High Temple 2025

RENAISSANCE ASHEVILLE DOWNTOWN HOTEL
ASHEVILLE, NORTH CAROLINA
PRELIMINARY AGENDA (as of 14 January 2025)

MONDAY, FEBRUARY 10, 2025

3:00PM - 5:00PM **Workshop Registration**

TUESDAY, FEBRUARY 11, 2025

7:00AM-8:15AM **Workshop Registration**

8:15AM-8:30AM **Opening Remarks**
Kaitlin Rigitano, University of Dayton Research Institute

8:30AM-10:00AM **Session 1: Program Overviews**
Chair: Theo Dingemans, University of North Carolina at Chapel Hill

Overview of High Temperature PMC Activities at AFRL
Davide Simone, Air Force Research Laboratory

Overview of US Army High Temperature Composite Efforts
David Alfano, US Army DEVCOM AC, Benét Laboratories

US Navy Overview for Advanced Materials
Natalie Vest, Naval Air Warfare Center

10:00AM-10:30AM **Break**

10:30AM-12:00PM **Session 2: High Temperature Materials for Space Applications**
Chair: Hilmar Koerner, Air Force Research Laboratory

Space Supply Chain Resiliency
David Beck, Space Access Mobility Logistics, Space Systems Integration Office, Space Systems Command

High Performance Liquid Crystalline Polyimides for Air and Space
Mia Carrola, Zhenning Yu, Chris Crouse, & Hilmar Koerner, Air Force Research Laboratory

Vespel® Polyimide Parts for Next-Generation Aerospace and Space Applications
Angela Martin, DuPont - Vespel®
Chad Delong & Omar Padilla-Velez, DuPont de Nemours, Inc.

12:00PM-1:00PM **Lunch (provided)**

1:15PM-1:30PM **Group Picture**

TUESDAY, FEBRUARY 11, 2025 (continued)

1:30PM-3:00PM **Session 3: Modeling of High Temperature Composites**
Chair: Andrew Guenthner, Tideway Arts and Sciences, LLC

Modeling the Stochastic Evolution of a High-Performance Thermoplastic Crystallization during Additive Manufacturing
Matthew Grasinger, Air Force Research Laboratory

Process Modeling of Polyimide RTM Resin
Chris Calebrese, Joseph Begovich, Bruce Koors, Jesse Enlow, & Doug Armstrong, GE Aerospace

Evaluation and Testing of Complex Configuration Polyimide Systems for Relation to Application Environments
Kerry Necessary, Todd Bullions, & Greg Gemeinhardt, GE Aerospace

3:00PM-3:30PM **Break**

3:30PM-5:00PM **Session 4: Processing of High Temperature Resins and Composites**
Chair: Greg Gemeinhardt, GE Aerospace

Benzoxazine-Functional Phthalonitrile for Enhanced Melt State Processability of High-Temperature Matrices
Andrew Hollcraft & Jeffrey Wiggins, University of Southern Mississippi

Phthalonitrile-based Resin and Composite Materials
Jennifer Dysart, Tyler Richardson, & Matthew Laskoski, Naval Research Laboratory

High-Temperature Polyamideimide Composite Resins: Processing and Composite Properties
Theo Dingemans, University of North Carolina at Chapel Hill

5:00 PM **Adjourn**

WEDNESDAY, FEBRUARY 12, 2025

8:30AM-10:00AM **Session 5: Manufacturing of High Temperature Resins and Composites**
Chair: Gray Fowler, Textum

Manufacturing Challenges in Polyimide Processing
Douglas Armstrong, Joseph Begovich, Bruce Koors, Jesse Enlow, Heritage Weems, Kerry Necessary, GE Aerospace

Investigation of Hand Layup vs. Automated Fiber Placement for High Temperature (HTOMC) Organic Composites
Errick Robles & Rachael Andrulonis, Wichita State University, National Institute for Aviation Research
Chantel Camardese, Christopher Barberi, & Steve Smith, Toray Advanced Composites

Resin Transfer Molded Solid Rocket Motor Exit Cone Liner
Nicolas Carducci & Gray Fowler, Textum

10:00AM-10:30AM **Break**

WEDNESDAY, FEBRUARY 12, 2025 (continued)

10:30AM-12:00PM **Session 6: Durability of High Temperature Composites**
Chair: Dan McCray, University of Dayton Research Institute

Rapid Heating of Polymer Matrix Composites: An Investigation on Resin Chemistry for Composite Thermal Resistance in High Temperature, Oxidative Environments
Brendan Patterson, Ngon Tran, & Daniel Knorr, Jr., DEVCOM Army Research Laboratory

High-Temperature Composites for Army Dismounted Soldier Applications
Dan Baechle, DEVCOM Army Research Laboratory

Multifunctional Graphene from Renewable Plant Based Sources and Its Impacts on High Temperature Composite Properties and Flame Resistance
Daniel Mulqueen, Old Dominion University
Aaron Sinkler, Global Technical Systems

12:00PM - 1:30PM **Lunch (provided)**

1:30PM - 3:00PM **Session 7: Ablative Applications of High Temperature Composites**
Chair: Andy Littlefield, US Army Benét Laboratories

3D Printed Thermoplastic Composite Ablatives through Post-Stabilization and In-Situ Stretch Breaking
Ryan Dunn, Michael DeLay, & David Zilar, Mantis Composites

Bio-Based High Temperature Resins for Ablative Applications
James Sitter, Loren Brown, & Matthew Laskoski, Naval Research Laboratory

The Past and Present Advancements in Ablative Materials at Textron Systems
Andrew Wallace & Mike Favaloro, Textron Systems

3:00PM-3:30PM **Break**

3:30PM-5:00PM **Panel Session: "High Temperature Polymers in Next Generation Space and Rocket Applications"**
Moderator: Hillary Huttenhower, Pratt & Whitney

6:00PM **High Temple Social Hour**

7:00PM **High Temple Dinner Banquet**

THURSDAY, FEBRUARY 13, 2025

8:30AM-10:00AM **Session 8: Ultra High Temperature Composites**
Chair: Natalie Vest, Naval Air Warfare Center

Development of Processable Polymer Derived Ultra-High Temperature Ceramics and Composites
Timothy Pruyn, Matthew Dickerson, & Jared Delcamp, Air Force Research Laboratory

Development of Preceramic Polymer Microstructure and Thermal Properties
Virginia Mullins & Jeffrey Wiggins, University of Southern Mississippi

Geopolymer-High Performance Polymer Hybrids, Investigations of Microstructure, chemical Interactions, and Resulting Thermo-Mechanical Attributes
W. Jacob Monzel & Davide Simone, Air Force Research Laboratory
Minho Lee, Patrick Hewitt, Devon Samuel, Jeroen Deijkers, and Christopher Peruzzi, BlueHalo LLC

10:00AM-10:30AM **Break**

10:30AM-12:00PM **Session 9: High Temperature Resins and Composites**
Chair: Caitlin Duffner, Air Force Research Laboratory

Development of a Hybrid Polyimide-Phthalonitrile Amenable to 650+ °F Operation
Ashley Dustin, HRL Laboratories, LLC

Flow Control in a High Toughness BMI Prepreg System
Amy Mayhugh, Jonathon Hughes, & Alfred Haro, Toray Composite Materials America, Inc.

Film Adhesives for Extreme Environments
Henry Sodano, Trimer Technologies, LLC

12:00PM **Adjourn**