

Program

Integrated Radioactive Waste Management in Future Fuel Cycles

November 8-12, 2009

Charleston, South Carolina, USA

Conference Chair

James Marra

Savannah River National Laboratory, USA

Conference Co-Chair

Jay Roach

Idaho National Laboratory, USA

This conference is dedicated to the memory of Dirk Gombert.



Engineering Conferences International

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This conference is dedicated to the memory of Dirk Gombert.



Dirk Gombert II, 53, of Idaho Falls, passed away April 19, 2009. He was born September 8, 1955 in Orange, California, to Dirk Gombert and Dorothy Barbara Albronda Gombert. He grew up in Anaheim, California and Chicago, Illinois. He was a graduate of Oregon State University at Corvallis. He received his doctorate degree from the University of Idaho. He married Sheryl Rae Cook on February 3, 1979 in Bend, Oregon. They lived briefly in Idaho Falls before moving to Dharhan, Saudi Arabia and Portland, Oregon. In 1987 they moved to Idaho Falls where he worked as a Chemical Engineer for Battelle Energy Alliance at the INL.

He was a member of the licensed professional engineers for the State of Idaho. He loved his family first and foremost and traveling and the outdoors a far-behind second.

Conference Sponsors

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Sunday, November 8, 2009

16:00 - 18:00 Registration (Registration Booth)
18:00 - 19:30 Opening Reception (Calhoun Room)
 Sponsored by AREVA

Notes

- Technical Sessions will be in the Carolina B room.
- Meals will be in the Carolina A room.
- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, November 9, 2009

07:00 – 08:00 Breakfast

08:00 – 08:15 Opening Remarks by conference chairs: Jim Marra and Jay Roach
Opening Remarks by ECI Liaison: Jules Routbort

**Session I: Plenary Session – Industry and Government/Agency
Perspectives on Advanced Fuel Reprocessing and Waste Management**
Session Chairs: Jim Marra and Jay Roach

08:15 – 09:15

Perspectives from Industry

“AREVA’s Perspectives on a Closed Fuel Cycle”
Dorothy Davidson, AREVA

“Closing the Nuclear Fuel Cycle in the U.S. – EnergySolutions
Perspective”
Alan Dobson, EnergySolutions

09:15 – 09:45

“Updating the Regulatory Framework for Spent Fuel Reprocessing”
Thomas Hiltz, U.S. Nuclear Regulatory Commission

09:45 – 10:15

Coffee Break

10:15 – 10:45

“Considering 40 CFR Part 190”
Brian Littleton, U.S. Environmental Protection Agency

10:45 – 11:15

“The DOE Fuel Cycle Research and Development Program”
Carter “Buzz” Savage, U.S. Department of Energy Office of Nuclear
Energy

11:15 – 12:00

Forum Discussion with Plenary Speakers

12:00 – 13:00

Lunch

Session II: Regulatory Structure for a Reviewed Nuclear Infrastructure
Session Chairs: Kevin McMahon and John Marra

13:00 – 13:25

“Which Radionuclides Matter and Why: Risk Insights from the 2008
Performance Assessment for Yucca Mountain”
Peter Swift, Sandia National Laboratories

13:25 – 13:50

“Redefining the Classification of High Level Waste”
Mark Nutt, Argonne National Laboratory

13:50 – 14:15

“Review of the Technical Bases for 40 CFR Part 190”
John Kelly, Sandia National Laboratories

14:15 – 14:40

“Recycling of Used Fuel and Its Challenges”
Patricia Paviet-Hartmann, University of Nevada, Las Vegas

14:40 – 15:05

“Must Advanced Fuel Cycles Produce High-Level Waste?”
Steve Piet, Idaho National Laboratory

15:05 – 15:35

Coffee Break

Monday, November 9, 2009 (continued)

Session III: Metallic Waste Forms for Fission Products

Session Chair: Bill Ebert

- 15:35 – 16:00 “The Metallic Waste Form from EBR-II Spent Fuel Pyrometallurgical Treatment: From Development to Full-scale Production”
K. Marsden, Idaho National Laboratory
- 16:00 – 16:25 “Developing an Iron-Based Alloy Waste Form for Transition Metal Fission Product Wastes”
Bill Ebert, Argonne National Laboratory
- 16:25 – 16:50 “Noble Metal Fission Product Incorporation in Metallic Waste Forms”
Steve Frank, Idaho National Laboratory
- 16:50 – 17:15 “Melt Dilute Treatment of Legacy Nuclear Materials”
Bob Sindelar, Savannah River National Laboratory
- 17:15 – 17:40 “Development of Cermet High-Level Waste Forms”
Brad Patton, Oak Ridge National Laboratory

Dinner on your own / Free evening

Tuesday, November 10, 2009

07:00 – 08:15 Breakfast

Session IV: Oxide Waste Forms for Fission Products

Session Chairs: Catherine Fillet and John Vienna

- 08:15 – 08:40 “Advances in the Science of Cement Waste Form Performance”
David Kosson, Vanderbilt University
- 08:40 – 09:05 “Immobilization of Fission Products and Surplus Actinides in Pyrochlores and Related Oxides”
Kurt Sickafus, Los Alamos National Lab
- 09:05 – 09:30 “Benefits of HIP Tailored Waste Forms for Future Fuel Cycles”
Bruce Begg, ANSTO, Inc.
- 09:30 – 09:55 “Perspectives on Cold Crucible Melting for Treatment of Ln and TM Waste Streams”
Sergey Stefanovsky, SIA Radon
- 09:55 – 10:25 Coffee Break
- 10:25 – 10:50 “Glass Development for a Closed Commercial Nuclear Fuel Cycle in the U.S.”
John Vienna, Pacific Northwest National Laboratory
- 10:50 – 11:15 “Molybdenum Behavior in Nuclear Borosilicate Glass at the Atomic and Microscopic Scale”
S. Schuller, CEA
- 11:15 – 11:40 “Development of Glass Matrix for Immobilization of Cs/Sr Strip Solution after HLW Partitioning”
Albert Aloy, Khlopin Radium Institute
- 11:40 – 13:00 Lunch

Session V: Recycling and Beneficial Re-use of Radionuclides

Session Chair: Bill DelCul

- 13:00 – 13:25 “Recycle in Thermal Reactors of Uranium and Minor Actinides Recovered from Used Nuclear Fuel”
Chris Phillips, EnergySolutions
- 13:25 – 13:50 “AREVA Experience with Reprocessed Uranium”
Paul Murray, AREVA Federal Services
- 13:50 – 14:15 “Progress and Characteristics of Recovered Uranium from EBR-II Spent Fuel Pyrometallurgical Treatment”
T. A. Johnson, Idaho National Laboratory
- 14:15 – 14:40 “Minor Actinide Management Trade Study”
Brent Dixon, Idaho National Laboratory

Tuesday, November 10, 2009 (continued)

- 14:40 – 15:05 “Advanced Head-End Voloxidation: Potential Recovery of volatile and Semivolatile Fission Products”
Barry Spencer, Oak Ridge National Laboratory
- 15:05 – 15:35 Coffee Break
- 15:35 – 16:00 “A Practical Solution to Used Nuclear Fuel Recycling”
Emory Collins, Oak Ridge National Laboratory
- 16:00 – 16:25 “Near Complete Recycling: A Path Forward for Sustainable Nuclear Energy”
G. D. DeCul, Oak Ridge National Laboratory

Session VI: Novel Aqueous Separations

Session Chair: Bob Sindelar

- 16:25 – 16:50 “Reductive Sorption of Tc onto Metallic Iron from Anion resin Elutents”
Jeffrey Fortner, Argonne National Laboratory
- 16:50 – 17:20 “Recent Development of Conjugates of Magnetic Nanoparticle-Chelator for Used Fuel Separation Technology”
You Qiang, University of Idaho

Session VII: Long-term Storage of Spent Nuclear Fuel

Session Chair: Jim Buelt

- 17:20 – 17:45 “Life Management for Used Fuel in a Storage Basin at the Savannah River Site”
Bob Sindelar, Savannah River National Laboratory

18:00 – 19:30 **Poster Session with Reception**

Session Chair: Jim Marra

Dinner on own / Free evening

Wednesday, November 11, 2009

07:00 – 08:15 Breakfast

Session VIII: Gaseous Radionuclide Capture, Waste Forms and Management

Session Chairs: Bob Jubin and Paul Murray

- 08:15 – 08:40 “Continuous Improvement in the Reduction of Gaseous and Liquid effluents from AREVA’s LaHague Recycling Facility”
Michael McMahon, AREVA NC Inc.
- 08:40 – 09:05 “Development of New Generation Nuclear Waste Forms Based on Nano-Immobilization and Nano-Encapsulation”
Yifeng Wang, Sandia National Laboratories
- 09:05 – 09:30 “Adsorption Kinetics of Noble Gases on Various Materials with High Adsorption Capacities Determined from Gravimetric Method”
Yongliang Xiong, Sandia National Laboratories
- 09:30 – 09:55 “Off-gas Data from CETE Experiments”
Bob Jubin, Oak Ridge National Laboratory
- 09:55 – 10:25 Coffee Break
- 10:25 – 10:50 “Capture and Sequestration of Iodine Following DEOX Testing”
Ken Bateman, Idaho National Laboratory
- 10:50 – 11:15 “Experimental Sorption Testing of Elemental Iodine on Silver Mordenite”
Daryl Haefner, Idaho National Laboratory
- 11:15 – 11:40 “Development of Waste Forms for Iodine using Low-Sintering Glass”
Terry Garino, Sandia National Laboratories
- 11:40 – 12:05 “Capture and Immobilization of Iodine”
Ewan Maddrell, National Nuclear Laboratory
- 12:15 – 12:40 “A Year in Melox, an AREVA’s Expatriates Experience of Working in France”
Mike McMahon, AREVA NC Inc.
- 12:40 – 13:40 Lunch
- Free afternoon to explore Charleston
- 19:00 – 21:00 Conference Dinner
Sponsored by EnergySolutions
- Dinner Presentation
“The Role of Pilot Plants in the Development of Used Nuclear Fuel Recycling Facilities”
Chris Phillips, EnergySolutions

Thursday, November 12, 2009

07:00 – 08:15 Breakfast

Session IX: Managing Decay Heat and Repository Studies

Session Chairs: Peter Swift and David Sassani

08:15 – 08:40 “Options for Managing Heat and Radiotoxicity of Spent Nuclear Fuel”
Nick Soelberg, Idaho National Laboratory

08:40 – 09:05 “Examination of Thermal Constraints on GTCC Waste Disposal”
Jun Li, University of North Carolina

09:05 – 09:30 “Thermal Management in Geologic Disposal: The Yucca Mountain Strategy”
David Sassani, Sandia National Laboratory

09:30 – 09:55 “Thermomechanical Performance of a High Level Waste Salt Repository”
Daniel Clayton, Sandia National Laboratory

09:55 – 10:25 Coffee Break

10:25 – 10:50 “Generic Repository Concept Analyses to Support the Establishment of Waste Form Performance Requirements – Generic Tuff and Salt Model Development and Analysis”
Mark Nutt, Argonne National Laboratory

10:50 – 11:15 “Preliminary Performance Assessment of Deep Borehole Disposal”
Patrick Brady, Sandia National Laboratory

11:15 – 11:40 “Storage and Disposal of the High Level Waste from the Advanced FBR Fuel Cycles”
Kenji Nishihara, JAEA

11:40 – 12:05 “Managing Cs and Sr: RCRA and its Impact on the Disposal of Short-lived Waste”
Gary Cerefice, University of Nevada – Las Vegas

12:05 – 12:20 Closing remarks

12:30 Lunch and departures

List of Posters

1. "Murataite Ceramics for Immobilization of Lanthanides, Actinides and Corrosion Product"
Sergey Stefanovsky, SIA Radon
2. "Ferrigarnet Matrices for Lanthanide and Transition Metal Wastes"
Sergey Stefanovsky, SIA Radon
3. "The Ceramic Waste Form from EBR-II Spent Fuel Metallurgical Treatment:
From Development to Full-scale Production"
Steve Frank, Idaho National Laboratory
4. "Selective Fission-Product Removal from Electrefiner Salt"
Steve Frank, Idaho National Laboratory
5. "Fate of Gaseous Fission Products During Spent Nuclear Fuel Reprocessing"
Nick Soelberg, Idaho National Laboratory
6. "Exploring Strategies for Commercial Greater-Than-Class-C Waste Management"
Elizabeth Platfoot, North Carolina State University
7. "Impact of Reprocessing Separation Efficiency on Waste Generation"
Boonchawee Srimok, North Carolina State University
8. "The Synthesis of Ba-substituted $\text{CsTiSi}_2\text{O}_{6.5}$ Pollucite"
Terry Garino, Sandia National Laboratories
9. "On Disposition of Waste Streams from Aqueous Processing of Used Fuels"
James Cunnane, Argonne National Laboratory
10. "Evolution of Waste Management Options and Policy over the Last Half Century"
Brent Dixon, Idaho National Laboratory
11. "Simplified Methods to Analyze Repository Capacity Impact of Fuel"
Jun Li, University of North Carolina
12. "Impact of Reprocessing Separation Efficiency on Repository Capacity and Performance"
Jun Li, University of North Carolina
13. "Adaptive Waste Forms: The Concept and Its Implications"
Yifeng Wang, Sandia National Laboratories
14. "Ruddleston-Popper Oxide Compounds for the Immobilization of Sr and Tc
Radioisotopes"
Meng Zhou, New Mexico Tech and Los Alamos National Laboratory
15. "Development of a Cold Crucible Induction Melter System with an Innovative
Electromagnetically Heated Bottom Draining Device for Radioactive Waste Vitrification"
Dmitry Lopukh, St. Petersburg State Electrotechnical University
16. Actinide Incorporation and Sorption in Layered Structures
L.C. Shuller, University of Michigan