

Objectives

The workshop is envisioned to complement the conference, to further answer the following questions in the context of DoD efforts:

- What are the key challenges preventing advancement in technological readiness level (TRL) of UHTCs?
- What are the current efforts to overcome these challenges?
- What new efforts would be valuable to overcome these challenges?
- What resources are key to advancing UHTCs on the TRL scale?
- How do we achieve continuous discussion and collaboration?
- Identify new opportunities for collaboration

Distribution A

A reminder that although attendance was limited to US Government Contractors and Civilian Researchers, the workshop venue is only approved at a Distribution A (cleared for public release) level. The panel participants may choose to not answer, or offer to follow up the question in another venue, for any questions.

Rules of Engagement

No photography or recording of the panel presentations or discussions is allowed. In order to keep the workshop on schedule, the moderators will do their best to keep panel discussions focused and on time; please respect their requests to wrap up discussions.

AGENDA

8:00 – 8:15 – Welcome remarks

*Panelist Intros: **Cross-collaboration among DoD funded efforts***

8:15 – 8:30 – Dr. David Mitchell, Senior R&D Materials Scientist, Oak Ridge National Laboratory

Collaborative Development of Advanced Processes to Fabricate Ultra-High Temperature Ceramics and Composites at ORNL

8:30 – 8:45 – Dr. Jesse Maxwell, Aerospace Engineer, U.S. Naval Research Laboratory

Accelerating Hypersonics Research and Development through Interdisciplinary Engagement

8:45 – 9:00 – Dr. Kelly Stephani, Associate Professor, Kritzer Faculty Fellow at University of Illinois Urbana-Champaign

Hypersonic TPS Material Characterization, Modeling, and Testing through University and DOD Cross-Collaboration

9:00 – 10:00 – *Panel: **Cross-collaboration among DoD funded efforts***

10:00 – 10:15 – Coffee Break

*Panelists Intros: **Future directions for UHTC research***

10:15 – 10:30 – Dr. Eric Wuchina, Program Officer, Materials for Thermal & Chemical Extremes, Office of Naval Research

ONR Investment Strategies in Materials for Chemical and Thermal Extremes

10:30 - 10:45 – Dr. Bill Carter, Program Manager, Defense Sciences Office, Defense Advanced Research Projects Agency

Materials for Extreme Environments at DARPA DSO: Current and Future Challenges

10:45 – 11:00 – Dr. Daniel Cole, Program Manager, DEVCOM Army Research Laboratory - Army Research Office

Army Extramural UHTC Research: Current Projects and Efforts on the Horizon

11:00 – 11:15 – Dr. Ming-Jen Pan, Program Officer, Air Force Office of Scientific Research

Overview of AFOSR's Aerospace Composite Materials Program

11:15 – 12:45 – Poster (working) Lunch

12:45 – 13:45 – *Panel: **Future directions for UHTC research***

13:45 - 14:15 - Open Discussion on Panel Topics

14:15-14:30 – Closing Remarks

Posters

11:15 – 12:45 – Poster (working) Lunch

1. Scott McCormack, *University of California, Davis, USA*
Thermochemical and Thermophysical Properties up to 3000 °C and beyond
2. Amy Wat, Logan Bekker, Bruce Yang, Jesus Rivera, Ryan Lu, Swetha Chandrasekaran, Ashley Hall, Gabriella C. S. King, Marcus A. Worsley, Wyatt L. Du Frane, Joshua D. Kuntz, James Cahill, *Materials Sciences Division, Lawrence Livermore National Laboratory, USA*
Near-Net Shaping of Zirconium Diboride via Low Toxicity Gelcasting
3. Laura Silvestroni, Frédéric Monteverde, Luca Zoli, Diletta Sciti, *CNR-ISTEC, Italy*
Hi-tech Ceramics and Composites for Harsh Environments
4. Laura Silvestroni,¹ Nicola Gilli,² William Fahrenholtz,³ Jeremy Watts,³ and Greg Hilmas,³
¹CNR-ISTEC, Italy ²CNR-IMM, Italy ³Missouri Univ. of Science and Technology, USA
Unraveling the Principles behind Super-strong Ceramics at Extreme Temperatures
5. Lisa Rueschhoff¹, Samuel Frueh^{1,2}, Katherine Acord^{1,3}, Amber Powell¹, Zlatomir Apostolov¹, Michael K. Cinibulk¹, ¹Air Force Research Laboratory, WPAFB, USA ²UES, Inc., USA ³National Research Council Fellowship, USA
Improved Understanding of Test Environment and Material Interactions of UHTCs

Post Workshop

Information: A summary of the key topics and takeaways from the workshop, along with contact information on the attendees, will be sent in the next month. Please let the ECI staff know if you do NOT wish to have your information included in this email.

Feedback: Please be on the lookout for an e-mail in the coming weeks from ECI requesting feedback on the workshop. We look forward to your input!

Workshop Chairs

Lavina Backman, Lisa Rueschhoff, Kris Behler

Workshop Scribe

Maritza Sanchez

Conference Chairs

Daniel Butts, Carmen Carney, Carolina Tallon,
Greg Thompson, and Chris Weinberger

Thank you for your attendance and safe travels home!