

KEY

NSMMS & CRASTE Focused Sessions

CRASTE Focused Sessions

NSMMS Focused Sessions

Sunday, 25 June 2023				
1600 - 2000	Early Registration Check-In			
Monday, 26 June 2023				
0700 - 1700	Registration Open			
0700 - 0745	Speaker Meeting and Light Breakfast for Monday Presenters <i>Sponsored by Momentive</i>			
0700 - 0800	Attendee Light Continental Breakfast <i>Sponsored by RTCS, LLC</i>			
1000 - 1630	Exhibitor Move-In			
1150 - 1300	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i> Student Networking Lunch - Invitation Only			
1330 - 1630	Poster Move-In			
1700 - 1830	Welcome Reception and Exhibit & Poster Kick-Off <i>Sponsored by Hexcel Corporation</i>			
NSMMS & CRASTE Tutorials & Workshops				
Organizers: Mr. Nickolas Demidovich, Federal Aviation Administration; Mr. Carter Johnson, ReLogic Research; Dr. Gerald Russell, RTCS, LLC; & Mr. Tim Stewart, Ultramet				
0800 - 0805	Welcome & Announcements			
0805 - 0835	NASA's Lunar Construction Project (MMPACT) Dr. Raymond "Corky" Clinton, NASA Marshall Space Flight Center			
0835 - 0905	Hypersonics Materials and Manufacturing Challenges Mr. John W. Otto, Raytheon Missiles & Defense			
0905 - 0935	Stratolaunch's Talon-A Hypersonic Testbed Material Testing Capability Dr. Daniel Millman, Stratolaunch			
0935 - 0940	Transition to Multi-Track Technical Sessions & Workshops			
	Track One	Track Two	Track Three	Track Four
	NSMMS & CRASTE Spacecraft & Space Mobility Session Co-Chairs: Mr. Andrew Jimenez & Mr. Ethan Sichler, Air Force Research Laboratory Co-Organizers: Dr. Garth Wilks, Raytheon Missiles & Defense & Mr. Andrew Haaland, Northrop Grumman Corporation	NSMMS & CRASTE Workforce Development Workshop Lead Organizers: Dr. Gerald Russell, RTCS, LLC & Dr. Eric Wuchina, Naval Surface Warfare Center Carderock Division	NSMMS Ground & Flight Test Methodologies Session Chair: Mr. Kegan Miller, Naval Surface Warfare Center Lead Organizer: Dr. Joseph Sheeley, PERIKIN Enterprises Co-Organizers: Mr. Jason Calvert, U.S. Army Space and Missile Defense Command; Mr. Aaron Cossey, Missile Defense Agency; Mr. Paul Marchol, Aerojet Rocketdyne; & Dr. Gerald Russell, RTCS, LLC	NSMMS & CRASTE Oak Ridge National Laboratory Capabilities Overview Lead Organizer: Dr. James Klett, Oak Ridge National Laboratory
0940 - 0945	Session Introduction		Workshop Introduction	
0945 - 1010	Modular Propulsion Unit Maneuvering Requirements for CisLunar Space Mr. Michael Hanlon, Sierra Lobo, Inc.	0945 - 0955 Dr. Lori Stiglitz, Naval Surface Warfare Center 0955 - 1005 Mr. Doug Freitag, U.S. Advanced Ceramics Association 1005 - 1015 Dr. John Schmisser, The University of Tennessee Space Institute 1015 - 1030 Mr. Daniel Marren, TRMC 1030 - 1035 Moderator Wrap Up	Multi-Service Advanced Capability Hypersonic Test Bed (MACH TB) Mr. Kegan Miller, Naval Surface Warfare Center	Workshop Introduction Overview of the Manufacturing Demonstration Facility at the Oak Ridge National Laboratory and the Relevance to Missile and Aerospace Applications Dr. Michael Kirka, Oak Ridge National Laboratory
1010 - 1035	Solid Propulsion Engineered for CubeSat Kinetic Operations (SPECK-Ops) Mr. Elias Wilson, Exquadrum, Inc.		Multi-Service Advanced Capability Hypersonic Test Bed (MACH-TB) Novel Flight Experiment Test Capability Dr. Gerald Russell, RTCS, LLC	Additive Manufacturing of Metallic Components and AI Qualification/Certification during Production Dr. Michael Kirka, Oak Ridge National Laboratory
1035 - 1100	Coffee & Soda Break <i>Sponsored by Aerojet Rocketdyne</i>			
1100 - 1125	The ELECTRA Quick Disconnect Coupling: A Common Fluid Transfer Element for In-Space and On-Surface Applications Dr. Leslie Woodger, Aerojet Rocketdyne	Workforce Development Workshop, cont. 1100 - 1110 Dr. Steve Dunn, NASA Langley Research Center 1110 - 1130 Dr. Ragini Acharya, The University of Tennessee Space Institute 1130 - 1140 Dr. Barry Bauer, Lockheed Martin Corporation 1140 - 1150 Moderator Wrap-up	Hypersonic Weather Encounters using Electromagnetic Launch Assets Mr. Michael Libeau, Naval Surface Warfare Center	Additive Manufacturing of Ceramic and Polymeric Composites for Missile and Aerospace Applications Dr. Vlastimil Kunc, Oak Ridge National Laboratory
1125 - 1150	Accelerated Aging Analysis of Catalyst Materials for Advanced Monopropellant Rocket Engines Mr. Andrew Jimenez, Air Force Research Laboratory		Weather Effects Ground Test Results Mr. Tyler Stovall, Applied Technology Solutions, Inc.	Integrating Intelligent Machining with Additive Manufacturing Dr. Scott Smith, Oak Ridge National Laboratory
1150 - 1300	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i> Student Networking Lunch - Invitation Only			

	<p>NSMMS Missiles & Missile Defense</p> <p>Session Chair: Dr. Brent Carey, Mach-20, LLC</p> <p>Lead Organizer: Mr. Jason Calvert, U.S. Army Space and Missile Defense Command</p> <p>Co-Organizers: Mr. Aaron Cossey, Missile Defense Agency; Mr. Paul Marchol, Aerojet Rocketdyne; Dr. Gerald Russell, RTCS, LLC; & Dr. Joseph Sheeley, PERIKIN Enterprises</p>	<p>NSMMS & CRASTE Tutorials & Workshops, cont.</p>	<p>NSMMS Ground & Flight Test Methodologies, cont.</p> <p>Session Chairs: Mr. Kegan Miller, Naval Surface Warfare Center & Mr. Tyler Neale, Arnold Engineering Development Complex</p>	<p>NSMMS & CRASTE Small Business Forum</p> <p><i>Sponsored by Lockheed Martin Corporation</i></p>
1300 - 1305	Announcements & Session Introduction	Announcements	Announcements	<p>Small Businesses Forum One-on-Ones With:</p> <p>Aerojet Rocketdyne Ball Aerospace The Boeing Company Kratos Lockheed Martin Corporation Missile Defense Agency Northrop Grumman Corporation Raytheon Technologies</p>
1305 - 1330	<p>Hypersonic Test Bed Program</p> <p>Dr. Yazmin Carroll, Missile Defense Agency</p>	<p>Workforce Development Workshop, cont.</p> <p>Moderator Directed Q&A, Solutions Discussion</p>	<p>Wireless High-Temperature Sensor Array System for Hypersonic Applications</p> <p>Dr. Cheryl Xu, North Carolina State University</p>	
1330 - 1355	<p>Next Generation Seeker Window Technology</p> <p>Dr. Yazmin Carroll, Missile Defense Agency</p>	<p>NDE of Composites: Advances in Ultrasonic Spectroscopy Tutorial</p> <p>Mr. James Tucker, Kratos SRE</p>	<p>Ground Testing of High Temperature Hypersonic Thermal Protections System Materials</p> <p>Dr. Erica Corral, The University of Arizona</p>	
1355 - 1420	<p>Mechanical Behavior of a Thin, All-Oxide CMC for an Articulating Rigid Structure</p> <p>Dr. Avery Samuel, ARCTOS Technology Solutions</p>		<p>Advancements and Characterization of Oxy-Propane Torch for Low-Cost Material Screening</p> <p>Mr. Derrick Talley, Kratos SRE</p>	
1420 - 1445	<p>Additive Manufacture and Material Property Analysis of Crack-Free Electron Beam Melted Pure Tungsten</p> <p>Mr. Kurtis Watanabe, The University of Texas at El Paso</p>	<p>Considerations for Improved Optical Pyrometry of High Temperature Materials Tutorial</p> <p>Dr. Kendall Johnson, Space Dynamics Laboratory & Mr. Gordon Scriven, ATA Engineering</p>	<p>Low-Cost Torch Testbed for Developing High-Temperature Materials and Systems</p> <p>Mr. Alex Conley, Lockheed Martin Corporation</p>	
1445 - 1510	<p>Alternate Aeroshell Development for Hypersonics</p> <p>Mr. Matthew Blenis, ReLogic Research</p>		<p>Understanding the Arc Heater Flow Field with Implications to Material Testing</p> <p>Dr. Joseph Sheeley, PERIKIN Enterprises</p>	
1510 - 1540	<p>Coffee & Snack Break</p> <p><i>Sponsored by Scot Forge</i></p>			
	<p>NSMMS Missiles & Missile Defense, cont.</p>	<p>NSMMS & CRASTE High Altitude/Sub-Orbital Platforms & Experiments</p> <p>Session Chair: Mr. Nickolas Demidovich, Federal Aviation Administration</p>	<p>NSMMS Ground & Flight Test Methodologies, cont.</p>	<p>NSMMS & CRASTE Small Business Forum</p> <p><i>Sponsored by Lockheed Martin Corporation</i></p>
1540 - 1545	Announcements	Announcements & Session Introduction	Announcements	<p>Small Businesses Forum One-on-Ones With, cont.</p> <p>Aerojet Rocketdyne Ball Aerospace The Boeing Company Kratos Lockheed Martin Corporation Missile Defense Agency Northrop Grumman Corporation Raytheon Technologies</p>
1545 - 1610	<p>H4H C2 Noretip Design, Analysis, and Flight Testing</p> <p>Mr. Seth Fincher, ReLogic Research</p>	<p>NASA Flight Opportunities Panel</p> <p>Mr. John Kelly, NASA Flight Opportunities Program, Armstrong Flight Research Center</p>	<p>In-Situ Spectral Emissivity Extraction using COTS Pyrometers during Arc Heater Testing</p> <p>Dr. Jon Cox, Axient, LLC</p>	
1610 - 1635	<p>High Temperature Fin, Wing and Control Surfaces</p> <p>Mr. Robert Hardesty, The Peregrine Falcon Corporation</p>		<p>Design Challenges in Stagnation Heat Flux Calorimetry for Arc-Heated Test Facilities at AEDC</p> <p>Dr. Justin Myrick, Axient, LLC</p>	
1635 - 1700	<p>Design and Testing of Articulated Thermal Protection</p> <p>Mr. Eric McGill, University of Dayton Research Institute</p>	<p>The MK-II Aurora Spaceplane</p> <p>Ms. Khaki Rodway, Dawn Aerospace</p>	<p>Simultaneous Convective and Radiative Heating of Materials with the 200-kW Laser Enhanced Arc Jet Facility (LEAF)</p> <p>Dr. Megan MacDonald, NASA Ames Research Center</p>	
1700 - 1830	<p>Welcome Reception and Exhibit & Poster Kick-Off</p> <p><i>Sponsored by Hexcel Corporation</i></p>			

Tuesday, 27 June 2023	
0700 - 1730	Registration Open
0700 - 0745	Speaker Meeting and Light Breakfast for Tuesday Afternoon Presenters <i>Sponsored by Ball Aerospace</i>
0700 - 0800	Attendee Light Continental Breakfast <i>Sponsored by New Mexico State University Department of Mechanical and Aerospace Engineering</i>
1200 - 1330	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i>
1300 - 1730	Exhibits and Poster Session Open
1745 - 1930	On-site Networking Reception <i>Sponsored by Northrop Grumman Corporation</i>
NSMMS & CRASTE Plenary Session	
0800 - 0820	Opening Remarks, National Anthem & Plenary Session Announcements: Dr. Eric Wuchina , Lead Navy Advisor to NSMMS & CRASTE, Naval Surface Warfare Center Carderock Division Moderator: Ms. Danielle Gerstner , Branch Head, Materials for Hypersonics and Advanced Systems Branch, Naval Surface Warfare Center Carderock Division
0820 - 0900	Dr. James Weber Principal Director for Hypersonics, Office of the Under Secretary of Defense for Research and Engineering, Critical Technologies
0900 - 0940	Mr. Stan Stafira, Jr., SES Chief Architect, Missile Defense Agency
0940 - 1020	Coffee & Soda Break <i>Sponsored by Solvay</i>
1020 - 1100	Dr. Michael Gregg, SES Director, Aerospace Systems Directorate, Air Force Research Laboratory
1100 - 1140	Mr. Stephen Creech Assistant Deputy Associate Administrator, Moon to Mars Program Office, Advanced Exploration Systems at NASA Human Explorations and Operations Directorate, NASA Headquarters
1140 - 1200	Lifetime Achievement Award & Sponsor Thank You
1200 - 1330	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i>

	Track One	Track Two	Track Three	Track Four
Finalists for the Student Excellence Oral Awards are marked with an *	NSMMS Hypersonics Session Chairs: Dr. Allan Katz, Air Force Research Laboratory & Dr. Jesse Maxwell, U.S. Naval Research Laboratory Lead Organizer: Mr. Mitch Petervary, The Boeing Company Co-Organizers: Mr. Dan Hladio, Materials Research & Design, Inc.; Mr. Curtis Martin, Naval Surface Warfare Center; Mr. Tod Palm, Northrop Grumman Corporation; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Sandra Walker, NASA Langley Research Center; & Mr. Brian Zuchowski, Lockheed Martin Aeronautics Company	NSMMS Missiles & Missile Defense Session Chair: Dr. Yazmin Carroll, Missile Defense Agency Lead Organizer: Mr. Jason Calvert, U.S. Army Space and Missile Defense Command Co-Organizers: Mr. Aaron Cossey, Missile Defense Agency; Mr. Paul Marchol, Aerojet Rocketdyne; Dr. Gerald Russell, RTCS, LLC; & Dr. Joseph Sheeley, PERIKIN Enterprises	NSMMS Ground & Flight Test Methodologies Session Chair: Mr. Daniel Ogg, Arnold Engineering Development Complex Lead Organizer: Dr. Joseph Sheeley, PERIKIN Enterprises Co-Organizers: Mr. Jason Calvert, U.S. Army Space and Missile Defense Command; Mr. Aaron Cossey, Missile Defense Agency; Mr. Paul Marchol, Aerojet Rocketdyne; & Dr. Gerald Russell, RTCS, LLC	NSMMS Novel Spaceflight Payloads, Instruments & Mission Operations Session Chair: Dr. Samir Singh, Ball Aerospace Co-Organizers: Dr. Amjad Almansour, NASA Glenn Research Center; Dr. Raymond Clinton, NASA Marshall Space Flight Center; Ms. Kaia David, The Boeing Company; Mr. Michael Fuller, Northrop Grumman Space Systems; Mr. James Tucker, Kratos SRE; & Mr. John Vasquez, Naval Research Laboratory
	1330 - 1335 Announcements & Session Introduction	Announcements & Session Introduction	Announcements & Session Introduction	Announcements & Session Introduction
1335 - 1400	SMASH Program Update Dr. Jesse Maxwell, U.S. Naval Research Laboratory	Post-Processed Ceramic Modification to Carbon/Carbon Composites Dr. Samuel Swan, Sandia National Laboratories	Force Measurement Technique using Laser Interference Patterns (aka "Optical Balance") Mr. Joseph Herdy, CFD Research Corporation	Development of Radioluminescent Tritium Polymeric Material for High Visibility Applications Ms. Meghan Carrico & Ms. Lauren Fisher, NASA Marshall Space Flight Center
1400 - 1425	Design and Analysis of Bay Concepts for AFRL's Hypersonic Flight Research Vehicle Mr. Anthony Bazler, University of Dayton Research Institute	*Aerotherm Chemical Equilibrium (ACE Modeling) Ms. Kayla Stark, ReLogic Research & The University of Alabama in Huntsville	Adventures In and New Paradigm for Heat Flux Gauge Development in Hypersonics Dr. Jay Frankel, New Mexico State University	Lithium-Based Deferred-Action Batteries Dr. Danny Liu, Faraday Technology, Inc.
1425 - 1450	Multi-Service Advanced Capability Hypersonic Test Bed (MACH-TB) Subscale Test Capability Mr. Stephen Williams, RTCS, LLC	Developments on Fabrication and Characterization of Silicon Nitride Fibers by LCVD Mr. Jeff Vervlied, Free Form Fibers, LLC	Oxyacetylene Torch Test Bed Development with Computed Tomography (CT) Damage Characterization Mr. James Wagnon, Dynetics	Adhesive Formulation for Cryogenic Applications Dr. Samir Singh, Ball Aerospace & Mr. Joel Stray, Gentex Corporation
1450 - 1515	Multi-Service Advanced Capability Hypersonic Test Bed (MACH-TB) Full Scale Test Capability Mr. Brent Sims, M Technical Services	Transparent CVC SIC® for Windows and Radomes Dr. William Fischer, ASCM Technologies	Capabilities for the RF Characterization of Materials Under Extreme Heat Fluxes Dr. Gregory Neher, Riverside Research	Development and Testing of Innovative Radiation Shielding Materials Mr. John O'Dell, Plasma Processes, LLC
1515 - 1545	Root Beer Float Break Sponsored by Plasma Processes, LLC			
	NSMMS Hypersonics, cont.	NSMMS Missiles & Missile Defense, cont. Session Chair: Ms. Mandy Schaeffer, Naval Surface Warfare Center	NSMMS Ground & Flight Test Methodologies, cont.	NSMMS Novel Spaceflight Payloads, Instruments & Mission Operations, cont.
1545 - 1550	Announcements	Announcements	Announcements	Announcements
1550 - 1615	Enhancing Service Temperatures of Composites in Hypersonic Defense Applications Dr. Garrett Poe, Blueshift	Advancements in High-Temperature Characterization of Low-Loss Dielectrics for RF Sensors Mr. Christopher Howard, Georgia Tech Research Institute	Laser Power Profile Shaping for Thermal Simulation Ground Tests Dr. Thomas Robbins, UES, Inc.	Additive Manufactured Parts Printed for Use in ESD Sensitive Environments Mr. Ean Ludtke & Ms. Jordan Shonka, Ball Aerospace
1615 - 1640	High-Order Thermal Simulations for Hypersonics with Optimization of Trajectories (HOTSHOT) Dr. Jesse Maxwell, U.S. Naval Research Laboratory	Novel Performance Enhancements of RIPS Silicon Nitride Mr. Mark Hawthorne, ATC Materials, Inc. Exploratory Electron-Beam Curing Studies of Carbon Composite Precursor Phenolic Resin Ms. Ariel Parker, UES, Inc.	High Temperature Emissivity Measurement System (HiTEMS) Ms. Meghan Carrico, NASA Marshall Space Flight Center	Plasma-Jet Self-Sintering of Gold for In-Space Manufacturing of Electronics Prof. Harish Subbaraman, Oregon State University
1640 - 1705	Weather Analysis and Survivability Prediction for High Speed Vehicles Mrs. Sierra Craig, Lockheed Martin Corporation	Nitroxy Ceramic Material Properties: Hot Isostatic Press Mr. Will Retersdorf, Kratos SRE	Coupling Coupon Level Materials Modeling, Test and Evaluation into a Single Process Mr. Matthew Thomas, CFD Research Corporation	*Colloidal Nanomaterial Inks for Extreme Environment Sensors and Devices Ms. Katelyn Wada, Boise State University
1705 - 1730	Efficient Thermal Simulation for High-Speed System Analysis Dr. Robert Tramel, Falcon Dancer, Inc.	Effects of Oriented Boron Nitride Reinforcement of Polysiloxanes on Thermal Performance Dr. Jessica Cash, Naval Air Warfare Center	Digital Transformation for Large Scale Thermostructural Test Design Mx. Nic Heersema, NASA Armstrong Flight Research Center	Space Environmental Effects on Additively Manufactured (AM) Parts on MISSE-9/10 Mr. Justin McDellery, NASA Marshall Space Flight Center
1745 - 1930	On-site Networking Reception Sponsored by Northrop Grumman Corporation			

Wednesday, 28 June 2023				
0700 - 1730	Registration Open			
0700 - 0745	Speaker Meeting and Light Breakfast for Wednesday's Presenters <i>Sponsored by Textron Systems</i>			
0700 - 0800	Attendee Light Continental Breakfast <i>Sponsored by Leidos</i>			
1200 - 1330	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i>			
0945 - 1200 1300 - 1900	Exhibits and Poster Session Open			
1730 - 1900	Poster Session and Networking Reception <i>Sponsored by The Boeing Company</i>			
1900 - 2030	Exhibit Booth and Poster Dismantle			
	Track One	Track Two	Track Three	Track Four
Finalists for the Student Excellence Oral Award are marked with an *	NSMMS Hypersonics Session Chairs: Mr. Jonathan Boston, Air Force Research Laboratory; Dr. David Glass, NASA Langley Research Center; & Mr. Chris Kostyk, NASA Armstrong Flight Research Center Lead Organizer: Mr. Mitch Petervary, The Boeing Company Co-Organizers: Mr. Dan Hladio, Materials Research & Design, Inc.; Mr. Curtis Martin, Naval Surface Warfare Center; Mr. Tod Palm, Northrop Grumman Corporation; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Sandra Walker, NASA Langley Research Center; & Mr. Brian Zuchowski, Lockheed Martin Aerospace Company	NSMMS Additive Manufacturing for Space & Missile Materials Session Chair: Dr. Brock Birdsong, Auburn Applied Research Center Lead Organizer: Dr. Amjad Almansour, NASA Glenn Research Center Co-Organizers: Dr. Raymond Clinton, NASA Marshall Space Flight Center; Ms. Kaia David, The Boeing Company; Mr. Michael Fuller, Northrop Grumman Corporation; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Samir Singh, Ball Aerospace; Mr. James Tucker, Kratos SRE; & Mr. John Vasquez, Naval Research Laboratory	NSMMS Development, Processing & Testing of Advanced Materials Session Chairs: Dr. Carmen Carney & Mr. Ian Wolford, Air Force Research Laboratory Lead Organizer: Dr. David Witkin, The Aerospace Corporation Co-Organizers: Mr. Jimmy Allen, Dynetics; Prof. Greg Hilmas, Missouri University of Science and Technology; Dr. Garth Wilks, Raytheon Missiles & Defense; & Dr. Eric Wuchina, Naval Surface Warfare Center	NSMMS & CRASTE Space Access & Propulsion Session Chair: Dr. Ragini Acharya, The University of Tennessee Space Institute Lead Organizer: Mr. Anthony Brinkley, Lockheed Martin - HEAT Co-Organizers: Mr. Alan Brown, Aerojet Rocketdyne; Mr. Timothy McKechnie, Plasma Processes, LLC; & Mr. Tim Stewart, Ulramet
	0800 - 0805	0805 - 0830	0830 - 0855	0855 - 0920
	Announcements & Session Introduction	Announcements & Session Introduction	Announcements & Session Introduction	Announcements & Session Introduction
	CMC Hot Structures for Reusable Hypersonic Vehicles Dr. David Glass, NASA Langley Research Center	Summary of Additively Manufactured Thermal Protection System (AM TPS) Workshop 2.0 Mr. Stan Bouslog, NASA Johnson Space Center	*Assessment of Precursor-Derived Quaternary Ceramic Matrix Composites: Toward Lightweight, High-Temperature, and High-Strength Structural Material Mr. Mohammed Rasheed, Kansas State University	AFRL Rotating Detonation Rocket Engine Program Overview for 2023 Mr. Eric Paulson, Air Force Research Laboratory
	NASA Investments in High Temperature Durable Materials for Hypersonic Applications Mr. Chris Kostyk, NASA Armstrong Flight Research Center	Automated Manufacturing of Advanced, Ablation Resistant Thermal Protection Systems Mr. Garrett Yoder, Cornerstone Research Group	Rapid Manufacturing of SiC PDCs with High Thermal Shock Resistance Dr. Zhibin Yu, Florida State University	TopFuel Propulsion Technology Dr. Marlow Moser, Exquadrum, Inc.
	NASA Marshall Space Flight Center Capabilities that Support Hypersonic Technologies Ms. Savannah Metz, NASA Marshall Space Flight Center	*Additive Manufacturing of Forebody and Backshell Thermal Protection Materials Mrs. Tane Boghazian, Analytical Mechanics Associates & Mississippi State University	Design and Testing of an Air-Coupled Ultrasonic Scanning System for C-C Composites Dr. Dathan Erdahl, University of Dayton Research Institute	ARMR Component Optimization for Derivative Engine Scaling Mr. Brenden Reeds, Sierra Lobo, Inc.
	Seeker Window Attachment for Hypersonic Flight Systems Mr. Steven Nigro, Materials Research & Design, Inc.	Development of Carbon-Carbon and Carbon-Silicon Carbide Materials and Heat Treatment Processes for Fused Fiber and Powder Bed Fusion Additive Manufacturing Mr. Ken Fosaaen, Blue Force Technologies, Inc. / Keraskjold Materials Development, LLC	Using Deep Learning to Quantify CMC Microstructure and Damage Evolution from 3D X-Ray Tomography Techniques Dr. Ashley Hilmas, Air Force Research Laboratory	*High Temperature X-Ray Diffraction of Sputtered Thermite Reactive Nanolaminates Ms. Chloe Skidmore, Penn State University
0945 - 1015	Coffee & Soda Break <i>Sponsored by Toray Advanced Composites</i>			
1015 - 1020	Announcements	Announcements	Announcements	Announcements
1020 - 1045	AFRL's Leading Edge Experimentation Fixture Development Mr. Jonathan Boston, Air Force Research Laboratory	Design and Fabrication of Next Generation Shape Memory Alloy Actuators Dr. Morgan Trexler, The Johns Hopkins University Applied Physics Laboratory	3 Cycle Carbon Carbon using MG High Char Resin and Autoclave Infusion Dr. Ryan Toivola, Karman Space & Defense	Assessment of Potential Landing Surface Materials Dr. Malissa Lightfoot, Air Force Research Laboratory
1045 - 1110	Aerothermal Evaluation of a C-ZrC Composite in a Full-Scale Leading Edge Configuration Mr. Benjamin Carmichael, Kratos SRE	Post-Processing Optimization of Laser Powder Bed Fusion Nickel Alloys for High Temperature Applications Ms. Chappell Alex, U.S. Army Combat Capabilities Development Command Aviation & Missile Center	Boron-Carbon Fiber Hybrid Composites for High-Temperature Applications Ms. Monica Rommel, Global Materials, Inc. DBA Specialty Materials	Recent Developments in Silicon Carbide and Zirconium Carbide Technologies for Extreme Environments Mr. Alden Moore, General Atomics
1110 - 1135	Evaporative Transpiration Cooling of Additively Manufactured Hypersonic Leading Edges Dr. Christopher Roper, HRL Laboratories, LLC	Directly Deposited-Interconnected Carbon Fibers for Multi-Dimensional Structures Mr. Charles Cook, The University of Alabama	MOC3HA Mr. Jonathan Gray, ATA Engineering	*Processing of ZrC with Coarse WC and Fabrication of Cooling Channels Mr. Jacob Stacy, Missouri University of Science and Technology
1135 - 1200	Optimized Hypersonic Thermal Protection Systems through Carbon/Carbon 3D Printing Mr. Ryan Dunn, Mantis Composites	Leveraging Additive Manufacturing for Rapid Development of High Temperature Alloys and Ceramics for Use in Hypersonic Vehicle Hot Structures Dr. Gregory Scofield, Purdue Applied Research Institute	Stabilization Characterization of Carbon-Nanotubes by Laser Thermal Treatment Dr. Joshua Yoho, UES, Inc.	*Near Net Shape Fabrication and Characterization of Cermet Nuclear Thermal Propulsion Fuel Forms Mr. Nathaniel Blatt, Missouri University of Science and Technology
1200 - 1330	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i>			
	NSMMS Hypersonics, cont.	NSMMS Additive Manufacturing for Space & Missile Materials, cont. Session Chair: Dr. Bryan McEnerney, NASA Engineering Safety Center	NSMMS Development, Processing & Testing of Advanced Materials, cont.	CRASTE Innovative Test Methodologies & Platforms Session Chair: Mr. Nickolas Demidovich, Federal Aviation Administration Co-Chair: Dr. Ragini Acharya, The University of Tennessee Space Institute

1330 - 1335	Announcements	Announcements	Announcements	Announcements & Session Introduction
1335 - 1400	Micromachining for Enhanced Coating-Substrate Adhesion in Hypersonic Environments Dr. Ken Kane, The Johns Hopkins University Applied Physics Laboratory	AM Powder Flowability Capabilities at NASA Marshall Space Flight Center (MSFC) Mr. Justin McElderry, NASA Marshall Space Flight Center	Hybrid CVI and Polymer Infiltration and Pyrolysis Process for the Production of Carbon Carbon Composites Dr. Daniel Knorr, U.S. Army Combat Capabilities Development Command Army Research Laboratory	Calorimetry of a Cascading Arc Plasma Source as Potential Material Screening Facility Mr. Avery Carrico, Kratos SRE
1400 - 1425	Investigating Thermal and Optical Properties of Novel Rare Earth Zirconates for Radiative Barrier Coatings Mr. William Riffe, The University of Virginia	High-Temperature Niobium Base Alloys Produced with Directed Energy Deposition Dr. Francisco Medina, The University of Texas at El Paso	Protocol for Screening High Char Resins for Next Gen C/C Materials Dr. Chenggang Chen, University of Dayton Research Institute	Advancing Hypersonic Vehicles through Commercial Space Reentry Dr. Marat Kulakhmetov, Varda Space Industries
1425 - 1450	Synthesis and Hardness of Thin-Film High Entropy Transition Metal Ceramics Mr. Nathan McIlwaine, Penn State University	Characterization of Inconel 718 and Inconel 625 Cladding Using Laser Powder Directed Energy Deposition Mr. Dajalma Garcia, The University of Texas at El Paso	Results from Optimization of Materials and Processes for C/C Based on a Novel Resin Mr. Bhavesh Patel, Kratos SRE	Use of Hydrogen / Oxygen Rocket Thrust Chamber Assembly for High Temperature Materials Testing Mr. Jacob Ahrenholtz, Sierra Space Corporation
1450 - 1515	Evaluation of Advanced Materials and Coatings for Improved Performance of High-Temperature Seals and Thermal Barriers Dr. Scott Lattime, The University of Akron	Parameter Set and LPBF-Specific Post-Processing Development for Nickel Alloy 718 for Elevated Temperature Applications Mr. Joel White, Wichita State University	The Effect of Heat-Treatment Temperature on the Carbon Matrix Development of Both Polyarylacetylene and Phenolic Derived Carbon-Carbon Composites Dr. Alina Martinez, The Aerospace Corporation	Black Boxes and Big Bangs Dr. Dale Amon, Immortal Data, Inc.
1515 - 1545	Coffee & Snack Break <i>Sponsored by ReLogic Research</i> Please Turn in Your Poster Voting Card to the Registration Desk			
	NSMMS Hypersonics, cont.	NSMMS Additive Manufacturing for Space & Missile Materials, cont.	NSMMS Development, Processing & Testing of Advanced Materials, cont. Session Chair: Dr. Joseph Koo, The University of Texas at Austin	CRASTE Advances in Ground System & Range Operations Session Chair: Mr. Max Vozoff, X-Bow Systems Co-Chair: Mr. Nickolas Demidovich, Federal Aviation Administration
1545 - 1550	Announcements	Announcements	Announcements	Session Introduction
1550 - 1615	Pyrolysis Behavior of Cyanate Ester Derived CMCs Mr. Gary Tiscia, Materials Research & Design, Inc.	VR35K Directed Energy Deposition Nozzle Fabrication Mr. Jon McCabe, Sierra Space Corporation	Development of Advanced Conformal and Soft Pica for Future NASA Missions and Commercial Space Dr. Matthew Gasch, NASA Ames Research Center	Analysis of Kennedy Space Center Tropospheric Doppler Radar Wind Profiler Measurement Accuracy Ms. Meghan Carrico, NASA Marshall Space Flight Center
1615 - 1640	Asymmetric 4-Point Bend Test for Measurement of Interlaminar Shear Modulus and Strength of Refractory Composite Materials Dr. Brian Sullivan, Materials Research & Design, Inc.	Graded Alloy Transition Deposition (GRatd) Leading Edge Fabrication and Testing Dr. Daniel Driemeyer, The Boeing Company	Recent Results from 3MDCP Thermal and Mechanical Testing and Future Testing Plans in Support of Mars Sample Return Earth Entry Vehicle (MSR EEV) Mr. Rafael Gonzalez, Kratos SRE	Relative Wind Speed Sensor for High Altitude Trajectory Control Dr. Daniel Bivolaru, General Electric
1640 - 1705	Damage Investigation in Bending of Thin C/SiC Ceramic Matrix Composites Dr. Alicia Rossi, University of Dayton Research Institute	*Processing and Properties of Zirconium Carbide Manufactured by Ceramic On-Demand Extrusion Ms. Clare Sabata, Missouri University of Science and Technology	Ablative Silicone Materials in Development Dr. Kaka Dey, Momentive Performance Materials	HALAS High Altitude Lidar Atmospheric Sensing Enabling Improved Range Operations Dr. Lucas Taylor, Honeywell
1705 - 1730	Improved Prediction of Net Shape and Performance of 2D C-C Composite Parts Dr. Marc Russell, ATA Engineering, Inc.	Quantification and Understanding Size Effects in Additively Manufactured Thin-Wall Structures Dr. Kavan Hazeli, The University of Arizona	Carbon Fiber/Polysiloxane Prepreg Tape for Automated Tape Laying Additive Manufacturing of Hypersonic Thermal Protection Systems Mr. Colin Yee, The University of Texas at Austin	Rocket Lab Launch Programs, Ranges, History Mr. Brian Rogers, Rocket Lab
1730 - 1900	Poster Session and Networking Reception <i>Sponsored by The Boeing Company</i>			

0700 - 1730	Registration Open			
0700 - 0745	Speaker Meeting and Light Breakfast for Thursday's Presenters <i>Sponsored by Aerojet Rocketdyne</i>			
0700 - 0800	Attendee Light Continental Breakfast <i>Sponsored by Materials Research & Design, Inc.</i>			
1200 - 1330	Lunch Break <i>(On Your Own - See Registration Desk for Area Restaurants)</i>			
1730	2023 Poster & Student Oral Excellence Award Winner Announcements <i>Sponsored by Northrop Grumman Corporation</i> Grand Prize Give-Away <i>Sponsored by Textum</i>			
	Track One	Track Two	Track Three	Track Four
Finalists for the Student Excellence Oral Award are marked with an *	NSMMS Hypersonics Session Chairs: Dr. Carmen Carney, Air Force Research Laboratory & Dr. Matthew Dickerson, Air Force Research Laboratory Lead Organizer: Mr. Mitch Petervary, The Boeing Company Co-Organizers: Mr. Dan Hladio, Materials Research & Design, Inc.; Mr. Curtis Martin, Naval Surface Warfare Center; Mr. Tod Palm, Northrop Grumman Corporation; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Sandra Walker, NASA Langley Research Center; & Mr. Brian Zuchowski, Lockheed Martin	NSMMS Additive Manufacturing for Space & Missile Materials Session Chair: Dr. Daniel Driemeyer, The Boeing Company Lead Organizer: Dr. Amjad Almansour, NASA Glenn Research Center Co-Organizers: Dr. Raymond Clinton, NASA Marshall Space Flight Center; Ms. Kaia David, The Boeing Company; Mr. Michael Fuller, Northrop Grumman Corporation; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Samir Singh, Ball Aerospace; Mr. James Tucker, Kratos SRE; & Mr. John Vasquez, Naval Research Laboratory	NSMMS Development, Processing & Testing of Advanced Materials Session Chairs: Dr. Erica Corral, The University of Arizona & Dr. Allan Katz, Air Force Research Laboratory Lead Organizer: Dr. David Witkin, The Aerospace Corporation Co-Organizers: Mr. Jimmy Allen, Dynetics; Prof. Greg Hilmas, Missouri University of Science and Technology; Dr. Garth Wilks, Raytheon Missiles & Defense; & Dr. Eric Wuchina, Naval Surface Warfare Center	NSMMS & CRASTE Integrated Vehicle Health Management (IVHM) & Integrated System Health Monitoring (ISHM) Workshop Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation
	0800 - 0805 Announcements	0805 - 0830 Progress in the Development of Compliant High-Temperature Materials and Thermal Protection Systems Dr. Matthew Dickerson, Air Force Research Laboratory	0830 - 0855 ECLPS3-PIH Carbon/Carbon-Silicon Carbide Performance Assessment for Hypersonic Components Mr. Joshua Steele, Spirit AeroSystems	0855 - 0920 High Performance, Cost Effective Manufacture of Three-Directional Carbon Fiber CMC for Hypersonic Thermal Protection Components and Aeroshells Mr. David Biolsi, Spirit AeroSystems
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0830 - 0855 ECLPS3-PIH Carbon/Carbon-Silicon Carbide Performance Assessment for Hypersonic Components Mr. Joshua Steele, Spirit AeroSystems	0855 - 0920 High Performance, Cost Effective Manufacture of Three-Directional Carbon Fiber CMC for Hypersonic Thermal Protection Components and Aeroshells Mr. David Biolsi, Spirit AeroSystems	0920 - 0945 Flexible Thermal Protection System Dr. Rachel Guarriello, Physical Sciences, Inc.	0945 - 1015 Coffee & Soda Break <i>Sponsored by Ultramet</i>	
0855 - 0920 High Performance, Cost Effective Manufacture of Three-Directional Carbon Fiber CMC for Hypersonic Thermal Protection Components and Aeroshells Mr. David Biolsi, Spirit AeroSystems	0920 - 0945 Flexible Thermal Protection System Dr. Rachel Guarriello, Physical Sciences, Inc.	0945 - 1015 Coffee & Soda Break <i>Sponsored by Ultramet</i>	1015 - 1020 Announcements	
0920 - 0945 Flexible Thermal Protection System Dr. Rachel Guarriello, Physical Sciences, Inc.	0945 - 1015 Coffee & Soda Break <i>Sponsored by Ultramet</i>	1015 - 1020 Announcements	1020 - 1045 Wind Tunnel Testing of Ultrasonically Absorptive Aeroshell Materials for Hypersonic Boundary Layer Transition Delay Mr. John Saffian, Materials Research & Design, Inc.	
0945 - 1015 Coffee & Soda Break <i>Sponsored by Ultramet</i>	1015 - 1020 Announcements	1020 - 1045 Wind Tunnel Testing of Ultrasonically Absorptive Aeroshell Materials for Hypersonic Boundary Layer Transition Delay Mr. John Saffian, Materials Research & Design, Inc.	1045 - 1110 Affordable UHT Thermal Protection Systems for Hypersonics and Missile Defense Applications Dr. Edward Pope, MATECH	
1015 - 1020 Announcements	1020 - 1045 Wind Tunnel Testing of Ultrasonically Absorptive Aeroshell Materials for Hypersonic Boundary Layer Transition Delay Mr. John Saffian, Materials Research & Design, Inc.	1045 - 1110 Affordable UHT Thermal Protection Systems for Hypersonics and Missile Defense Applications Dr. Edward Pope, MATECH	1110 - 1135 A Novel Resin Transfer Molding (RTM) Design Process Towards the Development of Thermal Metamaterial Composites for Hypersonic Thermal Protection Dr. Justin Hendrix, Naval Surface Warfare Center	
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	NSMMS Hypersonics, cont.	NSMMS Additive Manufacturing for Space & Missile Materials, cont. Session Chair: Dr. Elaine MacDonald, The Boeing Company	NSMMS Development, Processing & Testing of Advanced Materials, cont. Session Chairs: Dr. Erica Corral, The University of Arizona & Dr. Garth Wilks, Raytheon Missiles & Defense	CRASTE Future Space Architectures Session Chair: Mr. Barry Hellman, Blue Origin, LLC Co-Chair: Dr. Ryan Hooper, Dynetics
1330 - 1335	Announcements	Announcements	Announcements	Announcements & Session Introduction
1335 - 1400	Manufacturing of Carbon/Carbon Composites for Hypersonic Applications (MOC3HA)- 1 Dr. Su Peiris, Battelle	Hybrid Manufacturing: Printing of Functional Prototypes Mr. James Tucker, Kratos SRE	*Machine Learning Material Response Modeling of a Low-Density Ablator for an Oxy-Acetylene Test Bed Using 1dFIAT Ms. Samantha Bernstein, The University of Texas at Austin	AFRL Reference Launch Vehicle Design for Evaluation of Tactically Responsive Missions Mr. Brenden Reeds, Sierra Lobo, Inc.
1400 - 1425	Manufacturing of Carbon/Carbon Composites for Hypersonic Applications (MOC3HA)- 2 Ms. Rachael Andrulonis, Wichita State University - NIAR	Overview of AFRL's RE-ARM: Rapid Energetics & Advanced Rocket Manufacturing Mr. Geoffrey Trapp, Air Force Research Laboratory	Effect of Fiber Heat Treatment and UHTC Matrix Additions on the Processing, Microstructure, and Mechanical Behavior of Thin C/SiC Ceramic Matrix Composites Dr. Charis Lin, UES, Inc.	Tactically Responsive Constellation Deployment Mission Analysis Status Update Ms. Theresa Sitter, Sierra Lobo, Inc.
1425 - 1450	Single-Cycle Densification of Carbon/Carbon for Hypersonic Applications Mr. Michael Favaloro, Textron Systems	*The Process-Structure-Property Relationship of High-Temperature Thermoelectric Material Processed via Laser Additive Manufacturing Mr. Ryan Welch, The George Washington University	A Polymer Based Method of Producing High Entropy Carbide for Hypersonic Hot Structure Dr. Justin Hendrix, Naval Surface Warfare Center	Mission Analysis Updates on Theater-Specific Coverage Mr. Victor Christopher Ong, Sierra Lobo, Inc.
1450 - 1515	Optimization and Characterization of CNT Stitching for Z-Reinforcement in Carbon-Carbon Laminates Ms. Allison Ruwe, University of Dayton Research Institute	Additively Manufactured Multi-Material Hot Structures Mr. Eric Clough, HRL Laboratories	Phase and Microstructure Evolution of Composite Metallic/Carbide Laminates under Thermal Loads Mr. Michael Large, The University of Alabama	Solar System Wide Data Network Mr. George Tyson, BNRC, LLC
1515 - 1545	Coffee & Snack Break <i>Sponsored by Momentive</i>			
	NSMMS Hypersonics, cont.	NSMMS Additive Manufacturing for Space & Missile Materials, cont.	NSMMS Development, Processing & Testing of Advanced Materials, cont. Session Chair: Dr. Joseph Koo, The University of Texas at Austin	CRASTE Future Space Architectures, cont.
1545 - 1550	Announcements	Announcements	Announcements	Announcements
1550 - 1615	Material Maturation for Hypersonics – A Program to Transition Advances in C/C Materials Technology to Industry Dr. Dennis Buchanan, University of Dayton Research Institute	Characterization of Additively Manufactured Interpenetrating Phase Composite Materials with Refractory Metals, SiC and ZrB ₂ Dr. David Mitchell, Oak Ridge National Laboratory	Advanced Polysiloxane Nano/Micro-Composites Reinforced with Carbon Fiber: Processing and Properties Characterization Mr. Colin Yee, The University of Texas at Austin	Rapid Maneuverability Requirements for On-Orbit GEO Logistics Architectures Mr. Finn O'Brien, Sierra Lobo, Inc.
1615 - 1640	Engineered Carbon/Carbon Materials for Application Specific Hypersonic Components Mr. Joshua Steele, Spirit AeroSystems	Accommodating CTE Mismatches with Lattice Structures Mr. Kurtis McIntosh, University of Dayton Research Institute	Characterization of Melanin as an Additive in High Temperature Phthalonitrile-Based Resin Blends Dr. Jennifer Dysart, Nova Research, Inc.	Enabling Novel Space Architectures with Nuclear Orbital Transfer Vehicles Dr. Lucas Beveridge, Atomos Space
1640 - 1705	Tailoring of Carbon Science Based C-C Composite Processing to Increase Design Flexibility of Hot Structures or Nose Tips Dr. Witold Kowbel, Advanced Composites and Coatings, LLC	Laser-CVD Silicon Carbide Fibers as Non Woven Preforms in Fiber-Reinforced SiC-SiC Composites Mr. Jeff Vervlied, Free Form Fibers, LLC	Manufacturing Techniques for Improved Laminate Properties in Ablative Phenolic Prepreg Systems for Autoclave Cure Mr. Phillip Twist, Park Aerospace Corporation	On-Orbit Assembly and Manufacturing of Large Apertures Enables Persistent and Timely Cislunar Space Situational Awareness Dr. Stergios Papadakis, The Johns Hopkins University Applied Physics Laboratory
1705 - 1730		Scale-Up of Additively Manufactured Continuous Fiber Ceramic Matrix Composites Dr. Bill Goodman, Goodman Technologies, LLC	Char Strength of Low Density Thermal Protection Systems Materials Mr. Ben Rech, Koo & Associates International, Inc.	
1730 - 1745	2023 Poster & Student Excellence Award Winner Announcements <i>Sponsored by Northrop Grumman Corporation</i> Grand Prize Give-Away <i>Sponsored by Textum</i> & Adjourn			