

Last Updated
7/10/2018

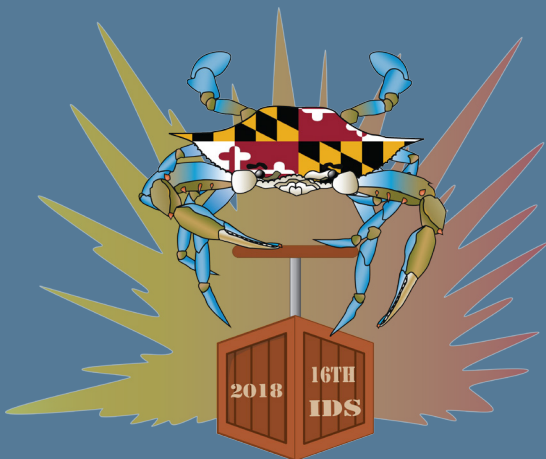
Preliminary Program

16th International Detonation Symposium

July 15-20, 2018

Hyatt
Regency
Chesapeake
Bay

Cambridge,
Maryland



SCHEDULE – Sunday, July 15

5:00pm - 8:00pm	Registration Desk Open	Conference Center Foyer
5:00pm - 8:00pm	I.T. Office / Presenter Ready Room	Skipjack
6:00pm - 8:00pm	Welcome Reception	Regatta Pavilion

SCHEDULE – Monday, July 16

7:00am - 5:00pm	Registration Desk Open	Conference Center Foyer
7:00am - 5:00pm	I.T. Office / Presenter Ready Room	Skipjack
7:00am - 8:00am	Attendee Continental Breakfast	Conference Center Foyer
8:00am - 8:20am	Opening Remarks	Choptank
8:20am - 9:40am	General Session I	Choptank
9:40am - 10:00am	BREAK	Conference Center Foyer
10:00am - 12:00pm	General Session II	Choptank
12:00pm - 1:00pm	Attendee Buffet Lunch <i>(attendees must wear their badge)</i>	Chesapeake ABCD
1:00pm - 3:00pm	Session A1 - ANET	Choptank
1:00pm - 3:00pm	Session A2 - DSDP	Chesapeake EFG
3:00pm - 3:20pm	BREAK	Conference Center Foyer
3:20pm - 5:20pm	Session A3 - ANET	Choptank
3:20pm - 5:20pm	Session A4 - DSDP	Chesapeake EFG
5:45pm - 9:00pm	Choptank Riverboat Dinner Cruise <i>(advance purchase ticket required)</i>	Breakwater Pavilion Floating Dock
6:00pm - 8:30pm	Bus to Downtown Cambridge <i>(advance registration required; wait list cannot be accommodated unless notified that you have a confirmed seat on the bus)</i>	See Registration Packet for pick-up and drop-off location

Topic Key

ANET	Advanced and Novel Experimental Techniques
DSDP	Detonation and Sub-Detonative Phenomena
MOD	Modeling
MME	Molecular / Mesoscale Effects
NNTM	New / Non-Traditional Materials
TMP	Thermal / Mechanical Properties

SCHEDULE - Tuesday, July 17

7:00pm - 5:00pm	Registration Desk Open	Conference Center Foyer
7:00am - 5:00pm	I.T. Office / Presenter Ready Room	Skipjack
7:00am - 8:00am	Attendee Continental Breakfast, Exhibits	Choptank
8:00am - 9:40am	Session B1 - MOD	Chesapeake BCD
8:00am - 9:40am	Session B2 - TMP	Chesapeake EFG
9:40am - 10:00am	BREAK, Posters, Exhibits	Choptank
10:00am - 12:00pm	Session B3 - MOD	Chesapeake BCD
10:00am - 12:00pm	Session B4 - TMP	Chesapeake EFG
12:00pm - 1:20pm	LUNCH on your own	
1:20pm - 2:40pm	Session B5 - MOD	Chesapeake BCD
1:20pm - 2:40pm	Session B6 - MME	Chesapeake EFG
2:40pm - 3:00pm	BREAK, Posters, Exhibits	Choptank
3:00pm - 5:00pm	Session B7 - DSDP / MME	Chesapeake BCD
3:00pm - 5:00pm	Session B8 - MME / MOD	Chesapeake EFG
5:00pm - 9:00pm	Poster Session and Reception <i>(attendees must wear their badge)</i>	Choptank

SCHEDULE - Wednesday, July 18

7:00am - 1:00pm	Registration Desk Open	Conference Center Foyer
7:00am - 1:00pm	I.T. Office / Presenter Ready Room	Skipjack
7:00am - 8:00am	Attendee Continental Breakfast, Exhibits	Choptank
8:00am - 10:00am	Session C1 - NNTM	Chesapeake BCD
8:00am - 10:00am	Session C2 - DSDP	Chesapeake EFG
10:00am - 10:20am	BREAK, Posters, Exhibits	Choptank
10:20am - 12:20pm	Session C3 - NNTM	Chesapeake BCD
10:20am - 12:20pm	Session C4 - DSDP	Chesapeake EFG
12:20pm	Free Afternoon	

Topic Key

ANET	Advanced and Novel Experimental Techniques
DSDP	Detonation and Sub-Detonative Phenomena
MOD	Modeling
MME	Molecular / Mesoscale Effects
NNTM	New / Non-Traditional Materials
TMP	Thermal / Mechanical Properties

SCHEDULE - Thursday, July 19

7:00pm - 5:00pm	Registration Desk Open	Conference Center Foyer
7:00am - 5:00pm	I.T. Office / Presenter Ready Room	Skipjack
7:00am - 8:00am	Attendee Continental Breakfast, Exhibits	Choptank
8:00am - 9:40am	Session D1 - ANET	Chesapeake BCD
8:00am - 9:40am	Session D2 - TMP	Chesapeake EFG
9:40am - 10:00am	BREAK, Posters, Exhibits	Choptank
10:00am - 12:00pm	Session D3 - ANET	Chesapeake BCD
10:00am - 12:00pm	Session D4 - DSDP	Chesapeake EFG
12:00pm - 1:20pm	LUNCH on your own	
1:20pm - 3:00pm	Session D5 - MOD	Chesapeake BCD
1:20pm - 3:00pm	Session D6 - MME	Chesapeake EFG
3:00pm - 3:20pm	BREAK, Posters, Exhibits	Choptank
3:20pm - 4:40pm	Session D7 - MOD	Chesapeake BCD
3:20pm - 4:40pm	Session D8 - MME	Chesapeake EFG
6:15pm - 9:30pm	Cocktail Reception, Dinner, and Keynote <i>(Attendees must wear their badge. Attendees and guests must have ticket showing entree selection.)</i>	Chesapeake ABCD

SCHEDULE - Friday, July 20

7:00am - 1:00pm	Registration Desk Open	Conference Center Foyer
7:00am - 1:00pm	I.T. Office / Presenter Ready Room	Skipjack
7:00am - 8:00am	Attendee Continental Breakfast, Exhibits	Choptank
8:00am - 9:40am	Session E1 - MOD	Chesapeake BCD
8:00am - 9:40am	Session E2 - DSDP	Chesapeake EFG
9:40am - 10:00am	BREAK, Posters, Exhibits	Choptank
10:00am - 12:00pm	Session E3 - MOD	Chesapeake BCD
10:00am - 12:00pm	Session E4 - DSDP	Chesapeake EFG
12:00pm	16th International Detonation Symposium Concludes	

Topic Key

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TMP	Thermal / Mechanical Properties

Choptank Ballroom

(GS-I) Monday, July 16 8:00 AM - 9:40 AM

GENERAL SESSION I

Co-Chairs:

Brian D. Roos

Army Research Laboratory

Bryce C. Tappan

Los Alamos National Laboratory

8:00 Introductory Comments

Joel Carney, Naval Surface Warfare Center
IHEODTD, Chair, 16th International
Detonation Symposium Organizing
Committee

**1. 8:20 Predicting the Effects of Density and
Microstructure on Shock Initiation of
Explosives**

W. Lee Perry, Los Alamos National
Laboratory

Topic: Molecular and Meso-Scale Effects

**2. 8:40 Ability of Metalized Gelled Nitromethane
to Accelerate a Flyer Plate**

Jason Loiseau, Royal Military College of
Canada

Topic: New / Non-Traditional Materials

**3. 9:00 Ignition and Growth Modeling of the
Shock Initiation of the TATB-based
Explosives LX-17 and PBX 9502 at Eight
Initial Temperatures Spanning a 446K
Range**

Craig M. Tarver, Lawrence Livermore
National Laboratory

Topic: Modeling

**4. 9:20 The Shell Acceleration Experiment (SAX) –
A Modern Corner-Turning Experiment**

Eric V. Bukovsky, Lawrence Livermore
National Laboratory

*Topic: Advanced and Novel Experimental
Techniques*

9:40 BREAK

Choptank Ballroom

(GS-II) Monday, July 16 10:00 AM - 12:00 PM

GENERAL SESSION II

Co-Chairs:

Larry G. Hill

Los Alamos National Laboratory

Erik T. Wrobel

Army Armament Research, Development
and Engineering Center

**1. 10:00 Sensitivity and Performance
Characterization of Insensitive Explosives**

Richard J. Lee, Naval Surface Warfare Center,
Indian Head EOD Technology Division

*Topic: Advanced and Novel Experimental
Techniques*

2. 10:20 HMX as Villain and Hero

Cary B. Skidmore, Los Alamos National
Laboratory

*Topic: Detonation and Sub-Detonative
Phenomena*

**3. 10:40 Microstructural Effects on Initiation
Threshold Behavior of HMX Based
Materials**

Christopher D. Molek, Air Force Research
Laboratory/Munitions Directorate/RWME

Topic: Molecular and Meso-Scale Effects

**4. 11:00 Gap Test and Critical Diameter Calculations
and Correlations**

Ernest L. Baker, NATO Munitions Safety
Information Analysis Center

Topic: Modeling

**5. 11:20 Mesoscale Modeling of Explosives at Sandia
National Laboratories: Past and Future
Directions**

Cole D. Yarrington, Sandia National
Laboratory

Topic: Molecular and Meso-Scale Effects

6. 11:40 Can the Large-Scale-Gap-Test Mislead Us

Douglas E. Kooker, Bennett Aerospace,
Incorporated

*Topic: Detonation and Sub-Detonative
Phenomena*

12:00 LUNCH

Choptank Ballroom

(A1) Monday, July 16 1:00 PM - 3:00 PM

ADVANCED AND NOVEL EXPERIMENTAL TECHNIQUES

Co-Chairs:

Kevin L. McNesby
Army Research Laboratory

Karmen Lappo
Sandia National Laboratories

1. **1:00 Proton Radiography as a High Explosive Diagnostic Tool**
Matthew S. Freeman, Los Alamos National Laboratory
2. **1:20 Steel as a Copper Alternative in Large Scale Cylinder Expansion Tests**
Forrest R. Svingala, Los Alamos National Laboratory
3. **1:40 Time Resolved Small Angle X-ray Scattering Measurements of Carbon Coagulation for Normal and Reflected Wave Detonations**
Rachel C. Huber, Los Alamos National Laboratory
4. **2:00 Fast and Slow Cook-off Experiments of LX-17 Using Induction and Resistance Heating**
Evan M. Kahl, Lawrence Livermore National Laboratory
5. **2:20 Compositional One-Dimensional Time to Explosion**
Greg L. Klunder, Lawrence Livermore National Laboratory
6. **2:40 Extracting Accurate Shock Kinematics from SWIFT Experiments**
Michael John Murphy, Los Alamos National Laboratory

3:00 BREAK

Chesapeake Ballrooms EFG

(A2) Monday, July 16 1:00 PM - 3:00 PM

DETONATION AND SUB-DETONATIVE PHENOMENA

Co-Chairs:

Leah Tuttle
Sandia National Laboratories

Suhithi M. Peiris
Air Force Research Laboratory

1. **1:00 Thermal Explosions of LX-17**
Evan M. Kahl, Lawrence Livermore National Laboratory
2. **1:20 Thermal Safety Characterization of Energetic Materials in the ODTX/P-ODTX System**
Peter C. Hsu, Lawrence Livermore National Laboratory
3. **1:40 Isothermal and Shock Hugoniot EOSs of TATB: A Combined Experimental and Theoretical Study**
Joseph M. Zaugg, Lawrence Livermore National Laboratory
4. **2:00 Features of Superdetonation in Liquid Explosives**
Dana M. Dattelbaum, Los Alamos National Laboratory
5. **2:20 Evolution of HMX Crystallinity During Thermal Decomposition**
Pamela R. Bowlan, Los Alamos National Laboratory
6. **2:40 Optical Initiation of Energetic Materials**
Maija M. Kukla, University of Maryland

3:00 BREAK

Choptank Ballroom

Chesapeake Ballroom EFG

(A3) Monday, July 16 3:20 PM - 5:20 PM

(A4) Monday, July 16 3:20 PM - 5:20 PM

ADVANCED AND NOVEL EXPERIMENTAL TECHNIQUES

Co-Chairs:

Alexandra A. Reinert
Naval Surface Warfare Center

William Lee Perry
Los Alamos National Laboratory

1. 3:20 **Ignition and Growth Response via Cutback Testing**
Erik T. Wrobel, US Army Armament Research, Development, and Engineering Center
2. 3:40 **Characterization of Hypervelocity Fragments and Subsequent HE Initiation**
Joseph Olles, Sandia National Laboratories
3. 4:00 **Medium-format Shadowgraph and Schlieren Imaging of Explosions Using Pulsed Lasers**
Kevin L. McNesby, US Army Research Laboratory
4. 4:20 **Optical Temperature Sensors for use in Explosions**
Hergen Eilers, Washington State University
5. 4:40 **Diverging Spherical Run-Distance to Detonation Characterization**
Thomas Elia, CEA, DAM
6. 5:00 **Low Impedance Window Characterization for Unreacted Equation of State Measurements in Explosives**
Paul E. Specht, Sandia National Laboratories

DETONATION AND SUB-DETONATIVE PHENOMENA

Co-Chairs:

Eric V. Bukovsky
Lawrence Livermore National Laboratory

Paul E. Anderson
Army Armament Research, Development
and Engineering Center

1. 3:20 **Understanding Sub-detonative Burning and Variability in DDT Characteristics for Granular HMX in Polycarbonate Tubes**
Gary R. Parker, Los Alamos National Laboratory
2. 3:40 **Low Velocity Detonation in Very Non-Ideal Explosives**
Harold W. Sandusky, Naval Surface Warfare Center Indian Head EODTD
3. 4:00 **Manipulation of Corner-turning Behavior in High Explosives via Additive Manufacturing**
Alexander H. Mueller, Los Alamos National Laboratory / Explosive Science and Shock Physics/ High Explosive Science and Technology
4. 4:20 **High Pressure Deflagration of Heated LX-17, an Insensitive High Explosive**
Jon L. Maienschein, MH Chew and Associates
5. 4:40 **A Volumetric Approach to Shock Initiation of PBX9404**
Mike DW Bowden, Los Alamos National Laboratory
6. 5:00 **Observations of the Mechanism of EBW Detonator Function**
Laura B. Smilowitz, Los Alamos National Laboratory

Chesapeake Ballroom BCD

(B1) Tuesday, July 17 8:00 AM - 9:40 AM

MODELING

Co-Chairs:

Robert J. Dorgan
Air Force Research LaboratoryCole D. Yarrington
Sandia National Laboratories

1. **8:00 Corner Turning Modeling of PBX 9502 Snowball Experiments**
I-Feng W. Kuo, Lawrence Livermore National Laboratory
2. **8:20 Temperature- and Pressure-Dependent Reaction Rates in Nitromethane and PETN from Density Functional Tight Binding Molecular Dynamics**
Romain Perriot, Los Alamos National Laboratory
3. **8:40 Development of 3D Mesh-free Detonation Front Tracking Capabilities**
Jin Yao, Lawrence Livermore National Laboratory
4. **9:00 A Numerical Methodology for Simulating Plasma Arc-initiated Detonations**
Louisa Michael, University of Cambridge
5. **9:20 Validation of the AWSO Reactive Flow Model with PBX 9502 Experiments**
Matthew A. Price, Los Alamos National Laboratory

9:40 BREAK

Chesapeake Ballroom EFG

(B2) Tuesday, July 17 8:00 AM - 9:40 AM

THERMAL AND MECHANICAL PROPERTIES

Co-Chairs:

Marcia A. Cooper
Sandia National LaboratoriesJacob Dodson
Air Force Research Laboratory

1. **8:00 Thermal Characteristics of LLM-105 and its Plastic Bonded Formulations**
Alexander E. Gash, Lawrence Livermore National Laboratory
2. **8:20 Fracture Toughness Measurement of PBX 9502 High Explosive**
Cheng Liu, Los Alamos National Laboratory
3. **8:40 Mesoscale Mechanics of Energetic Materials: A Coordinated Experiment-theory Effort Using New In Situ Probes**
David J. Walters, Los Alamos National Laboratory
4. **9:00 Energy Lost to Fragmentation for Various Inert Warhead Casing Materials**
Nicholas A. Poirier, University of Illinois Urbana-Champaign
5. **9:20 Development of a New Density and Mechanical Mock for HMX**
John D. Yeager, Los Alamos National Laboratory

9:40 BREAK

Chesapeake Ballroom BCD

(B3) Tuesday, July 17 10:00 AM - 12:00 PM

MODELING

Co-Chairs:

Sunil Dwivedi

Naval Surface Warfare Center

Michael L. Hobbs

Sandia National Laboratories

1. **10:00 Thermal Safety Modeling of TATB-based Explosive**
Jason S. Moore, Lawrence Livermore National Laboratory
2. **10:20 Heated Cyclotol Transport and Ignition Modeling**
David K. Zerkle, Los Alamos National Laboratory
3. **10:40 Computational Modeling of Detonations in Branching HE Structures for Plane Wave Generator Applications**
Bradley W. White, Lawrence Livermore National Laboratory
4. **11:00 Numerical Optimization Procedure to Design Specific Effects Explosive Formulations**
Nicolas Arnaud, ArianeGroup
5. **11:20 Modelling the Threshold Characteristics of Exploding Bridgewire Detonators**
Rod C. Drake, Atomic Weapons Establishment
6. **11:40 Modeling of Detonation and Desensitization in Condensed Phase Explosives of Complex Geometry**
Eleftherios Ioannou, University of Cambridge

12:00 LUNCH

Chesapeake Ballroom EFG

(B4) Tuesday, July 17 10:00 AM - 12:00 PM

THERMAL AND MECHANICAL PROPERTIES

Co-Chairs:

John D. Corley

Air Force Research Laboratory

Joseph Tringe

Lawrence Livermore National Laboratory

1. **10:00 Safety Assessments of Thermally Damaged Energetic Materials**
John G. Reynolds, Lawrence Livermore National Laboratory
2. **10:20 The Effect of Density on the Detonation Response of a TATB-Based Explosive**
Philip Rae, Los Alamos National Laboratory
3. **10:40 Evolved Gas Analysis of the Thermal Decomposition of TATB and TATB Based Plastic Bonded Explosives from the Small to Large Scales**
Benjamin J. Yancey, Lawrence Livermore National Laboratory
4. **11:00 Mechanical and Thermomechanical Properties of PBX 9502**
Paul B. Mirkarimi, Lawrence Livermore National Laboratory
5. **11:20 Raman Thermometry of Shocked Explosives**
Shawn D. McGrane, Los Alamos National Laboratory
6. **11:40 Development of a Small Scale Thermal Violence Test**
Malcolm David Cook, AWE plc

12:00 LUNCH

Chesapeake Ballroom BCD

(B5) Tuesday, July 17 1:20 PM - 2:40 PM

MODELING

Co-Chairs:

John B. Bdzil

Los Alamos National Laboratory

Anne F. Kyner

Naval Surface Warfare Center

1. **1:20 A Mesoscale Study on Explosively Dispersed Granular Materials**
Huangrui Mo, University of Waterloo
2. **1:40 ALE3D Simulation of Thermal Decomposition and Violence in Slow Cookoff Experiments with LX-17, a TATB-Based Explosive**
Matthew A. McClelland, Lawrence Livermore National Laboratory
3. **2:00 Mesoscale Simulations of HMX and PETN**
Thomas L. Jackson, University of Florida
4. **2:20 Implementation of a CREST Multistate Reactive Burn Model in CTH for Two Solid High Explosives**
David E. Kittell, Sandia National Laboratories

2:40 BREAK

Chesapeake Ballroom EFG

(B6) Tuesday, July 17 1:20 PM - 2:40 PM

MOLECULAR AND MESCO-SCALE EFFECTS

Co-Chairs:

Zachary D. Doorenbos

Naval Air Warfare Center Weapons Division

Kyle T. Sullivan

Lawrence Livermore National Laboratory

1. **1:20 Carbon Chemistry and Formation of Hierarchical Nanocarbons Under Extreme Conditions Produced by High Explosive Detonations**
Millicent A. Firestone, Los Alamos National Laboratory
2. **1:40 Sub Critical Diameter Structural Effects Exploited by Additive Manufacturing of High Explosive Components**
Alexander H. Mueller, Los Alamos National Laboratory / Explosive Science and Shock Physics/ High Explosive Science and Technology
3. **2:00 Time-resolved X-ray Imaging of Void Collapse in Silicone and TNT**
Michael R. Armstrong, Lawrence Livermore National Laboratory
4. **2:20 The Influence of Realistic Pore Geometries in Pressed HMX**
Jesus O. Mares, National Research Council - Air Force Research Laboratory

2:40 BREAK

Chesapeake Ballroom BCD

(B7) Tuesday, July 17 3:00 PM - 5:00 PM

DETONATION AND SUB-DETONATIVE PHENOMENA / MOLECULAR AND MESO-SCALE EFFECTS

Co-Chairs:

Joel B. Stewart

Army Research Laboratory

Edward D. Cooke

Army Armament Research, Development and Engineering Center

1. **3:00 Determination of Shock-to-Detonation Transitions and Equations of State of Additively Manufactured High Explosive Feedstocks**
Patrick R. Bowden, Los Alamos National Laboratory
2. **3:20 Ring-up Induced Shock Initiation of a TATB Based Polymer Bonded Explosive with Reactive Burn Modeling**
Malcolm J. Burns, AWE Plc (seconded to LANL)
3. **3:40 Viscous Heating via Low-Velocity Crushing Impact of High Explosives**
Matthew D. Holmes, Los Alamos National Laboratory
4. **4:00 A Global Chemical Mechanism of PETN, HMX and TATB: Applications to Detonation**
Bryan F. Henson, Los Alamos National Laboratory
5. **4:20 Scaling Law for Criticality Conditions in Heterogeneous Energetic Materials under Shock Loading**
Anas Nassar, The University of Iowa
6. **4:40 HP-HT Structural and Chemical Stability of TKX-50: Molecular Mechanisms**
Zbigniew A. Dreger, Naval Surface Warfare Center IHEODTD

Chesapeake Ballroom EFG

(B8) Tuesday, July 17 3:00 PM - 5:00 PM

MOLECULAR AND MESO-SCALE EFFECTS / MODELING

Co-Chairs:

Harry Keo Springer

Lawrence Livermore National Laboratory

Andrew C. Ihnen

Naval Air Warfare Center Weapons Division

1. **3:00 Microscale Electromagnetic (RF) Heating in Polymer Bonded Explosives Based on X-ray Computed Tomography**
David S. Moore, Los Alamos National Laboratory
2. **3:20 Examining the Effects of Crystal Structure and Bonding on Explosive Impact Sensitivity**
Virginia W. Manner, Los Alamos National Laboratory
3. **3:40 Connecting Novel Microstructure Characterization Techniques for Pentaerythritol Tetranitrate (PETN) Pellet Aging to Performance**
Peter A. Schulze, Los Alamos National Laboratory
4. **4:00 Initiation Phenomenology from Hypervelocity to Low Velocity Impacts**
Werner A. Arnold, MBDA-TDW
5. **4:20 Aluminum Powder Heat and Combustion Modeling Inside The Detonation Products of High Explosives**
Gérard Baudin, CEA, DAM
6. **4:40 Uncertainty in the Sensitivity Prediction of Porous HMX: Effects of Constitutive and Reactive Models**
Nirmal Rai, University of Iowa

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

IN MEMORIAM

KA-POW!! Highlights from the Scientific Career of William C. "Bill" Davis

Larry G. Hill, Los Alamos National Laboratory

Since the time of our previous (15th) meeting, we, the International Detonation Symposium (IDS) community, lost one of our most colorful, creative, influential, and longest standing contributors: William C. "Bill" Davis. We highlight key aspects of Bill's career—including many of his formative experiences and his most enduring and endearing scientific accomplishments—placing particular emphasis upon his many IDS contributions.

INVITED POSTER

Prepare to Board: The Power of Eighteenth Century Naval Grenades

Stephen Lacey, East Carolina University

ADVANCED AND NOVEL EXPERIMENTAL TECHNIQUES

Co-Chairs

Gerrit T. Sutherland
Army Research Laboratory

Timothy J. Foley
Los Alamos National Laboratory

P-ANET-001

Fiber Light Relay System (FLRS) in Non-Ideal Granular Explosives for Shock Front Monitoring

Karmen N. Lappo, Sandia National Laboratories

P-ANET-005

Measuring Detonation Propagation and Run to Detonation Using Embedded Optical Diagnostics

James W. Ferguson, AWE

P-ANET-002

Embedded Fiber Pressure Measurement Diagnostic for Thermal Ignition Experiments in High Explosives

George Rodriguez, Los Alamos National Laboratory

P-ANET-006

Explosive Particle Image Velocimetry

Christopher F. Tilger, Los Alamos National Laboratory

P-ANET-003

Isothermal Equations of State of Polymer Bonded Explosives via Optical-Microscopy-Interferometry (OMI) Measurements

Elissaios Stavrou, Lawrence Livermore National Laboratory

P-ANET-007

Time-resolved Small Angle X-ray Scattering during the Formation of Detonation Nanodiamond

Michael Bagge-Hansen, Lawrence Livermore National Laboratory

P-ANET-004

Relating Quantified Damage due to Periodic Loading with Shock Sensitivity in Energetic Materials

Nick R. Cummock, Purdue University

P-ANET-008

Experimental Study of an Explosively Driven Flat Plate Launcher

Erik H. Haroz, Los Alamos National Laboratory

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

DETONATION AND SUB-DETONATIVE PHENOMENA

Co-Chairs:

Samuel Park
Eric Forrest
Sandia National Laboratories

Chad G. Rumchik
Air Force Research Laboratory

Kevin S. Vandersall
Laurence E. Fried
Benjamin J. Yancey
Lawrence Livermore National Laboratory

Gary R. Parker
Los Alamos National Laboratory

P-DSDP-001

Air Gaps in the Cylinder Test
Lisa M. Lauderbach, Lawrence Livermore
National Laboratory

P-DSDP-002

**Effect of Mechanoactivation on Detonation
Ability of Mixtures of Ammonium
Perchlorate with Aluminum**
Aleksandr Yu Dolgoborodov, Joint Institute
for High Temperatures of Russian Academy
of Sciences (JIHT)

P-DSDP-003

**Modeling Shock Sensitivity of Explosive
PBXN-109**
Douglas E. Kooker, Bennett Aerospace,
Incorporated

P-DSDP-004

**Cyclotol Detonation Performance as a
Function of Scale and Geometry**
Eric K. Anderson, Los Alamos National
Laboratory

P-DSDP-005

Detonation of Highly Porous Explosives
Ivan A. Rubtsov, Lavrentyev Institute of
Hydrodynamics SB RAS

P-DSDP-006

**Carbon Condensation during Detonation
of High Explosives of Various Diameters**
Ivan A. Rubtsov, Lavrentyev Institute of
Hydrodynamics SB RAS

P-DSDP-007

**Multi-Shock Experiments on the TATB
Based Explosive PBX 9502 and the HMX
Based Explosive PBX 9501**
Richard L. Gustavsen, Los Alamos National
Laboratory

P-DSDP-009

**Convective Burning in Confined Explosive
Cracks of HMX-based PBX under Non-
shock Initiation**
Haibo Hu, Laboratory for Shock Wave and
Detonation Physics, Institute of Fluid Physics,
CAEP

P-DSDP-010

**The Required Margin for the Reliable
Functioning of Exploding Foil Initiator
Detonators**
Elizabeth A. Lee, AWE Plc

P-DSDP-011

**Condensation of Carbon During the
Detonation of Condensed Explosives Using
Two Methods of Analysis - The Method
of Labeled Atoms and the Method of
Electrical Conductivity - is Considered**
Alexey O. Kashkarov, Lavrentyev Institute of
Hydrodynamics of SB RAS

P-DSDP-012

Chemical Reaction Zone of TATB based PBX
Yong Han, Institute of Chemical Materials,
CAEP

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

DETONATION AND SUB-DETONATIVE PHENOMENA - CONTINUED

P-DSDP-013

Reaction Build-up of TATB-based Explosive JB-9014 under Different Initiation Pressures

Xu Zhang, Institute of Fluid Physics, China Academy of Engineering Physics

P-DSDP-022

Computer Simulations to Study the Post-ignition Violence of HMX Explosives in the Steven Test

Bradley W. White, Lawrence Livermore National Laboratory

P-DSDP-016

Ultrafast Mid-Infrared Spectroscopy on Shocked Thin Film Explosive Crystals

Michael S. Powell, Purdue University/Los Alamos National Laboratory

P-DSDP-023

Arrhenius Reactive Burn Model Calibration for Hexanitrostilbene (HNS)

Graham D. Kosiba, Lawrence Livermore National Laboratory

P-DSDP-018

Conversion of Size-Effect Curves to Detonation Velocity Versus Curvature Relationships using Particle Swarm Optimisation

Alexander N. Hodgson, AWE Plc

P-DSDP-024

Design Considerations and Test Results for PBX 9502 in Large Scale, Overly Confined DDT Tubes

Ian D. Lopez-Pulliam, Los Alamos National Laboratory

P-DSDP-019

Experimental Determination of Chapman-Jouguet Pressure Using Disc Acceleration eXperiment (DAX) Data

Marcos Chaos, Lawrence Livermore National Laboratory

P-DSDP-025

Pressure Amplification Off High Impedance Barriers in DDT

Eric M. Heatwole, Los Alamos National Laboratory

P-DSDP-020

Explosively Generated Plasma Interaction with Confined Explosives

Daniel E. McCarthy, Naval Surface Warfare Center, Indian Head EOD Technology Division

P-DSDP-026

Investigation of Simple and New Experimental Method on Shock to Detonation Transition Process

Shiro Kubota, National Institute of Advanced Industrial Science and Technology

P-DSDP-021

Dynamic Measurements of Solid Carbon Cluster Growth and Morphology in High Explosive Detonation Products

Erik B. Watkins, Los Alamos National Laboratory

P-DSDP-027

Failure Cone Test in TATB-base High-explosive

Remy Sorin, CEA

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

DETONATION AND SUB-DETONATIVE PHENOMENA - CONTINUED

MOLECULAR AND MESO-SCALE EFFECTS

P-DSDP-028

**Parameterization of a Cookoff Model for
LX-07**

Cuauhtemoc Aviles-Ramos, Los Alamos
National Laboratory

Co-Chairs:

John K. Brennan
U.S. Army Research Laboratory

Dana M. Dattelbaum
Los Alamos National Laboratory

P-DSDP-029

**Multiscale Modeling of Shock-to-
Detonation Transition of Pressed Energetic
Materials**

Oishik Sen, University of Iowa

P-MME-002

**Aging of RDX Crystal Qualities
Investigated by Means of X-ray Diffraction
Rocking Curves**

Michael J. Herrmann, Fraunhofer ICT

P-DSDP-030

**Ceria as a Catalyst for Explosive Energy
Release**

David K. Amondson, University of Illinois
Urbana Champaign

P-MME-003

**Developing Accurate Semi-Empirical
Quantum Models for CNHO Chemistry at
Detonation Conditions**

Matthew P. Kroonblawd, Lawrence Livermore
National Laboratory

P-MME-004

**Adhesion Controlled by Crystal Surface
Roughness and the Creep Properties of
LX07 Explosive**

Amir Weitz, RAFAEL

P-MME-005

**A Chemometric Approach in Correlating
Critical Physical Property Metrics to
Explosives Performance**

Josh M. Ottaway, Lawrence Livermore
National Laboratory

P-MME-006

**Microstructural Response of HE Crystals
Subjected to Nonhydrostatic Loading in
DAC Experiments**

Zbigniew A. Dreger, Naval Surface Warfare
Center IHEODTD

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

MODELING

Co-Chairs:
Joseph P. Hooper
Naval Postgraduate School

Sorin Bastea
Lawrence Livermore National Laboratory

P-MOD-001

Mesoscale Numerical Analysis of Thermal–mechanical–chemical Responses of Polymer-bonded Explosives under Impact Loading
Xinjie Wang, Beijing Institute of Technology

P-MOD-003

Cluster Evolution during the Early Stages of Heated and Shocked Explosives
Yushi Wen, China Institute of Chemical Materials, CAEP

P-MOD-004

Modeling the Response of a Plastic Bonded Explosive to Complex Shock Stimuli using the Extended History Variable Reactive Burn Model
John Starckenberg, Survice Engineering Company

P-MOD-005

Effects of Crystal Morphology on Impact Sensitivity of LLM-105 Based Explosives
Xinjie Wang, Beijing Institute of Technology

P-MOD-011

PX-80 Shock Initiation Characteristics Based on Large Scale Gap Test (LSGT) Experimental Setup
Valentin Ognev, Rafael

NEW / NON-TRADITIONAL MATERIALS

Co-Chairs:
Jonathan T. Essel
Naval Air Warfare Center Weapons Division

Bryce C. Tappan
Los Alamos National Laboratory

P-NNTM-001

Structural Analyses of Detonation Nanodiamonds and their Correlations with Impurities
Chi-Chin Wu, US Army Research Laboratory

P-NNTM-003

Glassy Organic Energetics
Rajen B. Patel, US Army Armament Research, Development, and Engineering Center

P-NNTM-006

Detonation Performance Characterization of Energetic Cocrystals
Vasant S. Vuppuluri, Purdue University

P-NNTM-007

Parameters of Detonation of Nano-dispersed Low-density High Explosives Based on PETN, RDX, and HMX
Konstantin A. Ten, Lavrentyev Institute of Hydrodynamic

The Poster Session and Reception will be held Tuesday, July 17 from
5:00 PM - 9:00 PM in the Choptank Ballroom.

THERMAL AND MECHANICAL PROPERTIES

Co-Chairs:

Laura B. Smilowitz
Los Alamos National Laboratory

Alexander E. Gash
Lawrence Livermore National Laboratory

P-TMP-001

Wider Strain-rate Dependent Damage Constitutive Model for PBX Explosive and its Application in Penetrating Concrete Target Simulations
Yanqing Wu, Beijing Institute of Technology

P-TMP-006

Magnitude of Response to Frictional Ignition by Oblique Impact of High Explosives Formulations
Robert M. Broilo, Los Alamos National Laboratory

P-TMP-002

Direct Observation of Thin Layers of Pure Energetic Materials when Heated to Elevated Temperatures Under Confinement
Andrew David Wood, Syanco Ltd

P-TMP-007

Determination of Spall Strength in Pressed Energetics
Jacob C. Dodson, Air Force Research Laboratory, Munitions Directorate, Fuzes Branch

P-TMP-003

The Response of Energetic Materials in the First 50 Picoseconds Following Thermal Excitation
Nhan C. Dang, U.S. Army Research Laboratory

P-TMP-008

PBX 9502 Gas Generation Throughout Long-Duration Thermal Exposure and Cookoff
Michael A. Englert-Erickson, Los Alamos National Laboratory

P-TMP-004

A Constitutive Model for Polymer Bonded Explosives under Confining Pressures
Qiang Wei, Institute of Systems Engineering, China Academy of Engineering

P-TMP-005

Viscoelastic-Viscoplastic Material Model for PBX
Roman Kositski, Rafael Ltd.

Chesapeake Ballroom BCD

(C1) Wednesday, July 18 8:00 AM - 10:00 AM

**NEW / NON-TRADITIONAL
MATERIALS**

Co-Chairs:

Jonathan M. Zucker
Los Alamos National Laboratory

Rajen B. Patel

Army Armament Research, Development
and Engineering Center

1. **8:00 Comprehensive Approach to Design High Explosives**
Roman Tsyshevskiy, University of Maryland
College Park
2. **8:20 Development of Reactive Fragments**
Jack RH Mellor, MBDA UK Ltd
3. **8:40 Additive Manufacturing of Thermites –
Reaction Mechanisms, Formulations, and
On-the-fly Mixing**
Kyle T. Sullivan, Lawrence Livermore
National Laboratory
4. **9:00 Nanostructured Composites of Explosives
and Single-Walled Carbon Nanotubes**
Alexey O. Kashkarov, Lavrentyev Institute of
Hydrodynamics of SB RAS
5. **9:20 Impact Fragmentation of Reactive
Materials**
Joseph P. Hooper, Naval Postgraduate School
6. **9:40 A Large Scale Study of Blast Effects from
a Structural Reactive Material Solid under
Explosive Loading**
Fan Zhang, Defence Research and
Development Canada / University of
Waterloo

10:00 BREAK

Chesapeake Ballroom EFG

(C2) Wednesday, July 18 8:00 AM - 10:00 AM

**DETONATION AND
SUB-DETONATIVE PHENOMENA**

Co-Chairs:

Richard L. Gustavsen
Los Alamos National Laboratory

Michaela Fasano

Naval Surface Warfare Center

1. **8:00 Detonation Behavior in Vapor-deposited
3,4-bis(4-nitro-1,2,5-oxadiazol-3-yl)-1,2,5-
oxadiazole 2-oxide (BNFF)**
Alexander S. Tappan, Sandia National
Laboratories
 2. **8:20 The Loss of Detonation Confinement: The
Evolution from a 1D to a 2D Detonation
Reaction Zone**
John B. Bdzil, Los Alamos National
Laboratory
 3. **8:40 Shock Initiation Sensitivities of Cast TNT-
based Explosives: Cyclotol and Octol**
Dana M. Dattelbaum, Los Alamos National
Laboratory
 4. **9:00 The Los Alamos Enhanced Corner Turning
(ECOT) Test**
Larry G. Hill, Los Alamos National
Laboratory
 5. **9:20 Temperature Measurement of a Shocked
TATB-based Explosive using Raman
Spectroscopy**
Philippe A. Hébert, CEA
 6. **9:40 Shock-induced Ultrafast Reactions in
Pentaerythritol Tetranitrate (PETN) Thin
Films**
Samuel Park, Sandia National Laboratories
- 10:00 BREAK**

Chesapeake Ballroom BCD

(C3) Wednesday, July 18 10:20 AM - 12:20 PM

**NEW / NON-TRADITIONAL
MATERIALS**

Co-Chairs:

Robert Knepper
Sandia National LaboratoriesAlfred G. Stern
Naval Surface Warfare Center

1. **10:20 Properties of Explosives Charges Based on TKX-50**
Peter Gerber, Fraunhofer ICT
2. **10:40 Detonation and Metal Acceleration of Aluminum-Water Mixtures**
Jason Loiseau, Royal Military College of Canada
3. **11:00 Blast Testing and Analysis of Cast-cured Explosives**
Edward D. Cooke, US Army Armament Research, Development, and Engineering Center
4. **11:20 Microwave Ignition of Thermites**
Amanda L. Duque, Los Alamos National Laboratory
5. **11:40 Synthesis of Novel Energetic Materials**
Leah A. Wingard, Army Research Laboratory
6. **12:00 Laser Initiation of Photothermally Active Metal-Ligand Charge Transfer (MLCT) Complexes for Detonator Applications**
Kathryn E. Brown, Los Alamos National Laboratory

Chesapeake Ballroom EFG

(C4) Wednesday, July 18 10:20 AM - 12:20 PM

**DETONATION AND
SUB-DETONATIVE PHENOMENA**

Co-Chairs:

Douglas E. Kooker
Bennett Aerospace, IncorporatedJoseph D. Olles
Sandia National Laboratories

1. **10:20 Diameter Effect Observations in Pressed HMX-Aluminum Explosive Formulations**
Bryce C. Tappan, Los Alamos National Laboratory / High Explosive Science and Technology
2. **10:40 Double-Shock Initiation of a TATB Based Explosive: Influence of Preshock Pressure and Duration on the Desensitization Effect**
Arnaud Sollier, CEA
3. **11:00 Detonation Thermochemistry: From Equation of State to Kinetic Modeling**
Sorin Bastea, Lawrence Livermore National Laboratory
4. **11:20 Laser-Driven Flyers for Shock Initiation in PBX materials: Observation of Hot Spots**
Will P. Bassett, Lawrence Livermore National Laboratory
5. **11:40 Modeling of Condensed Phase Explosives with a Temperature Dependent Rate Law**
Simon D. Wilkinson, University of Cambridge
6. **12:00 Characterisation of Stress-Waves Formed by Exploding Bridgewires in Porous and Condensed Media Applied to the Shock-to-Detonation Theory**
William D. Neal, AWE

Chesapeake Ballroom BCD

(D1) Thursday, July 19 8:00 AM - 9:40 AM

ADVANCED AND NOVEL EXPERIMENTAL TECHNIQUES

Co-Chairs:

Jacob Dodson

Air Force Research Laboratory

Zbigniew A. Dreger

Naval Surface Warfare Center

1. **8:00 CT Scan Characterization of Thermally Damaged Energetic Materials**
William W. Erikson, Sandia National Laboratories
2. **8:20 A Vision for Future Energetic Materials Experiments at X-Ray Light Sources: Requirements for the Matter-Radiation Interactions in Extremes (MaRIE) Project**
Cris W. Barnes, Los Alamos National Laboratory
3. **8:40 High Speed Temperature Measurement in Explosive Fireballs Using Tunable Diode Laser Absorption Spectroscopy**
Christopher M. Murzyn, University of Illinois at Urbana-Champaign
4. **9:00 The Explosive Skeleton Key: Using Multiple Wave Interactions as an Initiation Tool**
Elizabeth G. Francois, Los Alamos National Laboratory
5. **9:20 Quantitative Investigation of Fracture Process in Brittle/Quasi-Brittle Solids**
Cheng Liu, Los Alamos National Laboratory

9:40 BREAK

Chesapeake Ballroom EFG

(D2) Thursday, July 19 8:00 AM - 9:40 AM

THERMAL AND MECHANICAL PROPERTIES

Co-Chairs:

Bryan F. Henson

Los Alamos National Laboratory

Vasant S. Joshi

Naval Surface Warfare Center

1. **8:00 Evaluating the Ignitibility of PETN and PETN Formulations by Aged Slappers**
William L. Shaw, Lawrence Livermore National Laboratory
2. **8:20 Mutiphysics Modeling of Density Shift and Decomposition Response to Thermal Insult in Plastic Bonded Explosive Formulation PBX 9502**
Genevieve L. Watt, Los Alamos National Laboratory
3. **8:40 USANS and SANS Studies of Artificially Aged PETN**
Joseph T. Mang, Los Alamos National Laboratory
4. **9:00 In-Situ SANS and USANS Measurements of Thermally Elevated TATB and PBX 9502**
Christopher L. Armstrong, Los Alamos National Laboratory
5. **9:20 Analysis of the Kinetics of Crystallization and Melting of Different Lots of TNT and Tritonal**
Benjamin J. Yancey, Lawrence Livermore National Laboratory

9:40 BREAK

Chesapeake Ballroom BCD

(D3) Thursday, July 19 10:00 AM - 12:00 PM

ADVANCED AND NOVEL EXPERIMENTAL TECHNIQUES

Co-Chairs:
Samuel B. Emery
Naval Surface Warfare Center

John Korbin
Sandia National Laboratories

1. **10:00 Dynamic Exploding Foil Initiator Imaging at the Advanced Photon Source**
Nate J. Sanchez, Los Alamos National Laboratory
2. **10:20 Development of Low Explosive Mass Plane Wave Generators for Explosively Driven Flyer Experiments**
Robert V. Reeves, Lawrence Livermore National Laboratory
3. **10:40 Simulation and Analysis of Smaller-Scale Explosive Experiments**
Gerrit T. Sutherland, US Army Research Laboratory
4. **11:00 Shear Ignition Experiments of a Plastic Bonded Explosive under Long Duration Impact Conditions**
Tao Li, Laboratory for Shock Wave and Detonation Physics, Institute of Fluid Physics, CAEP
5. **11:20 The High Explosive Survivability Test**
Adam J. Wilkins, Air Force Research Laboratory - Munitions Directorate - Energetic Materials Branch
6. **11:40 Simultaneous Shock and Particle Velocities Measurement using a Single Microwave Interferometer on Pressed TATB Composition T2 submitted to Plate Impact**
Alexandre S. Lefrançois, CEA, DAM

12:00 LUNCH

Chesapeake Ballroom EFG

(D4) Thursday, July 19 10:00 AM - 12:00 PM

DETONATION AND SUB-DETONATIVE PHENOMENA

Co-Chairs:
Peter M. Dickson
Los Alamos National Laboratory

Gerardo I. Pangilinan
Naval Surface Warfare Center

1. **10:00 Effects of Confinement on Detonation Behavior of Vapor-deposited Hexanitrostilbene (HNS) Films**
Robert Knepper, Sandia National Laboratories
2. **10:20 Quantitative Details of Exploding Wires with Application to Single Pore Collapse Validation**
Joseph Olles, Sandia National Laboratories
3. **10:40 Effect of Microscale Defects on Shock and Detonation Propagation in Pentaerythritol Tetranitrate (PETN) Films**
Eric C. Forrest, Sandia National Laboratories
4. **11:00 Insensitive High Explosive Shock-to-Detonation Transition Criteria**
Micha Gresshoff, Lawrence Livermore National Laboratory
5. **11:20 Progress in Understanding Chemical Reaction Rates and Equations of State in the Non-Equilibrium Zeldovich-von Neumann-Doring (NEZND) Model of Detonation**
Craig M. Tarver, Lawrence Livermore National Laboratory
6. **11:40 Shock-induced Collapse of Multiple Cavities in Liquid Nitromethane**
Jason Loiseau, Royal Military College of Canada

12:00 LUNCH

Chesapeake Ballroom BCD

(D5) Thursday, July 19 1:20 PM - 3:00 PM

MODELING

Co-Chairs:

Philip Rae

Los Alamos National Laboratory

Bradley W. White

Lawrence Livermore National Laboratory

1. **1:20 Reactive Burn Model Parameterizations to Predict Ignition Response to Shaped Charge Jets**
Robert J. Dorgan, Air Force Research Laboratory/Munitions Directorate
2. **1:40 On the Development of a Phenomenological, Macro-scale Composite Reactive Flow Model for Multicomponent Explosive Formulations**
Sunhee Yoo, Torch Technologies
3. **2:00 Temperature Dependent Reactive Flow Model for a Porous Explosive**
Yehuda Partom, Retired from RAFAEL
4. **2:20 A Phonon Boltzmann Study of Microscale Thermal Transport in α -RDX Cook-Off**
Peter W. Chung, Department of Mechanical Engineering, University of Maryland
5. **2:40 Shock-induced Chemical Reactivity in CO on Picosecond Time Scales**
Michael R. Armstrong, Lawrence Livermore National Laboratory

3:00 BREAK

Chesapeake Ballroom EFG

(D6) Thursday, July 19 1:20 PM - 3:00 PM

MOLECULAR AND MESO-SCALE EFFECTS

Co-Chairs:

Christopher D. Molek

Air Force Research Laboratory

Leanna M. Minier

Sandia National Laboratories

1. **1:20 Influence of Chemistry in HMX-based PBX Initiation**
Christopher M. Miller, Georgia Institute of Technology
2. **1:40 High-Pressure Characterization of a Melt Castable Bisoxazole Energetic**
Jonathan C. Bennion, US Army Research Laboratory
3. **2:00 Considerations for Ultrafast Spectroscopy on Shocked Explosives: Preliminary Investigations into using the Explosive as Impactor**
Kathryn E. Brown, Los Alamos National Laboratory
4. **2:20 Computational and Experimental Study of TATB Shock Initiation at the Grain Scale**
Joseph M. Zaug, Lawrence Livermore National Laboratory
5. **2:40 Modeling the Effects of Microstructure and Chemical Kinetics on the Short Pulse Shock Initiation Behavior of HMX-Based Explosives**
H. Keo Springer, Lawrence Livermore National Laboratory

3:00 BREAK

Chesapeake Ballroom BCD

(D7) Thursday, July 19 3:20 PM - 4:40 PM

MODELING

Co-Chairs:

David Kittell

Sandia National Laboratories

Svjetlana Stekovic

University of Illinois Urbana-Champaign

1. **3:20 Understanding the Role of Microstructure in Energetic Material Composites Using Coarse-Grain Modeling and Simulation**
John K. Brennan, U.S. Army Research Laboratory
2. **3:40 Ignition and Growth Modelling of RS-RDX Based Explosive ARX-2014**
Jing-Ping Lu, Defence Science & Technology Group
3. **4:00 Reactive Burn Modelling of Experiments to Study the Transverse Initiation Behaviour of the TATB-Based Explosive PBX 9502**
Nicholas John Whitworth, AWE
4. **4:20 Reactive Flow Modeling of Small Scale Corner Turning Experiments**
I-Feng W. Kuo, Lawrence Livermore National Laboratory

Chesapeake Ballroom EFG

(D8) Thursday, July 19 3:20 PM - 4:40 PM

MOLECULAR AND MESO-SCALE EFFECTS

Co-Chairs:

William W. Erikson

Sandia National Laboratories

Michael Bagge-Hansen

Lawrence Livermore National Laboratory

1. **3:20 Multiscale Modeling of Frictional Hotspot Generation in Energetic Materials**
Grant D. Smith, Wasatch Molecular
2. **3:40 Reaction Dynamics in RDX at GPa Pressures**
Igor V. Schweigert, Naval Research Laboratory
3. **4:00 Effect of Void Morphological and Spatial Features on the Sensitivity of HMX**
Sidhartha Roy, University of Iowa
4. **4:20 The Use of Detailed Kinetic Models in the Shock to Detonation Transition Field: Review and Validation Proposal**
Vincent Chuzeville, Commissariat à l'Énergie Atomique et aux Énergies Alternatives

COCKTAIL RECEPTION, DINNER, AND KEYNOTE PRESENTATION

Cocktail Reception from 6:15 p.m. - 6:45 p.m.

Dinner begins at 6:45 p.m.

Location: Chesapeake ABCD

Attendees must wear their badge and have their ticket showing their entree selection.

Guests must have their ticket showing their entree selection.

Keynote Presentation

***“You’re Either an Expert or You’re Dead:” Col. Thomas J. Kane’s
75-Year Legacy for U.S. Army Explosive Ordnance Disposal***

Just over seventy-five years ago, Col. Thomas J. Kane and a small group of U.S. ordnance soldiers visited the war-torn United Kingdom. Training under the Royal Engineers, they became qualified bomb disposal technicians and returned to the United States. Kane and his cadre would supervise the U.S. Army’s very first ordnance disposal school at Aberdeen Proving Ground, Maryland. From these obscure roots, the U.S. Army bomb disposal branch has grown into a mainstay of today’s EOD community. But fewer people are aware of their unique contributions to Allied victory and their noble battlefield sacrifices.

Dr. Jeffrey M. Leatherwood is a published author, best known for *Nine From Aberdeen*, the first academic history of the origins of U.S. Army EOD in World War II. In 2009, he received his doctorate in Modern U.S. and World History from West Virginia University. Leatherwood has served as keynote speaker for the National EOD Association and he delivered the 2013 dedication address for Kane Hall at Fort Campbell, Kentucky. He is also a U.S. Army veteran who served one term in the Field Artillery. Leatherwood now serves as Associate Professor of History for American Military University and teaches part-time for the University of South Carolina.

Chesapeake Ballroom BCD

Chesapeake Ballroom EFG

(E1) Friday, July 20 8:00 AM - 9:40 AM

(E2) Friday, July 20 8:00 AM - 9:40 AM

MODELING

Co-Chairs:

Eric Brown

Los Alamos National Laboratory

Sean P. Maharrey

Naval Surface Warfare Center

**DETONATION AND
SUB-DETONATIVE PHENOMENA**

Co-Chairs:

Joshua E. Felts

Naval Surface Warfare Center

William L. Shaw

Lawrence Livermore National Laboratory

1. **8:00 Validation of the SURF Implementation in FLAG with the LANL Gapstick Experiment**
Carl E. Johnson, Los Alamos National Laboratory
2. **8:20 Machine Learning of Energetic Material Properties**
Brian C. Barnes, US Army Research Laboratory
3. **8:40 Numerical Modeling Comparing Slab to Cylinder Test Expansion Geometries for PBX 9501**
Marvin A. Zocher, Los Alamos National Laboratory
4. **9:00 Validation of a PETN Equation of State using Optically Diagnosed Explosively Driven Flying Plates**
Matthew P. Maisey, AWE Plc
5. **9:20 High Explosive Shock Initiation Model Based on Hot Spot Temperature**
Laurence E. Fried, Lawrence Livermore National Laboratory

1. **8:00 Effect of Pressure Pulse Duration and Lateral Distribution on Fragment Impact Initiation of High Explosives**
Magnus Bergh, Swedish Defence Research Agency
2. **8:20 Explosive Desensitization in Multi-Dimensional Scenarios**
Leah W. Tuttle, Sandia National Laboratories
3. **8:40 Effects of TATB Texture and Ratchet Growth on PBX 9502 Corner Turning**
Darla G. Thompson, Los Alamos National Laboratory
4. **9:00 Detonation Corner Turning, Dead Zones and Detonation Extinction**
Caroline A. Handley, AWE
5. **9:20 Microclad Parameter Study for the Initiation of PETN**
Matthew M. Biss, Los Alamos National Laboratory

9:40 BREAK

9:40 BREAK

Chesapeake Ballroom BCD

(E3) Friday, July 20 10:00 AM - 12:00 PM

MODELING

Co-Chairs:

Craig M. Tarver

Lawrence Livermore National Laboratory

Igor V. Schweigert

Naval Research Laboratory

1. **10:00 A Selection Rule for Flyer Plate and a Generalized Measure of Shock Sensitivity**
Yasuyuki Horie, University of Dayton
Research Institute
 2. **10:20 Modeling Multi-Shock Scenarios with XHVRB**
Leah W. Tuttle, Sandia National Laboratories
 3. **10:40 Toward a Morphology Aware Detonation Model**
Albert L. Nichols, Lawrence Livermore
National Laboratory
 4. **11:00 Shock Initiation Response of PBX 9502 Considering Rarefaction Wave Effects**
Brad E. Clements, Los Alamos National
Laboratory
 5. **11:20 Hydrodynamics of Pyrotechnic Explosions**
Allen L. Kuhl, Lawrence Livermore National
Laboratory
- 11:40 CONFERENCE WRAP UP**
Joel Carney and Chad Stoltz, Naval Surface
Warfare Center

Chesapeake Ballroom EFG

(E4) Friday, July 20 10:00 AM - 12:00 PM

DETONATION AND SUB-DETONATIVE PHENOMENA

Co-Chairs:

Eric J. Welle

Air Force Research Laboratory

Robert V. Reeves

Lawrence Livermore National Laboratory

1. **10:00 JCZS3--An Improved Database for EOS Calculations**
Michael L. Hobbs, Sandia National
Laboratories
 2. **10:20 The Transverse Radial Initiation Dynamics of PBX 9502**
Terry R. Salyer, Los Alamos National
Laboratory
 3. **10:40 Complete Mie-Grüneisen Equation of State for Several Explosives and Universal Unreacted Hugoniot Relations**
Vincent Chuzeville, Commissariat à l'Énergie
Atomique et aux Énergies Alternatives
 4. **11:00 Deflagration To Detonation During Impact Type Accidents**
Malcolm David Cook, AWE plc
 5. **11:20 Optimum Non-Equilibrium Carbon Phase Relationships for Detonation Calculations**
Leonard I. Stiel, L.I. STIEL, Chemical
Engineer
- 11:40 CONFERENCE WRAP UP**
Joel Carney and Chad Stoltz, Naval Surface
Warfare Center