

INTRODUCTION

The principal purpose of the International Detonation Symposia series, of which this is the Thirteenth, 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. Suhithi Peiris and Dr. Ruth Doherty of the Indian Head Division, Naval Surface Warfare Center, who organized the technical sessions, made the hotel arrangements and sent all the announcements. The symposia are now administered by the Center for Energetic Concepts Development (CECD) of the University of Maryland, College Park, who handled all the contracts and financial transactions. The Symposium Organizing Committee contributed by reviewing and selecting abstracts, setting up the poster session, and preparing the Proceedings for publication. The members of the Organizing Committee are:

Prof. Dave Anand (UMd)

Dr. Blaine Asay (LANL)

Dr. Ernie Baker (ARDEC)

Dr. Ruth Doherty (IHDIV, NSWC) - Local Chair

Dr. Judah Goldwasser (ONR)

Dr. James Kennedy (retired, LANL) - Publication Chair

Dr. Dave Lambert (AFRL)

Dr. Jon Maienschein (LLNL)

Dr. Suhithi Peiris (IHDIV, NSWC) - Continuing Chair

Dr. Anita Renlund (SNL) - Poster Chair

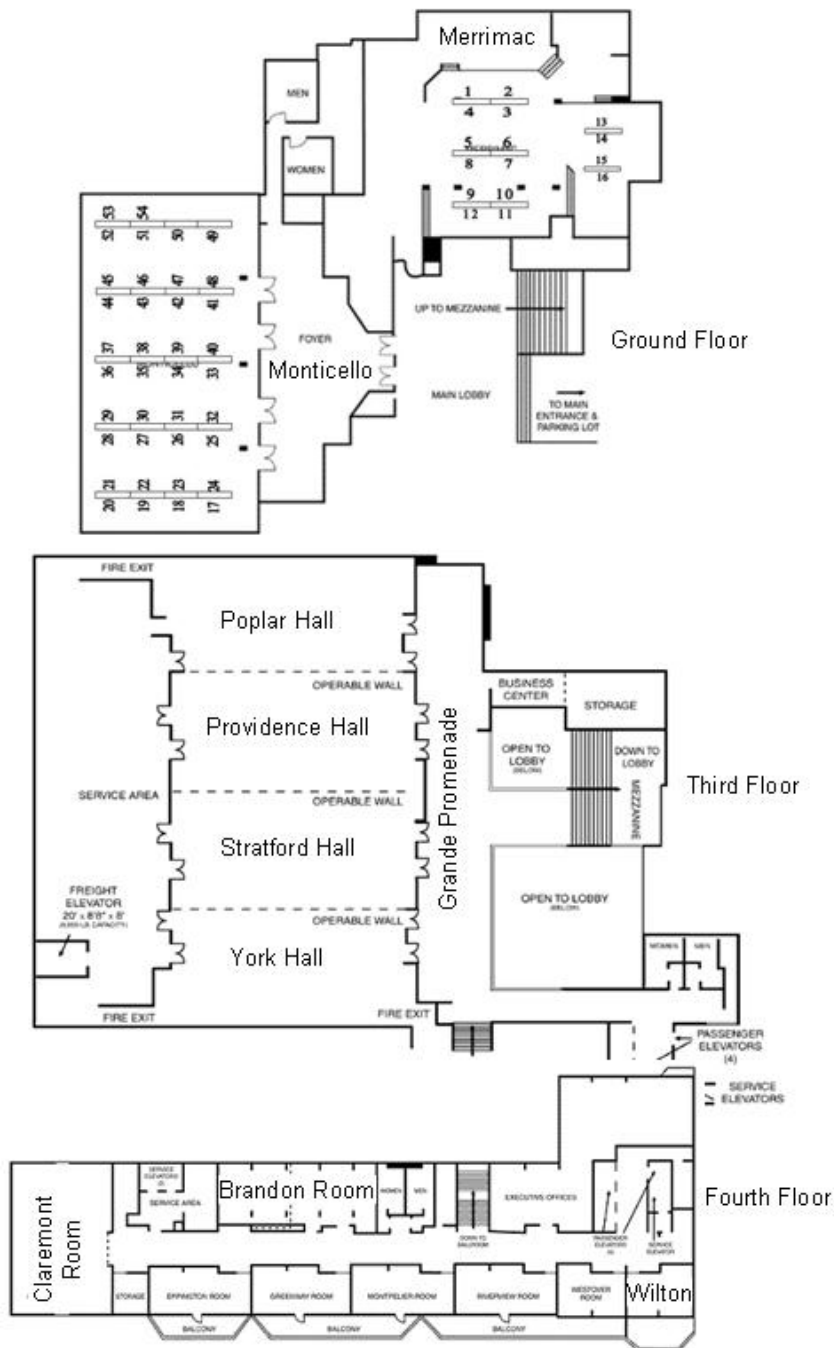
Dr. John Starckenberg (ARL) - Abstracts Review Chair

SYMPOSIUM VENUE

The Sheraton Waterside Hotel is Norfolk's only waterfront hotel offering breathtaking river views and impressively comfortable decor. It features the City Dock Restaurant and Lounge, with menus exhibiting all the best that coastal Virginia has to offer for breakfast, lunch, and dinner, and seating indoors or in the covered outdoor area.

The Sheraton is located next to Town Point Park, a beautiful area for a jog or relaxing stroll, and adjacent to the Waterside Festival Marketplace Mall. The Marketplace Food Court has eateries featuring cuisine from the Far East to the Mediterranean to good old American hamburgers. It's all authentic... and fast too! For full-service sit-down meals there four restaurants, including Outback Steakhouse and Joe's Crab Shack. The fun continues at Marketplace Mall well after the sun goes down, offering five night clubs and bars.

Sheraton Norfolk Waterside Hotel Meeting Rooms



REGISTRATION DESK

The Registration Desk located in the Grande Promenade, Third Floor, will be open from 3:00PM to 8:00PM on Sunday July 23rd with a welcome reception from 5:00PM to 7:00PM. Registration will re-open at 7:00AM on Monday, and 7:30AM from Tuesday to Friday. The onsite registration fee is US\$650.

The registration fee and display of your symposium nametag allows participation in the technical sessions, Sunday's welcome reception, Monday's lunch, Monday's Nauticus Excursion and dinner, 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

Symposium Session will begin at 8:00AM on Monday, in the York and Stratford rooms on the 3rd floor of the Sheraton Hotel. The author-attended Poster Session will be from 3:30PM to 5:30PM on Tuesday, in the Merrimac and Monticello ballrooms on the 1st floor. Wednesday afternoon is free of sessions. The symposium will close at 12:00PM on Friday.

ORAL PRESENTATIONS

Each oral session will be provided with a LCD projector, laptop computer, screen, lavalier microphone, and pointer. To use this laptop, bring your presentation on a thumb drive (Flash USB) or CD to the Speaker-Ready Room, (Wilton Room, Fourth Floor) the day before you are scheduled to present, to have your presentation loaded into the proper session. Alternatively, to use your own laptop, arrive at least 15 minutes before the beginning of the session and connect your laptop to the projector input switch. Please make sure your screen resolution is set at a maximum of 1024x768. Also, make sure that your computer is set to NOT go to sleep in the interim between its set up and your presentation.

All speakers are strongly encouraged to use the Speaker-Ready Room, (Wilton, Fourth Floor) to become familiar with the equipment and try out presentations. The Wilton room will be open at these times:

Sunday	3:00pm – 8:00pm	Wednesday	7:00am – 8:00am
Monday	7:00am – 8:00am 12:30pm – 1:00pm 4:00pm – 4:30pm	Thursday	7:00am – 8:00am 12:30pm – 1:00pm
Tuesday	7:00am – 8:00am 12:30pm – 1:00pm 5:30pm – 6:30pm	Friday	7:00am – 8:00am

POSTER PRESENTATIONS

Poster presenters should begin setting up displays from 3:00 PM on Sunday, 23rd in the Merrimac or Monticello rooms, Ground Floor. Poster boards and push pins are provided. See the Technical Program in the following pages for Poster Numbers. A layout of the posters is included with the Sheraton ballroom floor plans.

The author-attended Poster Session is scheduled for Tuesday, 3:30 to 5:30 PM, and will be conducted in two 1-hour sessions. We request that authors of odd-numbered posters be in attendance at their posters for the first hour on Tuesday (3:30 to 4:30) and authors of even-numbered posters be in attendance for the second hour (4:30 to 5:30). Authors are welcome to be at their posters for the entire two hours if they choose. There will be a Poster Reception with refreshments during the two-hour event.

Presenters should leave their posters displayed until noon Thursday, July 27, when they should be removed. Any posters remaining after 3PM on Thursday will be thrown away.

PUBLICATION

Authors should have submitted their manuscripts and publication clearances prior to June 30th. The web site 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 Friday, September 15th.

Session Chairs should have done an initial review of the papers before the symposium. If your session chair (see the Technical Program for a list) 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 open from 7:30AM till the end of the day's sessions, each day.

DISCUSSION QUESTIONS

It is a tradition of these symposia to document the questions asked of a presenter and the presenter's answers in the printed 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. Please note that the maximum number of TOTAL pages per manuscript (with these questions and answers) remains 10 pages or 5 double-sides. The questions and answers thus submitted will be published at the discretion of Dr. Jim Kennedy, 13th Symposium Publications Chair.

SPECIAL EVENTS

Session Chair Breakfast, Monday 7:00AM - Claremont Room

Oral and Poster Session Chairs and the Organizing Committee are invited to breakfast.

Companions' Breakfast, Monday 9:00AM - Brandon Room

Companions are invited to continental breakfast and a presentation by the Norfolk Convention and Visitor Bureau

Lunch, Monday 12:00PM- Poplar and Providence Halls

Registrants and Ticket Holders are invited to a plated luncheon.

Nauticus Excursion, Monday 5:00PM – Nauticus Center

Registrants and Ticket Holders go to Nauticus, the National Maritime Center, by making a left from the hotel on to Waterside Drive and going three blocks (500m). At 5:00PM walk directly in to the USS Wisconsin for a self-guided tour of one of the largest and last battleships built by the U.S. Navy, then explore the Science Center to glimpse the nautical power of the sea, mingle with fish and touch a live shark! Starting at 6:30PM, enjoy a buffet dinner in the Living Sea Landing area. Water and iced tea will be served with dinner and a cash bar will be available. (Flat-soled shoes are recommended for touring the ship. Ship tours will end at 6:00PM and be cancelled during rain storms with lightning.)

Companions' Tour, Tuesday 8:15AM - Hotel Entrance

Ticket Holders; depart via motor coach with your tour guide to Williamsburg, Virginia - the restored 18th-century capital of the New World. Stroll through the streets of Colonial Williamsburg with your historical interpreter for a one and one half hour leisurely walking tour. Then enjoy free time to shop, have lunch (not included), and return via motor coach by 2:15PM.

Symposium Tour, Wednesday 12:15PM - Hotel Entrance

Ticket Holders; grab a box lunch and depart via motor coach for a guided tour of Jamestown Settlement. Watch an introductory film, "Jamestown - The Beginning", tour a Powhatan Indian village, a colonial fort, and the three ships that transported English colonists to Virginia in 1607. Enjoy shopping in the beautiful gift shop, for unique items for home and garden as well as "Made in Virginia" items.

Symposium Banquet and Reception, Thursday 6:00PM - Grande Promenade & 7:00PM - Poplar and Providence Halls

Registrants and Ticket Holders are invited to the Banquet Reception and Banquet Dinner. After dinner, Prof. Richard Whittecar of Old Dominion University will speak on Islands and Dunes of the Virginia-Carolina Coast.

TECHNICAL PROGRAM

The Program Layout in the next page lists session chairs in parentheses.

	23-Jul	24-Jul	25-Jul		
	Sunday	Monday	Tuesday		
7:00 AM		Chair Breakfast Continental Break	Continental Breakfast		
8:00 AM		Introductory Remarks			
8:20 AM		G1 Detonation Transients, Stability and Failure (Ed Lee)	G3 Micro-Structural Effects (Weigand)		
8:40 AM					
9:00 AM					
9:20 AM					
9:40 AM		break	break		
10:00 AM		G2 Performance of Non- Ideal Explosives (Bdzil)	G4 New Theoretical Models (Haskins)		
10:20 AM					
10:40 AM					
11:00 AM					
11:20 AM					
11:40 AM		lunch (1.5 hrs)			
noon		lunch (1 hr)			
1:00 PM		S1A Micro- Structural Effects (Tappan)	S1B Detonation Transients, Stability and Failure (Thomas)		
1:20 PM			S3A Initiation Modeling (Fried)	S3B Shock/Defla- gration to Detonation Transition (Forbes)	
1:40 PM					
2:00 PM					
2:20 PM		break			
2:40 PM		S2A Detonation Reactions and Kinetics (Cook)	S2B Safety- related Responses (Sandusky)		
3:00 PM					
3:20 PM	Registratr 3pm - 8pm	Poster Reception 3:30pm - 5:30pm (Smilowitz, Sheffield, Gustavsen, Stewart, Reaugh, Hill, Trott, Ostmark, Hertel, Erikson, Davis, Bouma, Plaskin)			
3:40 PM					
4:00 PM					
4:20 PM					
4:40 PM		Museum Tour 5pm - 6:30pm Museum Dinner 6:30pm- 8:30pm			
5:00 PM					
5:20 PM					
5:40 PM					
6:00 PM	Registratr Reception 5pm - 7pm				
6:20 PM					
6:40 PM		Banquet Reception 6pm - 7pm			
7:00 PM					
7:20 PM	Registratr 3pm - 8pm				
7:40 PM					
8:00 PM		Banquet 7pm - 10pm			

26-Jul	27-Jul	28-Jul			
Wednesday	Thursday	Friday			
Cont. Break	Continental Breakfast	Continental Breakfast		7:00 AM	
G5 Chemistry at High P,T (Zaug)	G7 Detonation Reactions and Kinetics (Tarver)	S6A Performance of Non-Ideal Explosives (Braithwaite)	S6B Safety- related Responses (AIShehab)	8:00 AM	
				8:20 AM	
		8:40 AM			
		9:00 AM			
9:20 AM		break		9:20 AM	
9:40 AM	break	break		9:40 AM	
G6 Safety- related Responses (Yoh)	G8 Novel Experimental Techniques (Pangilinan)	G9 Physically Based Numerical Models (Guirguis)		10:00 AM	
				10:20 AM	
				10:40 AM	
				11:00 AM	
Tour to Jamestown Settlement 12:30pm- 5:30pm	lunch (1.5 hrs)	Closing Comments		11:20 AM	
				11:40 AM	
				noon	
				1:00 PM	
				1:20 PM	
	S4A Performance of Non-Ideal Explosives (Frost)	S4B Equations of State (Zerilli)			1:40 PM
					2:00 PM
	S5A Initiation Modeling (Miller)	S5B Nano Materials and Equations of State (Kramer)			2:20 PM
					2:40 PM
					3:00 PM
3:20 PM					
break				3:40 PM	
				4:00 PM	
				4:20 PM	
				4:40 PM	
				5:00 PM	
				5:20 PM	
				5:40 PM	
				6:00 PM	
				6:20 PM	
				6:40 PM	
				7:00 PM	
				7:20 PM	
				7:40 PM	
				8:00 PM	

<u>Monday</u>		10:00AM	<i>Approaches to the Simulation of Steady Highly Non-Ideal Detonations in Heterogeneous Explosives</i> <u>M. Braithwaite</u> , C.V. B Cunningham, I. B. Parker and G. J. Sharpe - Cranfield University, Shrivenham, UK
8:00AM	Introductory Remarks York and Stratford Halls Ruth Doherty and Su Peiris - Indian Head Division, Naval Surface Warfare Center, MD		
Monday	Session G1: Detonation Transients, Stability and Failure Session Chair: Ed Lee, Lawrence Livermore National Laboratory, Livermore, CA York and Stratford Halls		
8:20AM	<i>Comparison of the Detonation Failure Mechanism in Homogeneous and Heterogeneous Explosives</i> Oren E. Petel, <u>Andrew J. Higgins</u> - McGill University, Montreal, Canada Richard Turcotte - Canadian Explosives Research Laboratory, CANMET, Ottawa, Canada Sek K. Chan - Orica Canada Inc., Brownsburg, Canada	10:20AM	<i>Effect of Scale on the Blast Wave from a Metalized Explosive</i> <u>David L. Frost</u> , Samuel Goroshin - McGill University, Montreal, Canada Robert Ripley - Martec Ltd., Halifax, Canada Fan Zhang, DRDC - Suffield, Canada
8:40AM	<i>Detonation Diffraction, Dead Zones, and the Ignition-and-Growth Model</i> G. de Oliveira, <u>A. K. Kapila</u> and D. W. Schwendeman - Rensselaer Polytechnic Institute, Troy, NY J. B. Bdzil - Los Alamos National Laboratory, Los Alamos, NM W. D. Henshaw and C. M. Tarver - Lawrence Livermore National Laboratory, Livermore, CA	10:40AM	<i>An Investigation of the Detonation Characteristics of Some Non-Ideal Explosive Compositions Based Upon Ammonium Nitrate</i> <u>H. R. James</u> , B. D. Lambourn, H. N. Angseesing, C. A. Handley and N. J. Whitworth - AWE Aldermaston, Reading, UK P. J. Haskins, M. D. Cook, R. I. Briggs, A. D. Wood and P. R. Ottley - QinetiQ, Fort Halstead, UK
9:00AM	<i>The Dynamics of Detonation Failure in Conical PBX 9502 Charges</i> <u>Terry R. Salyer</u> and Larry G. Hill - Los Alamos National Laboratory, Los Alamos, NM	11:00AM	<i>N-Guanylurea-Dinitramide (FOX-12): a New Extremely Insensitive Energetic Material for Explosives Applications</i> <u>Henric Östmark</u> - Swedish Defence Research Agency, FOI, Sweden
9:20AM	<i>Hydrodynamic Stability Properties of Condensed-Phase Detonations with Common Engineering-Scale Models</i> <u>M. Short</u> , J. J. Quirk - University of Illinois, Urbana-Champaign, IL J. B. Bdzil, T. D. Aslam - Los Alamos National Laboratory, Los Alamos, NM	11:20AM	<i>Evaluation of Aluminum Participation in the Development of Reactive Waves in Shock-Compressed HMX</i> <u>R. J. Pahl</u> , W. M. Trott, S. Snedigar, and J. N. Castañeda - Sandia National Laboratories, Albuquerque, NM
Monday	Session G2: Performance of Non-Ideal Explosives Session Chair: John Bdzil, Los Alamos National Laboratory, Los Alamos, NM York and Stratford Halls	11:40AM	<i>Detonation in Metal-Teflon Mechano-Activated Composites</i> <u>A.Yu Dolgoborodov</u> , M.N. Makhov, I.V. Kolbanev, A.N. Streletskii - ICP RAS, Moscow, Russia V.E. Fortov - IHED RAS, Moscow, Russia
		Monday	Session S1A: Micro-Structural Effects Session Chair: Alex Tappan, Sandia National Laboratories, Albuquerque, NM York Hall
			Session S1B: Detonation Transients, Stability and Failure Session Chair: Keith Thomas, Los Alamos National Laboratory, Los Alamos, CA Stratford Hall
		1:00PM	<i>Coupling Grain Scale and Bulk Mechanical Response for PBXs</i> <i>Simulation of Detonation Propagation and Failure in Using Numerical Simulations of Granular Explosive Charges</i>

	<i>Real Microstructures</i> <u>Scott G. Bardenhagen</u> , Todd O. Williams - Los Alamos National Laboratory, Los Alamos, NM Christelle Collet – SNPE Matériaux Energétiques, France	<u>Rohan Banton</u> , John Starkenberg - U.S. Army Research Laboratory, Aberdeen, MD Frank van Swol - Sandia National Laboratories, Albuquerque, NM
1:20PM	<i>Closed-Bomb Combustion of Hot, Thermally Damaged PBX 9501</i> <u>G. R. Parker</u> , B. W. Asay, P. M. Dickson, W. L. Perry, B. C. Tappan, D. M. Oschwald, B. F. Henson and L. B. Smilowitz - Los Alamos National Laboratory, Los Alamos, NM	<i>The Effect of Electrical Energy on Detonation Failure in Wedges of the TATB</i> <u>R. E. Winter</u> and D. A. Salisbury - AWE Aldermaston, Reading, UK
1:40PM	<i>The Stress Vs. Strain Response of Single HMX Crystals</i> <u>Philip J. Rae</u> , Daniel E. Hooks & George (Rusty) T. Gray III - Los Alamos National Laboratory, Los Alamos, NM	<i>Three Dimensional Ignition and Growth Reactive Flow Modeling of Prism Failure Tests on PBX9502</i> <u>Mark L. Garcia</u> and Craig M. Tarver - Lawrence Livermore National Laboratory, Livermore, CA
2:00PM	<i>The Effect of Binder Concentration on IHE Booster Compositions</i> P. Bolton, <u>S. Wortley</u> , M. Wright - AWE Aldermaston, Reading, UK M. Sloane - ROXEL Summerfield, UK	<i>Detonation Behavior of Adjacent High Explosive Charges with Different Detonation Velocities</i> <u>Manfred Held</u> - TDW /EADS, Schrobenhausen, Germany
2:20PM	<i>Shock-Induced Reaction in Nitromethane Impregnated Geometrically Regular Samples</i> <u>Wayne M. Trott</u> , Melvin R. Baer, Jaime N. Castañeda, Alexander S. Tappan, John N. Stuecker and Joe Cesarano III - Sandia National Laboratories, Albuquerque, NM	<i>Reaction Zones and Conductive Zones in Dense Explosives</i> <u>A.P. Ershov</u> , N.P. Satonkina, G.M. Ivanov - Lavrentyev Institute of Hydrodynamics RAS, Novosibirsk, Russia

Monday	Session S2A: Detonation Reactions and Kinetics Session Chair: Malcolm Cook, QinetiQ, Fort Halstead, UK York Hall	Session S2B: Safety-Related Responses Session Chair: Harold Sandusky, Indian Head Division, Naval Surface Warfare Center, Indian Head, MD Stratford Hall
3:00PM	<i>Homogeneous Shock Initiation in Neat and Chemically Sensitized Nitromethane</i> <u>S. A. Sheffield</u> , R. Engelke, R. R. Alcon, R. L. Gustavsen, D. L. Robbins, and D. M. Dattelbaum - Los Alamos National Laboratory, Los Alamos, NM B. Crouzet - Commissariat à l'Énergie Atomique(CEA/DAM), Bruyères-le-Châtel, France	<i>Modeling HMX Ignition Using an Enthalpy Formulation</i> <u>Michael L. Hobbs</u> and Michael J. Kaneshige - Sandia National Laboratories, Albuquerque, NM
3:20PM	<i>Deflagration Kinetics of Energetic Binder, PGN</i> <u>Chad Stoltz</u> , Suhithi Peiris - Indian Head Division - NSWC, Indian Head, MD Richard Behrens, Sean Maharrey, and Aaron Highley - Sandia National Laboratories, Livermore, CA	<i>Cook-Off Model Development and Analysis of Energetic Materials Using Sandia Instrumented Thermal Ignition (SITI) Experimental Data</i> <u>Amanda Barra</u> , Michael Kaneshige - Sandia National Laboratories, Albuquerque, NM
3:40PM	<i>Reaction Zone Structure for Pressed HE and Mixtures of HE with Additions</i> <u>A.V. Utkin</u> , A.V. Ananin, V.M. Mochalova - Institute of Problems of Chemical Physics RAS, Russia	<i>Laminar and Deconsolidative Deflagration of RDX-Based Explosives at High Pressures</i> <u>Jake Koerner</u> , Jon Maienschein, Kevin Black, Martin DeHaven - Lawrence Livermore National Laboratory, Livermore, CA
4:00PM	<i>Non-Classical Steady-State Detonation Regimes in TNETB</i> <u>Sergei A. Kolesnikov</u> , Alexander V. Utkin, Alexander V. Ananin - Institute of Problems of	<i>Thermal Explosion Violence for Several Explosives—Measurements and Interpretation</i> <u>Jon Maienschein</u> , Martin

Chemical Physics RAS,
Chernogolovka, Russia

DeHaven, Greg Sykora, Kevin
Black, Jeffrey Wardell, Matthew
McClelland, Ted Strand, Tony
Whitworth, Carmelo Martinez -
Lawrence Livermore National
Laboratory, CA

Tuesday

Session G3: Micro-Structural Effects

**Session Chair: Donald Weigand, US Army ARDEC, Picatinny,
NJ**

York and Stratford Halls

8:00AM ***Formation of CRZ 3D Structure at SDT and at Shear Initiation
of PBX: Effects of Front Irradiation and Localization in HMX
Crystals***

I. Plaksin, J. Campos, J. Direito, J. Ribeiro, and R. Mendes -
University of Coimbra, Coimbra, Portugal
C. S. Coffey - Indian Head Division, Naval Surface Warfare
Center, Indian Head, MD

8:20AM ***PBX 9502 Detonation Shock Dynamics Calibration:
Repeatability and Dependence on Material Lot***

L. G. Hill, T.D. Aslam, J. B. Bdzil, W. C. Davis, and R. R.
Critchfield - Los Alamos National Laboratory, Los Alamos, NM

8:40AM ***Microstructure Effects on Detonation Performance of HNS and
CL-20***

Eric Welle, R. J. Pahl and A. S. Tappan, J. A. Palmer - Sandia
National Laboratories, Albuquerque, NM

9:00AM ***A Kinetics-Based Model for Simulating Deformation and
Damage in Composite Solid Propellant During XDT Events***

E. R. Matheson and D. Q. Nguyen - Lockheed Martin Space
Systems Company, Sunnyvale, CA

9:20AM ***Microenergetic Research Involving a Coupled Experimental and
Computational Approach to Evaluate Microstructural Effects on
Detonation and Combustion at Sub-Millimeter Geometries***

Alexander S. Tappan, Aaron L. Brundage, Gregory T. Long, Anita
M. Renlund, Stanley H. Kravitz, John J. Nogan, Brian
Wroblewski, Jeremy A. Palmer, and Melvin R. Baer - Sandia
National Laboratories, Albuquerque, NM

Tuesday Session G4: New Theoretical Models

**Session Chair: Peter Haskins, QinetiQ, Fort Halstead, UK
York and Stratford Halls**

10:00AM ***Higher-Order DSD for Detonation Propagation: DSD for
Detonation Driven by Multi-Step Chemistry Models with
Disparate Rates***

John Bdzil, Mark Short, Tariq Aslam, and James Quirk - Los
Alamos National Laboratory, Los Alamos, NM

10:20AM ***Determination of the Lighting Radius for Application of
Detonation Shock Dynamics Consistent with Ignition Transients
in Condensed Explosives***

Scott Stewart and Sunhee Yoo – University of Illinois at Urbana-
Champaign, Urbana, IL
David E. Lambert - Air Force Research Laboratory, Eglin AFB,
FL

10:40AM ***Modeling Detonation Diffraction and Dead Zones in PBX-9502***

B. L. Wescott and Scott Stewart - University of Illinois at Urbana-
Champaign, IL
W. C. Davis - Los Alamos National Laboratory, Los Alamos, NM

11:00AM ***The Hydrodynamics of the Early Stages of the Shock to
Detonation Transition***

B. D. Lambourn - AWE Aldermaston, Reading, UK

11:20AM ***Numerical and Theoretical Investigations on Detonation
Confinement Sandwich Tests***

Tariq D. Aslam, Larry G. Hill - Los Alamos National Laboratory,
Los Alamos, NM

Tuesday Session S3A: Initiation Modeling

**Session Chair: Larry Fried,
Lawrence Livermore National
Laboratory, Livermore, CA
York Hall**

**Session S3B:
Shock/Deflagration to
Detonation Transition
Session Chair: Jerry Forbes,
University of Maryland,
College Park, MD
Stratford Hall**

1:20PM ***Composition B Decomposition
and Ignition Model***

Dave Zerkle - Los Alamos
National Laboratory, Los
Alamos, NM

***Low Amplitude Single and
Multiple Shock Initiation
Experiments and Modeling of
LX-04***

Kevin S. Vandersall, Craig M.

		Tarver, Frank Garcia, Steven K. Chidester, Paul A. Urtiew - Lawrence Livermore National Laboratory, Livermore, CA Jerry W. Forbes - University of Maryland, College Park, MD			<i>Energetic Materials</i> <u>Linhbao Tran</u> - U. S. Army Research Laboratory, Aberdeen, MD	<i>High Explosive Under Shock Loading</i> <u>Shiro Kubota</u> , Yuji Ogata, Yuji Wada, Tei Saburi, Masatake Yoshida - National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan Kunihito Nagayama - Kyushu University, Fukuoka, Japan
1:40PM	<i>An Ignition Law for PBX 9501 from Thermal Explosion to Detonation</i> <u>B. F. Henson</u> , L. Smilowitz, B. W Asay, P. M. Dickson, M.M. Sandstrom, and J.J. Romero - Los Alamos National Laboratory, Los Alamos, NM	<i>Shock Desensitization Effect in the STANAG 4363 Confined Explosive Component Water Gap Test</i> <u>A. S. Lefrançois</u> - DGA/Centre d'Etudes de Gramat, Gramat, France R .S. Lee and C. M. Tarver - Lawrence Livermore National Laboratory, Livermore, CA		3:00PM	<i>Thermal Ignition of Explosives Using Pyrotechnics and Hypergolics</i> <u>Raafat Guirguis</u> - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD	<i>Experimental Study on Deflagration to Detonation Transition of NEPE Solid Propellants</i> <u>Fenglei Huang</u> - Beijing Institute of Technology, Beijing, China
2:00PM	<i>Analysis of Carbon Cluster Formation During High-Temperature Decomposition of HMX and TATB with ReaxFF Reactive Molecular Dynamics</i> L. Zhang, A. C. T. van Duin, <u>S. V. Zybin</u> , W. A. Goddard III - California Institute of Technology, Pasadena, CA E. Kober - Los Alamos National Laboratory, Los Alamos, NM	<i>Deflagration-to-Detonation Transition in LX-04 as a Function of Loading Density, Temperature, and Confinement</i> <u>H. W. Sandusky</u> , R. H. Granholm, and D. G. Bohl - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD K. S. Vandersall, D. E. Hare, and F. Garcia - Lawrence Livermore National Laboratory, Livermore, CA		Tuesday	Poster Session: Chemistry at High Temperature and Pressure Session Chair: Laura Smilowitz, Los Alamos National Laboratory, Los Alamos, NM Monticello and Merrimac Halls	
2:20PM	<i>Large-Scale Molecular Dynamics Studies of Quasi-Static and Shock Compression in Crystalline β-HMX</i> <u>Eugenio Jaramillo</u> and Thomas D. Sewell - Los Alamos National Laboratory, Los Alamos, NM Alejandro Strachan - Purdue University, West Lafayette, IN	<i>Shock Initiation Experiments and Modeling of Composition B, C-4, and ANFO</i> Paul A. Urtiew, <u>Kevin S. Vandersall</u> , Craig M. Tarver, Frank Garcia - Lawrence Livermore National Laboratory, Livermore, CA Jerry W. Forbes - University of Maryland, College Park, MD		3:30PM	<i>#1. Laser-Induced Decomposition of Energetic Materials at Static High Pressures: Study of the HNO₃ / 2 - Nitropropane Mixture</i> <u>V. Bouyer</u> , P. Hébert, M. Doucet, E. Mézière, L.-P. Terzulli, - CEA-LE RIPAULT, France	
2:40PM	<i>Reactive Gas Phase Compression Due to Shock-Induced Cavity Collapse in</i>			4:30PM	<i>#2. Behavior of Explosives Under Pressure in a Diamond Anvil Cell</i> <u>M.F. Foltz</u> - Lawrence Livermore National Laboratory, Livermore, CA	
				3:30PM	<i>#3. Pressure-Induced Molecular Structural Change on Aromatic Nitro Compounds</i> <u>Reiko I. Hiyoshi</u> , Yuji Kohno, Jun Nakamura, and Kazuyoshi Ueda - National Research Institute of Police Science, Japan	
				Tuesday	Poster Session: Sensitivity/Safety-Related Responses III Session Chair: Richard Bouma, TNO Defence, Security and Safety, The Netherlands	

- 4:30PM **#4. New Techniques in Characterization of High Strain-Rate Behavior of Explosives**
V. S. Joshi, R. J. Lee and R. H. Guirguis - Indian Head Division, Naval Surface Warfare Center
 Indian Head, MD
- 3:30PM **#5. Numerical Study on the Scale Effect in Gap Test of Emulsion Explosive**
Shiro Kubota, Yuji Ogata, Yuji Wada, Katsumi Katoh, Ganda Simangunsong, Koki Ishikawa, Takayuki Abe¹, Kunihiko Wakabayashi, Tomotaka Homae, Tomoharu Matsumura, Yoshio Nakayama¹, Tei Saburi¹ and Masatake Yoshida - National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan
 Kunihito Nagayama - Kyushu University, Fukuoka, Japan
- 4:30PM **#6. Constitutive Model and Equation of State of Unreacted PBXN-109**
M. Quidot and P Chabin - SNPE Matériaux Energétiques, Vert-le-Petit, France
- 3:30 PM **#7. Investigation of Initiation by Low Velocity Impact Using Small-Scale Experiments**
Michael Kaneshige, Daniel Sandoval, David Crawford - Sandia National Laboratories, Albuquerque, NM
- 4:30PM **#8. Threshold Studies on TNT, Composition B, C-4, and ANFO Explosives Using the Steven Impact Test**
Kevin S. Vandersall, Lori L. Switzer, and Frank Garcia - Lawrence Livermore National Laboratory, Livermore, CA
- Tuesday** **Poster Session: Shock/Deflagration to Detonation Transition**
Session Chair: Igor Plaksin, University of Coimbra, Portugal
- 3:30PM **#9. Links between Macroscopic Behavior and Explosive Morphology in Shock to Detonation Transitions**
H R James - AWE Aldermaston, Reading, UK
- 4:30PM **#10. Photographic Observation of Low Velocity Detonation in Nitromethane**
Hideki Hamashima and Shigeru Itoh - Kumamoto University, Kumamoto, Japan
 Yukio Kato - Nippon Koki Co., Fukushima, Japan

- 3:30PM **#11. Shock Initiation of the TATB-Based Explosive PBX 9502 Cooled to -55 Degrees Celsius**
R. L. Gustavsen, R. R. Alcon, D. L. Robbins, S. A. Sheffield, and J. M. Lloyd - Los Alamos National Laboratory, Los Alamos, NM
 S.M. Bucholtz, R. J. Gehr - Honeywell Federal Manufacturing & Technologies, Los Alamos, NM
- 4:30PM **#12. The Initiation of Fine Particle Hexanitrostilbene Using Laser-Driven Flyer Plates**
M D Bowden, L J Whitehorn, J Richardson, M P Maisey and R C Drake - AWE Aldermaston, Reading, UK
- Tuesday** **Poster Session: Detonation Reactions and Kinetics**
Session Chair: Steve Sheffield, Los Alamos National Laboratory, Los Alamos, CA
- 3:30PM **#23. Improved Wood-Kirkwood Detonation Chemical Kinetics**
Kurt R. Glaesemann and Laurence E. Fried - Lawrence Livermore National Laboratory, Livermore, CA
- 3:30PM **#17. Shock-Induced Electro Conductivity of the Insensitive High Explosive**
K. Grebenkin, M. Gorshkov, V. Zaikin, V. Slobodenyukov, O. Tkachev - VNIITF, Snezhinsk, Russia
- Tuesday** **Poster Session: Detonation Kinetics and Equations of State**
Session Chair: Rick Gustavsen, Los Alamos National Laboratory, Los Alamos, NM
- 4:30PM **#18. An Approach for Generating a Computationally Efficient Equation of State for Condensed Explosives Whose Detonation Products Undergo Phase Transitions**
Sergey Victorov - MEPHI (State University), Moscow, Russia
 Olivier Heuzé - CEA/DIF, Bruyères-le-Châtel, France
 Boris Khasainov - LCD, ENSMA, France
- 3:30PM **#19. A New Accurate Equation of State for Fluid Detonation Products Based on a Version of Perturbation Theory**
Sergey Victorov, Sergey Gubin - Moscow Engineering Physics Institute (State University), Moscow, Russia
- 4:30PM **#22. Modeling Hemispheric Detonation Experiments in 2 and 3 Dimensions**

W. Michael Howard, Laurence. E. Fried, P. Clark Souers, Peter A. Vitello, Robert L. Druce, Daniel Phillips and Frank Roeske - Lawrence Livermore National Laboratory, Livermore, CA

M. A. McClelland, J. L. Maienschein, W. M. Howard, A. L. Nichols, M. R. deHaven, and O. T. Strand - Lawrence Livermore National Laboratory, Livermore, CA

Tuesday **Poster Session: Physically-based Numerical Models**
Session Chair: Gene Hertel, Sandia National Laboratories, Albuquerque, NM

3:30PM **#27. Characterization of Damaged Materials**
Peter C. Hsu, Martin Dehaven, Matthew McClelland, and Jon Maienschein - Lawrence Livermore National Laboratory, Livermore, CA

4:30PM **#20. Molecular Dynamics Modeling of Shock and Detonation Phenomena in Liquids of Polyatomic Molecules**
Andrei L. Smirnov and Anatoly N. Dremin - Institute of Problem of Chemical Physics of Russian Academy of Sciences, Russia

3:30PM **#33. Application of Various Global Decomposition Model Forms to Energetic Material Cookoff**
W. W. Erikson - Sandia National Laboratories, Albuquerque, NM

3:30PM **#21. ALE3D Simulations of Gap Closure and Surface Ignition for Cookoff Modeling**
W. M. Howard, M. A. McClelland, and A. L. Nichols - Lawrence Livermore National Laboratory, Livermore, CA

4:30PM **#34. On Detonation in Cracked Explosives and the Resulting Damage to Adjacent Material**
Larry Hill - Los Alamos National Laboratory, Los Alamos, NM

4:30PM **#24. A Multiphase Model for Heterogeneous Explosives in both the Dense and Dilute Limits**
David E. Stevens and Michael J. Murphy - Lawrence Livermore National Laboratory, Livermore, CA

Tuesday **Poster Session: Sensitivity/Safety-Related Responses I**
Session Chair: Bill Erikson, Sandia National Laboratories, Albuquerque, NM

3:30PM **#25. New Allotropes of Single-Bonded Nitrogen by First-Principle Computational Experiments on One-Dimensional Helical Structures**
F. Zahariev, J. Hooper, S. V. Dudiy and T. Woo - University of Ottawa, Canada
F. Zhang - R&D Canada-Suffield, Medicine Hat, Canada

4:30PM **#28. Electrostatic Discharge Sensitivity of Pressed Solid High Explosives**
Dan Borovina, Nathan Burnside, Douglas McHugh, Heather Mallett, Neal Tapia, Gomer Gray, and Roy Przeklasa, Los Alamos National Laboratory, Los Alamos, NM

4:30PM **#54. Development of a Reactive Burn Model: Effects of Particle Contact Distribution**
Y. Hamate - University of Florida, FL
Y. Horie - Air Force Research Laboratory, Eglin, FL

3:30PM **#29. Can Thermal Analysis Reliably Predict Thermal Cookoff Behavior?**
A. K. Burnham, R. K. Weese, J. F. Wardell, T. D. Tran, J. L. Maienschein - Lawrence Livermore National Laboratory, Livermore, CA

Tuesday **Poster Session: Sensitivity/Safety-Related Responses II**
Session Chair: Jeffery Davis, Naval Air Warfare Center, China Lake, CA

4:30PM **#30. The Relationship Between Particle Morphology and Sensitivity for Pure Granular RDX**
Helen Czerski, William G. Proud, J. E. Field - University of Cambridge, UK

4:30PM **#26. ALE3D Simulation of Heating and Violence in a Fast Cookoff Experiment with LX-10**

3:30PM **#31. Development of Warheads Venting Technology for Cook-Off Response Mitigation**
S. DeFisher, E.L. Baker, T. Madsen, D. Pfau, N. Al-Shehab and B. Fuchs - U.S. Army Armament Research, Development and Engineering Center, Picatinny, NJ

4:30PM **#32. On the Response of an IHE to Long Duration Low Amplitude Shocks**
Steve Wortley, Keith Fleming - AWE Aldermaston, Reading, UK

Tuesday **Poster Session: Initiation Modeling and Micro-Structural Effects**
Session Chair: Scott Stewart, University of Illinois at Urbana-Champaign, IL

3:30PM **#35. Parameterization of the CHARM Reactive Flow Model Using Kinetic Parameters Derived from Cook-Off Experiments**
M D Cook, P J Haskins and A D Wood - QinetiQ, Fort Halstead, UK

4:30PM **#36. Modeling the Bulk Mechanical Response of Heterogeneous Explosives Based on Microstructural Information**
Suvranu De and Michael Macri - Rensselaer Polytechnic Institute, Troy, NY

3:30PM **#37. Secondary Effects on Projectile-Impact Shock Initiation**
William Lawrence, John Starkenberg, and Brian Krzewinski - U.S. Army Research Laboratory Aberdeen, MD

3:30PM **#39. A Combined Discrete/Finite Element Method Applied to Energetic Materials at the Meso-Scale Simulation Under Shock Loading**
Fu Hua, Wang WenQ - China Academy of Engineering Physics, Sichuan, China

Tuesday **Poster Session: Initiation Modeling**
Session Chair: Jack Reaugh, Livermore National Laboratory, Livermore, CA

4:30PM **#38. The Performance of Explosive Shock-Initiation Models Under Complex Shock Loading**
John Starkenberg, Douglas E. Kooker, and Linhbao Tran - U.S. Army Research Laboratory, Aberdeen, MD

4:30PM **#40. Simulation of Sympathetic Reaction Tests for PBXN-109**
J.P. Lu, I.J. Lochert, and B.L. Hamshere - Defence Science and Technology Organization, Australia
D.L. Kennedy - Orica Explosives, Kurri Kurri, Australia

3:30PM **#41. Analysis of Shock Decomposition and Sensitivity of Energetic Materials with ReaxFF Molecular Dynamics**
S. V. Zybin, L. Zhang, A. C. T. van Duin, and W. A. Goddard III - California Institute of Technology, Pasadena, CA

Tuesday **Poster Session: Micro-Structural Effects**
Session Chair: Larry Hill, Los Alamos National Laboratory, Los Alamos, NM

4:30PM **#42. Floret Test Observations on Detonation Spreading in Insensitive Explosives**
J. E. Kennedy - Hazards & Explosives Research & Education, Santa Fe, NM
C. G. Rumchik, Air Force Research Laboratory, Eglin AFB, FL
K.-Y. Lee, B. W. Asay, K. A. Thomas, Los Alamos National Laboratory, Los Alamos, NM
I. Plaksin, University of Coimbra, Coimbra, Portugal

3:30PM **#43. On the Nature of Variations in Density and Composition Within TATB-Based Plastic Bonded Explosives**
J.H. Kinney, T. Willey, B. Weeks, G. Overturf – Lawrence Livermore National Laboratory, Livermore, CA

3:30PM **#45. The Initiation Mechanism of Direct Optical Initiation (DOI) Detonators**
D. S. Stewart, University of Illinois at Urbana-Champaign, Urbana, IL
G. Rodriguez, A. R. Valenzuela, S. A. Clarke, A. A. Akinci, K. Thomas - Los Alamos National Laboratory, Los Alamos, NM

Tuesday **Poster Session: Novel Experimental Techniques**
Session Chair: Wayne Trott, Sandia National Laboratories, Albuquerque, NM

4:30PM **#46. Rapid Data Analysis Methodologies for Streak Camera Images: Measurement of Detonation Velocity and DDT Distance of Lead Azide at Sub-Millimeter Diameters**
S. P. Madden, A. S. Tappan, P. C. Jung, S. K. Marley, E. J. Welle, and R. J. Pahl - Sandia National Laboratories Albuquerque, NM

3:30PM **#47. Matrix Isolation Spectroscopy Applied on RDX Reaction Products**

Anna Pettersson, Martin Norrefeldt, Sara Wallin and Henric Östmark - Swedish Defence Research Agency, FOI, Sweden

Tuesday **Poster Session: Performance of Non-Ideal Explosives**
Session Chair: Henric Östmark, Swedish Defence Research Agency, FOI, Sweden

3:30PM **#49. A Theoretical Study of the Dependence of Non Ideal Detonation and the Diameter Effect on the Decomposition Rates in Cylindrical Charges of Polytrropic Explosive**

M. Cowperthwaite - Enig Associates, Inc, Silver Spring, MD
M. Braithwaite - Cranfield University, Shrivenham, UK

4:30PM **#50. Evaluation of the Acceleration Ability of Aluminized High Explosives**

M. N. Makhov, V. I. Arkhipov - Semenov Institute of Chemical Physics RAS, Moscow, Russia

3:30PM **#51. On Detonation of Aluminized BTNEN-Containing Mixtures**

M. F. Gogulya, M. N. Makhov, M. A. Brazhnikov, and A. Yu Dolgoborodov - Semenov Institute of Chemical Physics RAS, Moscow, Russia

4:30PM **#52. Detonation-Like Processes in Teflon/Al-Based Explosive Mixtures**

M. F. Gogulya, M. N. Makhov, M. A. Brazhnikov, and A. Yu Dolgoborodov - Semenov Institute of Chemical Physics RAS, Moscow, Russia

3:30PM **#53. Dynamic Measurements of Electrical Conductivity in MICs**

Douglas G. Tasker, Blaine W. Asay, V. Eric Sanders and Steven F. Son - Los Alamos National Laboratory, Los Alamos, NM

Wednesday

Session G5: Chemistry at High Temperature and Pressure
Session Chair: Joseph Zaug, Lawrence Livermore National Laboratory, Livermore, CA
York and Stratford Halls

8:00AM **Non-Molecular Phases in High Explosive Detonation**
Laurence E. Fried, Nir Goldman, Christopher Mundy, I-Feng Will Kuo, Jonathan Crowhurst, Joseph Zaug, Alexander Goncharov – Lawrence Livermore National Laboratory, Livermore, CA

8:20AM ***The Evolution of a Thermal Explosion: Spatial and Temperature Profiles Internal to a PBX9501 Thermal Explosion***

L. Smilowitz, B. F. Henson, M. M. Sandstrom, B. W. Asay, and J. J. Romero - Los Alamos National Laboratory, Los Alamos, NM

8:40AM ***Explosive-Driven Shock Waves in Argon***

William C. Davis, Terry R. Salyer, Tariq D. Aslam, and Scott I. Jackson - Los Alamos National Laboratory, Los Alamos, NM

9:00AM ***Phase Stability of Epsilon CL-20 at High-Pressure and Temperature***

Jared C. Gump and Suhithi M. Peiris - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD

9:20AM ***High Pressure Phase of RDX***

Naoyuki Goto, Mitsuo Koshi - The University of Tokyo, Tokyo, Japan

Hiroshi Fujihisa, Hiroshi Yamawaki, Kunihiro Wakabayashi, Yoshio Nakayama, Masatake Yoshida - National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan

Wednesday Session G6: Safety Related Responses

Session Chair: Jack Yoh, Seoul National University, Seoul, Korea
York and Stratford Halls

10:00AM ***An Investigation into the Mechanisms Responsible for Delayed Detonations in Projectile Impact Experiments***

M. D. Cook, P J Haskins, R. I. Briggs, H. Flower, P. Ottley, A. D. Wood - QinetiQ, Fort Halstead, UK
P. J. Cheese - Defence Ordnance Safety Group, Bristol, UK

10:20AM ***Runaway Reaction in a Solid Explosive Containing a Single Crack***

S. I. Jackson, L. G. Hill, H. L. Berghout†, S. F. Son, and B. W. Asay - Los Alamos National Laboratory, Los Alamos, NM

10:40AM ***Effect of Particle Size and Crystal Quality on the Critical Shock Initiation Pressures of RDX/HTPB Formulations***

Stanley M. Caulder and Philip J. Miller - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD

11:00AM **Measurement and ALE3D Simulation of Violence in a Slow Cook-off Experiment with LX-10 and AerMet 100 Steel**
M. A. McClelland, J. L. Maienschein, Jarek Knap, W. M. Howard, A. L. Nichols, M. R. deHaven, and O. T. Strand - Lawrence Livermore National Laboratory, Livermore, CA

11:20AM **Recent Advances in Thermal Explosion Modeling of HMX-Based Explosives**
Jack Jai-ick Yoh - Seoul National University, Seoul, Korea
Matthew A. McClelland, Albert L. Nichols, Jon L. Maienschein, and Craig M. Tarver - Lawrence Livermore National Laboratory, Livermore, CA

Thursday

Session G7: Detonation Reactions and Kinetics
Session Chair: Craig Tarver, Lawrence Livermore National Laboratory, Livermore, CA
York and Stratford Halls

8:00AM **Initiation Mechanisms in Single Crystal Explosives: Dislocations, Elastic Limits, and Initiation Thresholds**
Daniel E. Hooks - Los Alamos National Laboratory, Los Alamos, NM

8:20AM **Kinetic Modeling of Slow Energy Release in Non-Ideal Carbon Rich Explosives**
P. Vitello, L. Fried, and K. Glaesemann - Lawrence Livermore National Laboratory, Livermore, CA

8:40AM **Atmospheric Effects on Time-Resolved Emission Measurements of Detonation and Combustion Products**
Joel R. Carney and John Wilkinson - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD

9:00AM **Stochastic Simulation: an Alternative Approach to Model Complex Chemical Reactions**
Emmanuel Lapebie - DGA/DET/CEG, Gramat, France

9:20AM **Computer Modeling of Scale Effects at Heterogeneous HE Detonation**
K.F. Grebyonkin, A.L. Zhrebtsov, G.V. Kovalenko, M.V. Taranik - Russian Federation Nuclear Centre-Institute of Technical Physics, Chelyabinsk, Russia

Thursday Session G8: Novel Experimental Techniques
Session Chair: Gerry Pangilinan, Indian Head Division, Naval Surface Warfare Center, MD
York and Stratford Halls

10:00AM **Isentropic Compression Studies of the Mesoscale Response of Energetic Composites and Constituents**
Mel R. Baer and Clint A. Hall - Sandia National Laboratories, Albuquerque, NM
Rick L. Gustavsen, Daniel E. Hooks, Steve A. Sheffield - Los Alamos National Laboratory, Los Alamos, NM
Gerrit T. Sutherland - Naval Surface Warfare Center, Indian Head, MD
Dennis B. Hayes, Albuquerque, NM

10:20AM **Application of the Embedded Fiber Optic Probe to Make Continuous Measurements of Detonation Speed in High Explosive Detonation Studies**
D.E. Hare, D.R. Goosman, and E.L. Lee - Lawrence Livermore National Laboratory, Livermore, CA

10:40AM **Measurement of Ignition Threshold of Explosives Using a Hybrid Hopkinson Bar-Drop Weight Test**
V. S. Joshi, E. J. Cart, and R. H. Guirguis - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD

11:00AM **Small-Scale Shock Reactivity and Internal Blast**
R. H. Granholm and H. W. Sandusky - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD

11:20AM **An Experimental Investigation of Detonation Corner Turning Using High Resolution Radiography**
J. D. Molitoris, R. G. Garza, H. G. Andreski, J. D. Batteux, and P. C. Souers - Lawrence Livermore National Laboratory, Livermore, CA

Thursday Session S4A: Performance of Non-Ideal Explosives
Session Chair: David Frost, McGill University, Montreal, Canada
York Hall

Session S4B: Equations of State
Session Chair: Frank Zerilli, Indian Head Division, Naval Surface Warfare Center, Indian Head, MD
Stratford Hall

4:40PM	Gramat, Gramat, France <i>Modeling Initiation by a Reflected Shock</i> <u>Yehuda Partom</u> - Rafael, Haifa, Israel	Alamos, NM <i>Energetic Materials at High Compression: First-Principles Density Functional Theory Studies</i> <u>M. Conroy, I.I. Oleynik</u> - University of South Florida, Tampa, FL C. T. White - Naval Research Laboratory, Washington, DC	David Frost - McGill University, Montreal, Canada Kibong Kim and William Wilson - Defense Threat Reduction Agency, Fort Belvoir, VA
5:00PM	<i>Modeling of the Effect of Crystal Quality and Particle Size on the Shock Reactivity and Detonation Properties of Simple Nitramine-Based Explosives</i> <u>G.T. Sutherland</u> - Indian Head Division, Naval Surface Warfare Center, Indian Head, MD	<i>Evaluation of the Mechanical and Thermal Derivatives of the CJ State with an Application to Nitromethane</i> <u>J Roth</u> - Retired, Portola Valley, CA B D Lambourn - AWE Aldermaston, Reading, UK	8:40AM <i>Combined Initial Air Blast and Quasi-Static Overpressure Assessment of Pressed Aluminized Explosives</i> <u>Richard J. Lee</u> , Kirk E. Newman, Daren T. Knutson, Nicholas M. McGregor, and Douglas G. Bohl - Indian Head Division, Naval Surface Warfare Center, MD 9:00AM <i>Quantitative Distinction Between Detonation and Afterburn Energy Deposition using Pressure-Time Histories in Enclosed Explosions</i> <u>Richard G. Ames</u> , Jason T. Drotar, Joseph Silber, Marie Madden - Dahlgren Division, Naval Surface Warfare Center, Dahlgren, VA
<u>Friday</u>			
8:00AM	Session S6A: Performance of Non-Ideal Explosives Session Chair: Martin Braithwaite, Cranfield University, Shrivenham, UK York Hall <i>Prediction of Confinement Effects on Detonation with an Analytical 2D Non-Ideal Detonation Model</i> <u>S.K.Chan</u> – Orica Canada Inc., Madoc, Canada	Session S6B: Safety-Related Responses Session Chair: Nausheen Al-Shehab, US Army ARDEC, Picatinny, NJ Stratford Hall <i>Solid-State Phase Change in HMX During Drop-weight Impact</i> <u>Helen Czernski</u> , W. Lee Perry, and Peter M. Dickson - University of Cambridge, Cambridge, UK	9:20AM <i>Novel High Energetic Materials: Calculation and Synthesis Attempts of Metal Pentazolates</i> <u>Sara Wallin</u> , Martin Norrefeldt and Henric Östmark - Swedish Defence Research Agency, FOI, Sweden
8:20AM	<i>Casing Influence on Ignition and Combustion of Aluminum Particles in Cylindrical Explosive Charges</i> <u>Fan Zhang</u> , Akio Yoshinaka - Defence Research and Development Canada, Suffield, Canada	<i>Factors Affecting Quantitative High-Explosive Reaction Violence Measurements</i> <u>W. Lee Perry</u> , Jonathan M. Zucker, Peter M. Dickson, Gary R. Parker and Blaine W. Asay - Los Alamos National Laboratory, Los Alamos, NM	Friday Session G9: Physically Based Numerical Methods Session Chair: Raafat Guirguis, Indian Head Division, Naval Surface Warfare Center, MD York Hall 10:00AM <i>Multi-Scale Computer Simulations to Study the Reaction Zone of Solid Explosives</i> <u>John E. Reaugh</u> - Lawrence Livermore National Laboratory, Livermore, CA
			<i>Low Velocity Impacts on Explosive Assemblies</i> <u>A G Jones</u> , A J Dale and C T Hughes - AWE Aldermaston, Reading, UK M Cartwright - Cranfield University, Shrivenham, UK <i>Thermal and Mechanical Damage of PBX's, Part II</i> Gert Scholtes and <u>Denise Mueken</u> - TNO Defense Security and Safety, The Netherlands

- 10:20AM ***Mechanical Response and Shear Initiation of Double-Base Propellants***
Stephan R. Bilyk, Michael J. Scheidler, and Tusit Weerasooriya -
U.S. Army Research Laboratory, Aberdeen, MD
- 10:40AM ***WENO5M Shock-Fitted Solutions to 2-Dimensional Euler Equations with Reaction***
Andrew K. Henrick, Tariq D. Aslam, Joseph M. Powers - Los
Alamos National Laboratory, Los Alamos, NM
- 11:00AM Generalized Steady-State Model of Heterogeneous Detonation
with Non-Uniform Particles Heating Alexander Gonor - Applied
Science & Engineering Consulting, Toronto, Canada
Irene Hooton - National Defence Headquarters, Ottawa, Canada
- 11:20AM ***Detonation Properties Analysis of Homogeneous Explosives by
Molecular Dynamics***
Laurent Soulard - CEA-DAM, Bruyères-le-Châtel, France
- 11:40AM ***Closing Comments***
Ruth Doherty, Su Peiris - Indian Head Division, Naval Surface
Warfare Center, Indian Head, MD