Wednesday October 21, 2015

Introduction/Overview
Chair: Alexandre Martin, University of Kentucky, USA

8:00 Registration
8:30 Introduction
John Schmisseur, 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/RQHX, 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 Schwartzentruber, 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
Thursday October 22, 2015

National Agency Reports
Chair: John Schmisser, 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
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

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