

8th Ablation Workshop

October 5-6 2016

Arizona Historical Society's Arizona History Museum

949 E 2nd St, Tucson, AZ 85719

<http://ablation2016.engineering.uky.edu>

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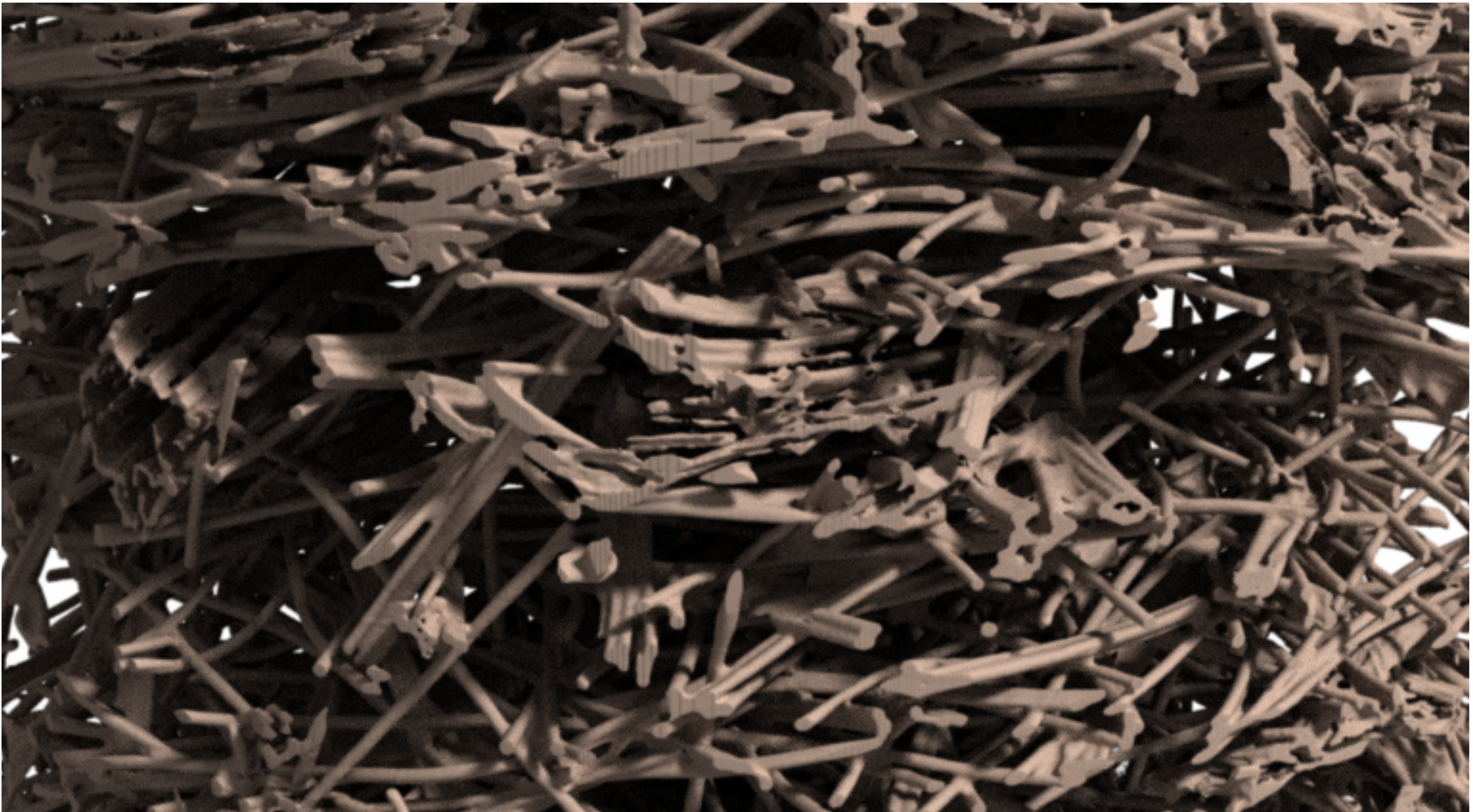
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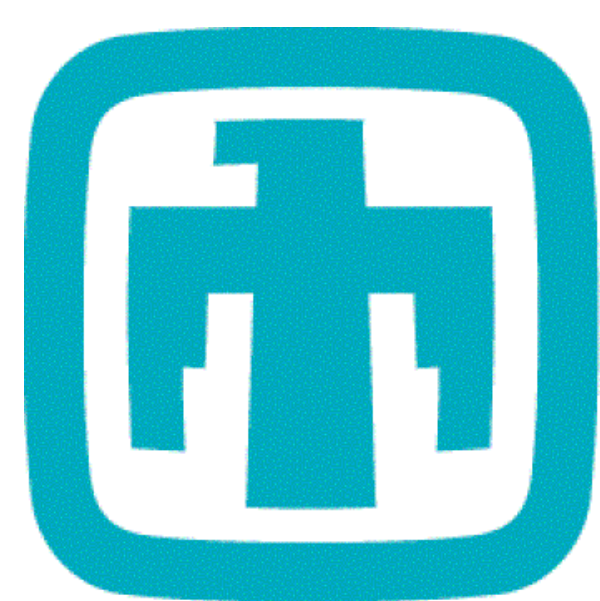
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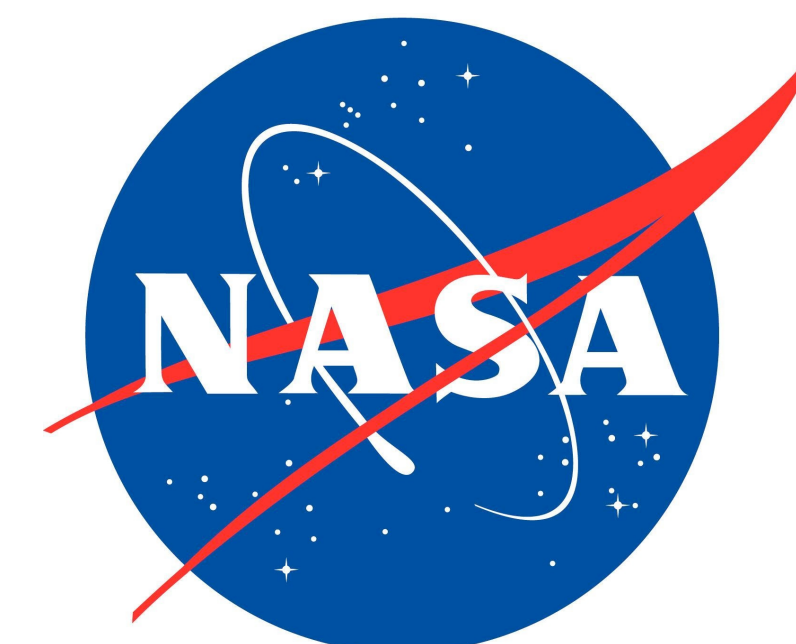
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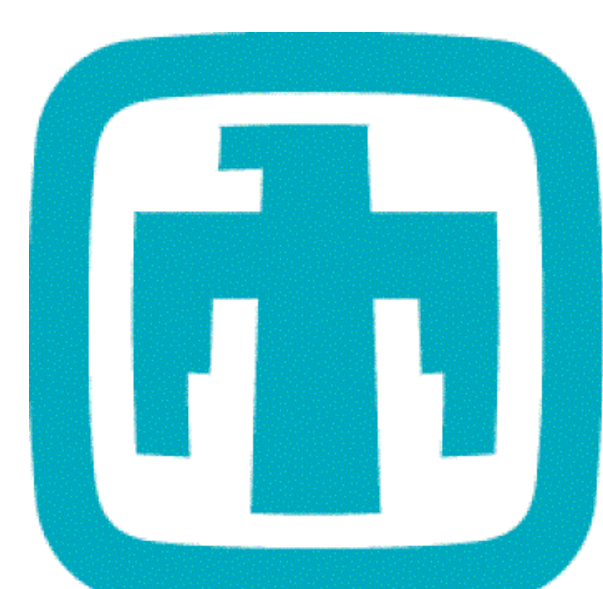
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Agenda

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Agenda

Wednesday October 5, 2016

Introduction/Overview

Chair: Charles Bersbach, Raytheon Missile Systems, USA

8:00 Registration and Coffee

8:30 Introduction

Charles Bersbach, Raytheon Missile Systems, USA

8:40 Keynote: Raytheon Missile Systems

Laura McGill, Raytheon Missile Systems, USA

9:05 Raytheon Ablation: Past and Future in Industry

Brian Roberts, Raytheon Missile Systems, USA

Numerical analysis, Part 1: Macroscopic modeling

Chair: Francesco Panerai, AMA/NASA Ames Research Center, USA

9:30 New Finite Rate Model for carbon surfaces from molecular beam experiments

Savio Poovathingal, Montana State University, USA

9:55 Coffee Break and Poster Session

10:25 A mesoscopic model of the oxidation of micro-structured porous carbon-based materials

José Grana-Otero, University of Kentucky, USA

10:50 Decoupled and Conjugate Analyses of Rocket Nozzle Ablation

Peter Cross, Naval Air Warfare Center Weapons Division / University of Michigan, USA

11:15 Development of Icarus, a 3D Unstructured Material Response Solver

Suman Muppidi, AMA/NASA Ames Research Center, USA

11:40 Lunch

Numerical analysis, Part 2: Microscopic modeling

Chair: Mark Ewing, Orbital ATK, USA

13:10 Porous Materials Analysis (PuMA): A computational framework for micro-tomography material properties and response

Joseph Ferguson, STC/NASA Ames Research Center, USA

13:35 Implementation of an oxidation surface chemistry

model in DSMC based on molecular beam experiments

Arnaud Boerner, UIUC/NASA Ames Research Center, USA

14:00 Multi-scale Thermal Response Modeling of an Avcoat-like TPS

Deborah Levin, University of Illinois at Urbana-Champaign, USA

14:25 Coffee Break and Poster Session

Experiments, Part 1: Charring ablator chemistry

Chair: Michael Barnhardt, NASA Ames Research Center, USA

14:55 DECA: Development of the European Conformal

Ablator as an extension of the ASTERM charring ablator family

Gregory Pinaud, Airbus Safran Launchers, France

15:20 Pyrolysis of PICA: Molar Yields as a Function of Heating Rate

Timothy Minton, Montana State University, USA

15:50 Oxidation of a Porous Carbon Char Using a Flow-Tube Reactor

Jason White, SRI International, USA

16:15 Pyrolysis Gas and Plasma Interaction

Douglas Fletcher, University of Vermont, USA

16:40 Adjourn

18:00 Workshop Dinner at Gentle Ben's

Agenda

Thursday October 6, 2016

Special Presentations

Chair: Jeremy Evans, Raytheon Missile Systems, USA

8:00 Good morning and Coffee

8:30 Keynote: OSIRIS-REx: An Asteroid Sample-Return Mission
Bashar Rizk, University of Arizona, USA

8:55 Ablation Test-Cases
Timothy Rich, NASA Langley Research Center, USA

National Agency Reports

Chair: Charles Powars, St. Croix Research, USA

9:20 Agency report: NASA
Nagi Mansour, NASA Ames Research Center, USA

9:45 Development of ablation modeling capabilities at Sandia National Laboratories
Derek Dinzi, Sandia National Laboratory, USA

10:05 Coffee Break and Poster Session

10:40 Update on DARPA's Materials Development for Platforms Program
Christopher Combs, University of Tennessee Space Institute, USA

11:05 Overview of Ablation Activities at NASA Johnson Space Center in FY2016
Tyler Fox, NASA Johnson Space Center, USA

11:30 Lunch

Experiments, Part 2: High enthalpy facilities testing

Chair: Francesco Marra, Sapienza – Università di Roma, Italy

13:00 In-situ Ablation Recession and Thermal Sensor Based on Ultra-fine Gage Thermocouples
Joseph Koo, University of Texas, USA

13:25 Design of a high enthalpy flow test facility using an oxyacetylene torch with
a supersonic nozzle for studying the ablation behavior of aerospace materials
Erica Corral, University of Arizona, USA

13:50 Ablation Behavior of Graphitic Materials Using a Low Velocity
and High Temperature Oxygen Rich Gas Flows
Melia Miller, University of Arizona, USA

14:15 Onset of spallation and spalled particle statistics
Alexandre Martin, University of Kentucky, USA

14:40 Conclusion/Adjourn

Wednesday-Thursday October 5-6, 2016

Posters

Strongly Coupled Thermo-Mechanical Simulation for Ablation Problems

Rui Fu, University of Kentucky, USA

Manufacturing and characterization of carbon-phenolic ablative materials modified by nano-filler addition

Laura Puglia, Sapienza – Università di Roma

X-ray micro-tomography of ablative heat shield materials

Francesco Panerai, AMA/NASA Ames Research Center, USA

Numerical Simulation of HYMETS Arc-Jet Flow with KATS

Umran Duzel, University of Kentucky, USA

KATS-Universal Solver: Preliminary Results

Justin Cooper, University of Kentucky, USA

Development of an Open-Source Avcoat Similar Material Database

Ali Omidy, University of Kentucky, USA

Ablation of aerospace materials in high enthalpy flows

using an oxyacetylene torch with a supersonic nozzle

Jeremy Elias, University of Arizona, USA

Scientific Committee

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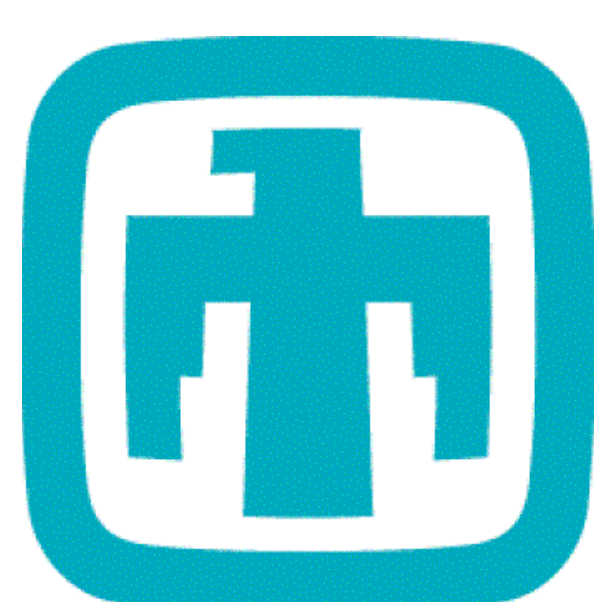
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