

Hyatt Regency Atlanta



ANS



AMERICAN NUCLEAR SOCIETY 2013 ANNUAL MEETING



*"Next Generation Nuclear Energy:
Prospects and Challenges"*

Official Program



Atlanta, Georgia • June 16-20, 2013



ANS

Our most sincere thanks
to the following contributors
for their support of the

2013 ANS ANNUAL MEETING

"Next Generation Nuclear Energy: Prospects and Challenges"

Gold

AREVA

EXCEL Services Corporation

GE Hitachi Nuclear Energy

Silver

CB&I Power - Vogtle Units 3 & 4

Entergy

Mitsubishi Nuclear Energy Systems

PPL Susquehanna, LLC

Southern California Edison

Bronze

American Electric Power

Thank You!



General Meeting Information

Meeting Highlights	4
Meeting Officials	5
Meeting Information Important information regarding hotel accommodations, spouse/guest hospitality, professional development workshops and more!	6
Special Events Details on the conference evening events.	7

Technical Sessions: 2013 ANS Annual Meeting

Condensed Schedule	8-9
Technical Sessions by Division	10-11
Technical Sessions by Day: Monday	11-14
Technical Sessions by Day: Tuesday	15-21
Technical Sessions by Day: Wednesday	21-26
Technical Sessions by Day: Thursday	27-30
Committee Meetings	31-33
Mentor Registration Form	34
ANS Organization List	35



SATURDAY, JUNE 15, 2013

8:00 a.m. - 5:00 p.m.	Teachers' Workshop
2:00 p.m. - 5:00 p.m.	Meeting Registration Hours

SUNDAY, JUNE 16, 2013

11:00 a.m. - 7:00 p.m.	Meeting Registration Hours
1:00 p.m. - 1:30 p.m.	First-Time Attendee Orientation
4:00 p.m. - 5:00 p.m.	Student Assistant Training Session
5:00 p.m. - 6:00 p.m.	Mentoring Program
6:00 p.m. - 7:30 p.m.	President's Reception

MONDAY, JUNE 17, 2013

7:30 a.m. - 5:00 p.m.	Meeting Registration Hours
8:00 a.m. - 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m.-11:30 a.m.	*Opening Plenary: Next Generation Nuclear Energy: Prospects and Challenges
1:00 p.m. - 4:00 p.m.	2013 ANS Meeting: Technical Sessions
6:30 p.m. - 10:00 p.m.	Dinner at the High Museum of Art

TUESDAY, JUNE 18, 2013

7:30 a.m. - 5:00 p.m.	Meeting Registration Hours
8:00 a.m. - 10:00 a.m.	Spouse/Guest Hospitality
8:30 a.m.-11:30 a.m.	2013 ANS Meeting: Technical Sessions
1:00 p.m. - 4:00 p.m.	2013 ANS Meeting: Technical Sessions

WEDNESDAY, JUNE 19, 2013

7:30 a.m. - 5:00 p.m.	Meeting Registration Hours
8:00 a.m. - 10:00 a.m.	Spouse/Guest Hospitality
8:30 a.m.-11:30 a.m.	2013 ANS Meeting: Technical Sessions
1:00 p.m. - 4:00 p.m.	2013 ANS Meeting: Technical Sessions
4:30 p.m. - 6:30 p.m.	Focus on Communications Workshop
7:00 p.m.	Dinner Theater at Agatha's

THURSDAY, JUNE 20, 2013

7:30 a.m. - 2:00 p.m.	Meeting Registration Hours
8:30 a.m.-11:30 a.m.	2013 ANS Meeting: Technical Sessions
1:00 p.m. - 4:00 p.m.	2013 ANS Meeting: Technical Sessions



2013 ANS Annual Meeting: Meeting Officials



GENERAL CHAIR:
Stephen Kuczynski
Southern Nuclear Company



TECHNICAL PROGRAM CHAIR:
Sedat Goluoglu
University of Florida



ASSISTANT PROGRAM CHAIR:
Mark D. DeHart
Idaho National Laboratory



ASSISTANT PROGRAM CHAIR:
Jeff Brault
CBI



FINANCE CHAIR:
Kelly Jordan
University of Florida



STUDENT PROGRAM CO-CHAIR:
Madison Martin



STUDENT PROGRAM CO-CHAIR:
Alyse Scurlock



**SPECIAL EVENTS AND
FLORIDA LOCAL SECTION CHAIR:**
Katherin L. Goluoglu



TECHNICAL TOURS CHAIR:
Yong Yang
University of Florida



SPOUSE/GUEST PROGRAM CHAIR:
Pingchien Neo
University of Florida



MEETING INFORMATION

The 2013 ANS Annual Meeting will be held June 16-20, 2013, in Atlanta, GA. There will be a Focus Workshop: "Changing the Nuclear Conversation: What it Takes to Develop Effective Messages for the Public and Policy Makers" held in conjunction with the 2013 ANS Annual Meeting.

ACCOMMODATIONS/HOTEL INFORMATION

The Hyatt Regency Atlanta will be the location for the 2013 ANS Annual Meeting, where all activities, technical sessions and governance committee meetings will take place.

The Hyatt Regency Atlanta Hotel is located at 265 Peachtree Street, NE, Atlanta, Georgia, 30303.

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 1:00 - 1:30 p.m. on Sunday, June 16, 2013, in Hanover G.

STUDENT ASSISTANT PROGRAM

Attendance at the 2013 ANS Annual Meeting is an exciting professional opportunity for college and graduate students.

To help defray travel and living expenses, students can sign up to work as session chairs' assistants. Student assistants must attend the student training session on Sunday, June 16, 2013, 4:00 - 5:00 p.m. in Hanover G.

Student assistants receive free meeting registration and a copy of the meeting TRANSACTIONS.

All students are responsible for paying their own room, tax, and incidentals. Please refer to the ANS website for more information about the meeting.

ANS student members who register for the meeting and/or work as session chairs' assistants

should pick up a travel assistance form which can be found in the student headquarters room. Student travel assistance is provided through contributions from the ANS professional divisions.

The student headquarters room will be located in Chicago D.

MENTORING PROGRAM

A special mentoring program will be held from 5:00 p.m. - 6:00 p.m. on Sunday, June 16, 2013, in the Hanover G.

ANS Members who will 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.

NOTICE FOR SPEAKERS

All speakers and session chairs must sign in at the "Speakers' Desk," located in the ANS Registration Area of the hotel during registration hours.

ANS CONFERENCE OFFICE

Location: Chicago E

ANS SECRETARIAT

Location: Chicago A

ANS MEDIA CENTER

Monday, June 17, 2013
7:45 a.m. - 4:00 p.m.
Tuesday, June 18, 2013
8:00 a.m. - 4:00 p.m.
Wednesday, June 19, 2013
8:00 a.m. - 4:00 p.m.
Location: Chicago C



FOCUS ON COMMUNICATIONS WORKSHOP

Wednesday, June 19, 2013 4:30p.m.- 6:30p.m.
Location: Learning Center

Changing the Nuclear Conversation: What it

ANS REGISTRATION

Meeting and workshop registration, speakers' & sessions chairs' desk and the message desk will be located at: the Permanent Registration Desk (Ballroom Level) of the Hyatt Regency Atlanta, Saturday, June 15, 2013 - Thursday, June 20, 2013. Meeting registration is required for all attendees and presenters. Badges are required for admission to all technical sessions, workshops and events.

REGISTRATION HOURS:

Saturday, June 15, 2013
2:00 p.m. - 5:00 p.m.
Sunday, June 16, 2013
11:00 a.m. - 7:00 p.m.
Monday, June 17, 2013
7:30 a.m. - 5:00 p.m.
Tuesday, June 18, 2013
7:30 a.m. - 5:00 p.m.
Wednesday, June 19, 2013
7:30 a.m. - 5:00 p.m.
Thursday, June 20, 2013
7:30 a.m. - 2:00 p.m.

Takes to Develop Effective Messages for the Public and Policy Makers

Sponsored by

ANS's Center for Nuclear Science and Technology Information

Developing effective messages means understanding your audience and then finding the ways to communicate with them in ways that they can relate to and support. As workshop participants enjoy refreshments, ANS Washington Rep Craig Piercy and PCG Managing Partner Mimi Limbach will engage you in developing messages that can help reshape the conversation about nuclear energy.

SPOUSE/GUEST HOSPITALITY

Spouse/guest hospitality breakfast will be served from 8:00 a.m. - 10:00 a.m., Monday, June 17, 2013, through Wednesday, June 19, 2013, in Suite 226. Continental breakfast will be served each morning.

Spouse/guest registration is required for admittance to the spouse/guest hospitality breakfast.

Spouse/guest registration includes one ticket to the president's reception and admittance to the spouse/guest breakfast only- it does not include technical sessions or other events.



ATTENTION RUNNERS: ANS FUN RUN



On Tuesday, June 18, 2013, there will be a noncompetitive run starting at 6:00 a.m. from the front entrance of the hotel.

We are looking forward to seeing you at the fun run in Atlanta, GA. Bring shoes and a big smile.

EVENING EVENTS

ANS President's Reception

Sunday, June 16, 2013

6:00 p.m. - 7:30 p.m.

Location: Regency Ballroom

One ticket to the ANS President's Reception is included in the full meeting registration fee.

Additional tickets can be purchased on-site at the ANS Registration desk for \$85.

DINNER AT THE HIGH MUSEUM OF ART

Monday, June 17, 2013

6:30 p.m. - 10:00 p.m.

Location: The Museum of High Art



Courtesy of High Museum of Art Staff



Courtesy of High Museum of Art Staff

The High Museum of Art is the leading art museum in the Southeastern United States. Housing a collection of classic and contemporary art, special exhibitions featuring the world's greatest art, and celebrated architecture by Richard Meier and Renzo Piano.



Courtesy of High Museum of Art Staff

Tickets can be purchased on-site at the ANS Registration Desk for \$85.00 per person.

Please Note: Busses will depart and return at the corner of Peachtree and Baker Streets, located at the right front entrance of the Hyatt Regency Atlanta Hotel.

DINNER AT AGATHA'S—A TASTE OF MYSTERY

Wednesday, June 19, 2013

7:00 p.m.

Location: Agatha's—A Taste of Mystery Presents:

Dinosaurs and Divas: Murder at the Fernvult Museum



AGATHA'S
A TASTE OF MYSTERY

Written by Debra Cole | Directed by Ryan Girard

The SternBank Museum of Natural, Cultural, and Historical History has some exciting news! Along with their amazing displays of Indian artifacts, fossilized creatures, and dinosaur exhibits, they've recently acquired a one-of-a-kind Etruscan necklace that dates back to 800 B.C. Too bad nobody told them it's also cursed!

Tonight at the museum, the "The Ladies Who Wear Hats" president-in-waiting, Rosalind Threadbare needs everything to go perfectly. She's thought of everything, the food, the décor, the music. The one thing she didn't count on, was murder!

Join The Mummified Mummy, Ben Franklin, Wanda Woodwoof, and Helen of Troy for another amazing night of laughs, suspense, and a museum-gone-wild in "A Night at the SternBank Museum.

Agatha's is located within walking distance of the hotel (one block), at 161 Peachtree Center Ave. Attendees are responsible for their own transportation to the venue

Tickets can be purchased on-site at the ANS Registration Desk for \$60.00 per person.

Condensed Schedule



Special
Centennial
Ballroom 3/4

Monday, June 17, 2013 • 8:00 AM

Opening Plenary

Next Generation Nuclear Energy: Prospects and Challenges

Room	Monday, June 17, 2013 1:00 PM-4:00 PM		Tuesday, June 18, 2013 8:30 AM-11:30 AM		1:00 PM-4:00 PM	
	Baker	Computational Thermal Hydraulics—I		General Two-Phase Flow		Thermal Hydraulics: General
Courtland	Managing the Spectrum of Risks in the Complexities on New Build Nuclear— Call for a New Business Model to Meet the Challenges and Opportunities in the U.S. and International Nuclear Markets—Panel				Emerging Issues in Nuclear Facility Safety	Recent Developments With Nuclear Security and Safeguards
Dunwoody	Experiences of Women in Nuclear—Panel		Communicating for New Nuclear Facilities—Panel	Communicating for Science—Paper/Panel	K-12 Outreach—I: Success Stories- Paper/Panel	K-12 Outreach—II: Southern Company Case Study—Panel
Fairlie	Advanced Measurement Techniques and Surface Techniques		Aerospace Nuclear Science and Technology: General		New Measurement Technologies for Current and Next-Generation Reactors	
Hanover A	NRC 50.54(f) Generic Letter on NTF Recommendation 2.3, Flooding Walkdowns—Panel		The Nuclear New Build Supply Chain and Procurement Issues—Panel		Young Blood: Integration and Retention of the Next Generation—Paper/Panel	
Hanover B	Radiation Protection and Shielding—Roundtable		Computational Tools for Radiation Protection and Shielding		Nuclear Materials	
Hanover C	Reactor Physics Design, Validation, and Operating Experience—I	Fuel Cycle Design Optimization and Analysis	Reactor Physics: General—I		Reactor Physics Design, Validation, and Operating Experience—II	
Hanover D	Current Issues in LWR Core Design and Reactor Engineering Support—Panel		Advanced Modeling and Simulation in Reactor Physics—I		Advanced Modeling and Simulation in Reactor Physics—II	
Hanover E	Current Issues in Computational Methods—Roundtable: Managing Modeling and Simulation Research and Innovation in an Applications-Driven Environment		Data Analysis in Nuclear Criticality Safety—I		Transport and Computational Methods	
Hanover F	Radiation Detection for Nonproliferation Application		Reactor Instrumentation and Neutron Beam Instrumentation for Research Reactors		Nuclear Chemistry and Radiochemistry	
Hanover G	Advanced Fuel Cycle Cost Basis Report Update		Hybrid Energy: Combining Nuclear and Other Energy Sources		Fuel Cycle Simulators and Systems Analysis	



Condensed Schedule

Room	Wednesday, June 19, 2013		Thursday, June 20, 2013		
	8:30 AM-11:30 AM	1:00 PM-4:00 PM	8:30 AM-11:30 AM	1:00 PM-4:00 PM	
Baker	Thermal Hydraulics in Severe Accidents	Computational Thermal Hydraulics—II	Thermal Hydraulics in Advanced High-Temperature Reactors	State of the Art in Modeling Fuel Rod Ballooning, Fuel Relocation and High Burnup Issues in LOCA Evaluation Models	
Courtland	Commercial-Grade Dedication of Real-Time Software—Panel	Commercial-Grade Dedication of Non-Real-Time Software—Panel	Nuclear Installations Safety: General—I	Nuclear Installations Safety: General—II	
Dunwoody	Training, Human Performance, and Workforce Development	Education, Training, and Workforce Development: General			
Fairlie	Special Session on Human Factors Engineering in Memory of Dr. Julius J. Persensky: Over 40 Years of Dedicated Service in the Field of Human Factors and Behavioral Science Technologies	Advances in Diagnostic and Prognostic Technologies	Updates on Research Reactor Regulation for Instrumentation and Control Systems—Panel	Instrumentation and Controls: General	
Hanover A	New Nuclear Construction Around the World—Status Report—Panel	Advanced/Gen-IV Reactors	Small Modular Reactors: Progression and Status		
Hanover B	Space Radiation Shielding Methods and Applications	Radiation Protection and Shielding: General	Nuclear Fuels	ADVANTG Tutorial: Automated Variance Reduction for MCNP	Accident Tolerant Fuels and Advanced Fuels
Hanover C	Student Research in Reactor Physics—I	Student Research in Reactor Physics—II	Reactor Analysis Methods—II		
Hanover D	Reactor Analysis Methods—I	Reactor Physics: General—II	Physics of Fluid-Fuel Systems—I	Physics of Fluid-Fuel Systems—II	
Hanover E	Data Analysis in Nuclear Criticality Safety—II	Mathematical Modeling, Uncertainty Quantification, and Sensitivity Analysis Methods	Nuclear Criticality Safety Standards—Forum		
Hanover F	Isotopes and Radiation: General	Biology and Medicine: General	New Horizons in Medical Health Physics		
Hanover G	Fuel Cycle and Waste Management: General—I	Fuel Cycle and Waste Management: General—II	Robotics and Remote Systems: General		



(Asterisks indicate special sessions. Parentheses indicate cosponsorship)

Special Sessions

*Opening Plenary: Next Generation Nuclear Energy: Prospects and Challenges, Mon. a.m. (8:00-11:30 a.m.)

Aerospace Nuclear Science and Technology (ANSTD)

Aerospace Nuclear Science and Technology: General, Tues. a.m.

Biology and Medicine (BMD)

(Reactor Instrumentation and Neutron Beam Instrumentation for Research Reactors, Tues. a.m.)

(Nuclear Chemistry and Radiochemistry, Tues. p.m.)

Biology and Medicine: General, Wed. a.m.

New Horizons in Medical Health Physics, Wed. p.m.

Education, Training, and Workforce Development (ETWDD)

Experiences of Women in Nuclear—Panel, Mon. p.m.

Communicating for New Nuclear Facilities—Panel, Tues. a.m.

Communicating for Science—Panel, Tues. a.m.

(Recent Developments with Nuclear Security and Safeguards, Tues. p.m.)

K-12 Outreach—I: Success Stories—Paper/Panel, Tues. p.m.

K-12 Outreach—II: Southern Company Case Study—Panel, Tues. p.m.

Training, Human Performance, and Workforce Development, Wed. a.m.

Education, Training, and Workforce Development: General, Wed. p.m.

Fuel Cycle and Waste Management (FCWMD)

Advanced Fuel Cycle Cost Basis Report Update, Mon. p.m.

Hybrid Energy: Combining Nuclear and Other Energy Sources, Tues. a.m.

Fuel Cycle Simulators and Systems Analysis, Tues. p.m.

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

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

Human Factors, Instrumentation, and Controls (HFICD)

New Measurement Technologies for Current and Next-Generation Reactors, Tues. p.m.

Special Session on Human Factors Engineering in Memory of Dr. Julius J. Persensky: Over 40 Years of Dedicated Service in the Field of Human Factors and Behavioral Science Technologies, Wed. a.m.

Advances in Diagnostic and Prognostic Technologies, Wed. p.m.

Updates on Research Reactor Regulation for Instrumentation and Control Systems—Panel, Thurs. a.m.

Instrumentation and Controls: General, Thurs. p.m.

Isotopes and Radiation (IRD)

Radiation Detection for Nonproliferation Application, Mon. p.m.

Reactor Instrumentation and Neutron Beam Instrumentation for Research

Reactors, Tues. a.m.

Nuclear Chemistry and Radiochemistry, Tues. p.m.

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

Materials Science and Technology (MSTD)

Advanced Measurement Techniques and Surface Techniques, Mon. p.m.

Nuclear Materials, Tues. p.m.

Nuclear Fuels, Wed. p.m.

Accident Tolerant Fuels and Advanced Fuels, Thurs. p.m.

Mathematics and Computation (MCD)

Current Issues in Computational Methods—Roundtable: Managing Modeling and Simulation Research and Innovation in an Applications-Driven Environment, Mon. p.m.

Transport and Computational Methods, Tues. p.m.

Mathematical Modeling, Uncertainty Quantification, and Sensitivity Analysis Methods, Wed. p.m.

Nuclear Criticality Safety (NCSD)

Data Analysis in Nuclear Criticality Safety—I, Tues. a.m.

Data Analysis in Nuclear Criticality Safety—II, Wed. a.m.

Nuclear Criticality Safety Standards—Forum, Thurs. a.m.

Nuclear Installations Safety (NISD)

NRC 50.54(f) Generic Letter on NITTF Recommendation 2.3, Flooding Walkdowns—Panel, Mon. p.m.

Emerging Issues in Nuclear Facility Safety, Tues. p.m.

Commercial-Grade Dedication of Real-Time Software—Panel, Wed. a.m.

Commercial-Grade Dedication of Non-Real-Time Software—Panel, Wed. p.m.

Nuclear Installations Safety: General—I, Thurs. a.m.

Nuclear Installations Safety: General—II, Thurs. p.m.

Nuclear Non-Proliferation Technical Group (NNTG)

Managing the Spectrum of Risks in the Complexities of New Build Nuclear —Call for a New Business Model to Meet the Challenges and Opportunities in the U.S. and International Nuclear Markets—Panel, Mon. p.m.

Recent Developments with Nuclear Security and Safeguards, Tues. p.m.

Operations and Power (OPD)

The Nuclear New Build Supply Chain and Procurement Issues—Panel, Tues. a.m.

Young Blood: Integration and Retention of the Next Generation—Paper/Panel, Tues. p.m.

New Nuclear Construction Around the World—Status Report—Panel, Wed. a.m.

Advanced/Gen-IV Reactors, Wed. p.m.

Small Modular Reactors: Progression and Status, Thurs. a.m.



Technical Sessions by Division/by Day: Monday

Radiation Protection and Shielding (RPSD)

Radiation Protection and Shielding—Roundtable, Mon. p.m.

(Radiation Transport, Protection and Shielding at Accelerator Facilities, Tues. a.m.)

Computational Tools for Radiation Protection and Shielding, Tues. a.m.

Space Radiation Shielding Methods and Applications, Wed. a.m.

Radiation Protection and Shielding: General, Wed. a.m.

ADVANTG Tutorial: Automated Variance Reduction for MCNP, Thurs. a.m.

Reactor Physics (RPD)

Reactor Physics Design, Validation, and Operating Experience—I, Mon. p.m.

Reactor Physics Design, Validation, and Operating Experience—II, Tues. p.m.

Fuel Cycle Design Optimization and Analysis, Mon. p.m.

Current Issues in LWR Core Design and Reactor Engineering Support—Panel, Mon. p.m.

Reactor Physics: General—I, Tues. a.m.

Reactor Physics: General—II, Wed. p.m.

Advanced Modeling and Simulation in Reactor Physics—I, Tues. a.m.

Advanced Modeling and Simulation in Reactor Physics—II, Tues. p.m.

Student Research in Reactor Physics—I, Wed. a.m.

Student Research in Reactor Physics—II, Wed. p.m.

Reactor Analysis Methods—I, Wed. a.m.

Reactor Analysis Methods—II, Thurs. a.m.

Physics of Fluid-Fuel Systems—I, Thurs. a.m.

Physics of Fluid-Fuel Systems—II, Thurs. p.m.

Robotics and Remote Systems (RRSD)

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

Thermal Hydraulics (THD)

Computational Thermal Hydraulics—I, Mon. p.m.

Computational Thermal Hydraulics—II, Wed. p.m.

General Two-Phase Flow, Tues. p.m.

Thermal Hydraulics: General, Tues. p.m.

Thermal Hydraulics in Severe Accidents, Wed. a.m.

Thermal Hydraulics in Advanced High-Temperature Reactors, Thurs. a.m.

State of the Art in Modeling Fuel Rod Ballooning, Fuel Relocation and High Burnup Issues in LOCA Evaluation Models, Thurs. p.m.

Monday • June 17, 2013

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m. Meeting Registration

8:00 a.m.-10:00 a.m. Spouse/Guest Hospitality

8:00 a.m.-11:30 a.m. *Opening Plenary:
Next Generation Nuclear Energy: Prospects and Challenges

1:00 p.m.-4:00 p.m. 2013 ANS Annual Meeting
Technical Sessions

- Computational Thermal Hydraulics—I
- Managing the Spectrum of Risks in the Complexities of New Build Nuclear—Call for a New Business Model to Meet the Challenges and Opportunities in the U.S. and International Nuclear Markets—Panel
- Experiences of Women in Nuclear—Panel
- Advanced Measurement Techniques and Surface Techniques

- NRC 50.54(f) Generic Letter on NTTF Recommendation 2.3, Flooding Walkdowns—Panel
- Radiation Protection and Shielding—Roundtable
- Reactor Physics Design, Validation, and Operating Experience—I
- Fuel Cycle Design Optimization and Analysis
- Current Issues in LWR Core Design and Reactor Engineering Support—Panel
- Current Issues in Computational Methods—Roundtable: Managing Modeling and Simulation Research and Innovation in an Applications- Driven Environment
- Radiation Detection for Nonproliferation Application
- Advanced Fuel Cycle Cost Basis Report Update

3:30 p.m.-4:30 p.m. ANS Business Meeting

6:30 p.m. - 10:00 p.m. Dinner at the High Museum of Art



MONDAY, JUNE 17, 2013, 8:00 A.M.

OPENING PLENARY: NEXT GENERATION NUCLEAR ENERGY: PROSPECTS AND CHALLENGES.

Session Organizer and Chair: Stephen E. Kuczynski (*Southern Nuclear*)

Centennial Ballroom 3/4

SPEAKERS:

- Commissioner Kristine L. Svinicki (*Commissioner, U.S. Nuclear Regulatory Commission*)
- Steve Kuczynski (*President and CEO, Southern Nuclear*)
- Daniel L. Roderick (*President and CEO, Westinghouse*)
- Edward Moses (*Principal Associate Director, Lawrence Livermore National Laboratory, National Ignition Facility*)
- Christofer M. Mowry (*President, Babcock and Wilcox mPower*)
- Eugene Grecheck (*VP Nuclear Development, Dominion Generation*)

MONDAY, JUNE 17, 2013, 1:00 P.M.

Computational Thermal Hydraulics—I,

sponsored by THD.

Cochairs: Elia Merzari, Rui Hu (*ANL*)

Room: Baker

1:00 p.m.

Steady State Thermal Hydraulic Analysis of a Molybdenum Production Element for Implementation in TRIGA® Reactors, P. Byfield, W. R. Marcum, S. R. Reese (*Oregon State Univ*)

1:25 p.m.

Sensitivity Analysis of a Typical Large, Dry Containment Response During a Loss of Coolant Accident Using RELAP5-3D and MELCOR, Rodolfo Vaghetto, Bradley A. Beeny, Yassin A. Hassan, Karen Vierow (*Texas A&M*)

1:50 p.m.

Extensible Framework for Illustrative Visualization of Time-Varying Flows, D. P. Guillen (*INL*), A. S. Rattner (*Georgia Tech*), A. Joshi (*Boise State Univ*), S. Garimella (*Georgia Tech*)

2:15 p.m.

Gas Diffusion Simulated by GOTHIC Code in H-Shape Tube, Yu-Kai Huang, Zhen-Yu Hung, Yuh-Ming Ferng, Chun-Kuan Shih, Bau-Shi Pei (*Natl Tsing Hua Univ*)

2:40 p.m.

Parameter Study of RELAP5 LOCA Simulation on Initial and Boundary Conditions, Jun Yang (*Univ of Wisconsin, Madison*)

3:05 p.m.

Development of Uncertainty Modules for a Sub-Channel Code, Fatih Aydogan (*Univ of Idaho*)

Managing the Spectrum of Risks in the Complexities on New Build Nuclear—Call for a New Business Model to Meet the Challenges and Opportunities in the U.S. and International Nuclear Markets—Panel,

sponsored by NNTG.

Session Organizer: Jeffery Jay (*CB&I Power*)

Chair: Adam Stulberg (*Georgia Tech*)

Room: Courtland

1:00 p.m.

According to the World Association of Nuclear Operators (WANO) and the Nuclear Energy Institute (NEI), as of May 2013, 30 nations worldwide are operating 436 nuclear power reactors providing over 13% of the

world's electricity. Seventy new nuclear power units are currently under construction in 14 countries with ~160 planned and over 320 proposed in some 42 countries. Most nuclear power units will be in developing nations with little or no existing infrastructure to support safe and secure operations. Markets are now expanding in the Middle East-North Africa (MENA) region with regional project investments over \$300B of new capital into the global nuclear industry. UAE is leading the MENA region with over \$20B investment in nuclear with Korea Electric Power Company (KEPCO) spear-heading their efforts with APR 1400 technology, as well as building the necessary national regulatory and human capital infrastructure required for sustaining safe and secure operations. The spectrum of risks in new build is complex in scope and dimension for new nations. Construction-consortium partnerships, human capital and talent acquisition challenges, to operations turnover and advancing a nuclear safety culture while addressing nonproliferation issues are just several of the strategic issues facing governments, nuclear institutions, operating companies and suppliers in the coming decades.

US expansion in first-of-a-kind nuclear technology is well underway with an investment of over \$24B between Southern Nuclear and SCANA as EPC efforts get underway at Vogtle 3&4 and VC Summer 2&3, respectively, with Westinghouse AP1000 technology. Of common interests, both reactor technologies rely on critical equipment and components from South Korean suppliers as part of the world-wide network of nuclear suppliers. Thus the economic interest in the global commercial market for nuclear energy is significant and within the next decade may be worth an estimated commercial value as much as \$740B USD.

External to the nuclear market is the competing economic energy interests of natural gas driven by advancements in extraction technologies. When combined against the strategic challenges posed by global climate change, the nuclear business model of the 20th century requires a makeover to remain economically competitive as part of an overall integrated energy portfolio for the industry and its supporting nations.

The distinguished panel of executive, academic, industry and consulting leaders will discuss their respective views on the broad spectrum of new build challenges and opportunities and the strategic attributes of what a new business model for new build should address, including the economics, to meet the complex, geo-political diverse needs of a 21st century global nuclear market.

PANELISTS:

- Hee-Yong Lee (*SVP, KEPCO*)
- Amir Shahkarami (*CEO, Exelon Nuclear Partners/SVP, Exelon Generation*)
- Sandy Rupperecht (*SVP, Westinghouse Electric Company*)
- David McKinney (*VP, Southern Nuclear Company*)
- Adam Stulberg (*Assoc Professor/Co-Director, CISTP, Georgia Institute of Technology [Moderator]*)
- Greg Kassner (*Mgr, World Association of Nuclear Operators, Atlanta Centre*)
- Rob Graber (*Principal, EnergyPath Corporation*)
- Bill Linton (*Principal, Linton Consulting*)
- Shenjie Gu (*SNERDI*)

Experiences of Women in Nuclear—Panel,

sponsored by ETWDD.

Session Organizer and Chair: J'Tia P. Taylor (*ANL*)

Room: Dunwoody

1:00 p.m.

The Professional Women in ANS proposes a panel session for all attendees of the 2013 ANS annual conference. For this panel, women in three varying stages of their careers will be invited to share their experiences with the



gathering. A mature student, a mid-career individual, and an experienced professional will speak of their career choices, challenges encountered, and their roles in the nuclear field. This panel will help bring out the subtle differences in professional experiences for men and women in nuclear and will encourage all members of ANS to learn from and relate to them.

PANELISTS:

- Mary Lou Dunzik-Gougar (*Idaho State Univ*)
- Loral Briggs (*ANL*)
- Kathryn Huff (*Univ of Wisconsin*)
- Tonya Lighty (*NRC*)

Advanced Measurement Techniques and Surface Techniques,

sponsored by MSTD.

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Randy K. Nanstad (*ORNL*)

Room: Fairlie

1:00 p.m.

In-situ Reactor Irradiation of Silica Optical Fiber Heated to 1000°C, Christian Petrie, David Hawn, Thomas E. Blue (*Ohio State*)

1:25 p.m.

Photothermal Reflectance Technique to Measure Thermal Conductivity with Micrometer Resolution, Zilong Hua, Heng Ban (*Utah State Univ*), Marat Khafizov, Robert Schley, David Hurley, Rory Kennedy (*INL*)

1:50 p.m.

Elastic Property Determination from Cantilever Resonant Frequencies for Anisotropic Materials, Zilong Hua, Heng Ban (*Utah State Univ*), Robert Schley, David Hurley (*INL*)

2:15 p.m.

Distributed Temperature Measurements with Single-Mode Fiber Using Rayleigh Backscatter up to 750°C, Thomas Wood Jr., Bryan Blake, Thomas E. Blue, Christian Petrie (*Ohio State*)

2:40 p.m.

Photothermal Radiometry and Scanning Thermal Microscopy for In-depth Thermal Conductivity Characterization of Proton-Irradiated ZrC, Colby Jensen (*Utah State Univ/Universite de Reims Champagne-Ardenne*), Mihai Chirtoc, Jean-Stéphane Antoniow, Nicolas Horny (*Universite de Reims Champagne-Ardenne*), Heng Ban (*Utah State Univ*)

NRC 50.54(f) Generic Letter on NTF Recommendation 2.3, Flooding Walkdowns—Panel,

sponsored by NISD.

Session Organizer and Chair: Charles R. Martin (*DNFSB*)

Room: Hanover A

1:00 p.m.

Based on the recommendations of its Fukushima near-term lessons learned task force, NRC issued a generic 50.54(f) letter in March 2012 requiring each operating nuclear power plant, among other activities, to perform an “external flooding walkdown” to assure that the plant’s protection against external flood-initiated accidents is adequate vis-a-vis the plant’s regulatory design basis. This session is intended to explore the technical basis for these walkdowns and provide insights into the result of the walkdowns in terms of safety insights and also in terms of the adequacy of the flood protection of the operating plants.

PANELISTS:

- Raymond E. (Ray) Schneider (*Westinghouse*)
- David (Dave) Lochbaum (*Union of Concerned Scientists*)
- Jim Riley (*NEI*)
- Charles R. (Chip) Martin (*DNFSB*)
- Ethan W. Hauser (*DTE Energy*)

Radiation Protection and Shielding—Roundtable,

sponsored by RPSD.

Session Organizer: Peter F. Caracappa (*RPI*)

Chair: Nolan Hertel (*Georgia Tech*)

Room: Hanover B

1:00 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.

Reactor Physics Design, Validation, and Operating Experience—I,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Stefano Monti (*IAEA*)

Room: Hanover C

1:00 p.m.

New Reactor Physics Benchmark Data in the March 2013 Edition of the IRPhEP Handbook, John D. Bess, J. Blair Briggs (*INL*), Jim Gulliford (*OECD/NEA*)

1:25 p.m.

Benchmark Evaluation of HTR-PROTEUS Pebble Bed Experimental Program Critical Core Loadings, John D. Bess, Leland M. Montierth (*INL*), David Hanlon (*AMEC*)

1:50 p.m.

Criticality and Dynamic Benchmarking of the DUFF Reactor Test, David I. Poston (*LANL*)

2:15 p.m.

STEK Experiment—Opportunity for Validation of Fission Products Nuclear Data, D. F. da Cruz, C. M. Sciolla, D. Rochman (*NRG*)

2:40 p.m.

Experimental Results of Joint LANL/CEA Measurements on CALIBAN, J. Hutchinson, B. Rooney, W. Myers, A. Sood, M. Smith-Nelson (*LANL*), N. Authier, A. Chapelle, P. Casoli, B. Richard (*CEA*)

Fuel Cycle Design Optimization and Analysis,

sponsored by RPD.

Session Organizer: Moussa Mahgerefteh (*Exelon*)

Chair: Stefano Monti (*IAEA*)

Room: Hanover C

3:10 p.m.

Method for Addressing Hybrid-Equilibrium Loading Constraints within the COPERNICUS Multi-Cycle Nuclear Fuel Optimization Code, David J. Kropaczek, Mehdi Asgari (*Studsvik Scandpower*), Moussa Mahgerefteh (*Exelon Nuclear Fuels*)



3:35 p.m.

Feasibility Study of a Sustainable MOX Fuel Cycle for PWRs, Alexey I. Soldatov, Michael A. Perlin (*Oregon State Univ*)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

Current Issues in LWR Core Design and Reactor Engineering Support-Panel,

sponsored by RPD.

Session Organizer and Chair: Moussa Mahgerefteh (Exelon)

Room: Hanover D

1:00 p.m.

The focus of this panel session will be to share current core design capabilities, developments, and methods for addressing issues impacting core designs and associated reactor engineering support activities. Particular issues may include recent operating experiences, reactivity management, poison management, power maneuver strategies and tools, fuel performance (cladding failures, crud-induced power shift, distinctive crud pattern), impact of primary chemistry, spent fuel disposal, refueling outage length, cycle length, fuel cycle cost, power uprate, and new fuel designs.

PANELISTS:

- Steve Baker (*TransWare*)
- Robb Borland (*First Energy*)
- Edward B. Gibson (*Southern Nuclear*)
- Thomas Remick (*SCE*)
- Joy Forster (*Duke Energy*)
- James Tusar (*Exelon*)

Current Issues in Computational Methods-Roundtable: Managing Modeling and Simulation Research and Innovation in an Applications-Driven Environment,

sponsored by MCD.

Session Organizer and Chair: Thomas M. Evans (ORNL)

Room: Hanover E

1:00 p.m.

As computational power has grown, the capabilities in modeling and simulation have expanded accordingly. The maturation of modeling and simulation as a field has naturally placed applications as the driver for projects and funding.

Accordingly, increasing emphasis is placed on end-user requirements such as input, output, and features leaving little time left for numerical methods development. Furthermore, high-impact research will necessarily entail investigation in multi-dimensional problems that are difficult to prototype. These conditions combine to create a set of challenges for the future evolution of technologies in modeling and simulation: (a) what is the best mechanism for prototyping innovative methods in multidimensional, multiscale, parallel computational physics application codes within a given project scope, (b) how do we convert prototyped methods into production code, and (c) what impacts does this environment pose for the teaching and mentoring of the next generation of computational scientists and engineers?

Radiation Detection for Nonproliferation Application,

sponsored by IRD.

Session Organizer: Kenan Unlu (Penn State)

Chair: Igor Jovanovic (Penn State)

Room: Hanover F

1:00 p.m.

Developing a Radiation Detector on Freestanding n-GaN, Padhraic L. Mulligan, Jinghui Wang, Lei R. Cao (*Ohio State*)

1:25 p.m.

Facility Advancements in Radioxenon Production at The University of Texas at Austin, S. Biegalski, F. Klingberg (*Univ of Texas, Austin*)

1:50 p.m.

Background Radioxenon Soil Concentrations Due to Spontaneous Fission, C. Johnson, S. Biegalski (*Univ of Texas, Austin*)

2:15 p.m.

Performance and Design Optimization of Graphene Field-Effect Transistors for Radiation Detection, I. Jovanovic (*Penn State*), O. Koybasi (*Massachusetts General Hospital*), E. Cazalas (*Penn State*), I. Childres, Y. P. Chen (*Purdue Univ*)

2:40 p.m.

Simulation and Analytical Form of the Molten Salt Alpha-Particle Spectrum, Timothy R. Garcia, Benjamin Reinke, Ashutosh Kumar, Wolfgang Windl, Thomas E. Blue (*Ohio State*)

Advanced Fuel Cycle Cost Basis Report Update,

sponsored by FCWMD.

Session Organizer: Michael J. Lineberry (Idaho State Univ)

Chair: Brent W. Dixon (INL)

Room: Hanover G

1:00 p.m.

Introduction to the Advanced Fuel Cycle Cost Basis for Economic Analysis of Proposed Nuclear Fuel Cycles, Brent Dixon (*INL*), Kent Williams (*Engineering Consultant*)

1:25 p.m.

The Advanced Fuel Cycle Cost Basis for Front End Technologies, Erich Schneider (*Univ of Texas, Austin*), Kent Williams (*Engineering Consultant*), invited

1:50 p.m.

The Advanced Fuel Cycle Cost Basis for Reactor Technologies, Edward Hoffman (*ANL*), Francesco Ganda (*INL*)

2:15 p.m.

Geologic Disposal Costs for Domestic SNF and HLW, Joe Carter, Steve Sheetz (*SRNL*)



Tuesday, June 18, 2013

- 7:30 a.m.-5:00 p.m. Meeting Registration
- 8:00 a.m.-10:00 a.m. Spouse/Guest Hospitality
- 8:30 a.m.-11:30 a.m. 2013 ANS Annual Meeting Technical Sessions
- General Two-Phase Flow
 - Communicating for New Nuclear Facilities—Panel
 - Communicating for Science—Paper/Panel
 - Aerospace Nuclear Science and Technology: General
 - The Nuclear New Build Supply Chain and Procurement Issues—Panel
 - Computational Tools for Radiation Protection and Shielding
 - Reactor Physics: General—I
 - Advanced Modeling and Simulation in Reactor Physics—I
 - Data Analysis in Nuclear Criticality Safety—I
 - Reactor Instrumentation and Neutron Beam Instrumentation for Research Reactors
 - Hybrid Energy: Combining Nuclear and Other Energy Sources
- 1:00 p.m.-4:00 p.m. 2013 ANS Annual Meeting Technical Sessions
- Thermal Hydraulics: General
 - Emerging Issues in Nuclear Facility Safety
 - Recent Developments with Nuclear Security and Safeguards
 - K-12 Outreach—I: Success Stories—Paper/Panel
 - K-12 Outreach—II: Southern Company Case Study—Panel
 - New Measurement Technologies for Current and Next-Generation Reactors
 - Young Blood: Integration and Retention of the Next Generation—Paper/Panel
 - Nuclear Materials
 - Reactor Physics Design, Validation, and Operating Experience—II
 - Advanced Modeling and Simulation in Reactor Physics—II
 - Transport and Computational Methods
 - Nuclear Chemistry and Radiochemistry
 - Fuel Cycle Simulators and Systems Analysis

TUESDAY, JUNE 18, 2013, 8:30 A.M.

General Two-Phase Flow,

sponsored by THD.

Cochairs: Yassin Hassan (*TAMU*) and Francesco D'Auria (*Univ of Pisa*)

Room: Baker

8:30 a.m.

A Model for a Spool Piece Made Up of Venturi and Void Fraction Flow Meter in Horizontal Flow, M. De Salve, G. Monni, B. Panella (*Politecnico di Torino-Italy*)

8:55 a.m.

Contact Angle Control Algorithm Development for Level Set Interface Tracking Method, Anand V. Mishra, Igor A. Bolotnov (*NCSU*)

9:20 a.m.

Two-Phase Heat Transfer Validation in Interface Tracking Code, Anton O. Pylypenko, Igor A. Bolotnov (*NCSU*)

9:45 a.m.

A Two-Phase Thermosyphon Experimental Facility for Fuels and Materials Irradiation, Joel L. McDuffee, David K. Felde, Larry J. Ott, Kevin R. Robb (*ORNL*)

10:10 a.m.

RELAP5 Model of a Two-Phase ThermoSyphon Experimental Facility for Fuels and Materials Irradiation, Juan J. Carbajo, Joel L. McDuffee (*ORNL*)

10:35 a.m.

Assessment of S-RELAP5 Ability to Predict Condensation in the Cold Leg, M. A. Cortes, C. K. Nithianandan (*AREVA*)

11:00 a.m.

Non-condensable Gas Effect on Steam Condensation in Single Horizontal Tube with Heat Transfer to Boiling Water, A. V. Morozov, O. V. Remizov, D. S. Kaliakin, A. S. Soshkina (*IPPE*)

Communicating for New Nuclear Facilities—Panel,

sponsored by ETWDD.

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

Room: Dunwoody

8:30 a.m.

Communications professionals from utilities and major suppliers involved in building new nuclear energy facilities will discuss the challenges they have faced, what they have learned about successful communications, and what they would do differently the next time. The PI Committee is inviting communications pros from Southern Nuclear, SCE&G, TVA, and Westinghouse.

PANELISTS:

- Todd Terrell (*Georgia Power*)
- Vaughn Gilbert (*Westinghouse*)
- Amy Lientz (*INL*)

Communicating for Science—Paper/Panel,

sponsored by ETWDD.

Session Organizer: Teri L. Ehresman (*INL*)

Chair: Laura Hermann (*Potomac Communications Group*)



Room: Dunwoody

PAPER

10:00 a.m.

Organizational Lessons Learned from the Space Shuttle Program, Kara A. Schmitt (*Florida Institute of Technology*)

PANEL DISCUSSION

10:25 a.m.

As government funding for science erodes, communicating about its importance and the necessity for stable funding sources is increasingly crucial. ANS members with experience in this arena along with communications professionals from national labs and independent science organizations will discuss the key issues, the approaches that have worked best and those that have not.

PANELISTS:

- Philippe M. Bardet (*George Washington Univ*)
- R. Craig Williamson (*South Carolina Universities Research and Education Foundation*)
- Shannon M. Bragg-Sitton (*INL*)
- Keith S. Bradley (*ANL*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:30 a.m.

Aerospace Nuclear Science and Technology: General,

sponsored by ANSTD.

Session Organizer: Martin Sattison (*INL*)

Chair: John Bess (*Battelle Energy Alliance*)

Room: Fairlie

8:30 a.m.

Experimental Demonstration of a Heat Pipe/Stirling Engine Nuclear Reactor, Patrick R. McClure, David E. Poston, David D. Dixon (*LANL*), Marc A. Gibson (*NASA*)

8:55 a.m.

Nuclear Batteries at Small and Large Scales Using Suitable Design Schemes, E. V. Steinfelds (*Western Kentucky Univ*), M. A. Prelas (*Univ of Missouri, Columbia*), Keith Andrew (*Western Kentucky Univ*)

The Nuclear New Build Supply Chain and Procurement Issues—Panel,

sponsored by OPD.

Session Organizer and Chair: Myron M. Kaczmarzsky (*CB&I Power*)

Room: Hanover A

8:30 a.m.

This session is an update on the development of the nuclear new build supply chain in the U.S. and globally. Procurement of nuclear quality plant material and components for nuclear new build projects is a challenge the industry is facing as new plant orders are placed globally. The particular challenges of vendor qualification for safety-related and nonsafety components, commercial-grade dedication programs, as well as the certification/inspection programs to prevent fraudulent and counterfeit materials, will be addressed.

This session will gather experts in the nuclear supply chain and investigate these challenges with supplier development and localization versus globalization of the supply chains for new plant builds.

PANELISTS:

- Richard Rasmussen (*NRC*)
- Robert Terry (*Westinghouse*)
- Ed Terres (*CB&I Power*)
- Carl Fisher (*AREVA, Inc*)
- Bill Linton (*Linton Consulting*)

Computational Tools for Radiation Protection and Shielding,

sponsored by RPSD.

Session Organizer: Peter F. Caracappa (*RPI*)

Chair: Michael Fensin (*LANL*)

Room: Hanover B

8:30 a.m.

Propagation of Uncertainty from a Source Computed with Monte Carlo, Douglas E. Peplow, Ahmad M. Ibrahim, Robert E. Grove (*ORNL*)

8:55 a.m.

Novel Hybrid Monte Carlo/Deterministic Technique for Shutdown Dose Rate Calculations, Ahmad M. Ibrahim, Douglas E. Peplow, Robert E. Grove (*ORNL*)

9:20 a.m.

MCNP Simulations of Background Particle Fluxes from Galactic Cosmic Rays, J. Palomares (*Stanford Univ*), G. W. McKinney (*LANL*)

9:45 a.m.

Computational Eye Model for Interventional Radiology Dosimetry and Multi-Scale Whole-Body Phantoms, Ashley M. Rhodes, Derek A. Fiedler, Peter F. Caracappa (*RPI*)

10:10 a.m.

An Improved C-12 Proton Capture Library for Emitting Correct Mono-Energetic Gamma Spectra, M. L. Fensin, G. W. McKinney (*LANL*)

10:35 a.m.

A Dose-Reconstruction Simulation of the 1999 Tokaimura Criticality Accident Using Motion Capture Data to Simulate Worker Posture, Justin Vazquez, Peter F. Caracappa, X. George Xu (*RPI*)

Reactor Physics: General—I,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Temitope A. Taiwo (*ANL*)

Room: Hanover C

8:30 a.m.

Pin-Level Reconstruction of Various Neutronic Quantities in Fast Reactors: Enhanced Physical Insight and Visualization Tools, Mark Reed (*MIT*), Nicholas Touran (*TerraPower*), Kord Smith, Benoit Forget (*MIT*)

8:55 a.m.

The Neutronics of a Burning-Breeding Nuclear System, S. Buccheri, S. Dulla, P. Ravetta (*Politecnico di Torino - Italy*)

9:20 a.m.

Application of an Annular Metallic Fuel With Lower Gas Plenum for Sodium-Cooled Fast Reactor, N. E. Stauff, T. K. Kim, D. Yuh, T. A. Taiwo, H. S. Khalil (*ANL*)



Advanced Modeling and Simulation in Reactor Physics—I,

sponsored by RPD.

Session Organizer: Ugur Mertuyurek (ORNL)

Chair: Yonghee Kim (KAIST)

Room: Hanover D

8:30 a.m.

Exploratory Development of Multi-Physics Reduced Order Modeling, Bassam A. Khuwailah, Hany S. Abdel-Khalik (NCSU)

8:55 a.m.

Advanced Neutronics Methods for Analysis of the RBWR-AC, Andrew Hall, Yunlin Xu, Andrew Ward, Thomas Downar (Univ of Michigan), Koroush Shirvan, Mujid Kazimi (MIT)

9:20 a.m.

Development and Applications of a Modern ORIGEN Code Architecture, Steven Skutnik (Univ of Tennessee), Frantisek Havluj (Nuclear Research Institute, Czech Republic), Daniel Lago (Georgia Tech), Ian Gauld (ORNL)

9:45 a.m.

Low-Order Approximations to the Angular Flux Time Derivative for Transport-Based Reactor Kinetics, Adam J. Hoffman, John C. Lee (Univ of Michigan)

10:10 a.m.

Anomaly Detection for High Fidelity Core Simulators, Neeti Pokhriyal, Ugur Mertuyurek, Andrew Godfrey, Jay Jay Billings (ORNL)

10:35 a.m.

AP1000 Calculation Using the Reactor Physics Codes in COSINE Project, Wang Changhui, Chen Yixue, Yu Hui, Liu Zhanquan (State Nuclear Power Software Development Center)

11:00 a.m.

Fission Products Profiles Measurements and Calculus in Gadolinium Doped Nuclear Fuel, Darío Pieck, Rémy Delorme, Julien Politello (CEA)

Data Analysis in Nuclear Criticality Safety—I,

sponsored by NCSU.

Session Organizer: Allison D. Miller (SNL)

Chair: Larry L. Wetzel (Babcock & Wilcox, NOG-L)

Room: Hanover E

8:30 a.m.

COG Preliminary Results for a SILENE Criticality Excursion Benchmark Experiment, Soon Kim, David Heinrichs, Rich Buck, Ed Lent, Chuck Lee (LLNL)

8:50 a.m.

K-25/K-27 Buildings Sodium Fluoride Trap Criticality Assessment, Roy Rathbun, Michael Crouse (URS Professional Solutions)

9:10 a.m.

Comparison Between the United States and United Kingdom Criticality Safety Personnel Training Program Guidance, Andrew R. Wysong (LLNL & UC Berkeley), David P. Heinrichs (LLNL), Nigel P. Tancock (Atomic Weapons Establishment)

9:30 a.m.

Use of Gadolinium as a Primary Criticality Control in Fuel Fabrication Process, Davoud A. Eghbali (GE-Hitachi Nuclear)

9:50 a.m.

Release of ENDF/B-VII.1-Based Continuous-Energy Neutron Cross-

Section Data Tables for MCNP, Jeremy Lloyd Conlin, Steven J. Gardiner, D. Kent Parsons, A. C. Kahler, M. Beth Lee, Morgan C. White (LANL)

10:10 a.m.

Roles of Information Technology in Nuclear Criticality Safety Training, S. Huang (LLNL), M. Lee (DOE), J. Morman (ANL), R. Goold, C. Lee, D. Heinrichs (LLNL)

10:30 a.m.

Criticality Safety and Non Destructive Assay 'A K-25 Love Story?', Roger W. Bartholomay (URS Professional Solutions), Brandon P. Rasmussen (Restoration Services Incorporated)

10:50 a.m.

Marrying Characterization Results and Burial Model Configuration Calculations, Roger W. Bartholomay, Roy W. Rathbun (URS-Professional Solutions)

Reactor Instrumentation and Neutron Beam Instrumentation for Research Reactors,

sponsored by IRD; cosponsored by BMD.

Session Organizer: Kenan Unlu (Penn State)

Chair: Lei Cao (Ohio State)

Room: Hanover F

8:30 a.m.

Measure Internal Conversion Electron Spectrum of Gadolinium Neutron Capture Using Neutron Beam, Lei R. Cao, Praneeth Kandlakunta (Ohio State)

8:55 a.m.

A Preliminary Study of ¹⁵⁷Gd Thermal Neutron Capture Cross Section with Activated Prompt Gamma Rays, Danyal Turkoglu, Lei R. Cao (Ohio State)

9:20 a.m.

Temperature Controlled Cryostat for Electrical and Optical Reactor Irradiation Experiments, Benjamin Reinke, Timothy Garcia, Thomas Wood, Chris Petrie, Ashutosh Kumar, Thomas Blue, Wolfgang Windl (Ohio State)

9:45 a.m.

Estimated Critical Position (ECP) Calculator for the MITR-II, S. M. Don, L. Hu, T. Newton (MIT)

10:10 a.m.

Modeling and Exposure of LiMnO₂ Batteries to Reactor Neutrons, Keith E. Holbert, Tyler Stannard, Anthony Christie, Taipeng Zhang (Arizona State Univ), Erik B. Johnson (Radiation Monitoring Devices Inc)

Hybrid Energy: Combining Nuclear and Other Energy Sources,

sponsored by FCWMD.

Session Organizer and Chair: Charles W. Forsberg (MIT)

Room: Hanover G

8:30 a.m.

Coupling Hybrid Energy Systems and Salt-Cooled Reactors with Nuclear Air-Brayton Combined Cycles (NACC), Charles Forsberg (MIT)

8:55 a.m.

Light-Water-Reactor Arrays for Production of Shale Oil and Variable Electricity, Daniel Curtis, Charles Forsberg (MIT)

9:20 a.m.

Energy Storage: Improving Fast Reactor Economics, Cal Abel, Bojan Petrovic (Georgia Tech)



TUESDAY, JUNE 18, 2013, 1:00 P.M.

Thermal Hydraulics: General,

sponsored by THD.

Chair: Sama Bilbao y Leon (*VCU*)

Room: Baker

1:00 p.m.

A Model to Predict Critical Flow Velocity for a Flat Laminate Plate, P. Jensen, W. R. Marcum (*Oregon State Univ*)

1:25 p.m.

Impact of Thermal-Hydraulic Fidelity on the Prediction of Crud Deposition on PWR Fuel Rods, Christian Bolesch, Dan Walter, Annalisa Manera, Victor Petrov (*Univ of Michigan*), Brian Kendrick (*LANL*)

1:50 p.m.

Pulsating Turbulent Penetration in T-Junction Mixing Experiments, J. Kickhofel, H.-M. Prasser (*ETH Zürich*)

2:15 p.m.

Computational Fluid Dynamic Modeling via COMSOL of Isoflux Vertical Parallel Plates, Lucas Kyriazidis, John R. White (*Univ of Massachusetts-Lowell*)

2:40 p.m.

Simulation of Flow-Induced Vibration on a Multi-Plate Experiment in Water, W. F. Jones, S. D. Snow (*INL*), W. R. Marcum, T. Howard (*Oregon State Univ*)

3:05 p.m.

Simulator Platform Integrated Uncertainty Quantification and Sensitivity Analysis Software Tool, H. Luo, D. Burgess, A. Lamaherach, Z. Wang (*GSE Systems Inc.*), Q. Wu (*Oregon State Univ*)

3:30 p.m.

Design of Apparatus for Validation Experiments, Jeff Harris, Blake Lance, Barton Smith (*Utah State Univ*)

3:55 p.m.

The Effect of Vertical Oscillation on Density Lock, Shengfei Wang (*North China Electric Power Univ*), C. Q. Yan (*Harbin Engineering Univ*), Y. Yu, F. L. Niu (*North China Electric Power Univ*)

4:30 p.m.

Technical Achievement Awards Lecture: Nuclear Fuel Assembly Thermal Hydraulics Analysis—Past, Present, and Future, Hisashi Ninokata (*Politecnico di Milano*)

Emerging Issues in Nuclear Facility Safety,

sponsored by NISD.

Session Organizer and Chair: Matthew R. Denman (*SNL*)

Room: Courtland

1:00 p.m.

The Societal Risk of Severe Accidents in Nuclear Power Plants, Richard Denning, Sean McGhee (*Ohio State*)

1:25 p.m.

A Risk Limit Curve Approach to Extending the Design Basis, Richard Denning, Ji Hyun Lee, David Grabaskas, Tunc Aldemir (*Ohio State*)

1:50 p.m.

Safety Analysis on AP1000 Containment Cooling System Response Under LBLOCA Conditions, Zhen-Yu Hung, Yuh-Ming Ferng, Bau-Shei Pei (*National Tsing Hua Univ*)

2:15 p.m.

RAVEN: A GUI and an Artificial Intelligence Engine in a Dynamic PRA Framework, C. Rabiti, D. Mandelli, A. Alfonsi, J. Cogliati, R. Kinoshita, D. Gaston, R. Martineau, C. Smith (*INL*)

Recent Developments with Nuclear Security and Safeguards,

sponsored by NNTG; cosponsored by ETWDD.

Session Organizer: Larry R. Foulke (*Univ of Pittsburgh*)

Chair: Craig Williamson (*SCUREF*)

Room: Courtland

2:45 p.m.

Risk-Informed Analysis Applied to Small Modular Reactor Security, Benjamin B. Cipiti, Gregory D. Wyss, Felicia A. Durán (*SNL*)

3:10 p.m.

Detection and Positioning of Radioisotopes Using a Four-Detector Response Algorithm, Michael Willis, Steve Skutnik, Howard Hall (*Univ of Tennessee*)

3:35 p.m.

Iterative Method for Determining Isotopic Composition of Nuclear Fuel Using Irradiation at Multiple Neutron Spectra, Jason M. Lewis, Dominik Raetz, Kelly Jordan (*Univ of Florida*)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

K-12 Outreach—I: Success Stories—Paper/Panel,

sponsored by ETWDD.

Session Organizer: Elizabeth L. McAndrew-Benavides (*NEI*)

Chair: Richard D. Holman (*INL*)

Room: Dunwoody

PAPER

1:00 p.m.

Lessons Learned from High School Outreach Efforts, Nathan L. Zohner, Mark White (*INPO NA-YGN*)

PANEL DISCUSSION

1:25 p.m.

PANELISTS:

- STEMersion: Collaborative Approach to K-12 Outreach in Charlotte N.C., Debbie Hager (*Duke Energy*)
- Pre-College Engagement at NC State University, Lisa Marshall (*NCSU*)
- NAYGN's Nuke 101, Stephen Harris (*Savannah River*)

K-12 Outreach—II: Southern Company Case Study—Panel,

sponsored by ETWDD.

Session Organizer: Elizabeth L. McAndrew-Benavides (*NEI*)

Chair: Richard D. Holman (*INL*)

Room: Dunwoody

2:30 p.m.

The Southern Company team will discuss the following topics: developing an outreach strategy; collaborating over multiple business units for results; and executing education and industry partnerships including energy education, Nuclear and Georgia Power Energy Academy Summer Camps, Jenkins High School Engineering Academy, SkillsUSA, High School Students for Success in the Nuclear Uniform Curriculum Program with a Nuclear Boot Camp, participating in a Statewide Energy Career Cluster, and linking K-12 to college, training, and jobs.



PANELISTS:

- Andrew Bouldin (*Southern Company*)
- Debra Howell (*Georgia Power Co.*)
- Nora Swanson (*Southern Nuclear*)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

New Measurement Technologies for Current and Next-Generation Reactors,

sponsored by HFICD.

Session Organizer and Chair: Hashem M. Hashemian (*Analysis & Measurement Services Corp.*)

Room: Fairlie

1:00 p.m.

Modeling and Dynamic Simulation of an Integral Pressurized Water Reactor, B. R. Upadhyaya, P. Collins, M. R. Lish, J. W. Hines (*Univ of Tennessee*), C. Mitra (*Analysis & Measurement Services Corporation*)

1:25 p.m.

Online Monitoring in Research Reactors - Safe and Effective, M. E. Walz (*INL*), R. D. O'Hagan, M. S. Pruitt, H. M. Hashemian (*AMS*)

1:50 p.m.

Gas Impurity Monitoring in Advanced Small Modular Reactors, Norm C. Anheier, Jonathan D. Suter, H. Amy Qiao (*PNNL*)

2:15 p.m.

Wide Range Counting System Digital Upgrade at the High Flux Isotope Reactor, Kevin L. Shaw (*ORNL*)

2:40 p.m.

Monitoring Tank Levels in Nuclear Reactor Containment, W. S. Johnson, C. J. Kiger, H. M. Hashemian (*AMS*)

Young Blood: Integration and Retention of the Next Generation—Paper/ Panel,

sponsored by OPD.

Session Organizer and Chair: Gale Hauck (*Westinghouse*)

Room: Hanover A

1:00 p.m.

PAPER

Developing and Retaining Next Generation Leaders: Research and Field Work with First-Line Supervisors and Military Recruits, Mary Jo Rogers (*Strategic Talent Solutions*)

PANEL DISCUSSION

1:30 p.m.

The nuclear power industry has changed significantly over the last decade in many ways. One of the challenges facing the industry is the fact that few new employees stay with the same job or even with the same company over their entire career. This session will discuss how different facets of the nuclear industry are focusing on recruiting and retaining employees. Of particular interest is the “next generation” —young employees and new college graduates. The changing demands of these employees have created new challenges for employers. Companies have a tremendous opportunity to make adjustments in order to leverage the enthusiasm and energy of the young generation in nuclear.

PANELISTS:

- Kati Austgen (*NEI*)
- Harsh Desai (*KAPL*)

- Joe McGuinness (*FPL*)
- Pete Shaw (*Westinghouse*)
- Rachel Slaybaugh (*Bettis*)
- Nicolas Stauff (*ANL*)
- Art Wharton (*Westinghouse*)

Nuclear Materials,

sponsored by MSTD.

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Jacob Eapen (*NCSU*)

Room: Hanover B

1:00 p.m.

Computational Study of the Effect of Helium Point Defects on the Peak Tensile Strength of Tungsten Nanostructures, You Sung Han, Vikas Tomar (*Purdue Univ*)

1:20 p.m.

A Study of Initial Hydrogen Uptake in Zr-Based Cladding Alloys, Shreyas Rajasekhara, David G. Enos, Barney L. Doyle, Blythe G. Clark (*SNL*)

1:40 p.m.

Graphite Compressive Creep Capsule Design for Irradiation in the HFIR, R. H. Howard (*ORNL*), J. L. McDuffee (*UT-Battelle*), Y. Katoh (*ORNL*)

2:00 p.m.

Local Amorphization and Dislocation Interactions at Low Neutron Flux in NBG-18 Graphite, Ram Krishna, Jacob Eapen (*NCSU*), T. D. Burchell (*ORNL*), K. L. Murty (*NCSU*)

2:20 p.m.

Irradiation Response of Boron Nitride Nanotubes Using Molecular Dynamics Simulations, William Lowe, Jacob Eapen (*NCSU*)

2:40 p.m.

Bi-metallic Composites to Raise Peak Temperatures of the Fluoride-Salt-Cooled High-Temperature Reactor (FHR), M. P. Short, R. G. Ballinger, C. Forsberg (*MIT*)

3:00 p.m.

On the Relationship Between Dynamic Solubility, Multi-Atom Bubble Nucleation, Irradiation-Induced Re-Resolution, and the Bubble Size Distribution in Xe Implanted Mo, Jeff Rest, Di Yun, Bei Ye, Zeke Insepov (*ANL*)

3:20 p.m.

Forecasting Performance of Constructional Materials Synthesized in Multi-component Plasma Conditions, A. I. Ksenofontov, E. I. Kurbatova (*National Research Nuclear University*), J. L. Regens (*Univ of Oklahoma*)

Reactor Physics Design, Validation, and Operating Experience—II,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Andrei Rineiski (*KIT*)

Room: Hanover C

1:00 p.m.

Hot Zero and Full Power Validation of PHISICS RELAP-5 Coupling, F. Lodi (*Univ of Bologna*), C. Rabiti, A. Alfonsi, A. Epiney (*INL*), M. Sumini (*Univ of Bologna*)

1:25 p.m.

A Novel Utilization of Er Burnable Absorber for Improvement of CANDU Safety Parameters, Woosong Kim, Yonghee Kim (*KAIST*)



1:50 p.m.

Optimizing PWR Low Leakage Cores with Genetic Algorithms and Other Techniques, S. Levine, T. Blyth, K. Ivanov (*Penn State*)

2:15 p.m.

Feasibility Study on AO Biasing with Axial Albedo Correction for Westinghouse Type 2-Loop Nuclear Power Plant, S. B. Son, D. I. Chang, J. G. Lee, H. S. Woo, C. S. Cho (*KEPCO Nuclear Fuel Co.*)

2:40 p.m.

Pulse Superimposition Calculation Methodology for Rossi- α Distribution Using MCNP6, A. Talamo, Y. Gohar (*ANL*), S. Sadovich, H. Kiyavitskaya, V. Bournos, Y. Fokov, C. Routkovskaya (*Joint Inst for Power and Nuclear Research-SOSNY*)

3:05 p.m.

Power Flattening Study for Ultra-Long Cycle Fast Reactor UCFR-1000, Taewoo Tak, Hyunsuk Lee, Sooyoung Choi, Deokjung Lee (*UNIST*)

Advanced Modeling and Simulation in Reactor Physics—II,

sponsored by RPD.

Session Organizer: Ugur Mertyurek (*ORNL*)

Chair: Akio Yamamoto (*Nagoya Univ*)

Room: Hanover D

1:00 p.m.

Verification of MPACT: Michigan Parallel Characteristics Transport Code, Benjamin Collins, Brendan Kochunas, Daniel Jabaay, Thomas Downar, William Martin (*Univ of Michigan*)

1:25 p.m.

Neutronics Analysis of the High Temperature Engineering Test Reactor (HTTR), HeeHo Park, Thomas Saller, Volkan Seker, Thomas J. Downar (*Univ of Michigan*)

1:50 p.m.

Rapid Light Water Reactor Modeling for MCNP and Associated Boiling Water Reactor Library, Noah A. Fischer, Holly R. Trellue, Jack Galloway (*LANL*)

2:15 p.m.

Full Core Burnup Calculations with MonteBurns Version 3.0, Jack D. Galloway, Holly R. Trellue (*LANL*)

2:40 p.m.

Optimization of Objective Functions and Constraints for the LP Optimization Code, McFLOP, Youn Duk Nam, Hae Chan Lee (*KEPCO Nuclear Fuel Co.*), Tong Kyu Park (*Seoul Natl Univ–Korea*)

3:05 p.m.

Irradiation of U-Zr Samples in the High Flux Isotope Reactor: Reactor Physics and Isotopics Calculations, Ronald J. Ellis (*ORNL*)

3:30 p.m.

Sensitivity of Thorium-Fueled Reduced Moderation BWR Performance to Void Fraction Correlation, Christopher R. Varela, Jeffrey Seifried, Jasmina Vujic, Ehud Greenspan (*Univ of California, Berkeley*)

Transport and Computational Methods,

sponsored by MCD.

Session Organizer: Brian C. Franke (*SNL*)

Chair: Douglas E. Peplow (*ORNL*)

Room: Hanover E

1:00 p.m.

Implementation of the Doppler Broadening Rejection Correction in KENO,

Shane W. D. Hart, G. Ivan Maldonado (*Univ of Tennessee*), Sedat Goluoglu (*Univ of Florida*), Brad Rearden (*ORNL*)

1:25 p.m.

Hybrid Method of MOC and MC for Efficient Continuous Energy Neutron Transport Analysis, Hyunsuk Lee, Chidong Kong, Sooyoung Choi, Taewoo Tak, Deokjung Lee (*Ulsan Natl Inst Sci Tech*)

1:50 p.m.

Reduction of Azimuthal Angle Discretization Error in Method of Characteristics by Using Gaussian Quadrature Set, Hyun Chul Lee, Jin Young Cho, Jae Man Noh (*KAERI–Korea*)

2:15 p.m.

An Update of ARCHER, a Monte Carlo Radiation Transport Software Testbed for Emerging Hardware Such as GPUs, X. George Xu, Tianyu Liu, Lin Su, Xining Du, Matt Riblett, Wei Ji (RPI), Forrest B. Brown (*LANL*)

2:40 p.m.

Multi-Level Iteration Optimization for the Variational Nodal Method with Multi-Group GMRES Algorithm, Yunzhao Li (*Xi'an Jiaotong Univ*), E. E. Lewis (*Northwestern Univ*), Micheal A. Smith (*ANL*)

Nuclear Chemistry and Radiochemistry,

sponsored by IRD; cosponsored by BMD.

Session Organizer: Kenan Unlu (*Penn State*)

Chair: Amanda M. Johnsen (*Penn State*)

Room: Hanover F

1:00 p.m.

Analysis and Characterization of a Californium 252 Sample, Derek Schanze (*Univ of Florida*), Donna Beals, Mike Bronikowski (*SRNL*), Kelly A. Jordan (*Univ of Florida*)

1:25 p.m.

Curriculum Development for the Chemistry of the Nuclear Fuel Cycle at the Pennsylvania State University, A. M. Johnsen, K. Ünlü (*Penn State*)

1:50 p.m.

Radiochemistry Education and Research Programs at the Pennsylvania State University, A. M. Johnsen, K. Ünlü (*Penn State*)

2:15 p.m.

Used Fuel Characterization with the Multi-Isotope Process Monitor, Jamie Coble, Chris Orton, Jon Schwantes (*PNNL*)

Fuel Cycle Simulators and Systems Analysis,

sponsored by FCWMD.

Session Organizer: Paul P. Wilson (*Univ of Wisconsin, Madison*)

Chair: Erich Schneider (*Univ of Texas*)

Room: Hanover G

1:00 p.m.

Dynamic Determination of Thermal Repository Capacity for Fuel Cycle Analysis, Kathryn D. Huff (*Univ of Wisconsin, Madison*), Alexander T. Bara (*Univ of Illinois*)

1:25 p.m.

Developing Standardized, Open Benchmarks and a Corresponding Specification Language for the Simulation of Dynamic Fuel Cycles, Matthew Gidden (*Univ of Wisconsin, Madison*), Anthony Scopatz (*Univ of Chicago*), Paul Wilson (*Univ of Wisconsin, Madison*)

1:50 p.m.

Nuclear Fuel Cycle Analysis and Optimization with the Code for Advanced Fuel Cycles Assessment (CAFCA), Samuel Brinton (MIT), Stefano Passerini (ANL), Mujid Kazimi (MIT)

2:15 p.m.

Nuclear Resources Utilization in Full Recycling Nuclear Fuel Cycle with Limited Separation Capacity, Abiodun Adeniyi, Bojan Petrovic (Georgia Tech)

Wednesday, June 19, 2013

7:30 a.m.-5:00 p.m.	Meeting Registration
8:00 a.m.-10:00 a.m.	Spouse/Guest Hospitality
8:30 a.m.-11:30 a.m.	2013 ANS Annual Meeting Technical Sessions <ul style="list-style-type: none"> • Thermal Hydraulics in Severe Accidents • Commercial-Grade Dedication of Real-Time Software—Paper/Panel • Training, Human Performance, and Workforce Development • Special Session on Human Factors Engineering in Memory of Dr. Julius J. Persensky: Over 40 Years of Dedicated Service in the Field of Human Factors and Behavioral Science Technologies • New Nuclear Construction Around the World—Status Report—Panel • Space Radiation Shielding Methods and Applications • Radiation Protection and Shielding: General • Student Research in Reactor Physics—I • Reactor Analysis Methods—I • Data Analysis in Nuclear Criticality Safety—II • Isotopes and Radiation: General • Biology and Medicine: General • Fuel Cycle and Waste Management: General—I
1:00 p.m.-4:00 p.m.	2013 ANS Annual Meeting Technical Sessions <ul style="list-style-type: none"> • Computational Thermal Hydraulics—II • Commercial-Grade Dedication of Non-RealTime Software—Panel • Education, Training, and Workforce Development: General • Advances in Diagnostic and Prognostic Technologies • Advanced/Gen-IV Reactors • Nuclear Fuels • Student Research in Reactor Physics—II • Reactor Physics: General—II • Mathematical Modeling, Uncertainty Quantification, and Sensitivity Analysis Methods • New Horizons in Medical Health Physics • Fuel Cycle and Waste Management: General—II
7:00 p.m.	Dinner at Agatha's A Taste of Mystery

WEDNESDAY, JUNE 19, 2013, 8:30 A.M.

Thermal Hydraulics in Severe Accidents,

sponsored by THD.

Chair: Fan-Bill Cheung (Penn State)

Room: Baker

8:30 a.m.

PWR Ex-Vessel Steam Explosion Analysis in 3-D, Matjaž Leskovar (Jozef Stefan Inst)

8:55 a.m.

Study of Degas Influence for CHF Extended with Downward-Facing Boiling, Huai-En Hsieh, Yuh-Ming Ferng, Mei-Shiue Chen, Bau-Shi Pei (Natl Tsing Hua Univ)

9:20 a.m.

Analysis of Waterhammer in RVHVS for Chinese Improved PWR, Ge Shao, Lili Tong, Xuewu Cao (Shanghai Jiaotong Univ)

9:45 a.m.

Analysis on Containment Venting under Severe Accident for AP1000, Kai Yuan (Shanghai Jiao Tong Univ-China), Lili Tong, Xuewu Cao (Shanghai Jiao Tong Univ)

Commercial-Grade Dedication of Real-Time Software—Paper/Panel,

sponsored by NISD.

Session Organizer and Chair: Charles R. (Chip) Martin (DNFSB)

Room: Courtland

PAPER

8:30 a.m.

Critical Characteristics for Software Commercial Grade Dedication of Safety Instrumentation & Control (I&C) Systems, Warren R. Odess-Gillett (Westinghouse)

PANEL DISCUSSION

9:00 a.m.

Commercial-grade dedication (CGD) process for software not developed under an acceptable SQA development program. Generally this requires preparation of a CGD review plan; determination of program requirements; review of program design, review of source code, program integration, and documentation; review of program testing; review of test results-validation; and preparation of the CGD review report. This session will explore experiences with such a process for digital safety-related instrumentation and control systems.

PANELISTS:

- Rossnayev Alvarado (NRC)
- Keith Morrell (SRS)
- Warren R. Odess-Gillett (Westinghouse)
- Eva Freund (The IV&V Group, Inc.)
- David Herrell (MPR Assoc)
- Charles R. (Chip) Martin (DNFSB)

Training, Human Performance, and Workforce Development,

sponsored by ETWDD.

Session Organizer: John S. Bennion (GE-Hitachi Nuclear)

Chair: Richard D. Holman (INL)

Room: Dunwoody

8:30 a.m.

Recruiting Women Today and Tomorrow Through Education, Jane LeClair, Adrian Skinner, Samantha Henrikson (Excelsior Coll)

**8:55 a.m.**

Designing, Developing and Implementing High Quality Nuclear Workforce Educational Programs, Gemma K. Frock, J. David Deal (*Aiken Technical College*)

9:20 a.m.

Exelon's Approach to Improving Operator Fundamental Performance, Gregg W. Ludlam (*Exelon*)

9:45 a.m.

Design Basis Retrievability, Erica Love-White (*Southern Nuclear Corporation*), Jerry Voss, Charles DeDeaux (*EXCEL Services Corporation*)

10:10 a.m.

Maturity of a Nuclear-Related Knowledge Management Solution, Matt Kelley, Millie Sass (*Westinghouse*), Brian Moon (*Perigean Technologies*)

Special Session on Human Factors Engineering in Memory of Dr. Julius J. Persensky: Over 40 Years of Dedicated Service in the Field of Human Factors and Behavioral Science Technologies

sponsored by HFICD.

Session Organizer: Hashem M. Hashemian (*Analysis & Measurement Services Corp.*)

Co-chairs: Joseph A. Naser (*EPRI*) and David Desaulniers (*NRC*)

Room: Fairlie

8:30 a.m.

Hybrid Alarm Systems: The Rest of the Story, J. J. Perensky, R. L. Boring (*INL*), D. Desaulniers (*NRC*)

8:55 a.m.

Decommissioning Engineering Using Mixed Reality: Lessons Learned and Future Plans, Chih-Wei Yang, Li-Chen Yang, I-Hsin Chou, Tsung-Chieh Cheng, Chien-Liang Shih (*INER*)

9:20 a.m.

Human Error Probabilities According to Human Error Modes in Advanced MCRs when Using Soft Control, Inseok Jang, Poong Hyun Seong (*KAIST*)

9:45 a.m.

Application of the AUTOS Model in NPP Control Rooms, Kara A. Schmitt (*Florida Inst of Technol*)

10:10 a.m.

The Effect of Automation Features on Operating Performance, Tsung-Ling Hsieh, Chih-Wei Yang (*Institute of Nuclear Energy Research, R.O.C.*), Tsung-Chieh Cheng (*INER*), Hui-Wen Huang (*Institute of Nuclear Energy Research, R.O.C.*)

New Nuclear Construction Around the World—Status Report—Panel,

sponsored by OPD.

Session Organizer and Chair: Edward L. Quinn (*Technology Resources*)

Room: Hanover A

8:30 a.m.

This session will focus on the latest status and developments in new reactor construction in the U.S. and around the world. Speakers from government, regulator, and industry backgrounds will address the growth and challenges from their perspectives and what to expect in new developments in the coming years.

PANELISTS:

- David Matthews (*NRC*)
- Doug Walters (*NEI*)
- Zheng Mingguang (*SNERDI*)
- Shenjie Gu (*SNERDI*)

Space Radiation Shielding Methods and Applications,

sponsored by RPSD.

Session Organizer and Chair: Lawrence W. Townsend (*Univ of Tennessee*)

Room: Hanover B

8:30 a.m.

Comparison of FLUKA Lookup Tables to Existing CRaTER Instrument Models, J. M. Brittingham, J. A. Porter, L. W. Townsend (*Univ of Tennessee*)

8:50 a.m.

Neutron Interaction Cross Section Processing for Space Radiation Transport, Thomas Harrison, Lawrence Townsend (*Univ of Tennessee*)

9:10 a.m.

Dose Estimates for Polar Flight Crews due to Extreme Solar Particle Events, Wouter C. de Wet, Lawrence W. Townsend, Claire Fage (*Univ of Tennessee*)

9:30 a.m.

Comparisons of Extreme Solar Particle Event Dose Estimates on Mars to New NASA Career Limits, Lawrence W. Townsend, Jamie A. Porter, Jeremy P. Townsend (*Univ of Tennessee*)

Radiation Protection and Shielding: General,

sponsored by RPSD.

Session Organizer and Chair: Peter F. Caracappa (*RPI*)

Room: Hanover B

9:55 a.m.

Efficient Passive Gamma Detector Modeling of Spent Fuel with MCNP, Noah A. Fischer, John S. Hendricks, Jack D. Galloway, Holly R. Trelue, Michael L. Fensin (*LANL*)

10:15 a.m.

Simulated Energy Deposition in Thin Polymeric Films, Matthew J. Urffer, A. Mabe, L. F. Miller (*Univ of Tennessee*)

10:35 a.m.

Impacts of the Adoption of ICRP-103: A Reactor Study, Ashley M. Rhodes, Justin A. Vazquez, Yiming Gao, Peter F. Caracappa, X. George Xu (*RPI*)

10:55 a.m.

Experiments Supporting the Development of Mo-99 Production Technologies Without HEU, C. T. Kelsey IV, G. E. Dale, K. A. Woloshun, E. R. Olivas, M. Mocko, I. May, M. A. Holloway, K. P. Hurtle, F. P. Romero, D. A. Dalmás (*LANL*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:30 a.m.

Student Research in Reactor Physics—I

sponsored by RPD.

Session Organizer: Mark D. DeHart (*INL*)

Chair: John D. Bess (*Battelle Energy Alliance*)

Room: Hanover C

8:30 a.m.

The Calculation of Fuel Bowing Reactivity Coefficients in a Subcritical Fast Burner Reactor, A. T. Bopp, W. M. Stacey (*Georgia Tech*)

**8:55 a.m.**

A Subcritical Advanced Breeder Reactor with a Tokamak Fusion Neutron Source, Christopher L. Stewart, Weston M. Stacey (*Georgia Tech*)

9:20 a.m.

Core Physics Parametric Studies for Liquid Salt Cooled Reactors, Cole Gentry, Nathan George, Ondrej Chvala, G. Ivan Maldonado (*Univ of Tennessee*), Spenser Lewis, Pietro Avigni, Bojan Petrovic (*Georgia Tech*)

Reactor Analysis Methods—I,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Deokjung Lee (*UNIST*)

Room: Hanover D

8:30 a.m.

Exact-to-Precision Generalized Perturbation Theory: Analytical Analysis, Congjian Wang, Hany S. Abdel-Khalik (*NCSU*)

8:55 a.m.

Coupling of RELAP-7 with the Three-Dimensional Kinetics Code RattleSnake, Hongbin Zhang, Yaqi Wang, Ling Zou, David Andrs, Haihua Zhao, Richard Martineau (*INL*)

9:20 a.m.

Development of Active Interrogation for Monitoring Special-Nuclear-Materials (AIMS) Hybrid Tool, K. Royston, W. Walters, A. Haghghat (*Virginia Tech*), C. Yi, G. Sjoden (*Georgia Tech*)

9:45 a.m.

Improvement and Validation of a Nodal-SP3 Code for Whole Core Pin-by-Pin Calculation, Liangzhi Cao, Wen Yang, Yunzhao Li, Hongchun Wu, Youqi Zheng (*Xi'an Jiaotong Univ*)

10:10 a.m.

Three Dimensional Nuclear Analysis System DeCART/CHORUS/MASTER, Jin Young Cho, Jae Seung Song, Kyung Hoon Lee (*KAERI-Korea*)

Data Analysis in Nuclear Criticality Safety—II,

sponsored by NCSD.

Session Organizer: Allison D. Miller (*SNL*)

Chair: Jerry E. Hicks (*DOE NNSA*)

Room: Hanover E

8:30 a.m.

Adjoint Sensitivity Analysis in a Large-Scale Subcritical Plutonium Benchmark, Richard T. Evans (*NCSU*), Jun Li (*Univ of North Carolina*), John Mattingly (*NCSU*)

8:55 a.m.

SNAP-3 Response Function and Its Application, Jun Li (*Univ of North Carolina*), John Mattingly (*NCSU*)

9:20 a.m.

²³⁵U Resolved Resonance Evaluation for Benchmark Calculations in the Intermediate Energy Region, L. C. Leal (*ORNL*), Y. Danon, D. Williams (*RPI*), M. Jandel (*LANL*)

9:45 a.m.

Corrected User Guidance to Perform Three-Dimensional Criticality Accident Alarm System Modeling with SCALE, Thomas M. Miller, Douglas E. Peplow (*ORNL*)

10:10 a.m.

Preliminary Covariance Data Representation for the “A Compact ENDF” File, Brian C. Kiedrowski, Albert C. Kahler, D. Kent Parsons (*LANL*)

10:35 a.m.

MCNP Simulations in Support of the Heat Pipe in Flat-Top Experiment, Rene Sanchez, David Hayes, John Bounds, Joetta Goda, Travis Grove, William Myers (*LANL*)

11:00 a.m.

Variations in Computed Neutron Multiplication of Deuterium Moderated Highly Enriched Uranium Systems, R. G. Taylor, D. F. Hollenbach (*Spectra Tech Inc.*)

Isotopes and Radiation: General,

sponsored by IRD.

Session Organizer: Kenan Unlu (*Penn State*)

Chair: Amanda M. Johnsen (*Penn State*)

Room: Hanover F

8:30 a.m.

Closeout of the Cf-252 Loan/Lease Program, Steven R. Sherman, Bradley D. Patton (*ORNL*)

8:55 a.m.

Study on Pulse-Power Charged All-Solid-State Battery for Radioisotope Battery, Seok Hee Lee (*Yonsei Univ*), Seung Hyun Jee, Young-Soo Yoon (*Gachon Univ*)

9:20 a.m.

Safety Analysis of Accurate Therapy System Based on PSA Method, Wenyi Li, Ruifen Cao, Xi Pei, Yican Wu (*Chinese Academy of Science*)

9:45 a.m.

Calibration of Photon Detectors for 14-MeV Neutron Analysis, Alexander Barzilov (*UNLV*), Phillip Womble (*Western Kentucky Univ*)

Biology and Medicine: General,

sponsored by BMD.

Session Organizer and Chair: Rolf L. Zeisler (*NIST*)

Room: Hanover F

10:15 a.m.

An Update of the Development and Clinical Testing of Virtual-Dose Software Used for Reporting CT Doses, Aiping Ding, Yiming Gao, Peter F. Caracappa, X. George Xu (*RPI*)

10:40 a.m.

Radiation Therapy Method Using a Short Lived Beta-Decay Source, Robert O'Brien, William Culbreth (*UNLV*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:30 a.m.

Fuel Cycle and Waste Management: General—I,

sponsored by FCWMD.

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

Chair: Jinsuo Zhang (*Ohio State*)

Room: Hanover G

8:30 a.m.

Three-Way Catalysts for Managing Off-Gas from Thermal Treatment of High-Nitrate Wastes, Ki Song, Adam Foster (*Studsвик, Inc*)

8:55 a.m.

Non-Destructive Assay of Plutonium and Uranium with the RPI LSDS, A. Weltz, B. Becker, J. A. Kulisek, N. Thompson, Y. Danon (*RPI*)



9:20 a.m.

Preliminary CFD Analysis of High-Thermal Capacity Dry Storage Systems, Corey E. Clifford, Mark L. Kimber, John D. Metzger (*Univ of Pittsburgh*)

9:45 a.m.

Salt Formations, a Safe Place for Transuranic Waste Disposal, J. F. Lucchini, M. Borkowski, J. Swanson, D. Cleveland, M. K. Richmann, D. T. Reed (*LANL*)

10:10 a.m.

Alteration Study of Sodium Borosilicate Glass Under Hydrothermal-Like Conditions, Nishi Rani, J. P. Shrivastava (*Univ of Delhi Delhi*), R. K. Bajpai (*BARC, Mumbai*)

WEDNESDAY, JUNE 19, 2013, 1:00 P.M.

Computational Thermal Hydraulics—II,

sponsored by THD.

Cochairs: David L. Aumiller (*BAPL*), Igor A. Bolotnov (*NCSU*)

Room: Baker

1:00 p.m.

The Effects of Pin Conduction in CFD Simulations of SFR Pin-Bundles, Rui Hu (*ANL*)

1:25 p.m.

A Study of Grout Flow Pattern Analysis, S. Y. Lee (*SRNL*), S. Hyun (*Mercer Univ*)

1:50 p.m.

Computational Fluid Dynamics Simulation of Vortex Shedding Between Inline Plates, T. K. Howard, W. R. Marcum (*Oregon State Univ*), W. F. Jones (*INL*)

2:15 p.m.

Single-Channel Thermal Analysis of Prismatic Block Type VHTR Compact Fuel via Two-Temperature Homogenized Model, Yoonhee Lee, Woosong Kim, Bumhee Cho, Nam Zin Cho (*KAIST*)

2:40 p.m.

CFD Modeling of a Coolant Channel for Missouri S&T Reactor, S. Sipaun (*Missouri Univ Sci Tech*), K. O'Bryant, M. Yousaf (*Univ of Missouri/Rolla*), C. Yigit (*Univ of Sakarya*), C. H. Castano, A. Alajo, S. Usman (*Missouri Univ Sci Tech*)

3:05 p.m.

Velocity Profile Under Natural Convection Between Two Parallel Plates, M. Yousaf, S. Sipaun (*Missouri Univ Sci Tech*), C. Yigit (*Univ of Sakarya*), S. Usman (*Missouri Univ Sci Tech*)

Commercial-Grade Dedication of Non-Real-Time Software—Panel,

sponsored by NISD.

Session Organizer and Chair: Charles R. Martin (*DNFSB*)

Room: Courtland

1:00 p.m.

Commercial-grade dedication (CGD) process for software not developed under an acceptable SQA development program. Generally this requires preparation of a CGD review plan; determination of program requirements; review of program design, review of source code, program integration, and documentation; review of program testing; review of test results-validation; and preparation of the CGD review report. This session will explore experiences with such a process for safety-related design and analysis software.

PANELISTS:

- Norman P. Moreau (*Theseus Professional Services, LLC*)
- Kevin Ake (*The Shelby Group*)
- William J. Bryan (*ANSYS, Inc.*)
- Emilio Baglietto (*MIT*)
- Kathleen A. Byle (*Intergraph*)
- Byron R. Frank (*Westinghouse*)

Education, Training, and Workforce Development: General,

sponsored by ETWDD.

Session Organizer: John S. Bennion (*GE-Hitachi Nuclear*)

Chair: H. L. Dodds (*Univ of Tennessee*)

Room: Dunwoody

1:00 p.m.

Educating for Nuclear's Future—A Successful Regional Partnership, William Wabbersen (*Savannah River Nuclear Solutions*), Mindy Mets (*SRSCRO*), M. R. Buckner, C. L. Munns, Susan Wood (*CNTA*)

1:25 p.m.

Collaborative Mindmapping for Nuclear Education, Jay Z. James (*KEPCO Int'l Nuclear Graduate School*)

1:50 p.m.

Electricity Production Choices and Consequences—Overview of a New Short Course, H. L. Dodds (*Univ of Tennessee*)

2:15 p.m.

Development of an On-Line Radiation Detection Laboratory Using LabVIEW, T. A. DeVol, R. Trogstad (*Clemson Univ*)

2:40 p.m.

Fukushima Impacts on NPP Acceptance of High School Students in Thailand, D. Bhanthumnavin (*National Institute of Development Administration*), V. Bhanthumnavin (*Shinawatra Univ*)

Advances in Diagnostic and Prognostic Technologies,

sponsored by HFICD.

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: James B. Coble (*PNNL*)

Room: Fairlie

1:00 p.m.

Health Monitoring to Support Advanced Small Modular Reactors, Jamie Coble, Ryan Meyer, Pradeep Ramuhalli (*PNNL*)

1:25 p.m.

Advanced Fault Monitoring and Diagnostics for Rod Control and Position Systems in Nuclear Reactors, J. R. McCulley, G. W. Morton, S. D. Caylor, H. M. Hashemian (*AMS*)

1:50 p.m.

Equipment Health Monitoring in Research Reactors—Reliability Improvement, E. T. Riggsbee, W. S. Johnson (*AMS*), H. M. Hashemian, M. Linn (*ORNL*)

2:15 p.m.

Remaining Useful Life Estimation of Electric Cables in Nuclear Power Plants, B. D. Shumaker, J. B. Ledlow, R. D. O'Hagan, D. E. McCarter, H. M. Hashemian (*AMS*)

2:40 p.m.

On-Line Monitoring with Auto-Regressive Modeling in Boiling Water Reactors, G. W. Morton, B. D. Shumaker, S. D. Caylor, H. M. Hashemian (*AMS*)



3:05 p.m.

Proof of Principle for the Run-Ahead Predictive Simulation Software (RAPSS), Kevin A. Makinson, Tom Riley, Andrew C. Klein (*Oregon State Univ*)

Advanced /Gen-IV Reactors,

sponsored by OPD.

Session Organizer and Chair: Belle R. Upadhyaya (*Univ of Tennessee*)

Room: Hanover A

1:00 p.m.

Fluoride-Salt-Cooled High-Temperature Reactor (FHR) with Natural-Gas Assist for Peak and Intermediate Electricity Loads, Charles Forsberg (*MIT*), Per F. Peterson, Harry Andreades (*Univ of California, Berkeley*), Lindsay Dempsay (*Generation Solutions Limited, New Zealand*)

1:25 p.m.

Design Goals for a Fluoride-Salt-Cooled High-Temperature Test Reactor (FHTR), Charles Forsberg, Lin-wen Hu (*MIT*)

1:50 p.m.

Fluoride Salt-Cooled High Temperature Test Reactor Core Design, R. R. Romatoski, S. M. Don, J. Richard, M. P. Short, L. W. Hu, C. Forsberg (*MIT*)

2:15 p.m.

High-Temperature Fluoride-Salt-Cooled Test Reactor (FHTR) Tritium and Impurity Removal System Analysis, Ethan Peterson, Curran Oi, Ciara Sivels (*MIT*)

2:40 p.m.

Plant Design Lessons Learned from Sodium and Molten-Salt Reactors Applicable to Fluoride-Salt-Cooled High-Temperature Test Reactor (FHTR), Mark Massie, Charles Forsberg (*MIT*)

3:05 p.m.

A Fluoride-Salt-Cooled High-Temperature Reactor (FHR) for Isolated Locations, R. R. Macdonald, C. W. Forsberg (*MIT*)

3:30 p.m.

High Temperature Gas Reactor Steam Reheat, Paul John Marotta (*nuExergy, LLC*)

Nuclear Fuels,

sponsored by MSTD.

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Totju L. Totev (*Consultant*)

Room: Hanover B

1:00 p.m.

Radial Burnup Profile Fitting of a High Burnup Pellet, Lijun Gao (*Tsinghua University/ Nuclear Power Institute of China*), Shengyao Jiang (*Tsinghua Univ*), Bingde Chen (*Nuclear Power Institute of China*)

1:20 p.m.

Advanced Characterization of MIMAS MOX Fuel Microstructure to Quantify the HBS Formation, Antoine Bouloré, Laurence Aufore, Eric

Federici (*CEA/DEN/DEC*), Patrick Blanpain (*AREVA NP*), Rémi Blachier (*EDF*)

1:40 p.m.

Simulation of Thermochemistry and Isotopic Evolution of Irradiated Nuclear Fuel, M. H. A. Piro, J. Banfield, K. T. Clarno, S. Simunovic, T. M. Besmann (*ORNL*)

2:00 p.m.

Thermal Degradation of U-Mo Fuel Dispersion in Al Matrix During Irradiation, Yeon Soo Kim (*ANL*)

2:20 p.m.

Preliminary Assessment of Microstructural Evolution of U-10Mo Thin Specimen Annealed at Typical Fast Reactor Temperature Regime, D. Yun, W. Mohamed, B. Ye, M. A. Kirk, P. Baldo, A. M. Yacout (*ANL*)

2:40 p.m.

Irradiation Behavior Analysis for U-Mo/Al Dispersion Fuels, Bei Ye, Jeffrey Rest, Yeon Soo Kim, Gerard Hofman (*ANL*)

3:00 p.m.

Numerical Modeling of TRISO Fuel Effective Thermal Conductivity, C. Folsom, C. Xing, C. Jensen, H. Ban (*Utah State Univ*)

3:20 p.m.

Comparative Study of Two γ -U(Mo) Innovative Powders: (Micro/Macro) Structural Characteristics, Guillaume Champion (*CEA, DEN, DEC*), Xavière Iltis (*CEA, DEN, DEC*), Olivier Tougaît (*Sciences Chimiques de Rennes*)

3:40 p.m.

Recovery of Uranium from Hydrophilic Phosphoric Acid Residue Using Trioctylamine, Laila A. Guirguis, Randa M. Elrakaiby, Nagwa I. Filaila (*Nuclear Materials Authority*)

Student Research in Reactor Physics—II,

sponsored by RPD.

Session Organizer: Mark D. DeHart (*INL*)

Chair: Sandra Dulla (*Politecnico Di Torino*)

Room: Hanover C

1:00 p.m.

Development of Fuel Shuffling Module for PHISICS, Allan Mabe (*Idaho State Univ*), Andrea Alfonsi, Cristian Rabiti, Aaron Epiney (*INL*), Michael Lineberry (*Idaho State Univ*)

1:25 p.m.

Partheno-Genetic Algorithm Approach for Optimal In-core Neutron Detector Location, Xingjie Peng, Kan Wang (*Tsinghua Univ*), Qing Li (*Nuclear Power Institute of China*)

1:50 p.m.

Neutronics Performance Analysis of a Small Modular Integral Pressurized Water Reactor, Evans Kitcher, Sunil Chirayath (*Texas A&M Univ*)

2:15 p.m.

Variable Enrichment Thorium-Fueled Boiling Water Breeder Reactor, Guanheng Zhang, Jeffrey Seifried, Jasmina Vujic, Ehud Greenspan (*Univ of California, Berkeley*)

2:40 p.m.

Analysis of Local Void Reactivity Coefficients for the RBWR-Th, Guanheng Zhang, Jeffrey Seifried, Jasmina Vujic, Ehud Greenspan (*Univ of California, Berkeley*)

3:05 p.m.

Preliminary Study of SFR with Depleted Uranium Breed & Burn Blanket, Guanheng Zhang (*Univ of California, Berkeley*), Anselmo Cisneros (*Univ of*



California, Davis), Ehud Greenspan (Univ of California, Berkeley)

Reactor Physics: General—II,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (INL)

Chair: Jess C. Gehin (ORNL)

Room: Hanover D

1:00 p.m.

Neutronics Analyses of NpO₂ Single Pellet Irradiations at HFIR to Support the Pu-238 Production Project, David Chandler, Randy W. Hobbs (ORNL)

1:25 p.m.

Definition of a Spatial Correction Factor for the Experimental Prompt Neutron Decay Constant, A. Talamo, Y. Gohar (ANL), S. Sadovich, H. Kiyavitskaya, V. Bournos, Y. Fokov, C. Routkovskaya (Joint Institute for Power and Nuclear Research)

1:50 p.m.

A New Coated UO₂ Particle Fuel for Ultra-High Performance Research Reactor, Rully Hidayatullah, Yonghee Kim (KAIST)

2:15 p.m.

Thermal Neutron Scattering Cross Sections for Silicon Carbide, Y. Zhu, J. L. Wormald, A. I. Hawari (NCSU)

2:40 p.m.

Development of Neutronic Models for the PULSTAR Reactor in Support of Power Upgrade, V. H. Gillette, J. C. Holmes, J. L. Wormald, A. I. Hawari (NCSU)

Mathematical Modeling, Uncertainty Quantification, and Sensitivity Analysis Methods,

sponsored by MCD.

Session Organizer: Brian C. Franke (SNL)

Chair: Harsh S. Desai (KAPL)

Room: Hanover E

1:00 p.m.

Deterministic Parameter Study for Fixed-Source Calculations Using FW-CADIS, R. N. Slaybaugh, S. C. Wilson (Bechtel Marine Propulsion Corporation)

1:25 p.m.

Application of Generalized Linear Least-Squares for Uncertainty Quantification in Inverse Transport Problems, Keith C. Bledsoe, Matthew A. Jessee (ORNL), Jeffrey A. Favorite (LANL)

1:50 p.m.

Use of Multi-fidelity Training Data in Uncertainty Analysis of Nuclear Engineering Applications, Oleg Roderick, Mihai Anitescu (ANL)

2:15 p.m.

Free Energy of Molten Salt (KCl) for Reprocessing Applications, Jin Wang, Jacob Eapen (NCSU)

2:40 p.m.

Propagation of Uncertainty in the Inverse-Kinetics Equation, B. Baker, G. R. Imel (Idaho State Univ)

New Horizons in Medical Health Physics,

sponsored by BMD.

Session Organizer: Bryan P. Bednarz (Univ of Wisconsin, Madison)

Chair: Glenn E. Sjoden (Georgia Tech)

Room: Hanover F

1:00 p.m.

Medical/Health Physics Research at RPI: A Review, X. George Xu (RPI), invited

1:25 p.m.

Large-Scale Radiation Emergencies: What Can Medical Health Physicists Do?, Armin Ansari (CDC), invited

1:50 p.m.

New Laboratory Capabilities in Medical Physics and Nuclear Engineering Research at Georgia Tech, Glenn Sjoden, Anna Erickson, Nolan Hertel (Georgia Tech), invited

2:15 p.m.

The UF/NCI Library of Hybrid Computational Phantoms—Applications to Patient Dose Tracking in Diagnostic Imaging, W. Bolch, A. Geyer, D. Long, D. Borrego (Univ of Florida), invited

2:40 p.m.

Monte Carlo-Based Radiation Dosimetry for Preclinical Trials of Radiohalogenated Pharmaceuticals, Bryan Bednarz (Univ of Wisconsin, Madison), Joseph Grudzinski (Univ of Wisconsin, Madison/Novelos Therapeutics), Benjamin Titz (Novelos Therapeutics), Abigail Besemer (Univ of Wisconsin), invited

3:05 p.m.

In-Clinic Assessment of Skin Doses for Interventional Fluoroscopic Procedures, W. Bolch, D. Siragusa, D. Borrego (Univ of Florida), invited

Fuel Cycle and Waste Management: General—II,

sponsored by FCWMD.

Session Organizer: Jack D. Law (INL)

Chair: Jinsuo Zhang (Ohio State)

Room: Hanover G

1:00 p.m.

Application of NF₃ to Fluoride Volatility Processing of Used Nuclear Fuel, Randall D. Scheele, Bruce K. McNamara, Andrew M. Casella (PNNL)

1:25 p.m.

Thorium as a By-Product: A Near-Term Alternative for the Thorium Fuel Cycle, Timothy Ault, Raymond Wymer, Steven Krahn (Vanderbilt Univ)

1:50 p.m.

Helical Contactor for Recovery of Uranium and Associated Metals from Uranium Ores and Radioactive Wastes, Agnieszka Miśkiewicz, Grażyna Zakrzewska-Trznadel (Inst of Nuclear Chemistry and Technology)

2:15 p.m.

Effect of Oxidation Process on the Reaction Kinetics of Zirlo Chlorination Reaction, Min Ku Jeon, Yong Taek Choi, Chang Hwa Lee, You Lee Lee, Kweon Ho Kang, Geun Il Park (KAERI-Korea)

2:40 p.m.

Decommissioning of Uranium-Graphite Reactors, S. E. Skorodumov, V. N. Ezhov, V. V. Plekhanov (JSC "Afrikantov OKBM")



Thursday, June 20, 2013

7:30 a.m.-2:00 p.m.	Meeting Registration
8:30 a.m.-11:30 a.m.	2013 ANS Annual Meeting Technical Sessions <ul style="list-style-type: none"> • Thermal Hydraulics in Advanced High-Temperature Reactors • Nuclear Installations Safety: General—I • Updates on Research Reactor Regulation for Instrumentation and Control Systems—Panel • Small Modular Reactors: Progression and Status • ADVANTG Tutorial: Automated Variance Reduction for MCNP • Reactor Analysis Methods—II • Physics of Fluid-Fuel Systems—I • Nuclear Criticality Safety Standards—Forum • Robotics and Remote Systems: General
1:00 p.m.-4:00 p.m.	2013 ANS Annual Meeting Technical Sessions <ul style="list-style-type: none"> • State of the Art in Modeling Fuel Rod Ballooning, Fuel Relocation and High Burnup Issues in LOCA Evaluation Models • Nuclear Installations Safety: General—II • Instrumentation and Controls: General • Accident Tolerant Fuels and Advanced Fuels • Physics of Fluid-Fuel Systems—II

THURSDAY, JUNE 20, 2013, 8:30 A.M.

Thermal Hydraulics in Advanced High-Temperature Reactors,

sponsored by THD.

Cochairs: Xiaodong Sun (*Ohio State*) and Hisashi Ninokata (*Politecnico di Milano*)

Room: Baker

8:30 a.m.

Effect of Salt Coolant Selection on FHTR Thermal Hydraulic Performance, Yao Xiao (*MIT, Xi'an Jiaotong Univ*), Lin-wen Hu, Charles Forsberg (*MIT*), Suizheng Qiu, Guanghui Su (*Xi'an Jiaotong Univ*)

8:55 a.m.

Modeling and Parametric Studies of the AHTR Fuel Element, Pietro Avignì, Bojan Petrovic (*Georgia Tech*)

9:20 a.m.

CFD Study of Thermal-Hydraulic Performance of a PCHE Under FLiNaK-Helium Condition, In Hun Kim, Xiaodong Sun (*Ohio State*), Hee Cheon No (*KAIST*)

9:45 a.m.

Design and Evaluation of Passive Decay-Heat Removal System Using Mercury Thermosyphon, Byung-Hyun You, Yong Hoon Jeong (*KAIST*)

10:10 a.m.

Experimental Study on Heat Transfer to Supercritical Fluid in a Vertical Tube, Siyu Zhang, Hanyang Gu, Xu Cheng (*Shanghai Jiao Tong Univ-China*)

10:35 a.m.

Thermal-Hydraulic Design of Wavy Channel Printed Circuit Heat Exchangers for Advanced Reactors, N. Bartel, V. Utgikar (*Univ of Idaho*), P. Sabharwall (*INL*), M. Chen, I. H. Kim, X. Sun, R. N. Christensen (*Ohio State*)

11:00 a.m.

Design of Printed Circuit Heat Exchangers for Very High Temperature Reactors, M. Chen, I. Kim, X. Sun, R. N. Christensen (*Ohio State*), N. Bartel, V. Utgikar (*Univ of Idaho*), P. Sabharwall (*INL*)

Nuclear Installations Safety: General—I,

sponsored by NISD.

Session Organizer and Chair: Matthew R. Denman (*SNL*)

Room: Courtland

8:30 a.m.

Functional Failure Analysis for Passive Containment Cooling System in AP1000, Yu Yu, Shengfei Wang, Fenglei Niu (*North China Electric Power Univ*)

8:55 a.m.

Sensitivity Analysis of Ultimate Response Guideline for Kuosheng BWR with MAAP5, Yi-Han Chen, Yuh-Ming Ferng, Bau-Shi Pei, Chun-Kuan Shih (*Natl Tsing Hua Univ*)

9:20 a.m.

The Sojourn Time Approach for Modeling Aging in Passive Components, Askin Guler, Tunc Aldemir, Richard Denning (*Ohio State*)

9:45 a.m.

Performing Probabilistic Risk Assessment Through RAVEN, A. Alfonsi, C. Rabiti, D. Mandelli, J. J. Cogliati, R. A. Kinoshita (*INL*)

Updates on Research Reactor Regulation for Instrumentation and Control Systems—Panel,

sponsored by HFICD.

Session Organizer and Chair: Leroy A Hardin, Jr. (*NRC*)

Room: Fairlie

8:30 a.m.

This panel discussion will focus on two specific areas of interest to the research and test reactor community. The first area will be a discussion on the instrumentation and control (I&C) system upgrade process for these facilities. In addition, there will be a discussion on the licensing of I&C systems for new facilities. While the emphasis will remain on the I&C systems, potential differences in approaches and other issues for a newly proposed facility versus an operating facility upgrade will be addressed. This panel will present a good opportunity to discuss these issues and others related to research and test reactor I&C systems with the recognized experts in the area.

PANELISTS:

- Leroy Hardin (*Panel Chair, U.S. NRC*)
- Duane Hardesty (*Co-Chair, U.S. NRC*)
- Kelly Jordan (*UFL*)
- Al Adams (*U.S. NRC via videoconference*)
- Norbert Carte (*U.S. NRC via videoconference*)



Small Modular Reactors: Progression and Status,

sponsored by OPD.

Session Organizer and Chair: Thomas A. Remick (*Southern California Edison*)

Room: Hanover A

8:30 a.m.

Prospects of Small Modular Reactor (SMR) Utilization in Thailand, Vutthi Bhanthumnavin, Ya Min Thu (*Shinawatra Univ*)

8:55 a.m.

A Study on Safety Characteristics of the MHR-50/100 is for the Severe Accidents—Applicability of the New Safety Standard under Preparation in Japan, Isao Minatsuki, Yorikata Mizokami (*MHI*)

9:20 a.m.

Online Monitoring in Small Modular Reactors (SMRs), C. Mitra, H. M. Hashemian, B. D. Shumaker (*AMS*), B. R. Upadhyaya (*Univ of Tennessee*)

9:45 a.m.

Energy Storage Systems for Nuclear Facilities, Kevin Lyon, Vivek Utgikar (*Univ of Idaho*), Piyush Sabharwal (*INL*)

ADVANTG Tutorial: Automated Variance Reduction for MCNP,

sponsored by RPSD.

Session Organizer and Chair: Scott W. Mosher (*ORNL*)

Room: Hanover B

8:30 a.m.

This three-hour demonstration and tutorial will highlight the capabilities of ADVANTG for generating variance reduction parameters for fixed-source, continuous-energy Monte Carlo transport simulations using MCNP5.

ADVANTG automates the process of generating 3-D space- and energy-dependent weight-window bounds and a consistent biased source distribution based on an approximate transport solution that is efficiently generated by the Denovo 3-D, parallel discrete ordinates package. The code implements the Consistent Adjoint Driven Importance Sampling (CADIS) method for accelerating individual tallies and the Forward-Weighted CADIS method for obtaining relatively uniform uncertainties across tallies in multiple regions and/or energy bins. The variance reduction parameters are generated in a format directly usable by unmodified versions of MCNP. ADVANTG can also be used as a front-end for Denovo and is capable of driving parallel SN calculations. The tutorial will cover the setup and execution of sample radiation detection and shielding problems. The open-source VisIt 3-D visualization software will be used as an integral part of the tutorial. This tutorial will also include a brief summary of our experience applying ADVANTG to simulations of real-world problems, including several radiation detection systems and shielding analyses of the High Flux Isotope Reactor, Spallation Neutron Source, and ITER. ADVANTG will be available from RSICC starting in the first half of 2013. Licensed users are welcome to bring their laptops and follow along.

Reactor Analysis Methods—II,

sponsored by RPD.

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Akio Yamamoto (*Nagoya Univ*)

Room: Hanover C

8:30 a.m.

Evaluation of the Effect of Bypass Direct Energy Deposition on Axial Power Predictions in PARCS/PATHS, Peter Yarsky (*NRC*), Andrew Ward (*Univ of Michigan*)

8:55 a.m.

Development and Testing of HENDL-ADS/MG Cross Section Library for Neutron Energy up to 150 MeV, Jun Zou, Qin Zeng, Chong Chen, Zhong Chen (*INEST, Chinese Academy of Sciences*)

9:20 a.m.

Study on Discontinuity Factor for Angular Flux in Transport Equation, Tatsuya Sakamoto, Tomohiro Endo, Akio Yamamoto (*Nagoya Univ*)

9:45 a.m.

Comparison of Two Formulations of Continuous-Energy Monte Carlo Local Problem in OLG Iteration Methodology, YuGwon Jo, Nam Zin Cho (*KAIST*)

10:10 a.m.

Few-Group Macroscopic Cross Section Adjustment for LWRs Using Random Sampling Technique, Akio Yamamoto, Shinya Kato, Tomohiro Endo (*Nagoya Univ*)

Physics of Fluid-Fuel Systems—I,

sponsored by RPD.

Session Organizer and Chair: Piero Ravetto (*Politecnico di Torino-Italy*)

Room: Hanover D

8:30 a.m.

Contribution to MSR Physics and Chemical Technology Relationship Study, Jan Uhlřr, Milan Štika, Evžen Losa (*UJV Rez - Nuclear Research Institute*)

8:55 a.m.

Molten Salt Technology for Very High Flux Research Reactors, Michael Eades, Xiaodong Sun, Thomas Blue (*Ohio State*)

9:20 a.m.

Point Kinetics Models of the Medical Isotope Production Reactor, Chris Cooling, M. M. R. Williams, Matthew Eaton, Erik Nygaard (*Imperial College London*)

9:45 a.m.

The Point Kinetic Component of Neutron Noise in an MSR, Imre Pázsit, Victor Dykin (*Chalmers Univ of Technology*)

10:10 a.m.

Space Molten Salt Reactor for Colonization-Level Surface Power, Ethan Chaleff, Michael Eades, Thomas Blue (*Ohio State*)

Nuclear Criticality Safety Standards—Forum,

sponsored by NCSD.

Session Organizer and Chair: Thomas P. McLaughlin (*Univ of Pittsburgh*)

Room: Hanover E

8:30 a.m.



Robotics and Remote Systems: General,

sponsored by RRSD.

Session Organizer: Timothy R. McJunkin (*Battelle Energy Alliance-INL*)

Chair: Reid L. Kress

Room: Hanover G

8:30 a.m.

Industrial Manipulator Collision Detection Demonstrated Using Motor Current Feedback and Position Control, Kyle Schroeder (*LANL*), Mitch Pryor (*Univ of Texas, Austin*), Troy Harden (*LANL*)

8:55 a.m.

Automated Design of Robotic/Human Manufacturing Workcells in Radioactive Environments, Joshua M. Williams (*LANL*), Mitch W. Pryor (*Univ of Texas, Austin*)

9:20 a.m.

Robots Reduce Dose, Improve Efficiencies in Standard and Emergency Operations, Daren Cato, Floyd Harris (*Duke Energy Corp*), Kim Monti, Kevin Derwin (*iRobot Corporation*)

9:45 a.m.

Teleoperator System Availability, Reid L. Kress (*Univ of Tennessee*)

THURSDAY, JUNE 20, 2013, 1:00 P.M.

State of the Art in Modeling Fuel Rod Ballooning, Fuel Relocation and High Burnup Issues in LOCA Evaluation Models,

sponsored by THD.

Chair: Kurshad Muftuoglu (*GE-Hitachi Nuclear*)

Room: Baker

1:00 p.m.

S-RELAP5 RLBLOCA Evaluation with Clad Swelling, Rupture, and Fuel Relocation, L. M. Gerken, C. K. Nithianandan (*AREVA*)

1:25 p.m.

S-RELAP5 Model of Clad Swelling, Rupture, and Fuel Relocation, C. K. Nithianandan, L. M. Gerken (*AREVA*)

1:50 p.m.

Assessment of BWR LOCA Analysis for High-Burnup Fuel Fragmentation and Dispersal Conditions, Kurshad Muftuoglu, Daniel C. Pappone (*GE-Hitachi Nuclear Energy*), Frank Holzgrewe, Willem van Doesburg (*BKW FMB Energie AG*)

Nuclear Installations Safety: General—II,

sponsored by NISD.

Session Organizer: Kevin R O’Kula (*URS Professional Solutions LLC*)

Chair: William C. Horak (*BNL*)

Room: Courtland

1:00 p.m.

Evaluation of Downstream Sump Debris Effects on EDF PWR, Gilles Champion (*EDF-SEPTEN*)

1:25 p.m.

Beyond Design Basis Event Pilot Evaluations at U.S. Department of Energy Nuclear Facilities, James O’Brien (*DOE*)

1:50 p.m.

Sensitivity Analysis of Ultimate Response Guideline for AP600 with MAAAP5, Pin-Yu Yuan, Yuh-Ming Ferng, Bau-Shi Pei, Chun-Kuan Shih (*Natl Tsing Hua Univ*)

Instrumentation and Controls: General,

sponsored by HFICD.

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: Leroy A. Hardin (*NRC*)

Room: Fairlie

1:00 p.m.

Standard for Field Programmable Gate Arrays in the Nuclear Power Industry, Steven A. Arndt (*NRC*)

1:25 p.m.

Analysis of Engineered Safety Feature Network for Lungmen NPS, Teng-Chieh Hsu, Hwai-Pwu Chou (*Natl Tsing Hua Univ*)

1:50 p.m.

Observations on Qualification of Commercial-Grade Software in Digital Instrumentation and Control (I&C) Systems, Rossnyev Alvarado, Timothy Mossman (*NRC*)

2:15 p.m.

Empowering the Nuclear Industry’s Mobile Workforce: Are Exclusion Zones Enough?, Chad J. Kiger (*AMS*)

2:40 p.m.

Harmonizing Requirements and Guidelines for Instrumentation and Control Systems, Terry W. Jackson, Daniel J. Santos (*NRC*)

3:05 p.m.

An Operator’s Auxiliary System Using Anticipatory Control Scheme, Hsuan-Han Huang, H. P. Chou, B. H. Lee (*Natl Tsing Hua Univ*)

Accident Tolerant Fuels and Advanced Fuels,

sponsored by MSTD.

Session Organizer and Chair: Kenneth J. Geelhood (*PNNL*)

Room: Hanover B

1:00 p.m.

Mechanical Properties of Zirconium Hydrides Using Microhardness and Nanoindentation, Mohamed S. Elbakhshwan, Jun-Li Lin, Brent J. Heuser (*Univ of Illinois*)

1:20 p.m.

Uranium-Carbon Nanocomposite Fuels, Chongzheng Na, Haitao Wang, Yong Wang, Aaron Lussier, Ginger Sigmon, Peter C. Burns (*Univ of Notre Dame*)

1:40 p.m.

LWR Fuel Behavior with SiC Cladding, Hangbok Choi (*General Atomics*)

2:00 p.m.

Alloy Development for Advanced Inert-Matrix Nuclear Fuels, Joseph T. McKeown (*LLNL*), Sangjoon Ahn, Brian Barnhart, Sandeep Irukuvarghula (*Texas A&M*), Mark Wall, Luke L. Hsiung (*LLNL*), Sean McDeavitt (*Texas A&M*), Patrice E. A. Turchi (*LLNL*)



2:20 p.m.

Development of Metal Fuel Cladding with Interdiffusion Barrier for Sodium Cooled Fast Reactor, Kang-Soo Lee (*Yonsei Univ, Gachon Univ*), Seung Hyun Jee (*Yonsei Univ*), Seok-Hee Lee, Sung-Pil Woo (*Yonsei Univ, Gachon Univ*), Young-Soo Yoon (*Gachon Univ*)

2:40 p.m.

Epitaxial Growth of Single Crystal Uranium Oxide Thin Films on TiO_2 , Al_2O_3 , YSZ, ZnO and NdGaO_3 Substrates, Mohamed S. Elbakhshwan, Brent J. Heuser (*Univ of Illinois*)

3:00 p.m.

New Insights into the Phase Transformations in the U-Np-O System, Melanie Chollet, Renaud C. Belin, Jean-Christophe Richaud (*CEA*)

3:20 p.m.

Determination of UO_2 Thin Films Mechanical Properties Under Heavy Ion Irradiation Using Nano-Indentation and Finite Element Modeling, Mohamed S. Elbakhshwan, Yinbin Miao, Brent J. Heuser, James F. Stubbins (*Univ of Illinois*)

Physics of Fluid-Fuel Systems—II,

sponsored by RPD.

Session Organizer: Piero Ravetto (*Politecnico di Torino-Italy*)

Chair: Nam Zin Cho (*KAIST*)

Room: Hanover D

1:00 p.m.

COUPLE, A Coupled Neutronics and Thermal-Hydraulics Code for Transient Analyses of Molten Salt Reactors, Dalin Zhang (*KIT*), Zhi-Gang Zhai (*Pro-Science, Germany*), Xue-Nong Chen, Shisheng Wang, Andrei Rineiski (*KIT*)

1:20 p.m.

Molten Salt Fast Reactor Transient Analyses with the COUPLE Code, M. Brovchenko, E. Merle-Lucotte, D. Heuer (*LPSC-IN2P3-CNRS/UJF/Grenoble INP*), A. Rineiski (*Institute for Nuclear and Energy Technologies, KIT*)

1:40 p.m.

Neutronic Evaluations for the EVOL Molten Salt Reactor, F. Alcaro, S. Dulla, P. Ravetto (*Politecnico di Torino-Italy*)

2:00 p.m.

Molten Salt Fast Reactor Analyses with SIMMER-III, Shisheng Wang, Andrei Rineiski, Dalin Zhang (*KIT*)

2:20 p.m.

Simulation of Moderated Molten Salt Reactor Transients, K. Nagy, D. Lathouwers (*TU-Delft*), J. L. Kloosterman (*Delft University of Technology*)

2013 ANS Winter Meeting & Nuclear Technology Exhibit

November 10-14
2013



Register today at: ans.org

Omni Shoreham Hotel
Washington D.C.



NATIONAL COMMITTEES

Accreditation Policies & Procedures

Sunday, 9:30 AM - 12:30 PM
Location: Hanover E

ANS Business Meeting

Monday, 3:30 PM - 4:30 PM
Location: Regency VII

Board of Directors

Professional Division Reports
Wednesday, 4:00 PM - 5:30 PM
Location: Regency VII

Board of Directors

Thursday, 7:30 AM - 4:30 PM
Location: Regency VII

Bylaws & Rules

Sunday, 4:30 PM - 6:00 PM
Location: Edgewood

Finance

Tuesday, 2:00 PM - 7:00 PM
Location: Regency VI

Honors & Awards

Monday, 4:00 PM - 6:00 PM
Location: Auburn

International

Sunday, 11:30 AM - 2:30 PM
Location: Hanover A

Local Sections Workshop

Sunday, 8:00 AM - 12:00 PM
Location: Baker

Membership

Sunday, 10:00 AM - 12:00 PM
Location: Executive Suite 226

National Program Committee (NPC)

Program

Wednesday, 4:00 PM - 6:30 PM
Location: Regency VI

Screening & International

Sunday, 10:00 AM - 12:00 PM
Location: Regency VI

National Meeting Sub Committee

Wednesday, 11:30 AM - 1:00 PM
Location: Regency VI

NEED

Sunday, 7:30 PM - 9:30 PM
Location: Greenbriar

Professional Engineering Exam Committee (PEEC)

Business Meeting

Sunday, 3:00 PM - 5:00 PM
Location: Courtland

PEEC Exam Writers Group

Saturday, 5:00 PM - 10:00 PM
Location: Fairlie

PEEC Exam Writers Group

Monday, 1:00 PM - 9:00 PM
Location: Lenox

Planning

Sunday, 2:00 PM - 6:00 PM
Location: Fairlie

President's Meeting with Committee Chairs

Sunday, 8:00 AM - 9:00 AM
Location: Dunwoody

President's Meeting with Division Chairs

Sunday, 9:00 AM - 10:00 AM
Location: Dunwoody

Professional Development Coordination Committee

Tuesday, 7:30 AM - 8:30 AM
Location: Regency VII

Professional Divisions

Committee Meeting

Wednesday, 5:30 PM - 7:00 PM
Location: Regency VII

Training Workshop

Saturday, 5:00 PM - 6:30 PM
Location: Dunwoody

Professional Women in ANS

Monday, 11:30 AM - 12:30 PM
Location: Lenox

Public Information

Sunday, 4:00 PM - 6:00 PM
Location: Hanover A

Public Policy

Wednesday, 11:30 AM - 1:30 PM
Location: Lenox

Publications Steering

Book Publishing

Sunday, 11:00 AM - 12:30 PM
Location: Harris

Meetings, Proceedings and Transactions

Sunday, 9:00 AM - 10:00 AM
Location: Edgewood

Nuclear News Editorial Advisory

Sunday, 4:00 PM - 5:30 PM
Location: Inman

NS&E Editorial Advisory

Sunday, 11:00 AM - 12:00 PM
Location: Inman

Publications Steering Committee

Monday, 4:30 PM - 6:30 PM
Location: Greenbriar

Technical Journals

Sunday, 1:00 PM - 4:00 PM
Location: Inman

Scholarship Policy & Coordination

Monday, 12:00 PM - 1:00 PM
Location: Auburn

Student Sections

Executive

Monday, 6:00 PM - 7:00 PM
Location: Regency VII

Reports

Monday, 7:00 PM - 8:00 PM
Location: Regency VII

SPECIAL COMMITTEES

Special Committee on Government Relations

Tuesday, 1:30 PM - 3:00 PM
Location: Lenox

Special Committee on Integration Oversight

Tuesday, 9:00 AM - 11:00 AM
Location: Lenox

OTHER COMMITTEES

8ICI Organizing Committee

Monday, 4:00 PM - 5:30 PM
Location: Regency VI

PNBC 19th (2014) Organizing Committee

Monday, 4:00 PM - 5:00 PM
Location: Harris

CNF

Monday, 7:00 PM - 10:00 PM
Location: Regency VI



Eagle Alliance Board of Directors

Sunday, 1:00 PM - 3:00 PM

Location: Harris

INEA

Tuesday, 4:00 PM - 6:00 PM

Location: Auburn

Joint Benchmark Committee Workshop

Saturday, 6:00 PM - 9:00 PM

Location: Courtland

KNS-US Meeting

Monday, 4:30 PM - 6:00 PM

Location: Kennesaw

Mathematics and Computation/Reactor Physics/Radiation Protection & Shielding

Joint Benchmark Meeting

Sunday, 11:00 AM - 1:00 PM

Location: Kennesaw

NEDHO

Sunday, 4:00 PM - 6:00 PM

Location: Hanover B

NURETH - 15

Tuesday, 6:00 PM - 8:00 PM

Location: Suite 219

PSA 2013 Planning Meeting

Monday, 5:30 PM - 7:00 PM

Location: Harris

Risk Management 2013 Organizing Committee

Monday, 6:30 PM - 8:30 PM

Location: Auburn

UWC 2013 Planning Committee

Sunday, 11:30 AM - 12:30 PM

Location: Hanover D

DIVISION COMMITTEES

Accelerator Applications

Executive

Monday, 11:30 AM - 1:30 PM

Location: Harris

Aerospace Nuclear Science & Technology

Sunday, 12:00 PM - 2:00 PM

Location: Suite 226

Biology and Medicine

Committee of the Whole

Sunday, 4:00 PM - 5:30 PM

Location: Harris

Computational Medical Physics Working Group

Sunday, 10:00 AM - 11:00 AM

Location: Greenbriar

Joint Program Committee - I&R and B&M

Sunday, 1:30 PM - 2:30 PM

Location: Hanover G

Decommissioning and Environmental Science

Executive Committee Meeting

Sunday, 4:30 PM - 5:30 PM

Location: Suite 219

Nuclear Production of Hydrogen Working Group

Sunday, 12:00 PM - 1:00 PM

Location: Courtland

Program Committee Meeting

Sunday, 3:30 PM - 4:30 PM

Location: Suite 219

Education, Training and Workforce Development

Alpha Nu Sigma

Sunday, 1:00 PM - 2:00 PM

Location: Greenbriar

Executive/Membership/Honors & Awards

Sunday, 1:30 PM - 4:30 PM

Location: Edgewood

Program

Sunday, 10:30 AM - 12:00 PM

Location: Fairlie

University/Industry/Government Relations

Sunday, 9:30 AM - 10:30 AM

Location: Edgewood

Fuel Cycle & Waste Management

Executive

Sunday, 1:00 PM - 2:30 PM

Location: Hanover B

Program

Sunday, 12:00 PM - 1:00 PM

Location: Hanover B

Technical Operating & Standard Committee

Sunday, 2:30 PM - 3:30 PM

Location: Hanover B

Fusion Energy

Executive

Sunday, 3:00 PM - 5:00 PM

Location: Baker

Human Factors, Instrumentation and Controls Program

Sunday, 11:00 AM - 12:00 PM

Location: Auburn

Executive

Sunday, 12:00 PM - 2:30 PM

Location: Auburn

Isotopes & Radiation

Executive

Sunday, 2:30 PM - 4:00 PM

Location: Hanover A

Joint Program Committee - I&R and B&M

Sunday, 1:30 PM - 2:30 PM

Location: Hanover G

Materials Science and Technology

Executive

Monday, 7:00 PM - 9:00 PM

Location: Edgewood

Mathematics and Computation

Computational Medical Physics Working Group

Sunday, 10:00 AM - 11:00 AM

Location: Kennesaw

Executive

Sunday, 2:00 PM - 4:00 PM

Location: Kennesaw

Program

Sunday, 1:00 PM - 2:00 PM

Location: Kennesaw

Nuclear Criticality Safety

Education Meeting

Sunday, 1:00 PM - 2:00 PM

Location: Hanover E

Executive

Sunday, 3:00 PM - 4:30 PM

Location: Hanover E

Program

Sunday, 2:00 PM - 3:00 PM

Location: Hanover E



Nuclear Installations Safety

Executive

Sunday, 7:30 PM - 9:30 PM

Location: Hanover C

Program

Sunday, 4:00 PM - 6:00 PM

Location: Hanover C

Nuclear Nonproliferation (TG)

Governance

Sunday, 3:00 PM – 4:00 PM

Location: Hanover F

Program

Sunday, 2:00 PM - 3:00 PM

Location: Hanover F

Special Advisory Committee

Sunday, 1:00 PM - 2:00 PM

Location: Hanover F

Operations and Power

Executive

Sunday, 4:00 PM - 6:00 PM

Location: Hanover D

Nuclear Construction Working Group

Sunday, 12:30 PM - 2:30 PM

Location: Hanover D

Program

Sunday, 2:30 PM - 4:00 PM

Location: Hanover D

Reactor Physics

Executive

Sunday, 4:00 PM - 6:00 PM

Location: Lenox

Goals & Planning

Sunday, 1:00 PM - 2:00 PM

Location: Lenox

Honors & Awards

Sunday, 10:00 AM - 11:00 AM

Location: Lenox

Program

Sunday, 2:00 PM - 4:00 PM

Location: Lenox

Radiation Protection and Shielding

Executive

Sunday, 1:30 PM - 3:30 PM

Location: Baker

Program

Sunday, 12:30 PM - 1:30 PM

Location: Baker

Shielding Standards

Sunday, 12:00 PM - 12:30 PM

Location: Baker

Robotics and Remote Systems

Executive

Sunday, 12:00 PM - 4:00 PM

Location: Hanover C

Thermal Hydraulics

Executive

Sunday, 4:30 PM - 6:00 PM

Location: Greenbriar

Program

Sunday, 2:30 PM - 4:30 PM

Location: Greenbriar

Young Members Group

Executive Committee

Monday, 11:30 AM - 1:00 PM

Location: Edgewood

STANDARDS COMMITTEES

ANS 2.10

Monday, 7:00 AM – 8:30 AM

Location: Auburn

ANS-6.4.2

Monday, 3:00 PM – 6:00 PM

Location: Suite 219

ANS-8.1

Sunday, 9:00 AM – 11:00 AM

Location: Auburn

ANS-8.1

Tuesday, 7:00 AM – 8:30 AM

Location: Suite 219

ANS-10.8

Saturday, 8:00 AM – 4:00 PM

Location: Auburn

ANS 19

Monday, 8:30 AM – 11:30 AM

Location: Greenbriar

ANS 19.1

Monday, 11:30 AM – 1:30 PM

Location: Greenbriar

ANS-54.1

Thursday, 8:30 AM – 4:30 PM

Location: Harris

ANS-57.2/57.3

Thursday, 9:00 AM – 11:00 AM

Location: Auburn

ANS-57.11

Tuesday, 8:30 AM – 4:30 PM

Location: Edgewood

ANS-57.11

Wednesday, 8:30 AM – 4:30 PM

Location: Edgewood

ANS-57.11

Thursday, 8:30 AM – 4:30 PM

Location: Edgewood

ANS Standards Board

Tuesday, 9:00 AM - 5:00 PM

Location: Regency V

JCNRM

Wednesday, 8:30 AM – 2:00 PM

Location: Regency V

NFSC

Monday, 8:30 AM - 6:30 PM

Location: Regency V

RPBPPC

Monday, June 17

3:30 PM – 5:30 PM

Location: Edgewood

TC 85/SC 6

Friday, 9:00 AM - 12:15 PM

Location: Suite 219

TC 85/SC 6/WG 1

Friday, 1:30 PM - 5:00 PM

Location: Suite 219

TC 85/SC 6/WG 2

Friday, 1:30 PM - 5:00 PM

Location: Suite 222

TC 85/SC 6/WG 3

Friday, 1:30 PM - 5:00 PM

Location: Suite 223

TC 85/SC 6/WG 1

Saturday, 9:00 AM - 12:15 PM

Location: Suite 219

TC 85/SC 6/WG 2

Saturday, 9:00 AM - 12:15 PM

Location: Suite 222

TC 85/SC 6/WG 3

Saturday, 9:00 AM - 12:15 PM

Location: Suite 223

TC 85/SC 6

Saturday, 1:30 PM - 4:30 PM

Location: Suite 219



Invest in Your Future

ANS Mentoring Program

Sunday, June 16, 2013
5:00 - 6:00 pm

Location:
Hanover G

The Mentoring Program is a unique opportunity for Mentors to invest in the future by connecting with the next stars (new members, first-time meeting attendees, and student members) of the nuclear industry. It's a chance for those new to the profession to connect with "those in the know," experienced professionals with real-world knowledge to share.

What are the benefits for Mentors and Protégés?

Mentors

- Influence the future
- Keep up to date
- Leave a legacy

Protégés

- Fast track a career
- Get individual attention
- Build a professional relationship

If you are the next star of the nuclear industry or you wish to catch a star, sign up today to participate in the ANS Mentoring Program. You'll be given information to guide you and support from previous program participants. Of course, you'll be connected with someone whose interests match your own with the potential for lifelong learning and friendship.

Yes. I want to be a: _____Mentor _____Protégé

(Please print all information)

Name _____

Company or School _____

Address _____ City / State / Zip _____

Phone _____ Fax _____ Email _____

E-mail mentoring Mentoring at meetings

Professional Interests:

Please list the Divisions and Committees of which you are, or would like to be, a member:

Please mail, fax, or email this form to:

Membership Department
American Nuclear Society
555 N. Kensington Avenue
La Grange Park, IL 60526

Phone: 800-323-3044 Fax: 708-579-8295 Email: mvtas@ans.org

ANS Organization Members

- AECL**
ALARON CORPORATION
ALPIQ SUISSE SA
ALTRAN SOLUTIONS CORP.
AMEREN-UE
AMERICAN ELECTRIC POWER SERVICE CORP.
AMERICAN NUCLEAR INSURERS
AREVA NP
ARIZONA PUBLIC SERVICE CO.
AT&F NUCLEAR, INC.
ATC-NUCLEAR
AXPO AG/NUCLEAR ENERGY
BEZNAU NUCLEAR POWER PLANT
- BABCOCK & WILCOX COMPANY**
BARNHART NUCLEAR SERVICES
BATTELLE MEMORIAL INSTITUTE
BECHTEL POWER CORP.
BKW FMB ENERGIE LTD.
BLACK & VEATCH
BORON PRODUCTS LLC, A CERADYNE CO.
R. BROOKS ASSOCIATES, INC.
- CB & I**
- DADE MOELLER & ASSOCIATES**
DEL MAR AVIONICS
DETROIT EDISON COMPANY
DOMINION GENERATION
DUBOSE NATIONAL ENERGY SERVICE
DUKE ENERGY CORPORATION
- ENERGY FUTURE HOLDINGS CORP.**
(COMANCHE PEAK NUCLEAR POWER PLANT)
ENERGYSOLUTIONS
ENERGY NORTHWEST
ENTERGY OPERATIONS INC.
EPRI
EXCEL SERVICES CORPORATION
EXELON NUCLEAR CO.
- FENOC**
FIVE STAR PRODUCTS
FLORIDA POWER & LIGHT
FLUOR
- GENERAL ATOMICS**
GE HITACHI NUCLEAR ENERGY
GSE POWER SYSTEMS INC.
- HAYWARD TYLER, INC.**
- INDIANA MICHIGAN POWER Co./**
D.C. COOK NUCLEAR POWER PLANT
- KERNKRAFTWERK LEIBSTADT AG**
KIEWIT POWER NUCLEAR CO.
KINETRICS INC.
KINEMATICS INC.
KOREA ATOMIC INDUSTRIAL FORUM, INC.
KOREA ELECTRIC POWER CORP.
KRSKO NUCLEAR POWER PLANT
KSB, INC.
- LAWRENCE LIVERMORE NATIONAL**
LABORATORY
LOS ALAMOS NATIONAL LABORATORY
L-3 COMMUNICATIONS MAPPS INC.
- MAJOR TOOL & MACHINE, INC.**
MARSHIELD - DIV. OF MARS METAL COMPANY
MCCALLUM-TURNER, INC.
MEGA-TECH SERVICES, LLC
METALTEK ENERGY PRODUCTS
MITSUBISHI NUCLEAR ENERGY SYSTEMS, INC.
- NAVARRO RESEARCH & ENGINEERING**
NEBRASKA PUBLIC POWER DISTRICT
NEI
NEWPORT NEWS SHIPBUILDING
NEXUS TECHNICAL SERVICES CORPORATION
NGNP INDUSTRY ALLIANCE
NUCLEAR FUEL SERVICES, INC.
NUCLEAR PLANT JOURNAL
- ONTARIO POWER GENERATION**
- PACIFIC GAS & ELECTRIC Co.**
PAKISTAN ATOMIC ENERGY COMMISSION
PAR NUCLEAR, INC.
PAR SYSTEMS, INC.
PHOENIX CONTACT INC.
PPL SUSQUEHANNA, LLC
PRIVATE FUEL STORAGE, LLC
PSEG NUCLEAR, LLC
- REEF INDUSTRIES, INC.**
- SANDIA NATIONAL LABORATORIES**
SARENS/RIGGING INTERNATIONAL Co.
SARGENT & LUNDY
SAVANNAH RIVER NATIONAL LABORATORY
SOUTHERN CALIFORNIA EDISON
SOUTHERN NUCLEAR OPERATING Co.
- TERRA POWER, LLC**
THERMO FISHER SCIENTIFIC
TOSHIBA AMERICA NUCLEAR ENERGY
CORPORATION
TRADETECH, LLC
TVA NUCLEAR POWER GROUP
TW METALS
- UR-ENERGY USA INC.**
URS WASHINGTON DIVISION
USEC INC.
- WASTE CONTROL SPECIALISTS**
WESTINGHOUSE ELECTRIC CORP.
WOLF CREEK NUCLEAR OPERATING CORP.
WYLE LABORATORIES

About the American Nuclear Society

The American Nuclear Society (ANS) is an international, not-for-profit, scientific and educational organization consisting of about 11,600 individual members, 1,500 organizations, 90 Organization Members, 20 professional divisions/technical groups 51 U.S. and 9 non-U.S. local sections/affiliated societies, 14 plant branches, and 45 student sections. ANS also maintains about 30 formal agreements for cooperation with international organizations.

The Society's main objectives are the advancement of engineering and science relating to the atomic nucleus, and to the integration of the science and management disciplines constituting nuclear science and technology. Other purposes are to encourage research, establish scholarships, disseminate information, inform the general public about nuclear-related activities, conduct meetings at which scientific and technical papers are presented, and cooperate with government agencies, educational institutions, and other organizations having similar purposes.

