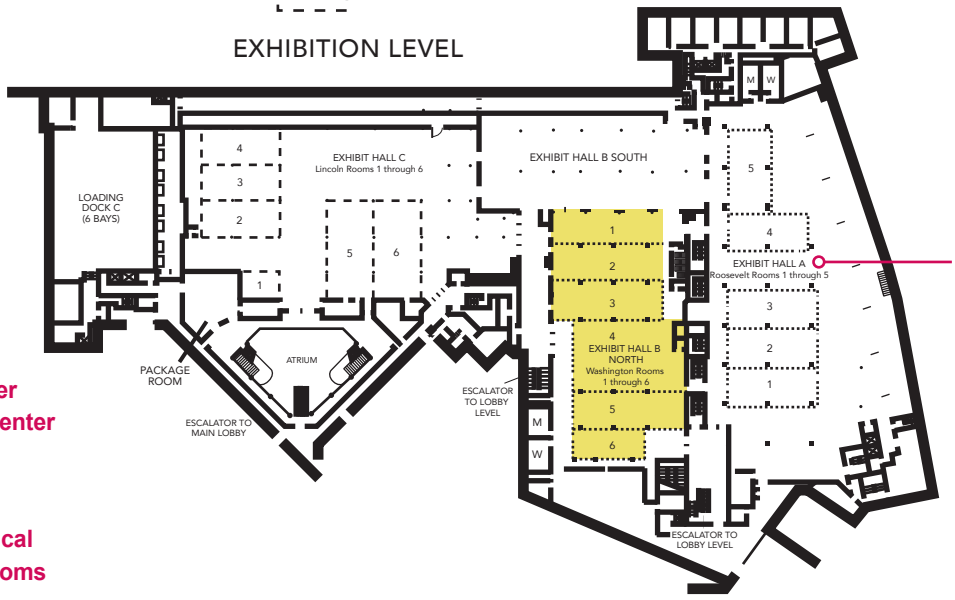
- General Chair's Special Session
- Evening Event with the Capitol Steps



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