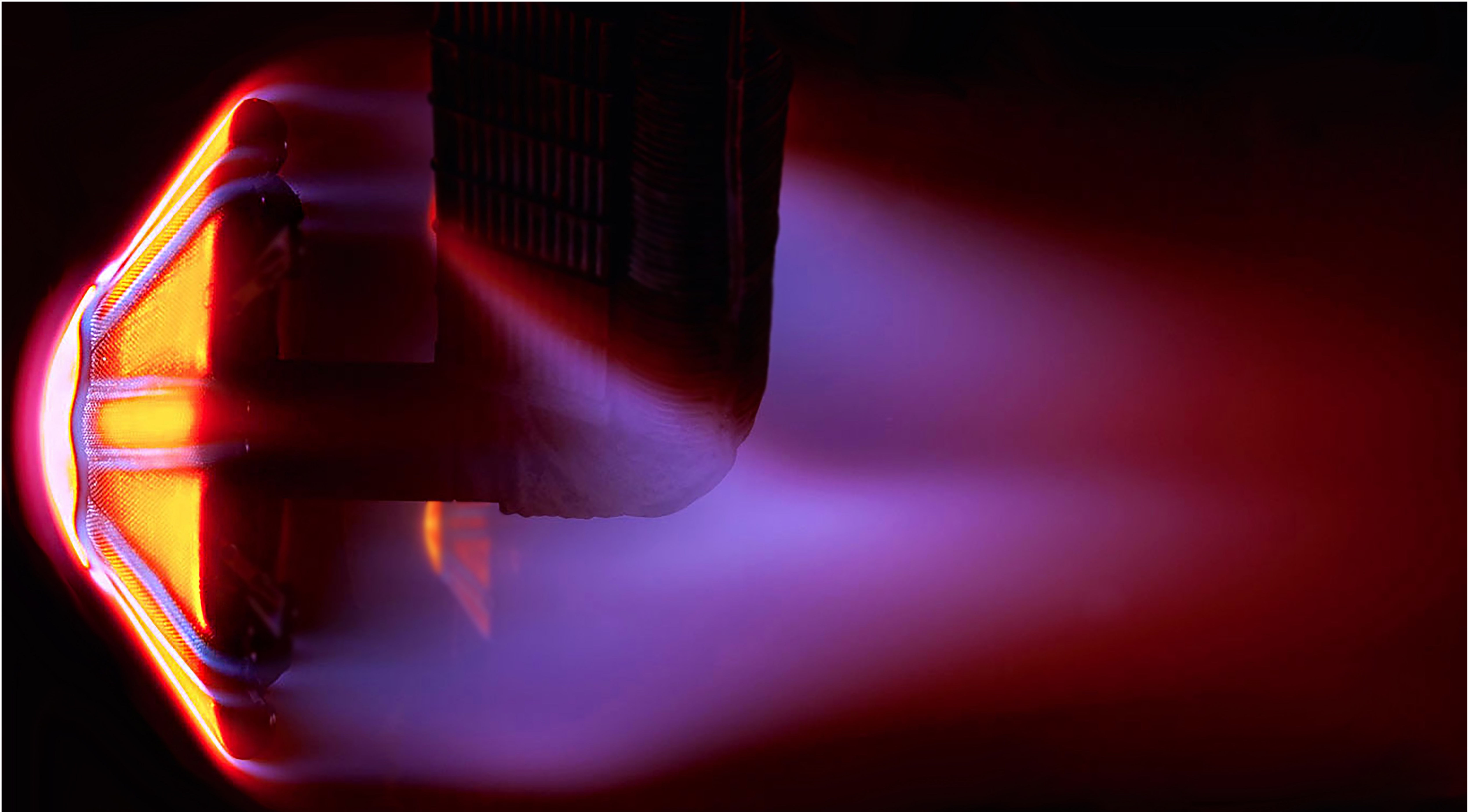


7th Ablation Workshop

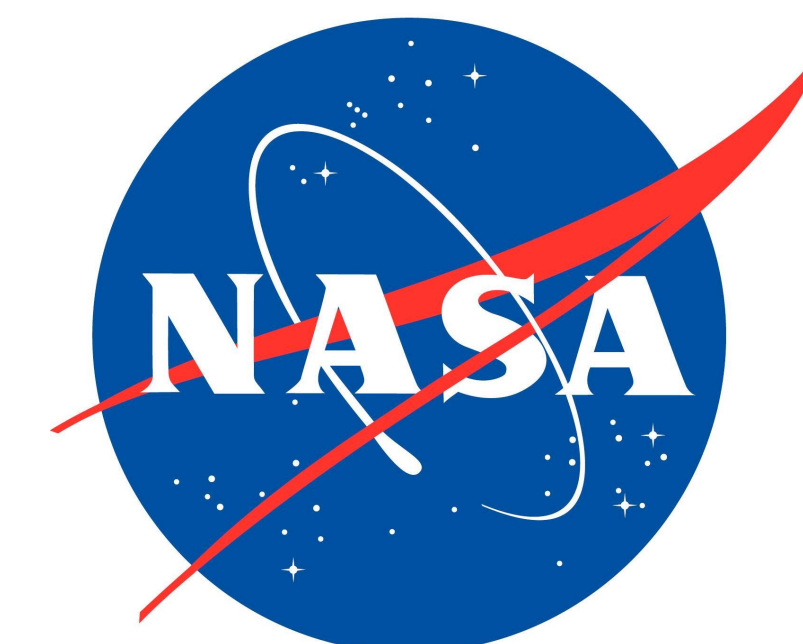
October 21-22 2015

University of Tennessee Space Institute
411 B H Goethert Parkway, Tullahoma, TN 37388
<http://ablation2015.engineering.uky.edu>

Hosted and organized by

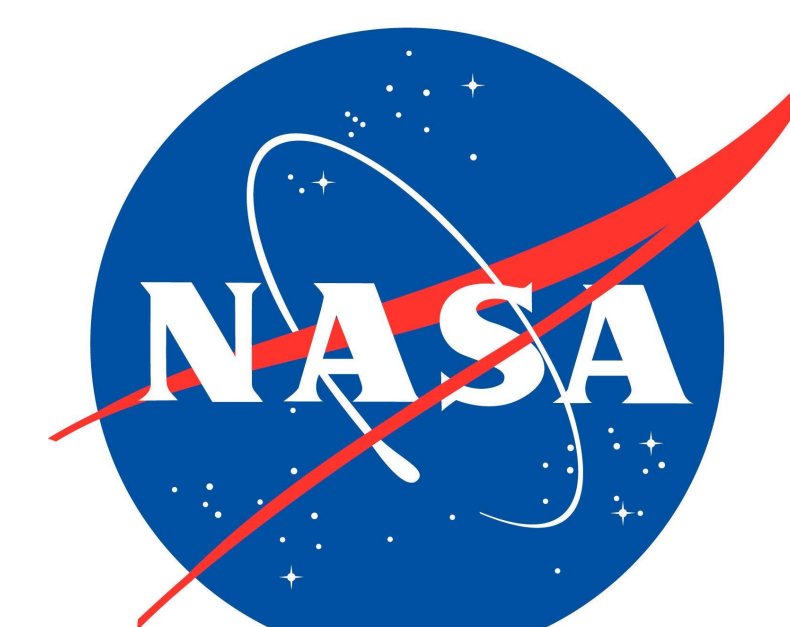


Steering Organizations



7th Ablation Workshop

Sponsored by



Agenda

Wednesday October 21, 2015

Introduction/Overview

Chair: Alexandre Martin, University of Kentucky, USA

8:00 Registration

8:30 Introduction

John Schmissieur, University of Tennessee Space Institute, USA

8:40 Keynote: Hypersonic Testing at AEDC

Wayne Hawkins, AEDC/TSTW, USA

Ground Testing of Ablative and High-Temperature Material

Chair: Stan Bouslog, NASA Johnson Space Center, USA

9:05 AEDC Arc Heater Test Methods and Current Capabilities

Mark Smith, AEDC, USA

9:30 Expansion of the AEDC H2 Arc Heater Facility Test Envelope Using Cold-Air Mixing

Gary Hammock, AEDC, USA

9:55 Future Expansion of AEDC Arc Heater Test Capabilities

Joseph Sheeley, AEDC, USA

10:20 AEDC Hypervelocity Ballistic Ranges

Edward Polk, AEDC, USA

10:45 Coffee Break and Poster Session

11:00 Introduction to the AFRL High-Speed Experimentation Branch

Glenn Liston, AFRL/RQH, USA

11:25 Study of Ablative Thermal Systems in Expansion Tubes

Richard Morgan, University of Queensland, Australia

11:50 Investigation of Pyrolysis Gas Chemistry in an Inductively Coupled Plasma Facility

Douglas Fletcher, University of Vermont, USA

12:15 Lunch in the UTSI Cafeteria - The View

Diagnostics for Gas-Surface Interactions and Ablating Surfaces

Chair: Thomas Schwartzenruber, University of Minnesota, USA

13:30 Oxidation of Hot Carbon and Pyrolysis of PICA

Timothy Minton, Montana State University, USA

13:55 Quantitative Atomic Oxygen Measurements

Zhili Zhang, University of Tennessee, USA

14:20 Quantitative Measurements of Ablation-Products Transport

in a Mach 5 Boundary Layer using Naphthalene PLIF

Christopher Combs, University of Tennessee Space Institute, USA

14:45 Review of the research activities on ablation at the von Karman Institute for Fluid Dynamics

Alessandro Turchi, von Karman Institute, Belgium

15:10 Afternoon break and departure for Tour and Dinner at Jack Daniel's

16:05 Tour of Jack Daniel's Distillery, Lynchburg, TN

17:35 Dinner on Jack Daniel's BBQ Hill

19:35 Return to UTSI

Agenda

Thursday October 22, 2015

National Agency Reports

Chair: John Schmisseur, University of Tennessee Space Institute, USA

8:00 Good morning and Coffee

8:30 Ablation Research: Air Force

Ivett Leyva, Air Force Office of Scientific Research, USA

8:50 Ablation Research: NASA

Michael Wright, NASA Ames Research Center, USA

9:10 Ablation Research: Sandia

David Kuntz, Sandia National Laboratory, USA

9:30 Materials Development for Platform: DARPA

Jesse Margiotta, DARPA, USA

9:50 Coffee Break and Poster Session

Modeling of Gas-Surface Interactions

Chair: Charles Bersbach, Raytheon, USA

10:05 Experimental and numerical results of spallation modeling

Alexandre Martin, University of Kentucky, USA

10:30 Micro-scale analysis of carbon preform using DSMC with a new surface reaction model

Savio Poovathingal, University of Minnesota, USA

10:55 Comparison of volumetric and surface ablation models in CFD

Alessandro Turchi, von Karman Institute, Belgium

11:20 Microscale Simulations of FiberForm Permeability using DSMC

Arnaud Borner, University of Illinois, USA

11:45 Lunch in the UTSI Cafeteria - The View

13:00 IRS activities on gas-surface interaction and characterization of ablating materials

Bartomeu Massuti-Ballester, University of Stuttgart, Germany

13:25 Detailed chemical equilibrium model for porous ablative materials

James Scoggins, von Karman Institute, Belgium

13:50 Two-stream diffusive radiation transport model for indepth material thermal assessment

Martin Haynes, Fluid Gravity Engineering, United Kingdom

Thermal Analysis of Material Systems

Chair: Mark Ewing, ATK, USA

14:15 Development of Seeding Strategies for Ablative Thermal Protection Systems

Bradley Butler, University of Kentucky, USA

14:40 Radiant Heating Tests on Meteoritic Material

Eric Stern, NASA Ames Research Center, USA

15:05 Coffee Break and Poster Session

15:20 Oxidation Behavior of Aerospace Materials in High

Enthalpy Flows Using an Oxyacetylene Torch Test Facility

Erica Corral, University of Arizona, USA

15:45 Pyrolysis of Porous Carbon Char Using a Flow-Tube Reactor

Jason White, SRI Inc., USA

16:10 Finite-rate chemistry of phenolic resin pyrolysis

gases flowing through a porous char: first investigations

Hsi-Wu Wong, University of Mass.-Lowell, USA

16:35 Concluding remarks

16:35 Adjourn

Posters

Wednesday-Thursday October 21-22, 2015

Towards Conjugate Analysis of Rocket Nozzle Ablation

Peter Cross, University of Michigan, USA

Multi-dimensional Modeling of Pyrolysis Gas Transport in Charring Ablative Materials

Justin Cooper, University of Kentucky, USA

Microscale oxidation modeling of carbon fiber materials based on x-ray microtomography

Joseph Ferguson, University of Kentucky, USA

Near surface flow structure over a dimpled surface with blowing

Colby Borchetta, University of Kentucky, USA

Impact of spalled particles on a hypersonic flow field environment

Raghava Davuluri, University of Kentucky, USA

Development of a 3D Unstructured Material Response Solver

Eric Stern, NASA Ames Research Center, USA

Scientific Committee

Dr. Michael J. Wright

Hypersonic Project Scientist for EDL Technologies
Entry Systems and Technology Division
NASA Ames Research Center
Moffett Field, CA 94035
michael.J.Wright@nasa.gov

Mr. Jeffrey L. Payne

Program Manager
Sandia National Laboratories
Albuquerque, NM 87185
jlpayne@sandia.gov

Dr. John Schmissieur

Professor
University of Tennessee Space Institute
Tullahoma, TN 37388
jschmiss@utsi.edu

Dr. Alexandre Martin

Assistant Professor
University of Kentucky
Lexington, KY 40506
alexandre.Martin@uky.edu

Organizing Committee

Dr. John Schmissieur, Chair

Professor
University of Tennessee Space Institute
Tullahoma, TN 37388
jschmiss@utsi.edu

Dr. Alexandre Martin, Co-chair

Assistant Professor
University of Kentucky
Lexington, KY 40506
alexandre.Martin@uky.edu

Sponsors

