



14TH ABLATION WORKSHOP

NOVEMBER 5-7, 2024

THE JOHNS HOPKINS APPLIED PHYSICS LABORATORY - 11100 JOHNS HOPKINS ROAD, LAUREL, MARYLAND 20723

ABLATION.ENGR.UKY.EDU

AGENDA – DAY 1

Tuesday, November 5

8:00–8:40	REGISTRATION AND BREAKFAST	
	Session 1: Overview	
8:40–8:50	<i>Opening Remarks</i>	APL/UK
8:50–9:10	<i>Aerothermodynamics at APL</i>	Bobby Braun
9:10–9:30	<i>Overview of Navy Ablation Activities (Part 1)</i>	Eric Marineau
9:30–9:50	<i>Recent Advancements in Ablation Tools and Understanding at Sandia National Laboratories</i>	Scott Roberts
9:50–10:10	<i>Overview of NASA Ablation Activities</i>	Justin Haskins
10:10–10:30	<i>VKI Activities Related to Ablative Material Characterization and FTPS Research</i>	Bernd Helber
10:30–10:40	COFFEE BREAK	
	Session 2: Macroscale Modeling	
10:40–11:00	<i>Pyrolysis Models and Simulation Tools Across Communities</i>	Jean Lachaud
11:00–11:20	<i>Predicting Carbon Monoxide Production From Graphite Ablation in a Hypersonic Shock Tunnel</i>	Tom Gross
11:20–11:40	<i>Icarus Application to Dragonfly Heatshield</i>	Prakash Shrestha
11:40–12:00	<i>Aero-Optical Effects Caused by Ablation Products</i>	Jake Letkemann
12:00–13:00	LUNCH	
	Session 3: Multiphysics I	
13:00–13:20	<i>Development of Coupled Fluid/Thermal Strategies to Compute Graphite Ablation During Atmospheric Entry</i>	Vivien Loridan
13:20–13:40	<i>Coupled Aero-Thermo-Chemo-Mechanical Analysis of Ablative Thermal Protection Systems</i>	Christopher Quinn
13:40–14:00	<i>Advancements in Coupled Flow and Material Modeling for Entry Systems</i>	Jeremie Meurisse
14:00–14:20	<i>Advances on Uncertainty Quantification for TPS Modeling</i>	Anabel del Val
14:20–14:30	COFFEE BREAK	
	Session 4: Multiphysics II	
14:30–14:50	<i>Fracture and Failure Modeling in Ablative Materials</i>	Rui Fu
14:50–15:10	<i>A Mesoscale Framework to Model the Surface Recession of Ablative Thermal Protection Systems Materials</i>	Vijay Ramu
15:10–15:30	<i>Towards a Physically Accurate Framework for Direct Simulation Monte Carlo Ablation Simulations</i>	Andrew Hong
15:30–15:50	<i>Drag Model for Non-Spherical Particles and Effects for Hypersonic Flight Through Weather</i>	Bryce Daniels
16:00–17:00	POSTER SESSION	

AGENDA – DAY 2

Wednesday, November 6

8:00–9:00	REGISTRATION AND BREAKFAST	
	Session 5: Experiments I	
9:00–9:20	<i>Preheated Blunt Nose Wedge Model for Shock Tunnel Testing</i>	Chris James
9:20–9:40	<i>New Tools for Automating Arcjet Sample Recession Tracking and Analysis</i>	Alex Quintart
9:40–10:00	<i>Spallation of Porous Carbon Ablators in Supersonic Air and Nitrogen Plasma</i>	Benjamin Ringel
10:00–10:20	<i>Nanosecond CARS Measurements of Temperature and Relative CO Concentration in the Boundary Layer of a Graphite Ablator</i>	Dan Fries
10:20–10:40	COFFEE BREAK	
	Session 6: Experiments II	
10:40–11:00	<i>Current and Future Capabilities on Ablation at NMSU</i>	Francisco Torres Herrador
11:00–11:20	<i>Microparticle Impact Testing of Graphite at Elevated Temperatures</i>	Jamshid Ochilov
11:20–11:40	<i>Overview of the KREPE-2 Hypersonic Flight Mission</i>	Alexandre Martin
11:40–12:00	<i>Data Analysis of the Kentucky Re-entry Universal Payload System (KRUPS) Hypersonic Flights</i>	Bruno Tacchi
12:00–13:00	LUNCH	
	Session 7: Gas-Surface Interactions	
13:00–13:20	<i>Coking and Oxidation of a Simulated Pyrolyzing Ablator</i>	Henry Varona
13:20–13:40	<i>Oxidation of Silicon Carbide With Atomic Oxygen Through the Passive-to-Active Transition</i>	Timothy Minton
13:40–14:00	<i>Mo-Si-B Coatings for Enhanced Oxidation Resistance in SiC-based Thermal Protection Systems (TPS) for Hypersonic Applications</i>	Jeff Becker
14:00–14:20	<i>A Unified Approach to the Active and Passive Thermo-Chemo-Mechanical Oxidation of Silicon Carbide</i>	Daniel Pickard
14:20–14:40	<i>The Design of Kinetically Limited Subsonic Experiments via Damköhler Analysis</i>	Jeff Engerer
14:40–15:00	COFFEE BREAK	
	Session 8: Material Characterization	
15:00–15:20	<i>“Nano” Strategies for Enhancing Carbon-Phenolic Ablator Properties</i>	Laura Paglia
15:20–15:40	<i>Ultra-High Temperature Thermal Characterization of Carbon Fibers and Reinforced Composites</i>	Michela Martinelli
15:40–16:00	<i>Determination of Heat Transfer Parameters for Porous, Fibrous Insulation Materials</i>	John Maddox
16:00–16:20	<i>Wavelength and Angle-Dependent Radiative Properties of LI-2200: An Experimental Study</i>	Yejajul Hakim
18:00–21:00	BANQUET AT THE BALTIMORE MUSEUM OF INDUSTRY	

AGENDA – DAY 3

Thursday, November 7

8:00–9:00 **REGISTRATION AND BREAKFAST**

Special ITAR Session

9:00–9:20 *Overview of Navy Ablation Activities (Part 2)*

9:20–9:40 *Construction of Backward Rates for the Air-Carbon Ablation Model*

9:40–10:00 *Comparing the Thermal Response of Models Made From PICA and 3MDCP When Exposed to Arcjet Test Conditions Using a Coupled CFD-Material Response Approach*

Eric Marineau

Ares Barrios-Lobelle

Grant Palmer

10:00–10:20 **COFFEE BREAK**

10:20–10:40 *4D Microtomography of Avcoat During Heating and Decomposition*

10:40–11:00 *Experimental Investigation of In-Depth Radiative Heating in Porous TPS Materials Exposed to an Argon Plasma Flow*

Joseph Ferguson

Colby Gore

11:00–11:20 *Determination of Phenolic Phase in Carbon-Phenolic Composites Using Xray Computed Tomography (XRCT)*

Savio Poovathingal

11:20 **ADJOURN**

WORKSHOP ORGANIZING COMMITTEE

General Chairs:

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University of Kentucky

Alexandre Martin
University of Kentucky

Local Chairs:

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The Johns Hopkins University Applied Physics Laboratory

Kenneth Kane
The Johns Hopkins University Applied Physics Laboratory

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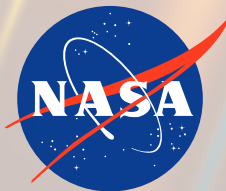
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