

2024 DOE-NE Advanced Reactor Technologies Gas-Cooled Reactor Program Review Meeting

July 16-18, 2024

July 16-17: Energy Innovation Laboratory (EIL)

July 18: Collaborative Computing Center (C3)

**All buildings are established General Access Area (GAA), no badging is required.*

Agenda

Tuesday, July 16, 2024

Energy Innovation Laboratory (EIL), Conference rooms A111-A113)

775 MK Simpson Blvd, Idaho Falls, ID 83401

(All times are MT)

Advanced Gas Reactor (AGR) TRISO Fuel Qualification Program

08:00	Welcome and Meeting Logistics.....	Gerhard Strydom, INL
08:05	Department of Energy Nuclear Energy Perspectives	Alison Hahn, DOE-HQ
08:15	Department of Energy ART Program Perspective.....	Matt Hahn, DOE-HQ
08:25	ART GCR Program Overview	Gerhard Strydom, INL
08:40	DOE AGR Fuel Development and Qualification Program Overview	Paul Demkowicz, INL
09:05	AGR-3/4 Fuel Compact Fission Product Concentration Profiles	Lu Cai, INL
09:25	Break (10 minutes)	
09:35	AGR-3/4 PIE and Data Analysis.....	Adriaan Riet, INL
10:05	AGR-5/6/7 PIE Overview 2024.....	John Stempien, INL
10:35	AGR-5/6/7 Partial Mass Balance.....	Lu Cai, INL
10:55	Break (10 minutes)	

Tuesday, July 16, 2024

AGR TRISO Fuel Qualification Program (Continued)

- 11:05 AGR-5/6/7 Compact Destructive Exams and Safety Testing—ORNL..... Will Cureton, ORNL
- 11:35 AGR-5/6/7 Compact Destructive Exams and Safety Testing 2024—INL John Stempien, INL
- 12:05 Break for lunch setup (15 minutes)**

TRISO Fuels NEUP Projects (60 minutes)

- 12:20 Robust bullet-time tagging and tracking system based on computer vision Muthanna Al-Dahhan, for individual ex-core TRISO-fueled pebble identification..... Missouri S&T
- 12:40 Statistical modeling of the effect of microstructural heterogeneity on the..... Yongfeng Zhang, irradiation behavior of TRISO fuel buffer layer University of Wisconsin Madison
- 13:00 Separate-effect Test Facilities Under Prototypical Conditions for N.K. Anand & Y. A. Hassan, Depressurization and Water-ingress Accidents..... Texas A&M University

AGR TRISO Fuel Qualification Program

- 13:20 Supplemental PIE Activities Supporting Mechanistic Understanding of Tyler Gerczak, ORNL TRISO Performance.....
- 13:40 Microtensile Specimen Analysis..... Tanner Mauseth, INL
- 14:00 X-ray Computed Tomography of TRISO Fuel William Chuirazzi, INL
- 14:20 Break (15 minutes)**
- 14:35 Thermophysical Property Characterization of Irradiated TRISO Compacts Ethan Hisle, INL
- 14:55 Overview of New Quality Control Methods Development at ORNL in FY24..... Grant Helmreich, ORNL
- 15:15 AGR Fuel Oxidation Testing Summary and Plans John Stempien, INL
- 15:35 Break (15 minutes)**

Tuesday, July 16, 2024

AGR TRISO Fuel Qualification Program

- 15:50 Fission Product Release Data Summary Covering AGR-1 through AGR-3/4 John Stempien, INL
- 16:10 Fuel Performance Modeling Status Update and Potential Model ImprovementsBill Skerjanc, INL
- 16:30 NDMAS Portal Updates Courtney Otani, INL
- 16:45 Concluding remarksPaul Demkowicz, INL
- 17:00 **Adjourn**

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Wednesday, July 17, 2024

Energy Innovation Laboratory (EIL), Conference rooms A111-A113

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Graphite Qualification and R&D

- 08:00 DOE ART Graphite R&D IntroductionWill Windes, INL
- 08:20 Graphite Oxidation Activities Rebecca Smith, INL
- 08:50 Oxidation Resistant GraphiteTim Bragg and Michael Barkdull, INL
- 09:20 Overview of Graphite Model Development..... Veerappan Prithvirajan, INL
- 09:50 Break (20 minutes)**
- 10:10 ASME – Grappling with the Concept of Component Failure..... Martin Metcalfe, Martin Metcalfe Consultancy
- 10:40 ASME Code Development (Design Rules)..... Andrea Mack, INL
- 11:10 Ceramic Composites..... Wilna Geringer, ORNL
- 11:40 Break for lunch setup (20 minutes)**

Wednesday, July 17, 2024

Graphite Qualification and R&D NEUP Projects (60 minutes)

- 12:00 Introduction of NEUP speakersWill Windes, INL
- 12:05 Multiscale Effects of Defects and Microstructure on Mechanical..... Gongyuan (Patrick) Liu,
Properties of Nuclear Graphite..... The Pennsylvania State University
- 12:35 Quantifying the Dynamic and Static Porosity/Microstructure..... Jacob Eapen,
Characteristics of Irradiated Graphite through Multi-technique North Carolina State University
Experiments and Mesoscale Modeling.....

Graphite Qualification and R&D

- 13:05 AGC Update.....Will Windes, INL
- 13:35 Molten Salt Intrusion Nidia Gallego, ORNL
- 14:05 Split-disk Studies.....Arvin Cunningham, INL and Lianshan Lin, ORNL
- 14:35 Wear Testing..... Tomas Grejtak, ORNL
- 15:05 Concluding remarksWill Windes, INL
- 15:20 **Adjourn**

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Thursday, July 18th, 2024

Collaborative Computing Center (C3), C3 Auditorium (Rooms 1131A-1131B)

955 MK Simpson Blvd, Idaho Falls, ID 83401

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High Temperature Metals

08:00 High Temperature Metals Program Overview Mike McMurtrey, INL

08:15 High Temperature Materials Heramb Mahajan, INL

Methods, Modeling, and Validation

08:30 ART GCR Design, Methods and Validation Overview Paolo Balestra, INL

08:50 Water-Cooled Natural Convection Shutdown Heat Removal Test Facility Matthew Jasica, ANL
(NSTF) data and status

09:20 Break (20 minutes)

09:40 Progress in the High Temperature Test Facility (HTTF) Benchmark Robert Kile, INL

10:10 Advanced Cross Section Library generation using reduced order models Yifeng Che, INL

Thursday, July 18, 2024

Methods, Modeling, and Validation (Continued)

- 10:40 AIR cooled RCCS CFD modeling validation..... Sinan Okay, Penn State University
- 11:00 **Break for lunch setup (20 minutes)**

Methods, Modeling, and Validation NEUP Projects (60 minutes)

- 11:20 Investigating Heat Transfer in Horizontally Oriented HTGR Under Bindra Hitesh,
Normal and PCC ConditionsPurdue University
- 11:50 Thermal Hydraulics Investigation of Horizontally Oriented Layout Muthanna Al Dahhan,
Micro HTGRs Using Integrated Advanced Measurement Techniques Missouri S&T

Methods, Modeling, and Validation

- 12:20 HTGR Validation: NEUP Survey and DatabaseSunming Qin, INL
- 12:50 TREAT TRISO Transient Testing Pre-test Analysis Using Mustafa K. Jaradat and
NEAMS Tools Jacob A. Hirschhorn, INL
- 13:20 **Break (20 minutes)**
- 13:50 International Collaborations Overview..... Paolo Balestra, INL
- 14:20 Questions/Discussions..... Paolo Balestra, INL
- 14:30 Final Remarks 2024 Program Review..... Gerhard Strydom, INL
- 14:40 **Adjourn**