



HILTON SEDONA RESORT AT BELL ROCK
SEDONA, ARIZONA
PRELIMINARY AGENDA (as of 15 November 2019)

MONDAY, FEBRUARY 3, 2020

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

TUESDAY, FEBRUARY 4, 2020

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

8:15AM - 8:30AM **Opening Remarks**
Dan McCray, UDRI

8:30AM - 10:00AM **Session 1: Government Overviews**
Chair: TBD

Overview of Army High Temperature Composite Efforts
Andrew Littlefield, US Army-ARDEC Benét Laboratories

Overview of US Navy High Temperature Programs
Ben Harvey, Naval Air Warfare Center, Weapons Division

Overview of High Temperature PMC Activities at AFRL
Hilmar Koerner, AFRL

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

10:30AM - 12:00PM **Session 2: High Temperature Resins & Composites**
Chair: TBD

"High-Temperature Phthalonitrile Composites With Improved Stability"
Matthew Laskoski, Naval Research Laboratory
Tristan Butler, National Research Council

"Benzocyclobutene (BCB) Derived Perfluoropyridine Monomers for Polyaromatic Thermosetting Resins"
Matthew Houck, Cynthia Corley, Scott Iacono, US Air Force Academy
Robert H. Lambeth, Army Research Laboratory

"A New 5th Generation High Temperature and Low Moisture Absorption Hydrocarbon Resins Family for Aerospace Applications"
Sajal Das, Novoset, LLC
Paul Boothe, Patrick Shipman & Scott Shuler, Novoset Technology Center

TUESDAY, FEBRUARY 4, 2020 (continued)

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

1:15PM – 1:30PM **Group Picture**

1:30PM - 3:00PM **Session 3: Fibers & Sizings**
Chair: TBD

“A New Class of PAN Fibers and Novel Reinforcement Concepts for High Temperature Organic Matrix Composite Applications”

Sean Johnson, Stephen Smith, Chantel Camardese & Christopher Barberi, Toray Advanced Composites

“Development of a Universal Sizing with Polyphosphazene Allotropes”
Roger Gerzeski, AFRL

“Epoxy-Benzoxazine Hybrid Resin for Structural Aerospace Applications”
Benjamin Rutz & Toshiya Kamae, Toray Composite Materials, Inc.

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

3:30PM - 5:00PM **Session 4: High Temperature Hybrid Materials**
Chair: TBD

“Poly(dioxaboroles) as Novel Resins for High Temperature Thermosets”

James Heckler & Sophia Angelopoulos, Universal Technology Corporation
Timothy Pruyn, AFRL

“Investigation of Phosphate-Aluminosilicate Geopolymers”
Jacob Monzel, AFRL

“Evaluation of Poly(Carborane-Siloxane-Arylacetylene) Hybrid Resin System for Thermal Barrier Coatings on PMCs”

Kyle Berglund, Naval Air Warfare Center Aircraft Division
Jacob Monzel and Tim Pruyn, AFRL
Manoj Kolel-Veetil, Naval Research Laboratory
Thao Gibson & Kaitlin Rigitano, UDRI

5:00 PM **Adjourn**

WEDNESDAY, FEBRUARY 5, 2020

8:30AM - 10:00AM

Session 5: Manufacturing of High Temperature Composites-I
Chair: TBD

"RM-1100 and Titanium Honeycomb Sandwich Structure Process Feasibility"
Tom Sutter & Jim Magato, Renegade Materials Corporation

"Evaluation of High Temperature Resin Transfer Molding (RTM) Resins for Propulsion Applications"
Thao Gibson & Kaitlin Rigitano, UDRI
Davide Simone, AFRL
Kyle Berglund, Naval Air Warfare Center Aircraft Division

"RTM-1100 Process Demonstration and Properties"
Tom Sutter & Jim Magato, Renegade Materials Corporation
David Nesbitt, Matrix Composites

10:00AM - 10:30AM

Break

10:30AM - 12:00PM

Session 6: Repair of High Temperature Materials
Chair: TBD

"Navy Repair for Bismaleimide (BMI) Composites"
Jillian Gill & Robert Thompson, Naval Air Systems Command

"Bonded Repair of Bismaleimide (BMI) Composite Structures"
Christopher Brooks & Russell Keller, The Boeing Company

"Evaluation of a NMP-free, High-Temperature Adhesive (RM 1020)"
Kevin Tienda, AFRL
Paul Childers & Corey Kondash, UDRI

12:00PM - 1:30PM

Lunch (provided) and Award Presentations

1:30PM - 3:00PM

Session 7: Modeling of High Temperature Materials
Chair: TBD

"Effect of Porosity on Structural Performance of High Temperature Polyimide Composites with Sharp Radii Features"
Xiaomei Fang, Xuetao Li, Levon Cimonian, Aurelia Ledbetter, Rajiv Naik, Hillary Huttenhower, Pratt & Whitney
Justin Alms, United Technologies Research Center

"Molecular Modeling of Polycyanurates to Predict Water Uptake and Thermophysical Properties"
Levi Moore & Kamran Ghiassi, AFRL
Neil Redeker, ERC, Inc.

"Visualizing Phase Morphology in Transparent High-Performance Epoxy Systems"
Gale Holmes, Jeremiah Woodcock, Anthony Kotula, Ahure Powell, Stephen Stranick, & Jeffrey Gilman, National Institute of Standards and Technology

3:00PM - 3:30PM

Break

WEDNESDAY, FEBRUARY 5, 2020 (continued)

3:30PM - 5:00PM

Panel Session: Composite Resin and Process Modeling Progress
Moderator: Hillary Huttenhower, Pratt & Whitney

6:00PM

High Temple 40 Dinner (provided)

THURSDAY, FEBRUARY 6, 2020

8:30AM - 10:00AM

Session 8: Manufacturing of High Temperature Composites-II
Chair: TBD

“Improving Processability of 3D-Printable Metastable Fluoropolymer Composites”

Nathan Weeks, Enrique Gazmin, Jayden Glover, and Scott Iacono, US
Air Force Academy
Jena McCollum, University of Colorado – Colorado Springs

*“Advances in High Temperature Polyimides: From 3D Printed Objects to Fire
Suppression Foams”*

Clay Arrington, Benjamin Stovall, Daniel Rau, Christopher Williams &
Timothy Long, Virginia Tech

*“Effect of Composition on Phase Behavior of Liquid Crystalline Polyimides for
Advanced Manufacturing Applications”*

Edward Trigg, Zenning Yu, Loon-Seng Tan & Hilmar Koerner, AFRL

10:00AM - 10:30AM

Break

10:30AM - 12:00PM

Session 9: Manufacturing of High Temperature Composites-III
Chair: TBD

“Mechanical Properties of an Additively Manufactured Cyanate Ester”

Marissa Giovino, Hilmar Koerner & Jeffery Baur, AFRL

“Bismaleimide - Cyanate Ester IPNs for Additive Manufacturing”

Giuseppe Palmese, Nicolas Alvarez, and Anh Huynh, Drexel University

*“Synthesis and Processability of Ortho-Diynyl Arene Resins toward
Polynaphthalene Networks and High Yield Carbon-Carbon Composites”*

Ernesto Borrego, Behzad Farajidizaji, Solomon Tesfaye, Ganesh
Narayanan, Charles Pittman, Jr., & Dennis Smith, Jr., Mississippi State
University

12:00PM

Adjourn