OAK RIDGE National Laboratory

AGENDA

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2023 Hybrid Molten Salt Reactor (MSR) Workshop
Oak Ridge National Laboratory (ORNL)
Building 5200, Tennessee Rooms 202 A–C and virtually
Sponsored by: Gateway for Accelerated Innovation in Nuclear (GAIN) and ORNL

Agenda as of 10/24/2023

Event contact	General Chair: Kevin Robb, 865-576-4730; robbkr@ornl.gov Alternate General Chair: Joanna Mcfarlane; mcfarlanej@ornl.gov	
Time	**Event**	**Lead**
Wednesday, October 25, 2023, Eastern Daylight Time (UTC-4:00)		
8:30–8:35 am	**Call to Order**	Kevin Robb, ORNL
8:35–8:45 am	**Welcome**	Mickey Wade, ORNL
8:45–9:15 am	**Opening Plenary**	Alison Hahn, U.S. Department of Energy, Office of Nuclear Energy Andy Worrall, GAIN, ORNL
9:15–10:05 am	**University Salt Irradiation Test Beds** Molten Salt Reactor Test Bed with Neutron Irradiation The First University Advanced Research Reactor	**Session Chair: Sunil Chirayath, Texas A&M University** Charles Forsberg, Massachusetts Institute of Technology Rusty Towell, Abilene Christian University
10:05–10:15 am	**Break**	

10:15 am–12:10 pm	**DOE National Laboratory Advancements**	**Session Chair: Joanna Mcfarlane, ORNL**
	Overview of the Molten Salt Reactor Campaign	Patricia Paviet, Pacific Northwest National Laboratory (PNNL)
	Molten Salt Work Status at Idaho National Laboratory	Youssef Ballout, Idaho National Laboratory (INL)
	Molten Salt Research at Argonne National Laboratory	Mel Rose, Argonne National Laboratory
	Overview of PNNL capabilities in support of MSR development	Praveen Thallapally, PNNL
	Oak Ridge National Laboratory Foundational Studies to Support Molten Salt Reactor Development	Joanna Mcfarlane, ORNL
	Actinide-Molten Salt Chemistry and Properties Research at Los Alamos National Laboratory	Marisa Monreal, Los Alamos National Laboratory
12:10–1:10 pm	**Working Lunch (provided)**	
	Molten Salt Reactor Analysis with SCALE 6.3.1	Donny Hartanto, ORNL
*1:05 pm	***Optional HFIR Tour,*** *registrants depart at 1:05 pm from conference center*	***Organizer: Dianne Ezell, ORNL***

1:10–2:00 pm	**R&D Lightning Talks** Laser-Induced Breakdown Spectroscopy: A Versatile Tool for MSR Applications Online Monitoring of Molten Salts using Fiber-Coupled Plasma Discharges Usage of Surrogate Fluids for Optimization of Component Level Design for Heat Transport Systems within Molten Salt Reactors Developing a Non-Destructive Method for Measuring Holdup in Liquid Fueled MSRs Graphite-Salt Interactions – an overview of research activities at ORNL Corrosion and Tribology Developments in Nuclear Salts	**Session Chair: Hunter Andrews, ORNL** Hunter B. Andrews, ORNL Alex Bataller, North Carolina State University Lane Carasik, Virginia Commonwealth University Diego Jose Macias, University of Michigan Nidia Gallego, ORNL Lewis Handy-Cardenas, University of Wisconsin-Madison
2:00–3:15 pm	**Safeguards and Security Recommendations** International Safeguards by Design Novel strategies for Material Control and Accountancy of Liquid-Fueled MSRs A Material Control and Accountancy Approach for MSR License Applications Examples of Data-Driven Safeguards and Security by Design	**Session Chair: Karen Hogue, ORNL** Traci Newton, International Atomic Energy Agency Nathan Shoman, Sandia National Laboratory (SNL) Nicholas Luciano, ORNL Karen Hogue, ORNL
3:15–3:30 pm	**Break**	

3:30–4:35 pm	**Molten Salt Community Synergies** Activities of the Molten Salts in Extreme Environments Energy Frontier Research Center Molten salts as tritium breeders in fusion reactors Progress Developments for High-Temperature Concentrating Solar and Chloride Molten Salt R&D Systems	**Session Chair: Kevin Robb, ORNL** James Wishart, Brookhaven National Laboratory Monica Gehrig, ORNL Ken Armijo, SNL
4:35–6:00 pm	**Poster Session Reception with Hors d'oeuvres**	**Location: Bldg. 5700, Court of Flags** See the end of agenda for list of posters.

Thursday, October 26, 2023, Eastern Daylight Time (UTC-4:00)		
8:15–8:20 am	**Call to Order**	Kevin Robb, ORNL
8:20–8:35 am	**Opening Plenary**	Hash Hashemian, Analysis and Measurement Service Corp. and Member, Tennessee Nuclear Energy Advisory Council
8:35–8:55 am	**Special Talk on Molten Salt Reactor Experiment**	Neil Whatley and Garrett Hester, United Cleanup Oak Ridge
8:55–9:45 am	**MSR Licensing** Status of Nuclear Regulatory Commission Research and Licensing Activities Advances in IMSR Pre-licensing Activities	**Session Chair: Alex Huning, ORNL** Greg Oberson, U.S. Nuclear Regulatory Commission Robin Rickman, Terrestrial Energy USA
9:45–10:35 am	**Advanced Reactor Demonstration Program Risk Reduction** Molten Chloride Reactor Experiment Hermes Reactor Update	**Session Chair: Kevin Robb, ORNL** Dan Walter, TerraPower Anne Demma, Kairos Power
10:35–10:50 am	**Break**	

10:50–11:40 am	**Industry Lightning Talks** Development of Robust High-Temperature Reference Electrodes for Molten Salts Control Valve material combinations in 750C chloride molten salt Ball Valves in Molten Salt Applications Optimizing Protection: Coatings Selection for Molten Salts Valves Using FactSage™ Overlays for Improved Corrosion Resistance During MSR Operation Progress on FLiBe R&D at Commonwealth Fusion Systems	**Session Chair: Hunter Andrews, ORNL** Jim Steppan, HiFunda LLC Jeff Parish, Flowserve Tom Gosling, Gosco Valves Fadila Khelfaoui, Velan Inc Timothy Hall, Faraday Technology Inc. Caroline Sorensen, Commonwealth Fusion Systems
11:40 am–12:40 pm	**Working Lunch (provided)** MELCOR Advancements for MSRs	 David Luxat, SNL
**1:05 pm*	***Optional Salt Lab Tour,*** *registrants depart at 1:05 pm from conference center*	***Organizer: Dianne Ezell, ORNL***
12:40–2:30 pm	**Developer Forum 1** Exodys Energy Flibe Energy Seaborg Technologies TerraPower ThorCon	**Session Chair: Patricia Paviet, PNNL** Ed Pheil, Exodys Energy DJ Hanson, Flibe Energy Federico Puente-Espel, Seaborg Technologies Josh Walter, TerraPower Dane Wilson, ThorCon
2:30–2:40 pm	**Break**	

2:40–4:15 pm	**Developer Forum 2** Copenhagen Atomics Kairos Power Natura Resources Terrestrial Energy, USA	**Session Chair: David Holcomb, INL** Aslak Stubsgaard, Copenhagen Atomics Jake McMurray, Kairos Power Doug Robison, Natura Resources Robin Rickman, Terrestrial Energy, USA
4:15–4:25 pm	**Closing Remarks**	Kevin Robb, ORNL
4:25 pm	**Adjourn Day 2**	

POSTER SESSION PARTICIPANTS

**Below are the poster authors and titles that requested being noted on the agenda.*

Authors	***Poster Title***
Kirkland Sheriff, Dino Sulejmanovic, Jiheon Jun, William Cannon, Lauren Petta, Shiou-Jyh Hwu	A Method for Radioactive Waste Decontamination and Corrosion Inhibition in Aquoeus and Molten Salt Systems Using Polyoxometalates
Jaime Ownby, Matt Wrosch, Jose Beserra	Cost Drivers of High Purity Salts at Scale
Ellery Hendrix, W. Beck Andrews, David Montiel, and Katsuyo Thornton	Simulating Microstructure Evolution in a Molten Salt Environment with Phase-Field Modeling
Supathorn Phongikaroon, Aristidis Loumis-Demetrakopoulos, John Smith, Peggy Milota	Research Activities by the Molten Salt Group at VCU
Shuai Che, Sheng Zhang, Yuqi Liu, Minghui Chen, Adam Burak, and Xiaodong Sun	High-Temperature Molten Salt Test Facilities at UM Thermal Hydraulics Laboratory
Jeff Parish and Brent Sherar	Mixed Material Corrosion Study in Chloride Molten Salt at 750C
Zander Mausolff, Troy Reiss, Brandon Chisholm	Development of a Risk-Informed and Performance-Based Safety Case for TerraPower's Molten Chloride Reactor Experiment
Levi Gardner, Melissa Rose	Viscosity measurements of molten salts by rotating cylinder method
Daniel Barth, Leonard E Prokopchak, Tom Gosling, Cheryl Schuster	Custom Built Molten Salt Test Loops and Test Rigs
Aaron J. Unger, Hilary Fitzgerald, Katie McBride, Pradeep Perera, Dev Chatterjee, and Perry Motsegood	Chloride-Based Volatility for Waste Reduction and/or Reuse of Metallic-, Oxide-, and Salt-Based Reactor Fuels
Colin Patricelli, Colin Moore, Brian Canfield, Wei-Ting Hsu, Abdulrasheed Sado, Pradyumna Parshi, Owen Johnson, Collin Webb, Eric Lukosi	Update on Progress of DiMAS Sensor for LF-MSR Material Accountancy
Nicholas Termini, Anthony Birri, Jisue Moon, Daniel Orea, Kevin Robb, Joanna McFarlane, N. Dianne Bull Ezell	Molten Salt Thermophysical Property Measurement Capabilities at ORNL
Shin Dong-jun, Lee Ju-ho, Yoon Dal-sung, Kim Tae-ho, Lee Chang-hwa	Thermodynamic and Electrochemical Assessment for Oxide Removal in NaCl-MgCl2 for Molten Salt Reactors
J. Schorne-Pinto, M. Aziziha, J. Paz Soldan Pinto, A. M. Mofrad, C. M. Dixon, R. E. Booth, J. A. Wilson, T. M. Besmann	Development and applications for the MSTDB-TC global thermochemical database for molten salt reactors
Hannah K. Patenaude, Charles R. Lhermitte, Kenneth R. Czerwinski, Cory A. Rusinek, and Marisa J. Monreal	Electrode Materials for f-Block Electroanalytical Chemistry in Molten Chloride Salts
Shayan Shahbazi, Sara Thomas, Yeongshin Jeong, Rushi Gong, Tingzhou Fei, Dong Hoon Kam, Ben Chen, David Grabaskas, Mauricio Tano, Samuel Walker, Abdalla Abou-Jaoude	NEAMS Activities Supporting Mechanistic Source Term Model Development for Molten Salt Reactors
Suketu R. Gandhi	Need for New Approach for Cl Isotope Separation
Brian Carpman, James Kelly, Stephen Raiman	Molten Chloride Salt Corrosion of Ultra-High Temperature Ceramics