

DRAFT AGENDA

JANNAF Technical Information Meetings

17 – 20 Sep 2018

BRICC, Arlington, VA

Classification Level: Unclassified, Distribution C (government and government contractors)

Topic 1 – Investigating the Relationship between Mechanical and Reactive Behavior in Energetic Materials

Purpose: The objective of this panel task is to foster communication and collaborations within the JANNAF community to better understand the coupling between mechanical insult to and chemical reactions in energetic materials.

Organizers:

- Joel Stewart and Joshua Felts (JANNAF PSHS Shock/Impact-Induced Reactions panel chairs)
- Barrie Homan and Eric Welle (JANNAF CS Explosive Performance / Enhanced Blast panel chairs)
- Martin Schmidt (AFOSR Program Officer for Dynamic Materials and Interactions)

Mon, 17 Sep 2018

0815 Opening Remarks

0830 Morning Session 1

- James Anderson (Army, ARL): Overview of ARL's EMBURE efforts
- H.S. Udaykumar (University of Iowa): "Meso-Informed Ignition and Growth Model for Multiscale Shock-to-Detonation Simulations in Heterogeneous Explosives"
- Pradeep Guduru (Brown University): Temperature measurement experimental development
- Al Nichols (LLNL): Overview of ALE3D's chemistry module

1030 Break

1045 Morning Session 2

- Steven Son (Purdue University): Overview of Purdue efforts
- Patrick Bowden (LANL): "Stand-Off Detonator Fragment Initiation of HE and Modeling Flyer and HE Response"
- Michael Bonanno (Navy, Indian Head): "Review of Small-Scale Compression and Impact Testing of Gun Propellants"

1215 Lunch

1345 Afternoon Session 1

- Paul Peterson (LANL): Overview of LANL explosive hazards
- Kyle Ramos (LANL): "Mesoscale Mechanics of Energetic Materials: A Coordinated Experiment-Theory Effort Using New In Situ Probes"
- Chris Meredith (ARL): "Overview of the First SHPB Experiments on Single Crystal Explosives"

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1515 Break

1545 Afternoon Session 2

- Afternoon Talk 4
- Afternoon Talk 5

1645 Adjourn

Tue, 18 Sep 2018

0815 Discussion/Brainstorming

- Based on the previous talks and discussion, what are the main challenges associated with predicting the response in sub-detonative events?
- What can JANNAF's Shock/Impact Induced Reactions panel do to assist (e.g., documenting this meeting's findings in a report, organizing technical sessions at a future JANNAF subcommittee meeting, hosting follow-on informational meetings, etc.)?

1200 Adjourn/Lunch

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Topic 2 – Experimental and Computational Investigations in Polymer Behavior

Purpose: Discuss polymer research being undertaken at the DOE and DoD laboratories and its relevance to both the coupling between mechanical and chemical behavior in energetic materials as well as gap testing.

Organizers:

- Jennifer Jordan (LANL Group Leader for Shock and Detonation Physics)
- Joel Stewart and Joshua Felts (JANNAF PSHS Shock/Impact-Induced Reactions panel chairs)
- Martin Schmidt (AFOSR Program Officer for Dynamic Materials and Interactions)

Tue, 18 Sep 2018

1315 Opening Remarks

1330 Afternoon Session 1

- Dana Dattelbaum (LANL): “Dynamic Properties and Strength of Polyethylene”
- Dan Casem (ARL): High-rate PMMA data
- Michael Murphy (LANL): PMMA shock response

1500 Break

1515 Afternoon Session 2

- Josh Coe (LANL): “EOS/Hydrodynamic Modeling of Polymers under Performance Conditions”
- Afternoon Talk 5
- Afternoon Talk 6

1645 Adjourn

Wed, 19 Sep 2018

0815 Discussion/Brainstorming

- Based on the previous talks and discussion, what are the main challenges associated with understanding and accurately predicting polymer behavior?
- What can the community do to overcome the remaining challenges?

1200 Lunch

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Topic 3 – Investigation of Gap Test Modeling and Instrumentation

Purpose: The objective of this panel task is to facilitate collaboration across the JANNAF community investigating shortcomings in gap test modeling. These investigations include the assessment of material models used to describe the behavior of the components in the various gap tests and the review of different diagnostic techniques that can provide data for use in model parameterization and validation.

Organizers:

- Joel Stewart and Joshua Felts (JANNAF PSHS Shock/Impact-Induced Reactions panel chairs)
- Martin Schmidt (AFOSR Program Officer for Dynamic Materials and Interactions)

Wed, 19 Sep 2018

1315 Opening Remarks

1330 Afternoon Session 1

- Josephine Covino (OSD, OUSD ATL): Hazard classification and TB 700-2
- Douglas Kooker (Army, ARL): “An Alternative Gap-Test Configuration to Mitigate Ambiguities Associated with the Large-Scale-Gap Test”
- Chris Braithwaite (UK) / Eric Welle (AFRL): Gap testing in water

1500 Break

1515 Afternoon Session 2

- Gerrit Sutherland (Army, ARL): “Recent Pentolite 1.56 g/cc CYLEX Test Results”
- Elizabeth Francois (LANL): “Shock Sensitivity Tailoring of IM Formulations using the IHE Gap Test”
- Afternoon Talk 6

1645 Adjourn

Thurs, 20 Sep 2018

0815 Morning Session 1

- Devlin Hayduke (Materials Sciences, Inc.): “Modified Gap Testing to Evaluate Composite Materials for Shock Attenuation”
- Michaela Fasano (Navy, Indian Head): “Simple Explosive Plane Wave Booster Designs for 1-D Shock Experiments”
- David Littlefield (University of Alabama Birmingham): SwRI PMMA Model Implementation Efforts into DOE codes
- Morning Talk 4

1015 Break

1030 Morning Session 2

- Larry Hill (LANL): “Gap test and Gapstick: Data and Data Analysis”

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- Carl Johnson (LANL): “Reactive Burn Model Validation for HE Safety Applications”
- Morning Talk 7

1200 Lunch

1315 Discussion/Brainstorming

- Based on the previous talks and discussion, what are the main challenges on which the gap test community needs to focus?
- Do the standard materials (e.g., pentolite donor and PMMA attenuator) need to be modified?
- Do additional diagnostics need to be incorporated to improve the utility of the gap tests and obtain more useful data (with appropriate considerations for cost and complexity)?
- What can JANNAF’s Shock/Impact Induced Reactions panel do to assist (e.g., documenting this meeting’s findings in a report, organizing technical sessions at a future JANNAF subcommittee meeting, hosting follow-on informational meetings, etc.)?

1645 Adjourn