	Track One	Track 1WO	Hack Hirec
	NSMMS & CRASTE Tutorials & Workshops	NSMMS & CRASTE Tutorials & Workshops	NSMMS & CRASTE Tutorials & Workshops
0935 - 1035	The Path to Flight: Maturing New Hypersonic Technologies Organizer: Dr. William Carter, Defense Advanced Research Projects Agency	Small Business Engagement in Hypersonics Workshop Session Chair: Dr. Dean Modroukas, Innoveering, LLC Organizers: Dr. Keith Bowman, Innoveering, LLC; Mr. Glenn Liston, ABDA, Inc.; & Dr. Gerald Russell, RTCS, LLC -Workshop Objective and Products Dr. Keith Bowman, Innoveering, LLC -The Value of Small Businesses in Innovation Keynote: Col Jake Porter, Air Force Research Laboratory -Rapid Transition of TPS Technologies into Hypersonic Systems Dr. Bruce Moylan, Lockheed Martin	Critical Material Property Databases: Current Status and Future Needs -Background and Need for Accessible Databases Mr. Thomas Lewis, Air Force Research Laboratory -CMH-17 CMC Volume 5 Mrs. Rachael Andrulonis, Wichita State University -High Temperature Antennas for Hypersonics: Data Needs Mr. Curtis Martin, Naval Surface Warfare Center -MOC3HA Data Dr. Brent Carey, Battelle -Panel Discussion
1035 - 1100	Break	Commention	
	Sponsored by Aerojet Rocketdyne		
1100 - 1200	Utilizing Low Cost Alternative Facilities for Preliminary Flight Material Validation Mr. Alex Conley, Lockheed Martin HEAT; Mr. Carter Johnson, ReLogic Research; & Mr. Tim McKechnie, Plasma Processes	Small Business Engagement in Hypersonics Workshop, cont. Focus Topic Sessions -Materials/Structures Mr. Tim Stewart, Ultramet - Air-Breathing Propulsion Dr. Dean Modroukas, Innovering, LLC -Ground and Flight T&E Facilities Mr. Roger Herdy, CFD Research Corporation -M&S Mr. Gary Tiscia, Materials Research & Design, Inc.	Space Servicing, Assembly, and Manufacturing Mr. Jeramie Broadway, NASA Marshall Space Flight Center
1200 - 1330	Lunch Break (On Your Own - See Registration Desk for Area	a Restaurants)	

	Track One		Track Two	Track Three
	NSMMS Missiles & Missile Defense	NSMMS & CRA Tutorials & Wo	STE orkshops, cont.	NSMMS & CRASTE Small Business Forum
	Session Chair: Ms. Danielle Gerstner, Naval Surface Warfare Center			Sponsored by Lockheed Martin
	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			
	Session Introduction	1330 - 1430	Small Business Engagement	Small Businesses Forum One-on-Ones
1335 - 1400	Technology Maturation - Windows and Materials Overview Mr. Mark Glenn, Missile Defense Agency		in Hypersonics Workshop, cont.	
1400 - 1425	RF Aperture Materials Needs Mr. Curtis Martin, Naval Surface Warfare Center		-Open Floor Q&A -Present Summary of Focus Topic Sessions and Future Engagement Planning	
1425 - 1450	Testing and Optimization of Windows	1430 - 1435	Transition to Other Tutorials,	Workshops, & Sessions
	Mr. Brian Tucker, Mainstream Engineering			
	Multilayered MAX Phase Coating for High- Temperature Oxidation Protection of Missile Control Surfaces Dr. Jessica DeBerardinis, Ultramet	1435 - 1540	Workshop on Ensuring the Future through Workforce Development Session Chair: Mr. Dan Marren, SRC Organizers: Dr. Gerald Russell, RTCS, LLC & Dr. Eric Wuchina, NSWC	Small Businesses Forum One-on-Ones
1515 - 1540	Carbon Foam Lightning and Thermal Protection System Mr. Matthew Przybysz, Touchstone Research Laboratory		JHTO Expanding Workforce Strategies from STEM Pipeline through Existing Workforce Dr. Lori Stiglitz, NSWC Crane -University Consortium for Applied Hypersonics - Overview	
1540 - 1600			Ma Dan Mannan CDC	
	Sponsored by Ultrame Track One		Track Two	Track Three
	Track One	NSMMS & CRA		
		NSMMS & CRA Tutorials & Wo	STE	Track Three NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625	Track One NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force	Tutorials & Wo	STE	NSMMS & CRASTE
1600 - 1625 1625 - 1650	Track One NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory	Tutorials & Wo	STE rkshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research	Tutorials & Wo	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715	Track One NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton	Tutorials & Wo	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900	Track One NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Klo	Tutorials & Wo	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or	Tutorials & Wo	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or	Tutorials & Wo 1600 - 1730	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA-Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28 0700 - 0745	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or June 2022) Speaker Meeting (with Light Breakfast) fo Presenters Sponsored by Momentive Attendee Light Continental Breakfast	Tutorials & Wo 1600 - 1730	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA-Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28 0700 - 0745	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or June 2022) Speaker Meeting (with Light Breakfast) fo Presenters Sponsored by Momentive	Tutorials & Wo 1600 - 1730	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA-Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28 0700 - 0745 0700 - 0800	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or June 2022) Speaker Meeting (with Light Breakfast) fo Presenters Sponsored by Momentive Attendee Light Continental Breakfast Sponsored by Spirit AeroSystems Registration Open Lunch Break	Tutorials & Wo 1600 - 1730 k-Off r Tuesday Afte	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28 0700 - 0745 0700 - 1730 1200 - 1330	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or June 2022 Speaker Meeting (with Light Breakfast) fo Presenters Sponsored by Momentive Attendee Light Continental Breakfast Sponsored by Spirit AeroSystems Registration Open	Tutorials & Wo 1600 - 1730 k-Off r Tuesday Afte	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.
1600 - 1625 1625 - 1650 1650 - 1715 1715/1730 - 1900 1930 - 2130 Tuesday, 28 0700 - 0745 0700 - 1730 1200 - 1330 1330 - 1730	NSMMS Missiles & Missile Defense, cont. Modeling and Optimization of Strategic and Tactical Rockets; MONSTR Program Overview Dr. Timothy Gallagher, United States Air Force Case-on-Propellant Manufacturing of Composite Rocket Motor Cases from High Temperature Resins Dr. Jared Morrissette, Air Force Research Laboratory Design and Testing of Articulated Thermal Protection Mr. Eric McGill, University of Dayton Research Institute Welcome Reception and Exhibit & Poster Kic Student Networking Reception (Invitation Or June 2022 Speaker Meeting (with Light Breakfast) fo Presenters Sponsored by Momentive Attendee Light Continental Breakfast Sponsored by Spirit AeroSystems Registration Open Lunch Break (On Your Own - See Registration Desk for A	Tuesday Afte	Workshops, cont. Workshop on Ensuring the Future through Workforce Development, cont. -Workforce Requirements and Development for the Advanced Ceramics Industry Mr. Doug Freitag, USACA -Investing in the Future Workforce for Hypersonics Dr. Brett Hauber, UDRI -Activities in Work Force Development for Thermal Protection Systems used in Hypersonics and Reentry Dr. Tim Ferguson, Kratos SRE	NSMMS & CRASTE Small Business Forum, cont.

NSMMS & C	RASTE Plenary Session Racing State S
0800 - 0815	Opening Remarks, National Anthem & Plenary Session
	Announcements: Dr. Garth Wilks, Lead Air Force Advisor to NSMMS & CRASTE,
	Air Force Research Laboratory
	Moderator: Col Daniel Gallton, Chief, Science & Engineering Division,
	Air Force Office of Scientific Research
0815 - 0855	Keynote: Mr. Tom Lockhart, SES, Director of Engineering and Technical Management, Air Force Nuclear Weapons Center
0855 - 0930	Dr. Sharon Cobb, SES, Associate Program Manager, Space Launch System Program,
	NASA Marshall Space Flight Center
0930 - 1005	Dr. William Carter, Program Manager, Defense Advanced Research Projects Agency
1005 - 1035	Break
	Sponsored by RTCS, LLC
1035 - 1110	Mr. Kelsey Haynes, RCCTO speaking on behalf of Mr. Robert Strider, SES, Deputy Director, Army Hypersonic Project Office
1110 - 1145	Dr. Eric Wuchina, NSWCCD speaking on behalf of Dr. Knox Millsaps, SES, Division Director, Aviation, Force Projection and Integrated Defense, NSWCCD
1145 - 1200	Awards Ceremony: Col Daniel Gallton, Chief, Science & Engineering Division,
	Air Force Office of Scientific Research; Dr. Raymond Clinton,
	NASA Marshall Space Flight Center; & Mr. Tim Stewart, Ultramet
1200 - 1330	Lunch Break
	(On Your Own - See Registration Desk for Area Restaurants)

	Track One	Track Two	Track Three	Track Four
	NSMMS	NSMMS	NSMMS	CRASTE
.	Hypersonics	Development, Processing & Testing of	Novel Spaceflight Payloads, Instruments, &	Emerging Entry, Descent, and Recovery Systems &
Students		Advanced Materials	Mission Operations	Technologies
are	Session Chairs: Mr. Curtis Martin, Naval			
marked	Surface Warfare Center & Dr. Jesse Maxwell,		Session Chair: Dr. Samir Singh, Ball Aerospace	
with *	U.S. Naval Research Laboratory	Wisconsin		Session Chair: Prof. Joseph Koo, The University of
			Lead Organizer: Mr. Michael Fuller, Northrop	Texas at Austin
	Lead Organizer: Mr. Mitch Petervary, The	Lead Organizer: Dr. David Witkin, The	Grumman Space Systems	
	Boeing Company	Aerospace Corporation	Co-Organizers: Mr. James Tucker, Kratos SRE; &	Co-Chair: Dr. Andrei Zagrai, New Mexico Institute
	Co-Organizers: Mr. Dan Hladio, Materials	Co-Organizers: Mr. Jimmy Allen, Dynetics;	Mr. John Vasquez, U.S. Naval Research Laboratory	of Mining and Technology
	Research & Design, Inc.; Mr. Tod Palm,	Prof. Greg Hilmas, Missouri University of		
	Northrop Grumman Aeronautics Systems;	Science and Technology; Dr. Garth Wilks, Air		
	Dr. Suraj Rawal, Lockheed Martin Space	Force Research Laboratory; & Dr. Eric		
	Systems; Dr. Sandra Walker, NASA Langley	Wuchina, Naval Surface Warfare Center		
	Research Center; & Mr. Brian Zuchowski,			
	Lockheed Martin Aeronautics Company			
	Session Introduction	Session Introduction	Session Introduction	Session Introduction
1335 - 1400	Surface Morphing and Adaptive Structures	*Thermogravimetric Analysis as an	Adhesive Formulation for use in Cryogenic	Development of Domestic Lyocell Based Phenolic
	for Hypersonics (SMASH)	Indicative Tool of Ablation Performance for	Applications	Impregnated Carbon Ablator (PICA-D) and
	Dr. Jesse Maxwell, U.S. Naval Research	Low-Density Flexible Thermal Protection	Dr. Samir Singh, Ball Aerospace & Mr. Joel Stray,	Conformal PICA for Future NASA Missions
	Laboratory	Systems Material for Hypersonic Vehicles	Gentex Corporation	Dr. Matthew Gasch, NASA Ames Research Center
		Mr. Steven Kim, The University of Texas at		
		Austin		
	Morphing Ceramic Matrix Composites for	*Low-Density Flexible Thermal Protection	Timely and Cost Effective Cryo-Mechanical	*Comparison of Material Response Models of Low
	Hypersonic Wind Tunnels	Systems Material for Hypersonic Vehicles	Testing	Density Thermal Protection System Materials for
	Dr. Sergio dos Santos e Lucato, Teledyne	Mr. William Fahy, KAI, LLC	Mr. James Tucker, Kratos SRE	Hypersonic Applications
	Scientific			Ms. Samantha Bernstein, The University of Texas at
1435 1450	Material Maturation for Hypersonics – A	The Processing and Evaluation of	Update on Improved Precision of CTE	Austin Development and Qualification of PICA-D Thermal
1425 - 1450	Program to Transition Advances in C/C	Polyarylacetylene Resin as a Substitute	Measurements for Space Structure Materials	Protection System to Support Mars Sample Return
	Materials Technology to Industry	Matrix for Modern Phenolic Composites	•	and Dragonfly Missions
		· ·	Mr. James Tucker, Kratos SRE	
	Dr. Dennis Buchanan, University of Dayton Research Institute	used in Ablative Applications		Dr. Steven Violette, Spirit AeroSystems
	Research institute	Dr. Vanessa Arredondo, The Aerospace		
		Corporation		
		Updated presentation title to "Evaluation of		
		Polyarylacetylene Resin as a Matrix		
		Material in Carbon-Carbon Composites for High Temperature Applications"		
1450 - 1515	Investigation on the Effects of Pyrolysis on	*Computational Model of Carbon Fiber	Burst Test of Composite Cryogenic Tank	An Initial Study for the Design of a Recoverable
	the Structure of Carbon-Carbon Composite	Zirconium Carbide Composite Oxidation	Dr. William Keith, The Boeing Company	Distributed Black Box for Spacecraft
	Materials for Hypersonic Aircraft	under Hypersonic Conditions		Mr. Dale Amon, Immortal Data, Inc.
	Prof. Jacqueline Johnson, The University of	Ms. Allison Rzepka, University of Illinois	Updated presentation title to "4.2M Composite	
	Tennessee Space Institute	Urbana-Champaign	Cryotank Validation"	
			•	
1515 - 1545	Root Beer Float Break			•
	Sponsored by Plasma Processes, LLC			

	Track One	Track Two	Track Three	Track Four
Students are marked with *	NSMMS Hypersonics, cont.	NSMMS Development, Processing & Testing of Advanced Materials, cont.	NSMMS Novel Spaceflight Payloads, Instruments, & Mission Operations, cont.	CRASTE Reducing Cost, Increasing Safety, & Improving Reliability Session Chair: Mr. Max Vozoff, X-Bow Systems
				Co-Chair: Mr. Nickolas Demidovich, Federal Aviation Administration
1545 - 1550 1550 - 1615	Announcements Development of Ultrasonically Absorptive Materials for Boundary Layer Transition Delay Mrs. Kerry Howren, Materials Research & Design, Inc.	Announcements *Aerothermal Evaluation of Novel and Modified Ablative Composite Systems for Hypersonic Applications Mr. Colin Yee, The University of Texas at Austin	Announcements Response of Ablative Thermal Protection Materials to Degradation in Low Earth Orbit – Characterization of Specimens from MISSE-13 Dr. Peter Marshall, Analytical Mechanics Associates, Inc.	Session Introduction Polymer Radiation Shielding for Lightweighting Spacecraft Mr. Brad Thomas, NanoSperse
1615 - 1640	Manufacturing Quality Assessments of Carbon/Carbon Structures Dr. Victoria Kramb, University of Dayton	*Influence of Silicon Carbide on Laser Powder Bed Fusion Molybdenum Maj Nathan Elisworth, Air Force Institute of Technology	Orbital Access using MISSE Mr. Langston Wesson, Aegis Aerospace	Effective Risk Management of Electrostatic Discharge Machining Processes Mr. John Renbarger, Ball Aerospace
	Research Institute SiC-SiC Ceramic Matrix Composite Material for Reusable Hypersonic Vehicle Hot Structures Mr. Derek Caputo, Materials Research & Design, Inc. SiC-Based CMC for Hypersonics & Space Mr. Michael Peretti, GE Edison Works	Graded Alloy Transition Deposition (GRATD) Process Development Dr. Daniel Driemeyer, Boeing Research & Technology *Development of a Novel Molybdenum- Chromium-Aluminum Alloy for Hypersonic Service	Analysis of Materials International Space Station Experiment-10 (MISSE-10) Thin-Film Solar Cells Ms. Meghan Carrico, NASA Marshall Space Flight Center Regolith-Derived Extensible Feedstocks for Orbital Manufacturing of Materials and Structures	Application of Base-Bleed and Propellant Grain Optimization for Range Extension of a Rocket- Assisted Projectile Mr. Farid Rafla, Air Force Research Laboratory Enabling Powerful Suborbital Missions with Rocket Lab's Electron Launch Vehicle Mr. Richard French, Rocket Lab
1800 2100	Naturaling Deportion at the Medican Mellon	Mr. Michael Niezgoda, University of Wisconsin Madison	Dr. Michael Miller, Southwest Research Institute	
	Networking Reception at the Madison Malla Sponsored by Northrop Grumman Corporation 29 June 2022			
	Sponsored by Dynetics Registration Open Lunch Break			
0700 - 1200 1330 - 1900	(On Your Own - See Registration Desk for Area Exhibits and Poster Session Open	a Restaurants)		
	Poster Session and Networking Reception Sponsored by The Boeing Company			
1900 - 2030	Exhibit and Poster Dismantle Track One	Track Two	Track Three	Track Four
	NSMMS Hypersonics	NSMMS Development, Processing & Testing of	NSMMS Additive Manufacturing for Space & Missile	CRASTE Orbital Access for Small Payloads
	Session Chairs: Dr. Bill Carter, Defense Advanced Research Projects Agency & Mr. Curtis Martin, Naval Surface Warfare Center	Advanced Materials Session Chair: Dr. Paul Kladitis, University of Dayton Research Institute	Materials Session Chair: Dr. Jim Stott, NASA Marshall Space Flight Center	Session Chair: Dr. Sandra Walker, NASA Langley Research Center Co-Chair: Mr. Nickolas Demidovich, Federal Aviation Administration
	Lead Organizer: Mr. Mitch Petervary, The Boeing Company Co-Organizers: Mr. Dan Hladio, Materials Research & Design, Inc.; Mr. Tod Palm, Northrop Grumman Aeronautics Systems; Dr. Suraj Rawal, Lockheed Martin Space Systems; Dr. Sandra Walker, NASA Langley Research Center; & Mr. Brian Zuchowski, Lockheed Martin Aeronautics Company	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, Air Force Research Laboratory; & Dr. Eric Wuchina, Naval Surface Warfare 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 Space Systems; Dr. Suraj Rawal, Lockheed Martin Space Systems; Mr. Michael Renbarger, Ball Aerospace; Dr. Samir Singh, Ball Aerospace; Mr. James Tucker, Kratos SRE; & Mr. John Vasquez, U.S. Naval Research Laboratory	
0800 - 0805	Session Introduction Hypersonic Window & Aperture Needs	Session Introduction	Session Introduction Overview and Findings of an Additively-	Session Introduction
	Mr. Curtis Martin, Naval Surface Warfare Center	High Temperature Microwave Performance Characterization of Hypersonic Radome Materials Mr. Glen Hilderbrand, Applied Research Associates	Manufactured TPS Workshop Mr. Stan Bouslog, NASA Johnson Space Center	Expanding Suborbital Testing: NASA Flight Opportunities and Commercial Partners Advance New Capabilities Mr. John Kelly, NASA Armstrong Flight Research Center
0830 - 0855	Historical Aperture Data for Current Hypersonic Needs Dr. Wesley Chapkin, Textron Systems NSMIMS	Advanced Ceramic Matrix Composite Design Toolkit Dr. Sergio dos Santos e Lucato, Teledyne Scientific NSMMS	NSMMS	Geo Belt Surge Logistics: An Application of the Capacitated Orbital Vehicle Routing Problem for Propulsive Requirements Mr. Finn O'Brien, Air Force Research Laboratory CRASTE
	Hypersonics, cont.	Development, Processing & Testing of Advanced Materials, cont.	Additive Manufacturing for Space & Missile Materials, cont.	Orbital Access for Small Payloads, cont.
0855 - 0920	Thermal and Mechanical Testing of a 3D Woven Reinforced Oxide-Oxide Window Subcomponent Mrs. Kerry Howren, Materials Research & Design, Inc. Presentation to be given by: Dr. Brian Sullivan, Materials Research & Design, Inc.	Presentation to be Announced	NASA's Efforts in Lunar Construction, Manufacturing and Outfitting Dr. Raymond Clinton, NASA Marshall Space Flight Center Updated presentation title to "An Overview of NASA's Initiatives in Lunar Construction, Manufacturing and Outfitting".	Launch Site Identification for Tactically Responsive Space Access: Impact of Austere Sites Ms. Theresa Sitter, Sierra Lobo, Inc.
0920 - 0945	Oxide / Oxide CMC Materials for Hypersonic Radomes and Thermal Protection Systems Mr. John Dignam, Mentis Sciences, Inc.	Developments on Fabrication and Characterization of Silicon Nitride Fibers by LCVD Mr. Jeff Vervlied, Free Form Fibers, LLC	Advanced, High-Temperature, Polymer-Derived Ceramics as Structural Insulating Materials for Thermal Protection Systems Dr. Kevin Harsh, Sporian Microsystems, Inc.	Theater Persistent Coverage Analysis Mr. Victor Christopher Ong, Sierra Lobo, Inc.

	Track One	Track Two	Track Three	Track Four
Students	NSMMS	NSMMS	NSMMS	CRASTE
are	Hypersonics, cont.	Development, Processing & Testing of	Additive Manufacturing for Space & Missile	Innovative Test Methodologies & Platforms
marked with *		Advanced Materials, cont.	Materials, cont.	Session Chair: Mr. Jeramie Broadway, NASA
				Marshall Space Flight Center
				Co-Chair: Mr. Gary Tiscia, Materials Research &
1015 - 1020	Announcements	Announcements	Announcements	Design, Inc. Session Introduction
1020 - 1045	High Temperature Antennas	Diagnostic Spectroscopy Tools for	Nickel Based Super Alloy Laser Powder Bed	Accelerated DIC Displacement and Strain
	Mr. Jeff Duce, The Boeing Company	Improved Understanding of UHTC Material Interactions with Testing Environments	Fusion Printing Optimization for High Temperature Structures	Measurement for Hypersonics Applications Dr. Michael McGaw, McGaw Technology, Inc.
		Dr. Samuel Frueh, Air Force Research	Ms. Chappell Alex, U.S. Army DEVCOM Aviation &	Dr. Michael McGaw, McGaw Technology, Inc.
1045 - 1110	Integrated RF-Transparent Aperture for	Laboratory Novel Processing Approaches towards	Missile Center Rapid and Flexible TPS and Ablation-Resilient	Combined Thermal/Acoustic Testing of Thin
	Hypersonics Ms. Vann Heng, The Boeing Company	Ultra-High Temperature CMCs with Enhanced Oxidation and Ablation	Coating Fabrication with Selective Laser Heating Dr. Albert Darling, Battelle Memorial Institute	Additive Inconel Shell Demonstration Article Dr. Ricardo Perez, Air Force Research Laboratory
	wis. valid theng, the boeing company	Resistance	Dr. Albert burning, butterie Memorial institute	of the second refer to the second reasonatory
1110 - 1135	Low-Ablation Composites for Thermal	Dr. Zlatomir Apostolov, Air Force Research *Phase Evolution during Oxidation of HfC	An Approach to Critical Component, Flight	High Temperature Emissivity Measurement
	Protection Systems	at Extreme Conditions	Certification	System (HiTEMS) Analysis of Smooth and Textured
	Dr. Justin Hendrix, Naval Surface Warfare Center	Mr. Jonathan Scott, Missouri University of Science and Technology	Dr. Mark Patterson, Kratos SRE	Molybdenum Ms. Meghan Carrico, NASA Marshall Space Flight
			Updated presentation title to "Procedure to Determine Component Fliaht Confidence".	Center
1135 - 1200	Multi-Layer Metal Insulation: A Thermal	Oxidation Kinetics of Sub-Stoichiometric	Influence of Reduced Carbon Content on Microstructure and Mechanical Behavior of	Commercial Dual Use Technology for Planetary Scale Multi-Modal Automated Advanced Analytics
	Protection System with Integrated Structure Miss Kelsey Parker, Peregrine Falcon	ZrC _X via Furnace Testing to 2500 °C / 1 ATM Air		through Commercial Persistent Surveillance Low
	Corporation	Dr. Mark Opeka, Kratos SRE	(LPBF) Dr. Tait McLouth, The Aerospace Corporation	Earth Orbit Satellites Dr. Shawana Johnson, Global Marketing Insights,
1200 1220	Lunch Burch		Dr. Tale McZodali, The Acrospace Corporation	Inc.
1200 - 1330	Lunch Break (On Your Own - See Registration Desk for Area	a Restaurants)		
	Track One	Track Two	Track Three	Track Four
Students	NSMMS	NSMMS	NSMMS	NSMMS
are	Hypersonics, cont.	Development, Processing & Testing of	Additive Manufacturing for Space & Missile	Ground & Flight Test Methodologies
marked with *		Advanced Materials, cont.	Materials, cont.	Session Chair: Mr. Marshall Polk, United States Air
		Session Chair: Dr. Daniel Driemeyer, Boeing Research & Technology	Session Chair: Mr. Stan Bouslog, NASA Johnson Space Flight Center	Force
		nesearch & reciniology	Space riight 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
1330 - 1335	Announcements	Announcements	Announcements	Rocketdyne: & Dr. Gerald Russell. RTCS. LLC. Session Introduction
1335 - 1400	Teaching Old Materials New Tricks:	*Near Net Shape Fabrication and	Developing Ablative Materials for Additive	Project Phoenix: A Large-Scale, Clean Air, Variable
	Architected Materials for Hypersonics and Space	Characterization of Cermet Nuclear Thermal Propulsion Fuel Forms	Manufacturing of TPS Dr. Adam Sidor, NASA Johnson Space Center	Mach Freejet Hypersonic Test Facility Mr. Stuart Steen, PERIKIN Enterprises
	Dr. William Carter, Defense Advanced Research Projects Agency	Mr. Nathaniel Blatt, Missouri University of Science and Technology		
1400 - 1425	, , ,	Fabrication of Spark Plasma Sintered ZrC	Design, Production and Arc-Jet Testing of	Aerothermal Materials Response Test and
	Transpiration Cooling of Hypersonic Leading Edges	with WC Additions for Nuclear Thermal Propulsion	Additively Manufactured Thermal Protection Systems and Hot Structure	Evaluation Methods – You CAN Get There From Here!
	Dr. Christopher Roper, HRL Laboratories, LLC	Dr. Jeremy Watts, Missouri University of	Dr. Bill Goodman, Goodman Technologies, LLC	Dr. Gerald Russell, RTCS, LLC
1425 - 1450	Additive Manufacturing: Enabling	Science and Technology Characterization of Advanced Polyimide	Technology Development Enabling Direct Ink	High Temperature Dynamic Instrumentation
	Technology for Hypersonic Missions	Composites	Writing of Solid Propellant Grains	Evaluation
	Dr. Youping Gao, Castheon, Inc.	Mr. Matthew Opliger, Wichita State University	Mr. Jeremy Snyder, Jacobs/Exquadrum	Mr. Samuel Tilmann, Air Force Research Laboratory
1450 - 1515	AFRL's Leading Edge Experimentation Fixture Development	Modeling Volume Yield and Gas Evolution in Preceramic Polymers During Pyrolysis	The Use of 3D Printed Parts Printed on the HT2 Gearbox as Ground Support Equipment	Analysis of PICA-NuSil at the Hypersonic Materials Environmental Test System (HyMETS)
	Mr. Jonathan Boston, Air Force Research	Dr. Thomas Key, UES, Inc.	Ms. Jordan Shonka, Ball Aerospace	Dr. Brody Bessire, NASA Ames Research Center
1515 - 1545	Laboratory Break			
	Sponsored by ReLogic Research			
	Poster Voting Cards Due to Registration Desk Track One	Track Two	Track Three	Track Four
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	NSMMS	NSMMS	NSMMS	NSMMS
	Hypersonics, cont.	Development, Processing & Testing of Advanced Materials, cont.	Additive Manufacturing for Space & Missile Materials, cont.	Ground & Flight Test Methodologies, cont.
	Announcements	Announcements	Announcements	Announcements
1550 - 1615	Testing of Sharp Carbon Carbon Composite Leading Edges with Oxidation Protection	Quantification of SiC/SiC CMC Microstructure and Damage Evolution	Fabrication of Radiatively Cooled Thruster Chambers using Additive Manufacturing and	High-Op Tempo for Hypersonics (H4H) Testbed for Tech Maturation
	Mr. Tim McKechnie, Plasma Processes, LLC	under Increasing Tensile Loads	Advanced Joining Techniques	Mr. Scott Wilson, Naval Surface Warfare Center
		Dr. Ashley Hilmas, Air Force Research Laboratory	Mr. John O'Dell, Plasma Processes, LLC	Presentation to be given by: Dr. Gerald Russell,
1615 - 1640	High-Fidelity Design, Analysis, and Testing	Effect of SiC Filler Concentration and Size	Additively Manufactured Window Frames	RTCS. LLC Evolution of Skin Materials from Benchtop Studies
20.0	of a 1X Scale Flight-Weight C/C Wing for the	Distribution on SiOC CMCs	Mr. Brian Tucker, Mainstream Engineering	to Sled Testing for Supersonic Missiles with
	AFRL Flight Research Vehicle Mr. Daniel Clemens, University of Dayton	Mr. Ray Blotteaux, Transition Composites		Articulating Nose Technology Dr. Benjamin Dickinson, Air Force Research
1640 170-	Research Institute	Thormal Conductivity Magazine	*Activated Carbon Cormet Hort Surface	Laboratory
1640 - 1705	Fabrication of a 1X Scale Flight-Weight C/C Wing for the AFRL Flight Research Vehicle	Thermal Conductivity Measurements on Carbon-Carbon	*Activated Carbon Cermet Heat-Exchange Material Structures to Minimize Bremsstrahlung	MIL-810 Test Operations Procedure for Hypersonic Weather Encounter
	Mr. Anthony Bazler, University of Dayton Research Institute	Mr. James Hawbaker, Kratos SRE	Emission Mr. Andrew Mason, Air Force Institute of	Mr. Marshall Polk, United States Air Force
			Technology	
1705 - 1730	Hybrid Ceramic-Metal Control Fin for Hypervelocity Projectiles	Carbon/Carbon Rocket Nozzles Made using Net-Shaped Tailored Fiber Placed 3D	Thermo-Structural Optimization of Robust Multi- Material Additive Hot Structures	Update on VAT and VacTGA (Low Pressure) IR&D at SR up to 2000-2500 °C
	Mr. Craig Iwano, Materials Research &	Preforms with High-Strength Carbon	Mr. Evan O'Connor, HRL Laboratories, LLC	Mr. Bhavesh Patel, Kratos SRE
	Design, Inc.	Nanotube Thread Stitching – Part 2 Dr. Paul Kladitis, University of Dayton		
1730 - 1900	Poster Session and Networking Reception	Research Institute		
	Sponsored by The Boeing Company			
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Engine System Modeling and Power Balance Estimation Mr. Breidel Edgar, Materials Sciences, LLC Active Model-Based Control of Laser Heating for Low-Cost Thermal Protective Systems Dr. Christopher Buurma, Battelle Memorial Institute 1135 - 1200 Arcijet Evaluation of Monolithic Ceramic Materials Mr. Nate McGillivray, Kratos SRE NSMMS & CRASTE Integrated Vehicle Health Management (IVHM) & Integrated Systems Health Monitoring (ISHM) Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break Lines Larkin Lark				
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Mr. Jonathan Boston, Air Force Research Laboratory 839 0-855 Accommodating CTE Differences in Mixed Mareiral Characterization Ms. Jennifer Martin-Velazquez, Air Force Research Laboratory Ms. Kurtis Monitosi, University of Dayton Ms. Kurtis Monitosi, University of Dayton Research Laboratory Ms. Kurtis Monitosi, University of Dayton Research Institute Mr. Justin Monitosi, University of Dayton Research Institute Mr. Such Similar High Temperature Joints Mr. Kurtis Monitosi, University of Dayton Research Institute Mr. Justin Monitoriosi, University of Dayton Research Institute Mr. Justin Monitoriosi, University of Dayton Research Baboratory Mr. Justin Monitoriosi, University of Dayton Research Research Albisonatory Mr. Justin Monitoriosi, University of Dayton Research Research Albisonatory Mr. Justin Monitoriosi, University of Polymer-Derived Additive Manufacturing Di. Tobbias Schaedler, MRI. Laboratories, LLC Additive Manufacturing for Space & Missile Materials, cont. Mr. Justin Monitoriosi, University of Airon Di. Wild Kowbel, Advanced Composites and Coolings Are Revolutionary C-C Composites and Coatings Dr. Wildold Knowle, Advanced Composites Are District Mr. Justin M				
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Research Institute		and Dissimilar High Temperature Joints	Modular Aerospike Engine In-Flight	Hypersonic Nose Sections
Description				Mr. Ryan Dunn, Mantis Composites
Mr. Michael Peretti, GE Edison Works O945 - 1015 Break Sponsored by Materials Research & Design, Inc. Track One Track Two Track Two Track Three NSMMS Additive Manufacturing Dr. Tobias Schaedler, HRL Laboratories, LLC NSMMS Hypersonics, cont. NSMMS Additive Manufacturing for Space & Missile Orbital Experiment, cont. Announcements Announcements Announcements Dr. Wildold Kowbel, Advanced Composites and Coatings or Leading Edges and Aero-Structure Applications Dr. Wildold Kowbel, Advanced Composites and Coatings or Space & Missile Processing Parameters for Novel High Parameters for Novel			Laboratory	
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Systems Dr. Christopher Buurma, Battelle Memorial Institute 1135 - 1200 Materials Mr. Nate McGillivray, Kratos SRE Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Tex of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break MSMMS & CRASTE Integrated Vehicle Health Management (IVHM) & Integrated Systems Health Monitoring (ISHM) Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Tex of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break			Laboratory	
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Arcjet Evaluation of Monolithic Ceramic Materials Mr. Nate McGillivray, Kratos SRE Mr. Nate McGillivray, Kratos SRE Mr. Nate McGillivray, Kratos SRE NSMMS & CRASTE Integrated Vehicle Health Management (IVHM) & Integrated Systems Health Monitoring (ISHM) Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break				
Mr. Nate McGillivray, Kratos SRE (IVHM) & Integrated Systems Health Monitoring (ISHM) Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break		Arcjet Evaluation of Monolithic Ceramic		
Monitoring (ISHM) Session Chair: Mr. James Larkin, Aerojet Rocketdyne Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break				
Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break		Nate Mediniviay, Maios SNE		SStry rian, raraday reclinology, mc.
Co-Chair: Mr. Derek DeVries, Northrop Grumman Corporation Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break			Session Chair: Mr. James Larkin, Agroint	
Session Introduction Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology 1200 - 1330 Lunch Break				
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Session Introduction Suborbital Test of the Electro-Mechanical Impedance Structural Health Monitoring System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology Lunch Break			Grumman Corporation	
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System Dr. Andrei Zagrai, New Mexico Institute of Mining and Technology 1200 - 1330 Lunch Break				
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1200 - 1330 Lunch Break				
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	Track One	Track Two	Track Three
	NSMMS & CRASTE	NSMMS & CRASTE	NSMMS
	Space Access & Propulsion	Integrated Vehicle Health Management	Additive Manufacturing for Space & Missile
		(IVHM) & Integrated Systems Health	Materials, cont.
	Session Chair: Mr. Andrew Haaland,	Monitoring (ISHM), cont.	
	Northrop Grumman Corporation		
	Lead Organizer: Mr. Anthony Brinkley,		
	Lockheed Martin HEAT		
	Co-Organizers: Mr. Alan Brown, Aerojet		
	Rocketdyne; Mr. Tim McKechnie, Plasma		
	Processes, LLC; & Mr. Tim Stewart, Ultramet		
1220 1225	Session Introduction	Announcements	Announcements
	Investigation of Disaggregated Space	Fiber Optic Sensors Embedded in Pipe	Development of Advanced Refractory Alloy
	Logistics for GEO Belt Servicing	Walls for Temperature and Pressure	through Additive Manufacturing for Rocket
	Mr. Ethan Sichler, Air Force Research	Measurements	Propulsion and Hypersonics
	Laboratory	Mr. Matthew Davis, Luna Innovations Inc.	Dr. Youping Gao, Castheon, Inc.
1400 - 1425	Numerical Simulation of a Rocket Plume	Material-Agnostic Additive Manufacturing	Additive Manufacturing and Interface
	During Vertical Landing and its Interaction	of Sensory and Motor Structural Fibers	Engineering of Colloidal Nanocrystals for Flexible
	with the Landing Surface and the	Dr. Shay Harrison, Free Form Fibers	Thermoelectric Generators
	Surrounding Environment	, .	Dr. David Estrada, Boise State University
	Dr. Farhad Davoudzadeh, Air Force Research		•
	Laboratory		
1425 - 1450	Rocket Landing Surface Environment and	Property Monitoring of CMC using	All-Printed Supercapacitor Array for In-Space
	Material Characterization	Ultrasound NDE	Manufacturing
	Dr. Malissa Lightfoot, Air Force Research	Dr. Ming Chen, Air Force Research	Dr. Jennifer Jones, NASA Marshall Space Flight
	Laboratory	Laboratory	Center
1450 - 1515	Military Responsive Launch and In-Space	Real Time Structural Health Monitoring for	OSAM-2: Plans and Progress for the First
	Capabilities Enabled by AFRL's Ascent	Space Structures	Demonstration of Structural Manufacturing in
	Propellant	Mr. Grant Chang, Acellent Technologies, Inc.	Space
	Mr. Nils Sedano, Air Force Research		Mr. Lawrence Huebner, NASA
	Laboratory	Fiber-Optic Sensor Networks to Enable	
		Next-Generation Hypersonic Vehicle	
		Monitoring and Control	
		Mr. William Price, IFOS Corporation	
1515	Grand Prize Give-Away & Adjourn		
	Sponsored by Textum		
		so registered for the tour	
1000 - 1930	Badger Propulsion Test Facility Tour - for tho (Bus departs at 1600 and returns at 1930)	se registered for the tour	
	logs achairs at 1000 and letuins at 1930)		