Monday September 17, 2018

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

7:00 Registration, Breakfast and Coffee
8:00 Overview and welcome
  Jason Meyers & Linda Schadler, University of Vermont, USA
8:10 Ablation Workshop: 10 Years of History
  Michael Wright, NASA Ames Research Center, USA
8:35 Mars Sample Return: Grand Challenge for EDL
  Ethiraj Venkatapathy, NASA Ames Research Center, USA
9:00 TPS Architectures and the Influence of Material and Architecture on Failure Mode Evolution
  Mairead Stackpoole, NASA Ames Research Center, USA
9:25 Overview of Sandia National Laboratories ablation activities
  Justin Smith, Sandia National Laboratories, USA
9:50 Preliminary post-test ablation analysis of the ExoMars2016 Schiaparelli module during the entry on Mars atmosphere
  Gregory Pinaud, Ariane Group SAS, France
10:15 Coffee Break

Experimental Chemical Decomposition
Chair: Justin Smith, Sandia National Laboratories, USA

10:45 Measurements of Pyrolysis Gas Interactions in Dilute Plasmas
  Douglas Fletcher, University of Vermont, USA
11:10 Determination Of The Ablation Properties Of A New Class Of Ablatives By Mesa Code
  Ozen Atak, University of Texas, USA
11:35 Thermogravimetric Analysis of Phenolic and Silicone Decomposition Products
  Jason White, SRI, USA
12:00 Molecular Beam Studies of Carbon and Silicon Carbide Ablation by Atomic Oxygen
  Timothy Minton, Montana State University, USA
12:25 Lunch

Micro-scale Modeling
Chair: Yves Dubief, University of Vermont, USA

13:40 Predictive Modeling of Chemical and Structural Failure of Porous Ablative Materials
  Thomas Schwartzentruber, University of Minnesota, USA
14:05 Pitting Dynamics in Carbon Oxidation
  José Graña-Otero, University of Kentucky, USA
14:30 Apparent Permeability Prediction on Micro-Porous Media with the Lattice Boltzmann Method
  Michel Ho, École Polytechnique de Montréal, Canada
14:55 Modeling the Effective Thermal Conductivity of Anisotropic Porous Materials
  Federico Semeraro, UIUC at NASA Ames Research Center, USA
15:20 Coffee Break

Poster Session (see page 4)
15:20 Poster session
17:00 Adjourn
17:40 Spirit of Ethan Allen Boarding Begins
18:00 Spirit of Ethan Allen Departs
Tuesday September 18, 2018

Mesoscale Modeling -- Phenomena
Chair: Mark Ewing, Northrop Grumman, USA

7:00 Breakfast and Coffee
8:00 KATS-Universal Solver: Application to Flow Tube Oxidation Modeling
    Haoyue Weng, University of Kentucky, USA
8:25 Effects of carbon-based ablation products on hypersonic boundary layer stability
    Olivia S. Elliott, Air Force Institute of Technology, USA
8:50 Mesoscale Framework for Multi-Physics Simulation of Ablative Thermal Protection Systems
    Marina F. F. Sessim, University of Florida, USA
9:15 Overview of the Material Response Code MABLE
    Luke Chipperfield, Fluid Gravity Engineering Ltd., UK
9:40 Investigation of Factors Affecting Rocket Nozzle Conjugate Ablation Predictions
    Peter G. Cross, Navy NAWCWD, USA
10:05 Coffee Break

Mesoscale Modeling -- Properties
Chair: Peter G. Cross, Navy NAWCWD, USA

10:35 Icarus Material Response Modeling of Meteoritic Melt Interfaces: Application of an
    Atomistically-Derived Property Database
    Justin B. Haskins, NASA Ames Research Center, USA
11:00 Mesoscale Modeling of TPS materials: Effective Property Calculations and Sensitivity Analysis
    Lincoln N. Collins, Sandia National Laboratories, USA
11:25 A Ready-to-Use Multi-Fidelity Gas-Surface Interaction Module for CFD
    Georgios Bellas-Chatzigeorgis, von Karman Institute for Fluid Dynamics, Belgium
11:50 Development of an Oxidation Model for Carbon Preform Ablators for use in CFD
    Krishnan Swaminathan-Gopalan, NASA Ames Research Center, USA
12:15 Lunch

Experimental Characterization
Chair: Adam Amar, NASA Jonhson Space Center, USA

13:55 HEEET ETU Test Series
    Scott Splinter, NASA Langley Research Center, USA
14:45 A Comparative Study on Ablation Performance, Thermal Properties, and Microstructures of
    2D, 2.5D, and 3D Carbon/Phenolic Ablatives
    Joseph Koo, University of Texas, USA
13:30 Comprehensive Material Properties Characterization of the Zuram Ablator at the VKI for
    Material Response Code Validation
    Francisco Torres Herrador, von Karman Institute for Fluid Dynamics, Belgium
15:10 Nitridation and Surface Catalyzed Recombination on High-Temperature Carbonaceous
    Fiber Materials
    Jason Meyers, University of Vermont, USA
15:35 Conclusion/Adjourn
Developments of a Low-Mach Number Flow Solver for the UVM ICP Torch
   Yves Dubief, University of Vermont, USA
Towards the Prediction of the Mars 2020 Heatshield Material Response
   Jeremie Meurisse, NASA Ames, USA
Recent developments of the Porous Microstructure Analysis (PuMA) software.
   Joseph Ferguson, STC at NASA Ames, USA
CFD modeling of Subsonic Plasma Flow for Ablation Experiments
   K. Sandeep Prata, University of Minnesota, USA
Computing Surface Properties on Thermal Protection System Microstructure
   A. Dev Achambath, University of Minnesota, USA
Competing Reaction Pyrolysis model Applied to Carbon/Phenolic Ablators
   F. Torres Herrador, von Karman Institute, Belgium
Significance of DSMC Computed Aerothermal Environments in the Rarefied Regime for Atmospheric Entry Material Response
   Arnaud Borner, STC at NASA Ames, USA
Conjugate Heat Transfer Model of an Experimental Apparatus Measuring Thermal Conductivity of Fibrous Insulation Materials
   Christopher Barrow, University of Kentucky, USA

Material Response Analysis of a Titan Entry Heatshield
   Grant Palmer, AMA at NASA Ames, USA
A Chemical Equilibrium Approach to Silicon Carbide Oxidation
   Samuel Chen, University of Michigan, USA
Kentucky Re-entry Universal Payload System (KRUPS): Sub-orbital Flights
   Nicola Khouri, University of Kentucky, USA
Numerical Reconstruction of Spalled Particle Trajectories in an Arc-Jet Environment
   Raghava Davuluri, University of Kentucky, USA
DSMC Simulation of Flow Through Various TPS Microstructures
   S. Ramjatan, University of Minnesota, USA
Qualitative Assessment of Supersonic Flow Through Porous Media with KATS-US
   Umran Duzel, University of Kentucky, USA
Modeling Multi-Phase Transport in a Porous Ablator Using KATS Universal Solver
   Ali Omidy, University of Kentucky, USA
Computation of Darcy’s Permeability in Porous Media Based on Voxel Images
   John M. Thornton, NASA Ames, USA
A thermochemical model for oxidation of ultra high temperature ceramics using high temperature high enthalpy and high temperature flows
   Erica Corral, University of Arizona, USA

Material Response Analysis of a Titan Entry Heatshield
   Grant Palmer, AMA at NASA Ames, USA
A Chemical Equilibrium Approach to Silicon Carbide Oxidation
   Samuel Chen, University of Michigan, USA
Kentucky Re-entry Universal Payload System (KRUPS): Sub-orbital Flights
   Nicola Khouri, University of Kentucky, USA
Numerical Reconstruction of Spalled Particle Trajectories in an Arc-Jet Environment
   Raghava Davuluri, University of Kentucky, USA
DSMC Simulation of Flow Through Various TPS Microstructures
   S. Ramjatan, University of Minnesota, USA
Qualitative Assessment of Supersonic Flow Through Porous Media with KATS-US
   Umran Duzel, University of Kentucky, USA
Modeling Multi-Phase Transport in a Porous Ablator Using KATS Universal Solver
   Ali Omidy, University of Kentucky, USA
Computation of Darcy’s Permeability in Porous Media Based on Voxel Images
   John M. Thornton, NASA Ames, USA
A thermochemical model for oxidation of ultra high temperature ceramics using high temperature high enthalpy and high temperature flows
   Erica Corral, University of Arizona, USA

Scientific Committee

Dr. Mark Ewing
Director, Analysis Engineering
Northrop-Grumman
Brigham City, UT 84302
mark.ewing@orbitalatk.com

Dr. Alexandre Martin
Associate Professor
University of Kentucky
Lexington, KY 40506
Alexandre.Martin@uky.edu

Dr. Justin Smith
Program Manager - Aerosciences
Sandia National Laboratories
Albuquerque, NM 87185
jussmit@sandia.gov

Dr. Ivett Leyva
Program Manager, High-Speed Aero.
Air Force Office of Scientific Research
Arlington, VA 22203
Ivett.Leyva@us.af.mil

Dr. Alexandre Martin
Associate Professor
University of Kentucky
Lexington, KY 40506
Alexandre.Martin@uky.edu

Dr. Grégory Pinaud
Research Engineer
Ariane Group SAS
Saint-Médard-en-Jalles, France
gregory.pinaud@ariane.group

Dr. Michael J. Wright
Entry Systems Modeling Proj. Manager
NASA Ames Research Center
Moffett Field, CA 94035
Michael.J.Wright@nasa.gov

Organizing Committee

Dr. Jason Meyers, Chair
Research Assistant Professor
University of Vermont
Burlington, VT
Jason.Meyers@uvm.edu

Dr. Alexandre Martin
Associate Professor
University of Kentucky
Lexington, KY 40506
Alexandre.Martin@uky.edu

Dr. Michael J. Wright
Entry Systems Modeling Proj. Manager
NASA Ames Research Center
Moffett Field, CA 94035
Michael.J.Wright@nasa.gov