

ORNL IS MANAGED BY UT-BATTELLE, LLC FOR THE US DEPARTMENT OF ENERGY

2022 Hybrid Molten Salt Reactor (MSR) Workshop
Energy Through Safe, Secure, and Sustainable Technology
Oak Ridge National Laboratory (ORNL)
Building 5200, Tennessee Rooms 202 A–C and virtually via Zoom
Sponsored by: Gateway for Accelerated Innovation in Nuclear (GAIN) and ORNL

Agenda as of 10/24/2022

Event contact	General Chair: David Holcomb, 865-898-2193 (mobile); holcombde@ornl.gov Technical Chair/Alternate General Chair: Kevin Robb, 814-746-6846 (mobile); robbkr@ornl.gov	
Tuesday, October 11, 2022, Eastern Daylight Time (UTC-4:00)		
Time (EDT)	Event	Lead
8:30–8:35 am	Call to Order	David Holcomb, ORNL
8:35–8:45 am	Welcome	Jeremy Busby, ORNL
8:45–9:25 am	Plenary Overviews Pathways to Clean Energy Future NNSA's Role in Advanced Reactors DOE-NE Molten Salt Reactor Activities	Session Chair David Holcomb, ORNL Christine King, GAIN Corey Hinderstein, National Nuclear Security Administration (NNSA) Patricia Paviet, Pacific Northwest National Laboratory (PNNL)
9:25–10:35 am	Nonproliferation and Regulatory Compliance Session Domestic MC&A and Licensing Moltex Energy: Safeguards by Design Considerations Terrestrial/IAEA Model Safeguards Approach Engagement Export Controls and Molten Salt Reactors	Session Chair Karen Hogue, ORNL Michael Dion, ORNL Olivier Gregoire, Moltex Energy Robin Rickman, Terrestrial Energy Krystee Ervin, ORNL

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Time (EDT)	Event	Lead
10:35–10:45 am	Break	
10:45–11:50 am	International Collaboration Session GIF - MSR provisional System Steering Committee (pSSC) Overview and Activities Japanese MSR Activities European Union Program Salt Irradiation at the Nuclear Research and Consultancy Group	Session Chair: David Holcomb, ORNL David Holcomb, ORNL Motoyasu Kinoshita, MSLab Inc. Jan-Lin Kloosterman, TU Delft Ralph Hania, Nuclear Research and Consultancy Group
11:50 am–12:50 pm	Working Lunch Salt Production and Scale Up at Idaho National Laboratory	James King/Bill Phillip, Idaho National Laboratory (INL)
12:50–1:10 pm	Special Topic Molten Chloride Fast Reactor Technology Integrated Effects Test Facility Update	Michael Vandevanter, TerraPower
1:10–2:40 pm	Corrosion Chemistry Session ORNL Salt Corrosion Activities - Past to Present MSR Salt Chemistry Operational Envelopes Method for Redox Control with Continuous Electrochemical Measurement in Molten Salt Reactors Development of a Thermodynamic Database for Corrosion in Chloride MSRs Salt Purification and Redox Control for Corrosion Mitigation Open questions	Session Chair: Joanna McFarlane, ORNL Jim Keiser, ORNL Nathan Hoyt, Argonne National Laboratory (ANL) Michael Simpson, University of Utah Jacob Yingling, INL Jinsuo Zhang (presented by Amanda Leong), Virginia Tech
2:40–2:50 pm	Break	

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Time (EDT)	Event	Lead
2:50–4:20 pm	<p>MSR Systems Modeling Session</p> <p>SCALE/MELCOR Non-LWR Source Term Demonstration Project – Molten Salt Reactor (MSR)</p> <p>SAM Code for Systems Analysis</p> <p>Mass Accountancy with the MOLE/GRIFFIN Code for the Molten Salt Reactor Experiment</p> <p>ACU MSRR Systems Modeling</p>	<p>Session Chair: Aaron Graham, ORNL</p> <p>David Luxat, Sandia National Laboratories (SNL)/Will Wieselquist, ORNL</p> <p>Rui Hu, ANL</p> <p>Kyoung Lee, ORNL</p> <p>Kevin Clarno, University of Texas-Austin</p>
4:20–5:30 pm	<p>Safety and Licensing Session</p> <p>On-line Monitoring for Molten Salt Reactors and Supporting Systems</p> <p>Experiments to Advance and Validate Accident Progression Models for MSRs</p> <p>Tritium Transport in MSRs</p> <p>Uncertainty in Molten Salt Properties</p>	<p>Session Chair: Dave Luxat, SNL</p> <p>Amanda Lines, PNNL</p> <p>Sara Thomas, ANL</p> <p>Thomas Fuerst, INL</p> <p>Melissa Rose, ANL</p>
5:30 pm	<p>Adjourn Day 1 – Virtual Session</p>	

Time (EDT)	Event	Lead
5:30–6:30 pm	<p>Poster Session & Heavy Hors d'oeuvres</p> <p>University of Nevada, Las Vegas Hannah Patenaude, "Electrochemical Characterization of Molten Salt Fuel Systems with Boron-doped Diamond"</p> <p>University of Tennessee, Knoxville Sarah Creasman, "Sensitivity Analysis of Thermophysical Properties of Molten Salts using a Molten Salt Demonstration Reactor Model in TRANSFORM"</p> <p>Edward Duchnowski, "Coupled Thermal-Hydraulic and Neutronic Transient Calculations for the gFHR"</p> <p>Kyra Lawson, "Modeling of a Fast Chloride MSR"</p> <p>University Of Wisconsin, Madison Cole Evered, "Development of Experimental Setups for In-situ Irradiation and Stress Effects on Molten Salt Corrosion"</p> <p>Virginia Tech Nagihan Karakaya, "Corrosion Study in A Force Convection Molten Chloride Salt Loop"</p> <p>Nagihan Karakaya, "Reduction of Solid Uranium Dioxide in Calcium Salts"</p> <p>Emily Meilus, "High-Temperature Polished and Unpolished Mullite Tube Reference Electrode Evaluation in Molten Chloride Salt"</p> <p>Jaewoo Park, "Flow-accelerated Corrosion of Stainless Steel in 316H in Molten UF4-based Salt"</p>	<p>Session Chair: Dino Sulejmanovic, ORNL</p> <p>Materion Sponsored Poster Competition Winners:</p> <ol style="list-style-type: none"> Hannah Patenaude (\$500) Emily Meilus (\$300) Edward Duchnowski (\$200)
6:30 pm	<p>Adjourn Day 1 – In-Person Session</p>	

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Wednesday, October 12, 2022, Eastern Daylight Time (UTC-4:00)

Time (EDT)	Event	Lead
8:25–8:30 am	Call to Order	David Holcomb, ORNL Jeremy Busby, ORNL
8:30–8:45 am	Plenary Session US Department of Energy, Office of Nuclear Energy (DOE-NE)	Kathryn Huff, DOE-NE
8:45–10:15 am	Physical Properties of Molten Salts Session Thermal Properties Measurements of Molten Salt at Argonne National Laboratory The LANL Molten Salt Research Capability: 2022 Status Update Thermal Properties and Related Activities at INL Molten Salt Thermophysical Property Measurement and Modeling Efforts at ORNL	Session Chair: Dianne Ezell, ORNL Melissa Rose, ANL Marissa Monreal, Los Alamos National Laboratory (LANL) Toni Karlsson, INL Anthony Birri, ORNL
10:15–10:30 am	Break	
10:30 am–12:00 pm	Empowering Pumps Session Molten Salt Pump Progress at ORNL Molten Salt Technology at UW-Madison Novel Reciprocating Pump for High Temperature Molten Salts High Temperature Molten Salt R&D Test Loops for MSR Applications Molten Salt Components - Centrifugal Pumps	Session Chair: Kevin Robb, ORNL Kevin Robb, ORNL Paul Brooks/Lewis Handy-Cardenas, University of Wisconsin William Sames, Cinco Research Corp. Daniel Barth, High Temperature System Designs, LLC Robert Fleming, Hayward Tyler, Inc.

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Time	Event	Lead
12:00–1:00 pm	Working Lunch Molten Salt Thermal Property Database – Thermophysical Property Overview and Tool Demonstration	Nicholas Termini, ORNL
1:00–2:30 pm	Developer Forum 1 ThorCon: Status 2022 Global Energy from Thorium Development Update from Copenhagen Atomics NEXT: Status and Outlook (What has Changed and What Hasn't Changed) Seaborg Technologies - Overview and Status	Session Chair: Kevin Robb, ORNL Dane Wilson, ThorCon Kirk Sorensen, Flibe Energy, Inc. Aslak Stubsgaard, Copenhagen Atomics Rusty Towell, Natura Resources, LLC Andreas Pedersen, Seaborg Technologies
2:30–2:40 pm	Break	
2:40–4:10 pm	Developer Forum 2 Exodys Energy Overview Molten Chloride Fast Reactor Program Overview Terrestrial Energy: Carbon-Free Energy for Global Industry Kairos Power Progress Update Moltex Energy: Substantiation of Innovative Design Features.	Session Chair: Joanna McFarlane, ORNL Carl Perez, Exodys Energy Dan Walter, TerraPower Robin Rickman, Terrestrial Energy USA Jake McMurray, Kairos Power Andrew Ballard, Moltex Energy
4:10–4:20 pm	Closing Remarks	Alison Hahn, DOE-NE
4:20 pm	Adjourn Day 2	