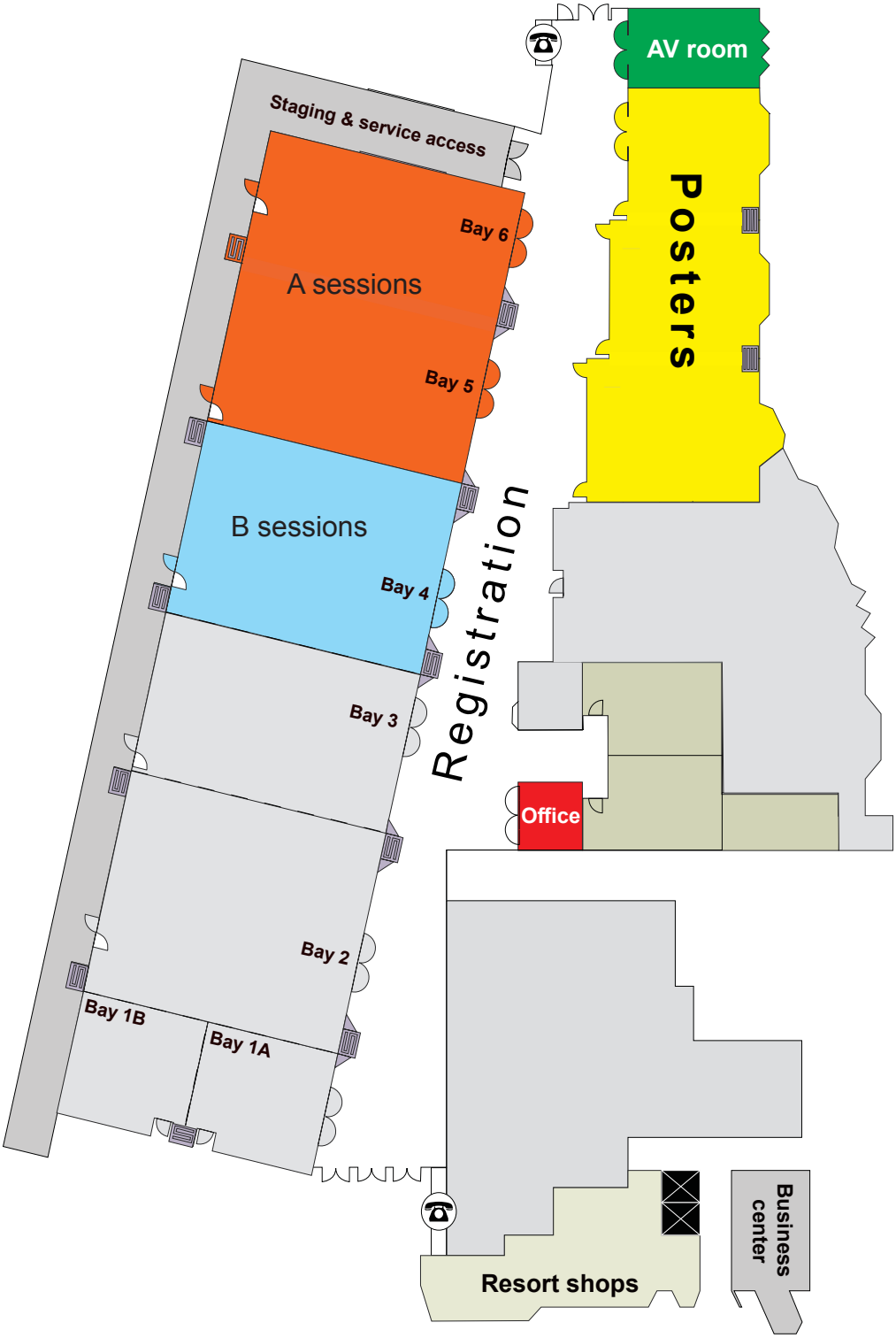
14th International Detonation Symposium

Coeur d'Alene, Idaho

11th – 16th April, 2010

www.intdetsymp.org



Coeur d'Alene Resort Conference Center

INTRODUCTION

The principal purpose of the International Detonation Symposia series, of which this is the fourteenth, is to bring together scientists actively engaged in research on detonation chemistry, physics and associated phenomena from all over the world. The papers presented here and the discussion generated after the presentations are documented as hardbound proceedings that are recognized as primary references in the field of detonation science.

This Symposium is chaired by Dr Blaine Asay (Los Alamos National Laboratory), Dr Suhithi Peiris (Defense Threat Reduction Agency) and Dr Chris Boswell (Indian Head Division, Naval Surface Warfare Center).

The Members of the Organizing Committee are:

Blaine Asay	*LANL*	Local Chair
Ernie Baker	*US Army ARDEC*	
Chris Boswell	*IHD NSWC*	Continuing Chair
Marcia Cooper	*SNL*	Poster Chair
Raafat Guirguis	*IHD NSWC*	
Dave Lambert	*AFRL*	
Jon Maienschein	*LLNL*	Abstracts Review Chair
Suhithi Peiris	*DTRA*	Continuing Chair
Brian Roos	*ARL*	AV Coordinator

SYMPOSIUM VENUE

The 14th International Detonation Symposium will be held at the Coeur d'Alene Resort, located in the town of Coeur d'Alene in northern Idaho, on the north shore of Lake Coeur d'Alene, flanked by the foothills of the Bitterroot Mountains. It is 30 miles east of Spokane, Washington, along Interstate 90.

REGISTRATION DESK

The Registration Desk, located in the Conference Center, will be open from 3:00 pm to 8:00 pm on Sunday April 11 with a welcome reception from 5:00 pm to 7:00 pm. Registration will re-open at 7:00 am on Monday, and 7:30 am from Tuesday to Friday. The on site registration fee is US$850. The registration fee and display of your Symposium name tag allows participation in the technical sessions, Sunday's welcome reception, Monday's lunch, Tuesday's Poster Reception, Thursday's Banquet, daily continental breakfasts, and coffee breaks. A copy of the Symposium Proceedings will be mailed to each Registrant after the Conference.

SYMPOSIUM SESSIONS

All technical sessions will be held in the Conference Center, beginning at 8:00 am on Monday. The author-attended Poster Session will be from 3:20 pm to 5:20 pm on Tuesday in the Lake View rooms (North Cape, Kidd Island & Casco Bays). Wednesday afternoon is free. The symposium will close at 12:00 pm on Friday.

ORAL PRESENTATIONS

Each oral session will have an LCD projector, PC and Mac laptop computers, screen, microphone, and pointer. Presenters are not allowed to use personal projectors. Take your presentation on a USB drive or CD to the AV Room the day before you are scheduled to present to have your presentation loaded into the appropriate session.

All speakers are strongly encouraged to use the computer and projector in the AV Room to become familiar with the equipment and try out presentations.

Each oral presentation is limited to a total of 20 minutes. Presentations should be prepared for completion in 15 minutes, leaving 5 minutes for questions and answers. The Session Chairs have been asked to keep strictly to the schedule, especially in the parallel sessions so that we can maintain synchronization of talk times.

AV ROOM OPENING TIMES					
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
3:00 - 7:00	7:00 - 10:00 12:30 - 3:20 6:00 - 7:00	7:00 - 10:00 12:30 - 3:20 6:00 - 7:00	7:00 - 10:00 12:00 - 1:00	7:00 - 10:00 12:30 - 3:20 6:00 - 7:00	7:00 - 8:00

DISCUSSION QUESTIONS

It is a tradition of these Symposia to document the questions asked of a Presenter and the Presenter's answers in the Proceedings, at the end of each manuscript. If you have a question for a Presenter, please pick up a form from the Publication Desk and document your question. If you are a Presenter, please check with the Publication Desk for any questions you have received, and provide the Desk with your written answer before the end of the symposium.

POSTER PRESENTATIONS

Poster presenters may begin setting up displays from 3:00 pm on Sunday in the Lake View rooms (North Cape, Kidd Island & Casco Bays), and should plan to leave them displayed through Thursday afternoon. A number assigned to each poster is listed in this program and each poster should be placed on the board with that number. A layout of the rooms will be provided in a separate poster session handout to be found on tables around the entrance to the poster rooms.

The author-attended Poster Reception is scheduled for Tuesday from 3:20 to 5:20 pm. All poster Authors are requested to be in attendance at their posters during the Poster Reception.

Posters should be removed by noon on Friday; any posters remaining in the room after this time will be disposed of.

PUBLICATION

The website is set up such that you can upload revised versions of your manuscript as many times as you wish. The final version of each paper is due by Friday May 14th.

Session Chairs should have done an initial review of the papers before the Symposium. If your Session Chair (see the Technical Program) has not reviewed your paper, please talk to him/her during the Symposium. If you have questions or concerns about your review, or need a copy of your paper, visit the Publication Desk. Also, please check with the Publication Desk to receive comments and questions submitted concerning your paper. The Publication Desk will be located at the Conference Office, and will be open from 7:30 am until the end of the each day's sessions.

SESSION CHAIRS

The Session Chairs' Breakfast will take place on Monday at 7:00 am in Boardroom 5 on the 7th floor, and will include a discussion of the schedule and detailed instructions on running the sessions. Please be on time so that we can be done by 7:45 am. Final manuscript reviews are due by Friday April 30th, so authors can complete all editing by Friday May 14th. Jim Kennedy will be the POC for issues relating to questions for Presenters.

ACTIVITIES & SPECIAL EVENTS

Monday Companion Breakfast Buffet

Monday, April 12, 9:00 – 10:00, free for companions and families.

The Companion Breakfast will be held in Boardroom 5 on the 7th floor, with a beautiful view of both the Lake and Tubbs Hill, the rocky point directly east of the Resort. It provides a warm welcome to companions & families and an excellent opportunity to meet other companions. You will also hear from local personnel about activities in the area.

The Sierra Silver Mine at Historic Wallace

Tuesday, April 13, 9:00 – 3:00, $110 per person.

The Sierra Silver Mine Tour at Historic Wallace, the Silver Capital of the World, is the only tour of its kind in the Northwest. The tour offers a rare and exciting opportunity to personally experience the underground world of mining. We will board a trolley and hard hats will be issued at the portal. Lunch will be served. Buses will leave from the front entrance of the CDA Resort main building.

Bird Aviation Museum & Invention Center

Wednesday, April 14, 1:00 – 6:00, $30 per person.

Displaying over 50 planes, several antique cars and many other inventions such as respirators, an original Intel 4004 computer chip, microwave technology, etc., the Bird Aviation Museum and Invention Center provides an exciting experience for the whole family. An assortment of finger foods and beverages will be provided during the tour. Buses will leave from the front entrance of the CDA Resort main building.

http://www.birdaviationmuseum.com

Thursday Wine Tasting and Olive Oil Tasting

Thursday, April 15, 12:30 – 3:30, $69 per person.

Journey to Coeur d'Alene Olive Oil to create and taste your own olive oil from olives harvested on family-owned and operated groves. Then it's on to Coeur d'Alene Wine Cellars for a tour of the grounds and a wine tasting of fine Washington State Wines vinted in scenic North Idaho. From renowned Columbia Valley vineyards, the winery handcrafts award-winning Syrahs and Viognier. Buses will leave from the front entrance of the CDA Resort main building.

Thursday Banquet on the Boats

Thursday, April 15, 6:30 – 9:00, price included in registration, $70 per companion, $30 under 12.

Lake Coeur d'Alene gets its name from early French traders who found the locals to have a "heart of the awl," when it came to trading practices. The Lake is located 2,128 feet above sea level, is about 25 miles long with over 125 miles of shoreline, and an average depth of 120 feet. The Symposium's banquet will be on the Lake Coeur d'Alene, cruising on a triple-boat (three boats are linked together and guests are free to walk from boat to boat), with delectable dinner buffets and great views of local wildlife, secluded lake homes, and the sun setting on the world's only floating golf green. Each registered participant and ticketed companion will get 2 drink tickets at boarding. Boats will leave the dock at 7:00 pm. Dress: casual.

The Coeur d'Alene Resort Golf Course

The Coeur d'Alene Resort Golf Course is nestled in the foothills of the Rocky Mountains on the shores of beautiful Lake Coeur d'Alene in North Idaho. Opening in 1991 to unprecedented reviews and awards, The Coeur d'Alene Resort Golf Course established itself as a premier destination golf course, debuting as the #11 resort golf course in the nation, and ranking #1 in the category of "Beauty and Esthetics" by Golf Digest.

The discounted conference green fee is $110. Rental clubs are Taylor Made Burners and are available in right or left handed, regular, stiff, and women's flexes. Rental price is $59 plus tax. For more information or tee times, call the Pro Shop on 800-935-6283 / 208-667-4653.

http://www.cdaresort.com/golf

	SUNDAY 11TH	MONDAY 12TH		TUESDAY 13TH	
7:30		*Continental breakfast*		*Continental breakfast*	
8:00		*Introductory comments*		**TUA1**	**TUB1**
8:20					
8:40		**MOG1**		*Advanced and novel experimental techniques 1*	*Shock to detonation transition 1*
9:00		*General session*			
9:20					
9:40		*Break*		*Break*	
10:00				**TUA2**	**TUB2**
10:20					
10:40		**MOG2**		*Performance or theory of composite and non-ideal explosives 1*	*Chemistry at high temperature and pressure 1*
11:00		*General session*			
11:20					
11:40				*Lunch*	
12:00		*Lunch (provided)*			
12:20					
12:40					
1:00		**MOA3**	**MOB3**	**TUA3**	**TUB3**
1:20					
1:40		*Nano/reactive materials*	*Physically based numerical models 1*	*Safety-related responses 1*	*Unreacted and reacted equations of state of explosives*
2:00					
2:20					
2:40					
3:00		*Break*		*Break*	
3:20		**MOA4**	**MOB4**		
3:40					
4:00	*Registration*	*Detonation reaction mechanisms and kinetics 1*	*Initiation modeling 1*	*Poster reception*	
4:20					
4:40					
5:00					
5:20	*Reception*				
6:30					
7:00					

A sessions – Bays 5 + 6
B sessions – Bay 4

	WEDNESDAY 14TH		THURSDAY 15TH		FRIDAY 16TH	
7:30	*Continental breakfast*		*Continental breakfast*		*Continental breakfast*	
8:00	**WEA1**	**WEB1**	**THA1**	**THB1**	**FRA1**	**FRB1**
8:20	*Advanced and novel experimental techniques 2*	*Micro-structural effects and initiation*	*Advanced and novel experimental techniques 3*	*Chemistry at high temperature & pressure 2*	*Performance or theory of composite and non-ideal explosives 3*	*Initiation modeling 2*
8:40						
9:00						
9:20						
9:40	*Break*		*Break*		*Break*	
10:00	**WEA2**	**WEB2**	**THA2**	**THB2**	**FRA2**	**FRB2**
10:20	*Detonation reaction mechanisms and kinetics 2*	*Detonation transients, stability and failure*	*Performance or theory of composite and non-ideal explosives 2*	*Shock to detonation transition 2*	*Detonation reaction mechanisms and kinetics 3*	*New theoretical models applied to detonation*
10:40						
11:00						
11:20						
11:40					*Closing comments*	
12:00			*Lunch*			
12:20						
12:40						
1:00			**THA3**	**THB3**		
1:20			*Mechanical properties of explosives*	*Physically based numerical models 2*		
1:40						
2:00						
2:20						
2:40	*Free afternoon*					
3:00	*Bird Aviation Museum & Invention Center Tour*					
3:20			**THA4**	**THB4**		
3:40			*Safety-related responses 2*	*Micro-detonics and sensitivity*		
4:00						
4:20						
4:40						
5:00						
5:20						
6:30			*Welcome aboard*			
7:00			*Banquet on the boats*			

A sessions – Bays 5 + 6
B sessions – Bay 4

MONDAY

08:00 *Introductory comments*

Blaine Asay – Los Alamos National Laboratory.

MOG1

Session Chair: Gert Scholtes – TNO Prins Maurits Laboratory.

08:20 *Multiscale Simulation of Hot Spot Ignition*

Laurence Fried, Fady Najjar, Riad Manaa, Michael Howard, Evan Reed & Nir Goldman Lawrence Livermore National Laboratory.

08:40 *Modeling Solid State Detonation and Reactive Materials*

Sunhee Yoo, Scott Stewart, Mark Lieber & Matthew Szuck – University of Illinois at Urbana Champaign, David Lambert – Air Force Research Laboratory.

09:00 *Sub-sonic Thermal Explosions Investigated by Radiography*

Laura Smilowitz, Bryan Henson, Blaine Asay, Jerry Romero, Gary Grim, andy Saunders, Frank Merrill, Cynthia Schwartz & Chris Morris – Los Alamos National Laboratory.

09:20 *Measurements of SAXS signal during TATB detonation using synchrotron radiation*

Konstantin Ten, Vladimir Titov, Edward Pruuel & Leonid Lukyanchikov – Lavrentyev Institute of Hydrodinamic SB RAS, Yuriy Aminov, Evgeniy Smirnov & Alexandr Muzyrya – RFNC VNIITF.

MOG2

Session Chair: Neil Bourne – AWE.

10:00 *Critical Thickness Measurements in Vapor-Deposited Pentaerythritol Tetranitrate (PETN) Films*

Alexander S. Tappan, Robert Knepper & Ryan R. Wixom – Sandia National Laboratories.

10:20 *Interaction of a Blast Wave with a Metalized Explosive Fireball*

David Frost & Sam Goroshin – McGill University, Robert Ripley – Martec Ltd.

10:40 *Characterization of Ignition Threshold of PBXN-110 Using Hybrid Drop Weight-Hopkinson Bar*

Vasant Joshi & Clinton Richmond – Indian Head Division, Naval Surface Warfare Center.

11:00 *Mesoscopic Investigations of the Deformation and Initiation Mechanisms of an HMX-based Pressed Composition*

Hervé Trumel – CEA, DAM, Le Ripault, Philippe Lambert – Sciences Et Applications Co.

11:20 *Shock-Induced Molecular Changes in RDX Crystals: Use of Time-Resolved Optical Spectroscopy*

Zbigniew Dreger, Nhan Dang – Washington State University.

11:40 *Shock Desensitization in Explosives: An Exploration of Two Competing Hypotheses*

Hugh James & Brian Lambourn – AWE.

	MOA3 ***Nano/Reactive Materials*** Session Chair: Steve Son – Purdue University.	**MOB3** ***Physically Based Numerical Models 1*** Session Chair: Joe Foster
1:00	*The Effect of Charge Reactive-Structural-Material Cases on Air Blast* Fan Zhang – Defence R & D Canada - Suffield, Robert Ripley – Martec Ltd.	*A Multi-Scale Modeling Framework for Shear Initiated Reactions in Energetic Materials* Müge Fermen-Coker & John K. Brennan – U.S. Army Research Laboratory, Linhbao Tran – Shock Physics Insight.
1:20	*Predicting the Contribution of Case Combustion to Explosive Performance with SHAMRC* Craig Watry – Applied Research Associates	*Modelling of a Suite of Aluminised Explosives Experiments* Alec Milne – Fluid Gravity Engineering
1:40	*The Effects of Strain and Interface Energy in NiAl Reactive Multilayers* Peter Chung – U.S. Army Research Laboratory.	*Modelling Detonation Propagation and Failure in PBX 9502 Using CREST* Nicholas Whitworth & Caroline Handley – AWE.
2:00	*Initiation Properties of Nanocrystalline RDX Based Explosive Compositions* Victor Stepanov – US Army, ARDEC.	*Modeling Oblique Initiation of Insensitive Explosives* Charles Mader – Mader Consulting Co., Michael Gittings – Consultant.
2:20	*Energetic Materials for Integration on Chip* Luke Currano, Wayne Churaman & Christopher Morris – US Army Research Lab, Collin Becker – University of Colorado, Boulder, Leela Mohana Reddy & Pulickel Ajayan – Rice University.	*Reflected Blast Wave Environments from C-4 Charges* W. Michael Howard – Lawrence Livermore National Laboratory.
2:40	*Inkjet Printing of Nanocomposite High-Explosive Materials* Andrew Ihnen & Woo Lee – Stevens Institute of Technology, Brian Fuchs, Anne Petrock, Victor Stepanov, Philip Samuels & Anthony Di Stasio – Army Research Development and Engineering Center.	*Extended Lagrangian Quantum Molecular Dynamics Simulations of Shock-induced Chemistry in Hydrocarbons* Edward Sanville, Nicolas Bock, William M. Challacombe, anders Niklasson, Marc Cawkwell, Dana Dattelbaum & Stephen Sheffield – Los Alamos National Laboratory, Thomas D. Sewell – University of Missouri-Columbia.

	MOA4 ***Detonation reaction mechanisms and kinetics*** Session Chair: Bryan Henson – LANL.	**MOB4** ***Initiation modeling*** Session Chair: Tommy Sewell – University of Missouri-Columbia.
3:20	*Influence of Powder Dispersion on the Reaction Zone Structure for Pressed RDX and HMX* Alexander Utkin & Valentina Mochalova – Institute of Problems of Chemical Physics RAS.	*A Modified Criterion for the Prediction of Shock Initiation Thresholds for Flyer Plate and Rod Impacts* Peter Haskins & Malcolm Cook – QinetiQ.
3:40	*Ab-initio Discovery of Utlrafast Detonation and Metallization in Nitromethane and Hydrazoic Acid* Evan Reed – Lawrence Livermore National Laboratory.	*Initiation of Energetic Materials: From Intermolecular Shearing to Nano-Composite Behavioral Predictions* Ronald Armstrong – University of Maryland.
4:00	*Photoacoustically Measured Speeds of Sound and the Equation of State of HBO2: on Understanding Detonation with Boron Fuel* Joseph Zaug, Sorin Bastea, Jonathan Crowhurst & Nicolas Teslich – Lawrence Livermore National Laboratory.	*Exploring Athermal Initiation Mechanism of Azides* Riad Manaa & George Overturf – Lawrence Livermore National Laboratory.
4:20	*An Effect of the Reaction Light Absorption on the Formation of the Detonation Reaction Zone 3D-Structure in PBXs* Igor Plaksin, Luis Rodrigues, Svyatoslav Plaksin, Jose andrade Campos, Ricardo Mendes & Jose Manuel Ribeiro – ADAI and LEDAP, University of Coimbra.	*Application of a Four-Step HMX Kinetic Model to an Impact-Induced Friction Ignition Problem* Lee Perry, Jake Gunderson & Peter Dickson – Los Alamos National Laboratory.
4:40	*Non-Shock Initiation Model for Explosive Families: Experimental Results* Mark anderson, Steven Todd & Charlie Jensen – Sandia National Laboratories, Terry Caipen – Applied Research Associates, Chance Hughs – North Vector.	*Coarse-Grain Models for Metals: Constant-Pressure Dissipative Dynamics Simulations* John Brennan – U.S. Army Research Lab, Martin Lisal – Institute of Chemical Process Fundamentals.
5:00	*State of the Art of Predictive Sympathetic Detonation and Fragment Impact Initiation Modeling* John Starkenberg – American Systems Corporation.	*Numerical and Experimental Studies of PBXN-109 Sympathetic Reaction* Jing-Ping Lu – Defence Science & Technology Organisation.

TUESDAY

	TUA1 ***Advanced and novel experimental techniques 1*** Session Chair: Eric Welle – AFRL.	TUB1 ***Shock to detonation transition 1*** Session Chair: Douglas Tasker – LANL.
8:00	*Embedded Fiber Optic Probes to Measure Detonation Velocities Using the Photonic Doppler Velocimeter* Oliver Strand, David Hare, Raul Garza & Tony Whitworth – Lawrence Livermore National Laboratory, David Holtkamp – Los Alamos National Laboratory.	*Single and Double Shock Initiation of TATB Based Explosive T2: Comparison of Electromagnetic Gauge Measurements with DNS Using Different Reactive Flow Models* Arnaud Sollier, Philippe Manczur, Blandine Crouzet, Laurent Soulard, Jean-Hughes Quesada, Jean-Marc Chevalier & Christophe Matignon – CEA, Pascal Bouinot & Regis Duconget – Centre D'Etudes De Gramat.
8:20	*Transient Absorption Spectroscopy of Laser Shocked Explosives* Shawn McGrane, Von Whitley, Cynthia Bolme, Daniel Eakins & David Moore – Los Alamos National Laboratory.	*On the Shock Response of HMX and TATB Based Explosives to Complex 1-D Plate Impacts* Susan Sorber – AWE.
8:40	*Applications and Principles of Photon Doppler Velocimetry to Explosives Testing* Matthew Briggs, Larry Hill, Lawrence Hull & Michael Shinas – Los Alamos National Laboratory.	*Study of Energy Focusing Phenomenon in Explosion Systems which Include High Modulus Elastic Elements* Igor Balagansky – Novosibirsk State Technical University.
9:00	*On the Quantitative Measurement of Fracture Toughness in High Explosive and Mock Materials* Cheng Liu, Carl Cady & Philip Rae – Los Alamos National Laboratory.	*Fragment Impact of Energetic Materials – a Review of Experimental Studies and an Analysis of Reaction Mechanism* Malcolm Cook & Peter Haskins – QinetiQ.
9:20	*Observation of Off-Hugoniot Shocked States with Ultrafast Time Resolution* Michael Armstrong, Jonathan Crowhurst, Sorin Bastea & Joseph Zaug – Lawrence Livermore National Laboratory.	*Shock Initiation and Detonation Study on High Concentration H2O2/H2O Solutions Using in-situ Magnetic Gauging* Stephen Sheffield, Dana Dattelbaum, David Stahl, Lee Gibson & Brian Bartram – Los Alamos National Laboratory.

	TUA2 ***Performance or theory of composite and non-ideal explosives 1*** Session Chair: Fan Zhang – DRDC Suffield.	TUB2 ***Chemistry at high temperature and pressure 1*** Session Chair: Su Peiris – DTRA.
10:00	*Thermal Non-Equilibrium Modeling of the Detonation Waves in Highly Heterogeneous Condensed HE: a Multiphase Approach for Metalized High Explosives* Gerard Baudin – DGA/DET/Centre D'Etudes De Gramat.	*Pressure-cooking of Explosives – the Structure of a High-pressure, High-temperature Form of RDX as Determined by X-Ray and Neutron Diffraction* Colin Pulham & David Millar – The University of Edinburgh, William Marshall – ISIS Neutron and Muon Facility.

10:20	*Plasmonic Enhancement of Direct Optical Initiation* David Moore, Steven Clarke, Anna Giambra & Adrian Akinci – Los Alamos National Laboratory.	*Towards New Energy-rich Molecular Systems: Polynitrogen* Jonathan Crowhurst, Riad Manaa, Daniel Aberg & Babak Sadigh – Lawrence Livermore National Laboratory.
10:40	*An Examination of Blast and Impulse Effects from Metal-Loaded Explosives* Victor Sanders, Jonathan Zucker, Bryce Tappan, John McAfee & Blaine Asay – Los Alamos National Laboratory.	*Atomistic Simulations of Chemical Reactivity of TATB Under Thermal and Shock Conditions* Riad Manaa, Evan Reed & Laurence Fried – Lawrence Livermore National Laboratory.
11:00	*Hybrid Detonation Waves in Metalized Explosive Mixtures* Fan Zhang & Akio Yoshinaka – Defence R&D Canada – Suffield.	*The Surface Quasiliquid, Melt Acceleration and the Role of Thermodynamic Phase in the Thermal decomposition of Crystalline Organic Explosives* Bryan Henson & Laura Smilowitz – Los Alamos National Laboratory.
11:20	*Characterization of Energetic Formulations Optimized for Optical Initiation* Jonathan Zucker, Bryce Tappan, Dave Oschwald & Nathan Burnside – Los Alamos National Laboratory.	*Al-Teflon Reactions Under Extreme Conditions* Santanu Chaudhuri & Martin Losada – Washington State University.

	TUA3 ***Safety-related responses 1*** Session Chair: Nausheen Al-Shehab – ARDEC.	**TUB3** ***Unreacted and reacted equations of state of explosives*** Session Chair: Scott Stewart – UIUC.
1:00	*Mechanical Damage, Ignition, and Burn: Experiment, Model Development, and Computer Simulations to Study High-Explosive Violent Response* John Reaugh – Lawrence Livermore National Laboratory, andrew Jones – AWE.	*Thermodynamic Properties of Detonation Products Including Solid Carbon Clusters* Nicolas Pineau, Emeric Bourasseau, Guillaume Chevrot & Jean-Bernard Maillet – CEA DAM.
1:20	*Shock Initiation and Detonation Propagation in Damaged TATB-based Solid Explosives* Steven Chidester, Kevin Vandersall, Craig Tarver & Frank Garcia – Lawrence Livermore National Laboratory.	*Thermodynamic States in Explosion Fields* Allen L. Kuhl – Lawrence Livermore National Laboratory.
1:40	*Characterization of Thermal, Mechanical and Detonative Properties of New Plastic Bonded Explosive Formulations of 1,3,5-Triamino-2,4,6-Trinitrobenzene Re-Crystallized from Ionic Liquid and Ionic Liquid/Co- Solvent Systems* Alexander Gash – Lawrence Livermore National Laboratory.	*Extremely Low Sensitivity Melt Castable Explosives Based on FOX-12* Henric Östmark – Swedish Defence Research Agency, FOI.

2:00	*DDT of Hot, Thermally Damaged PBX 9501 in Heavy Confinement* Gary Parker, Peter Dickson, Blaine Asay & John McAfee – Los Alamos National Laboratory.	*Characteristic Melt Times and Onset of Reaction for Aluminized Explosives* Leonard Stiel – Polytechnic Institute of Nyu, Ernest Baker – Us Army ARDEC.
2:20	*Frictionally Induced Ignition Processes in Drop and Skid Tests* Peter Dickson, Gary Parker & Alan Novak – Los Alamos National Laboratory.	*Calculating Hugoniots for Molecular Crystals from First Principles* Ann E. Mattsson – Sandia National Laboratories, Ryan R. Wixom – Energetics Characterization, Thomas R. Mattsson – HEDP Theory.
2:40	*Measurement of Material Properties of Damaged Energetic Materials* Peter Hsu, Gary Hust, Martin Dehaven, Steven Chidester, Libby Glascoe, Keo Springer & Jon Maienschein – Lawrence Livermore National Laboratory.	*Unreacted Equation of State Development and Multiphase Modeling of Dynamic Compaction of Low Density Hexanitrostilbene (HNS) Pressings* Aaron Brundage – Sandia National Laboratories.

3:20 **POSTER RECEPTION 3:20 – 5:20**

Poster Session Chairs

Advanced and Novel Experimental Techniques
Session Chair: Joel Carney, Indian Head Division, Naval Surface Warfare Center, Indian Head, MD
Session Chair: Wayne Trott, Sandia National Laboratory, Albuquerque, NM.

Detonation Reaction Mechanisms and Kinetics
Session Chair: Dana Dlott, University of Illinois at Urbana – Champaign, IL

Detonation Transients, Stability and Failure
Session Chair: Mark Short, Los Alamos National Laboratory, Los Alamos, NM.

Initiation Modeling
Session Chair: John Starkenberg, Army Research Laboratory, Aberdeen Proving Ground, MD.

Mechanical Properties of Explosives
Session Chair: David Williamson, University of Cambridge/Cavendish Laboratory, Cambridge, United Kingdom.

Micro-Structural Effects and Initiation
Session Chair: Donald Wiegand, Army Research, Development, and Engineering Center, Picatinny Arsenal, NJ.

New Theoretical Models Applied to Detonation
Session Chair: Matei Radulescu, University of Ottawa, Ottawa, Canada.

Physically-based Numerical Models
Session Chair: Brad Forch, Army Research Laboratory, Aberdeen Proving Ground, MD
Session Chair: Caroline Handley, Atomic Weapons Establishment, Reading, Berkshire, Great Britain.

Sensitivity
Session Chair: Michael Kaneshige, Sandia National Laboratory, Albuquerque, NM.

Shock/Deflagration to Detonation Transition
Session Chair: Kevin Vandersall, Lawrence Livermore National Laboratory, Livermore, CA.

Unreacted and Reacted Equations of State of Explosives
Session Chair: Jared Gump, Indian Head Division, Naval Surface Warfare Center, Indian Head, MD.

Posters

1. *Creep Measurements on Plastic Bonded Explosives*

   Bruce J. Cunningham, Franco J. Gagliardi, Constantine Hrousis, Ian Darnell – Lawrence Livermore National Laboratory, Livermore, CA, Yehuda Partom – Rafael, Zikhron Ya'akov, Israel.

2. *Comprehensive Characterization of Voids and Microstructure in TATB-based Explosives from 10nm to 1cm: Effects of Temperature Cycling and Compressive Creep*

   Trevor Willey, Lisa Lauderbach, Thomas Lorenz, Franco J. Gagliardi, Robert Call, George Overturf – Lawrence Livermore National Laboratory, Livermore, CA.

3. *Measure of Quasi-Static Toughness and Fracture Parameters for Explosive Mock and Insensitive High Explosive LX-17*

   Louis Ferranti, Jr., Franco J. Gagliardi, Bruce J. Cunningham – Lawrence Livermore National Laboratory, Livermore, CA.

4. *Optical Flow Visualization of the Low Velocity Detonation Phenomena of Hydrazine Nitrate and Hydrazine Hydrate Mixture*

   Tomoharu Matsumura – National Institute of Advanced Science and Technology, Tsukuba, Ibaraki, Japan .

5. *Towards the Understanding of PETN Initiation by a Fast, High Power Arc Source*

   Christian Grant, Vincent Tang, James McCarrick, Elizabeth Glascoe – Lawrence Livermore National Laboratory, Livermore, CA.

6. *Prediction of Failure Diameter of Liquid Explosives with Recently Developed Equation of State*

   Sek Chan – Orica Canada Inc., Pierrefonds, Quebec, Canada.

7. *Determination of Detonation Parameters in Tetranitromethane/metanole Mixtures by Electromagnetic Method*

   Alexander Ananin, Sergey Koldunov, Vicotr Garanin, Vasily Sosikov– Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow, Russia.

8. *Photographic Observation of Low Velocity Detonation in Nitromethane Affected by Precursor Shock Waves in Various Wall Materials*

   Hideki Hamashima, Shigeru Itoh – Kumamoto Industrial Research Institute, Kumamoto, Japan, Yukio Kato – Nippon Koki Co., Ltd., Fukushima, Japan.

9. *X-ray Transmission Tomography for Detonation Investigation*

   Edward Pruuel, Lavrentyev Institute of Hydrodynamics Siberian Branch, Novosibirsk, Russia.

10. *Ignition and Detonation Characteristics of Silver Azide Pellets*

    Yuichiro Hamate – Tohoku University, Sendai, Miyagi, Japan.

11. *Non-ideal Detonation of Ammonium Nitrate and Activated Carbon Mixtures in Steel Pipes*

    Atsumi Miyake, Naoki Kinoshita – Yokohama National Institute, Yokohama, Kanagawa, Japan, Shiro Kubota, Tei Saburi, Yuji Ogata – National Institute of Advanced Industrial, Tsukuba, Ibaraki, Japan.

12. *LX-17 and UfTATB Data for Corner-Turning, Failure and Detonation*

    Clark Souers, Sila Lauderbach, Raul Garza, Peter Vitello – Lawrence Livermore National Laboratory, Livermore, CA.

13. *PBRB Model Integration with Wave Propagation Code and Performance Evaluation*

    Sunil Dwivedi, Yasuyuki Horie – University of Florida, Shalimar, FL.

14. *Simulation of Underwater Sympathetic Reaction Tests for PBXW-115*

    Jing-Ping Lu – Defense Science and Technology Organization, Adelaide, South Australia, Australia, Michael Chung – Victoria University, Melbourne, Victoria, Australia.

15. *Probabilistic Shock Initiation Thresholds and QMU Applications*

    Micha Gresshoff, Constantine Hrousis– Lawrence Livermore National Laboratory, Livermore, CA.

16. *The High Temperature Stress/Strain Relaxation Response of Unconfined PBX between 21 and 210C*

    Philip Rae – Los Alamos National Laboratory, Los Alamos, NM.

17. *Mesoscale Modeling of LX-17 Under Isentropic Compression*

    H. Keo Springer – Lawrence Livermore National Laboratory, Livermore, CA.

18. *A Self-consistent Multiscale Method for Modeling the Nonlinear Mechanical Response of Polymer Bonded Explosives*

    Suvranu De – Rensselaer Polytechnic Institute, Troy, NY.

19. *Shock Initiation Experiments on Ratchet Grown PBX 9502*

    R.L. Gustavsen, D.G. Thompson, B.W. Olinger, R. DeLuca, B.D. Bartram, N.J. Sanchez – Los Alamos National Laboratory, Los Alamos, NM.

20. *Deflagration Rates and Molecular Bonding Trends of Secondary Explosives*

    Joseph Zaug – Lawrence Livermore National Laboratory, Livermore, CA.

21. *Non-Shock Ignition of HMX-Based High Explosives: Thermo-Mechanical Numerical Study*

    Didier Picart – CEA DAM, Monts, France.

22. *Three-Dimensional Magnetohydrodynamic Simulation of Slapper Initiation Systems*

    John Christensen, Constantine Hrousis – Lawrence Livermore National Laboratory, Livermore, CA.

23. *Effects of the Microstructure and Crystal Orientation on the Shock Response of β-HMX Polycrystals*

    Suvranu De, Amir Reza Zamiri – Rensselaer Polytechnic Institute, Troy, NY.

24. *Correlating Cookoff Violence with Pre-ignition Damage*

    Michael Hobbs – Sandia National Laboratory, Albuquerque, NM.

25. *Modeling the Mechanical Response of PBX 9501*

Partha Rangaswamy, Darla Thompson, Cheng Liu, Matthew Lewis – Los Alamos National Laboratory, Los Alamos, NM.

26. *High-Power Electrostatic Discharges in PETN: Threshold and Scaling Experiments*

William Liou, James McCarrick, Ralph Hodgin, Danial Phillips – Lawrence Livermore National Laboratory, Livermore, CA.

27. *Instrumented Small-scale Gap Testing of Booster Compositions*

Chris Stennett – Cranfield University, Swindon, Great Britain
Peter Bolton, Steve Wortley – Atomic Weapons Establishment, Reading, Berkshire, Great Britain.

28. *Detonation Velocity Measurements for Primary Explosives*

Theodore Dolch, Neha Mehta, Eugene Homentowski, Kin Yee, Joel Rivera, Akash Shah, Kimberly Griswold, Karl Oyler – Army Research, Development, and Engineering Center, Picatinny Arsenal, NJ.

29. *Hazard Characterization of Fox-7 Compositions with Varying Particle Sizes*

Helen Flower, Steve Wortley – Atomic Weapons Establishment, Reading, Berkshire, Great Britain, Chris Stennett – Cranfield University, Swindon, Great Britain.

30. *Small-scale Deflagration Cylinder Test with Velocimetry Wall-Motion Diagnostics*

Daniel Hooks – Los Alamos National Laboratory, Los Alamos, NM.

31. *Modeling of the Large Scale and Expanded Large Scale Gap Test with the CTH Hydrocode*

Gerrit Sutherland - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD.

32. *The High-pressure Characterization of Energetic Materials: 5 Aminotetrazolium Nitrate*

Jennifer Ciezak – Army Research Laboratory, Aberdeen Proving Ground, MD.

33. *Formic Acid Effects on the Prediction of High Explosive Detonation Properties*

Ernest Baker – Army Research, Development, and Engineering Center, Picatinny Arsenal, NJ.

34. *Shock Desensitizing of Solid Explosive*

William Davis – Los Alamos National Laboratory, Los Alamos, NM.

35. *Explosive Compositions on the Basis of Mechanoactivated Nanocomposites of Metals and Solid Oxidizers*

Alexander Dolgoborodov – Semenov Institute of Chemical Physics RAS, Moscow, Russia.

WEDNESDAY

	WEA1 ***Advanced and novel experimental techniques 2*** Session Chair: Michael Denigan – AFRL.	WEB1 ***Micro-structural effects and initiation*** Session Chair: Didier Picart – CEA DAM.
8:00	*Laser-Ignition of Laser Dispersed Metal Particles* James Lightstone, Ahmed Abdel-Hafez & Joel Carney – Indian Head Division, Naval Surface Warfare Center, Mathew Brodt – University of Virginia.	*Small-Angle Neutron Scattering Studies of RDX Defect Structure* Chad Stoltz, Brian Mason, Joseph Hooper & Colin Roberts – Indian Head Division, Naval Surface Warfare Center.
8:20	*Small-Scale Internal Blast Measurements and Predictions* Richard Granholm & Harold Sandusky – Indian Head Division, Naval Surface Warfare Center.	*Towards Quantum Controlled Initiation of Explosives* Margo Greenfield, Shawn McGrane, Jason Scharff & David Moore – Los Alamos National Laboratory.
8:40	*Observations in Explosive Systems with High-Speed Digital Image Correlation* Marcia Cooper, Phillip Reu & Timothy Miller – Sandia National Laboratories.	*Critical Velocities for Deflagration and Detonation Triggered by Voids in a REBO High Explosive* Stuart Herring & Timothy Germann – Los Alamos National Laboratory, Niels Gronbech-Jensen – University of California, Davis.
9:00	*Development, Performance and Use of Direct Write Explosive Inks* Brian Fuchs, Amy Wilson & Paula Cook – US Army ARDEC, Daniel Stec – SAIC.	*Numerical Simulations of Shock-induced Void Collapse in Liquid Explosives* Louisa Michael & Nikos Nikiforakis – University of Cambridge.
9:20	*A Particle-Image Velocimeter for Measuring the Output of High-Energy Detonators* Michael Murphy & Steven Clarke – Los Alamos National Laboratory, Ronald Adrian – Arizona State University.	*A Combined Experimental and Numerical Simulation Investigation into the Properties of an HTPB-based PBX Binder* Scott Bardenhagen – Wasatch Molecular, Inc.

	WEA2 ***Detonation reaction mechanisms and kinetics 2*** Session Chair: Yukie Horie – AFRL.	WEB2 ***Detonation transients, stability and failure*** Session Chair: Lloyd Davis – LANL.
10:00	*Underwater Explosion Performance of Aluminized Explosives with Wide Range Composition* Yukio Kato & Kenji Murata – Nippon-koki Co., Ltd.	*Detonation Propagating in IHE: Comparison of Direct Numerical Simulation and Detonation Shock Dynamics against Experimental Data* Christophe Matignon – CEA.
10:20	*The Effects of Metal Loading on the Detonation Properties of Explosive Mixes* Charles Needham, Mary Brown, Craig Watry & Mike anderson – Applied Research Associates.	*Examination of the Pulsating Detonation Instability in a Two-step Model Using Characteristics* Matei Radulescu & Carlos Leung – University of Ottawa.

10:40	*Effect of Aluminum Particle Size and Mass Fraction on Detonation in Nitromethane with Aluminum Particles* Yukio Kato & Kenji Murata – Nippon-koki Co., Ltd.	*Behaviors of Nitromethane Under the Various Ignition Conditions* Shiro Kubota, Tei Saburi & Yuji Ogata – National Institute of Advanced Industrial Science, Kunihito Nagayama – Kyushu University, Katsuya Sasaki, Hideaki Kitajima & Ryo Sakamoto – Hitachi Zosen Corporation.
11:00	*Jack Rabbit Investigation of TATB IHE Detonation Chemical Kinetics* Mark Hart – Lawrence Livermore National Laboratory.	*Electromagnetic Effects on Explosive Reaction and Plasma* Douglas Tasker & Von Whitley – Los Alamos National Laboratory.
11:20	*Detonation Transformation Time at the Presence of Transverse Waves* S. Rybanin & Yu. Mikhailov – Institute of Problems of Chemical Physics RAS.	*Detonation Failure in Small Cylindrical LX-17 Charges* Thomas Lorenz – Lawrence Livermore National Laboratory.
11:40	*Electrical Conductivity Profiles in Detonating Low-density Explosives of Various Grain Sizes* Alexander Ershov & Natalia Satonkina – Lavrentyev Institute of Hydrodynamics.	*Three-Dimensional Ignition and Growth Modeling of Confined and Hot Prism Failure Tests* Mark Garcia & Craig Tarver – Lawrence Livermore National Laboratory.

FREE AFTERNOON

THURSDAY

	THA1 ***Advanced and novel experimental techniques 3*** Session Chair: Clare Bauer – AWE.	THB1 ***Chemistry at high temperature and pressure 2*** Session Chair: Choong-Shik Yoo, WSU.
8:00	*Small-Scale Testing for Development of Explosives* Joshua Felts – Indian Head Division, Naval Surface Warfare Center.	*Effects of Exothermic Binders on Times to Explosion of HMX-based Plastic Bonded Explosives* Craig Tarver – Lawrence Livermore National Laboratory.
8:20	*The Use of Digital Image Correlation in Explosive Experiments* Franco Gagliardi, Bruce Cunningham & Louis Ferranti – Lawrence Livermore National Laboratory.	*Unreacted Equations of State of LLM-105 and TATB* Jared Gump, Chad Stoltz & Brian Mason – Indian Head Division, Naval Surface Warfare Center, Benjamin Freedman & Jason Ball – Naval Research Enterprise Intern Program.
8:40	*Underwater Blast Experiments and Modeling for Shock Mitigation* Lee Glascoe, Larry McMichael & Kevin Vandersall – Lawrence Livermore National Laboratory.	*Major Effects in the Thermodynamics of Detonation Products: Phase Segregation vs Ionic Dissociation* Sorin Baste & Laurence Fried – Lawrence Livermore National Laboratory.
9:00	*Demonstration of a Multi-channel, Low-profile Wire Gauge for Tracing Wave Development and Detonation Turning in Explosives* Bradley Skidmore, Adam Trebs, Alan Novak, Jonathan Zucker, Gary Parker, Peter Dickson & Timothy Foley – Los Alamos National Laboratory.	*Decomposition Products of RDX Produced from Resonant Laser Excitation* Jeremy Monat, Indian Head Division, Naval Surface Warfare Center.
9:20	*Investigation of Low Detonation Velocity Emulsion Explosives Application to Explosive Welding* Victor Silvestrov – Lavrentyev Institute of Hydrodynamics.	*Deflagration Measurements of Three Insensitive High Explosives: LLM-105, TATB, and DAAF* Elizabeth Glascoe, Peter Hsu, Jon Maienschein, Martin DeHaven, Noel Tan & Heidi Turner – Lawrence Livermore National Laboratory.

	THA2 ***Performance or theory of composite and non-ideal explosives 2*** Session Chair: Richard Lee – IHD NSWC.	THB2 ***Shock to detonation transition 2*** Session Chair: Gerrit Sutherland – IHD NSWC
10:00	*Interpretations of Emission Measurements from Aluminized Explosive Fireballs* Jennifer Peuker – University of Illinois.	*Influence of Hot Spot Features on the Initiation Characteristics of Heterogeneous Nitromethane* Dana Dattelbaum, Stephen Sheffield, Stahl David, andrew Dattelbaum & Wayne Trott – Los Alamos National Laboratory.

10:20	*Precursor Detonation Wave Development in ANFO Due to Aluminum Confinement* Scott Jackson – Los Alamos National Laboratory.	*Characterization of Physical Processes in Thin-Pulse Initiation of Energetic Materials* David Damm & Evan Dudley – Sandia National Laboratories.
10:40	*Effect of Ammonium Perchlorate Grain Size and Content in Mixture with Nitromethane on Detonation Velocity and Critical Diameter* Eric Bouton & Robert Belmas – CEA, Le Ripault, Henri-Noel Presles, Laurence Pagnanini & Boris Khasainov – CNRS.	*Shock Initiation Experiments and Modeling on the TATB-based Explosive RX-03-GO* Kevin Vandersall – Lawrence Livermore National Laboratory.
11:00	*Effect of Prill Structure on Detonation Performance of ANFO* Terry Salyer, Mark Short, Charles Kiyanda, John Morris & Tony Zimmerly – Los Alamos National Laboratory.	*PBXN-109 Gap Test Studies for Different RDX Fills Without and With Aging* Harold Sandusky & Joshua Felts – Indian Head Division, Naval Surface Warfare Center.
11:20	*Simulation of Detonation of ANFO Mixture Confined by Aluminium: Edge Angles for DSD* Charles Kiyanda, Mark Short & Scott Jackson – Los Alamos National Laboratory.	*Short Pulse Shock Initiation Experiments and Modeling on LX-16, LX-10, and Ultrafine TATB* Craig Tarver & Chadd May – Lawrence Livermore National Laboratory.

	THA3 ***Mechanical properties of explosives*** Session Chair: Philip Rae – LANL.	**THB3** ***Physically based numerical models 2*** Session Chair: Mel Baer – SNL.
1:00	*Shock Wave Propagation in Energetic Single Crystals: Role of Crystalline Anisotropy* Michael Winey & Yogendra Gupta – Washington State University.	*Development of Plate and Cylinder Acceleration Mathematical Models* Daniel Murphy, Erik Wrobel & Ernest Baker – US Army ARDEC, Leonard Stiel – Polytechnic University.
1:20	*Non-Shock Initiation Model for High-Explosive Families* Steven Todd & Mark anderson – Sandia National Laboratories, Terry Caipen – Applied Research Associates Inc.	*Some Mesoscale Implications of the CREST Reactive Burn Model* Brian Lambourn & Caroline Handley – AWE.
1:40	*Macroscopic Crack Formation and Extension in Pristine and Artificially Aged PBX 9501* Cheng Liu – Los Alamos National Laboratory.	*New High-energy Oxidizers: A QM Study* Henric Östmark – Nanyang Technical University.
2:00	*Frictional Properties of Explosive Single Crystals of HMX, RDX and PETN and a Model of Impact Ignition by Frictional Heating* M Munawar Chaudhri – University of Cambridge, Yan-Qing Wu – Beijing Institute of Technology.	*Initial Modeling of Two HMX-based Plastic Bonded Explosives at the Mesoscale* Caroline Handley – AWE.
2:20	*Determination of Second-Order Elastic Constants of HE Single Crystals: Use of Impulsive Stimulated Thermal Scattering* Michael Winey, Baozhou Sun, Yogendra Gupta – Washington State University, Dan Hooks – Los Alamos National Laboratory, Keith Nelson – Mass. Institute of Technology.	*A Constitutive Model for Long Time Duration Mechanical Behavior in Insensitive High Explosives* Ian Darnell, Sejin Oh, Constantine Hrousis, Bruce Cunningham & Franco Gagliardi – Lawrence Livermore National Laboratory.

2:40	*Towards a Fundamental Understanding of the Thermomechanical Response of Damaged Polymer-bonded Energetic Materials* David Williamson – University of Cambridge.	*Phase Transition Behavior and Defect Structures of RDX through Molecular Dynamics* Peter Chung & Betsy Rice – US Army Research Laboratory, Lynn Munday – US Army Research Laboratory/University of Maryland, Santiago Solares – University of Maryland.

	THA4 ***Safety-related responses 2*** Session Chair: Mark Mason – China Lake.	**THB4** ***Micro-detonics and sensitivity*** Session Chair: Jim Kennedy
3:20	*The Development of the Variable Spark Test Machine and its Use in the Investigation of the Power Versus Energy Sensitiveness of Energetic Materials* Bob D'Mellow – AWE.	*Material Properties Effects on the Detonation Spreading and Propagation of Diaminoazoxyfurazan (DAAF)* Elizabeth Francois – Los Alamos National Laboratory.
3:40	*Small-Scale Thermal Violence Experiments for Combined Insensitive High Explosive and Booster Materials* Clare Bauer – AWE.	*ReaxFF Reactive Dynamics of Energetic Materials: Coupling Mechanical and Chemical Processes in Detonation Initiation* Sergey Zybin, Peng Xu, Qi An, Yi Liu & William A. Goddard III – California Institute of Technology.
4:00	*The ODTX System for Thermal Ignition and Thermal Safety Study of Energetic Materials* Peter Hsu, Gary Hust, Mike Howard, Jon Maienschein – Lawrence Livermore National Laboratory.	*The Effect of Dopant on the LASER Ignition Sensitivity of Hexanitrostilbene Type IV* Emma Burke & Xiao Fang – Cranfield University.
4:20	*Improving the Material Response for Slow Heat of Energetic Materials* Albert Nichols – Lawrence Livermore National Laboratory.	*Investigations of Initiation Spot Size Effects* Steven Clarke, Adrian Akinci, Gary Liechty, Alan Munger, Timothy Schaefer & Keith Thomas – Los Alamos National Laboratory.
4:40	*Conductive Ignition Modeling for Energetic Material* Rohan Banton & Scott Kukuck – US Army Research Laboratory.	*Mesoscale Modeling of Metal-loaded High Explosives* D. Scott Stewart, Brandon Lieberthal, D. Scott Stewart & John B.Bdzil – University of Illinois.
5:00	*Propagation of Reactions in Thermally Damaged PBX 9501* Joseph Tringe, Elizabeth Glascoe, James Kercher, Trevor Willey, Harry Springer, Daniel Greenwood, Jon Maienschein & John Molitoris – Lawrence Livermore National Laboratory, Laura Smilowitz & Bryan Henson – Los Alamos National Laboratory.	*Controlling the Microstructure of Vapor-Deposited Pentaerythritol Tetranitrate (PETN) Films* Robert Knepper, Alexander Tappan & Ryan Wixom – Sandia National Laboratories.

FRIDAY

	FRA1 ***Performance or theory of composite and non-ideal explosives 3*** Session Chair: Wayne Richards – AFRL.	FRB1 ***Initiation modeling 2*** Session Chair: Craig Tarver – LLNL.
8:00	*Detonation Shock Dynamics Calibration for PBX 9502 with Temperature, Density, and Material Lot Variations* Larry Hill & Tariq Aslam – Los Alamos National Laboratory.	*Testing and Modeling of PBX 9501 Shock Initiation* Kin Lam, Timothy Foley, Alan Novak, Peter Dickson & Gary Parker – Los Alamos National Laboratory.
8:20	*Modeling Explosives with High Metal Concentrations Using Particle Volumes in SHAMRC* Mike anderson – Applied Research Associates, Lee Glascoe, Larry McMichael & Vandersall Kevin – Lawrence Livermore National Laboratory.	*Advances in Modeling Exploding Bridgewire Initiation* Constantine Hrousis & John Christensen – Lawrence Livermore National Laboratory.
8:40	*A Streamline Approach to Steady Non-Ideal Detonation Theory* Simon Watt, Gary Sharpe & Sam Falle – University of Leeds, William Byers Brown – Mass Action Research Consultancy, Martin Braithwaite – Imperial College.	*Calibration of an Explosive Initiation Model for Composition A3 Type II* Douglas Kooker – American Systems Corp.
9:00	*Reactive Blast Waves from Composite Charges* Allen L. Kuhl, John B. Bell & Vincet E. Beckner – Lawrence Berkeley National Laboratory, Douglas Kooker – American Systems Corp.	*A Reactive Burn Model for Shock Initiation in a PBX: Scaling and Separability Based on the Hot Spot Concept* M. Sam Shaw & Ralph Menikoff – Los Alamos National Laboratory.
9:20	*An Improved Reaction Rate Equation for Simulating the Ignition and Growth of Reaction in High Explosives* Michael Murphy – Lawrence Livermore National Laboratory.	*State of the Art of Predictive Fragment Impact Initiation Modeling* John Starkenberg & Douglas Kooker – American Systems Corporation.

	FRA2 ***Detonation reaction mechanisms and kinetics 3*** Session Chair: Laura Smilowitz – LANL.	FRB2 ***New theoretical models applied to detonation*** Session Chair: Ernie Baker – ARDEC.
10:00	*Visible and Near-Infrared Spectral Signatures Following the Detonation of PETN-Based Explosives* Joel Carney & James Lightstone – IHD NSWC, Jon Koch & Scott Piecuch – Marquette University.	*A Flow Integrated DSD/Hydrodynamic Strategy for Computing the Motion of Detonation of Insensitive High Explosives on an Eulerian Grid* Mark Short & Tariq Aslam – Los Alamos National Laboratory.

10:20	*Detonation Wave Parameters in Nitromethane/Methanol and FEFO/ Nitrobenzene* Valentina Mochalova,Sergey Torunov & Alexander Utkin – Institute of Problems of Chemical Physics.	*On the Role of Phonon Scattering Processes in Shock-induced Initiation* Joe Hooper – Indian Head Division, Naval Surface Warfare Center.
10:40	*Reactive Flow Modeling of Liquid Explosives via ALE3D/Cheetah Simulations* I-Feng Kuo, Sorin Bastea & Laurence Fried – Lawrence Livermore National Laboratory.	*Dn(k) Calibration from Diameter-effect Data* Yehuda Partom – RAFAEL.
11:00	*The True Detonation Limits on Concentration of Nitromethane Mixtures with Methanol and Nitrobenzene* Sergey Koldunov – Institute of Problem of Chemical Physics RAS.	*Comparison of the Growth of Pore and Shear-band-driven Detonation* Albert Nichols – Lawrence Livermore National Laboratory.
11:20		
11:40	*Closing Comments* Chris Boswell – Indian Head Division, Naval Surface Warfare Center.	