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Final Report: 2018 Energetic Materials Gordon Research Conference Research Area 1.a.i: Chemical Sciences - (3) Molecular Structure and Dynamics (Dr. James K. Parker)

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W911NF-18-1-0066

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611102

6. AUTHORS

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES AND ADDRESSES
Gordon Research Conferences, Inc.
512 Liberty Lane

West Kingston, RI 02892 -1502

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES)
U.S. Army Research Office
P.O. Box 12211
Research Triangle Park, NC 27709-2211

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The views, opinions and/or findings contained in this report are those of the author(s) and should not contrued as an official Department of the Army position, policy or decision, unless so designated by other documentation.

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15. SUBJECT TERMS

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a. REPORT	b. ABSTRACT	c. THIS PAGE			Betsy Rice
UU	UU	UU	UU		19b. TELEPHONE NUMBER 410-306-1904

RPPR Final Report
as of 03-Jan-2019

Agency Code:

Proposal Number: 72963CHCF **Agreement Number: W911NF-18-1-0066**
INVESTIGATOR(S):

Name: Betsy Rice Ph.D.
Email: betsy.rice.civ@mail.mil
Phone Number: 4103061904
Principal: Y

Organization: **Gordon Research Conferences, Inc.**
Address: 512 Liberty Lane, West Kingston, RI 028921502
Country: USA
DUNS Number: 075712877 EIN: 050300482
Report Date: 31-Mar-2019 Date Received: 19-Dec-2018
Final Report for Period Beginning 01-Jan-2018 and Ending 31-Dec-2018
Title: 2018 Energetic Materials Gordon Research Conference Research Area 1.a.i: Chemical Sciences - (3) Molecular Structure and Dynamics (Dr. James K. Parker)
Begin Performance Period: 01-Jan-2018 **End Performance Period:** 31-Dec-2018
Report Term: 0-Other
Submitted By: Nancy Ryan Gray Email: grants@grc.org
Phone: (401) 360-1506

STEM Degrees: **STEM Participants:**

Major Goals: Organizing a Gordon Research Conference involves extensive communication with the research community to identify important issues at the frontiers of the field, and solicit suggestions for speakers and discussion leaders to participate in the conference. The Chair then contacts prospective participants to invite them to talk and discuss the nature of their contributions. The Chair then communicates the topics and aims of the conference through web pages, contact with relevant international professional bodies and email to members of the research community around the world to encourage applications for participation in the conference. The Chair is then responsible for assessing and accepting the applications and fielding a host of questions both concerning the technical content and practical aspects of conference participation.

Accomplishments: The 2018 Gordon Research Conference on Energetic Materials "Exploiting advances in additively-manufactured, nano- and non-crystalline materials, synthetic methods, modeling and simulation, and in situ diagnostics for energetic materials" was a stimulating venue for open discussions of cutting edge research among a diverse group of early-career and established scientists who are dedicated to understanding the properties and behavior of energetic materials. This Gordon Research Conference had a particular focus on highlighting emerging and innovative experimental and theoretical approaches that have the potential to significantly advance the current state of the art and shape future directions of this research community. The main topics of discussion included novel synthesis and scale-up of new materials, advanced diagnostics and experimental techniques, nanoscale, non-crystalline and additively-manufactured energetic materials, and new theoretical methods and models for simulating the behavior of energetic materials, including detonation, ignition/initiation, sub-detonative response, and thermal decomposition. An equally important focus was on the development of the next generation of energetic materials researchers, through initiatives which promote creation of new connections between young researchers and established professionals. These included a daily oral presentation by select young investigators, daily poster sessions, an "I'd like to understand . . . ." message board, in which questions were posted by newcomers to the field and discussions with key experts could be arranged, and a special keynote session in which distinguished researchers who have made profound and lasting contributions to the field provided unique perspectives, as well as reflections on past and present challenges. Additionally, the Gordon Research Seminar (GRS) was held at the same location immediately prior to the GRC; the GRS provided young scientists entering the field the opportunity to present their research, establish a supportive scientific network, and have unrestrained scientific discussions amongst peers. Furthermore, oral and poster presentations presented at the GRS were evaluated by a panel, with the highest rated selected for oral presentation during the GRC. Finally, the GRC program included a Monday afternoon Power Hour, which focused on addressing the challenges of women who work in this field, as well as daily free time in the afternoon and after the evening

sessions for additional networking.

Training Opportunities: Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference. The funding provided by was invaluable to the success of the Conference.

Results Dissemination: The final conference program has been posted on the GRC website.

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

GORDON RESEARCH CONFERENCES

FINAL PROGRESS REPORT
Army Research Office
Energetic Materials GRC

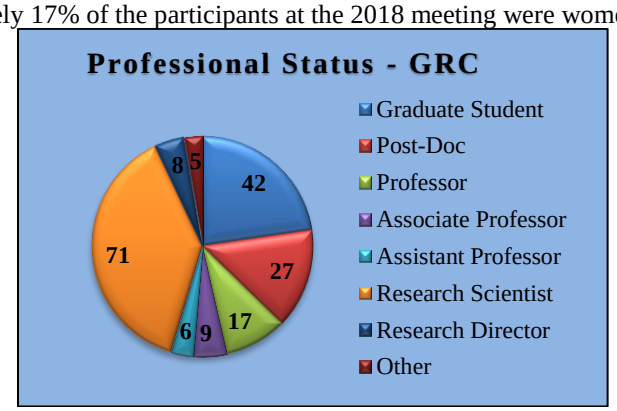
June 3-8, 2018

Operational Summary

The Gordon Research Conference (GRC) Energetic Materials was held at the Grand Summit Conference Center at Sunday River in Newry, Maine June 3-8, 2018. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.

Conference Participants

The Conference was well-attended with 185 participants. Scientists from academia represented 47% of the participants while attendees from government accounted for 44% and those from industry totaled 4%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 38% of all attendees. Approximately 17% of the participants at the 2018 meeting were women.



Conference Program

The 2018 Gordon Research Conference on Energetic Materials "Exploiting advances in additively-manufactured, nano- and non-crystalline materials, synthetic methods, modeling and simulation, and *in situ* diagnostics for energetic materials" was a stimulating venue for open discussions of cutting edge research among a diverse group of early-career and established scientists who are dedicated to understanding the properties and behavior of energetic materials. This Gordon Research Conference had a particular focus on highlighting emerging and innovative experimental and theoretical approaches that have the potential to significantly advance the current state of the art and shape future directions of this research community. The main topics of discussion included novel synthesis and scale-up of new materials, advanced diagnostics and experimental techniques, nanoscale, non-crystalline and additively-manufactured energetic materials, and new theoretical methods and models for simulating the behavior of energetic materials, including detonation, ignition/initiation, sub-detonative response, and thermal decomposition. An equally important focus was on the development of the next generation of energetic materials researchers, through initiatives which promote creation of new connections between young researchers and established professionals. These included a daily oral presentation by select young investigators, daily poster sessions, an "I'd like to understand . . . ." message board, in which questions were posted by newcomers to the field and discussions with key experts could be arranged, and a special keynote session in which distinguished researchers who have made profound and lasting contributions to the field provided unique perspectives, as well as reflections on past and present challenges. Additionally, the Gordon Research Seminar (GRS) was held at the same location immediately prior to the GRC; the GRS provided young scientists entering the field the opportunity to present their research, establish a supportive scientific network, and have unrestrained scientific discussions amongst peers. Furthermore, oral and poster presentations presented at the GRS were evaluated by a panel, with the highest rated selected for oral presentation during the GRC. Finally, the GRC program included a Monday afternoon Power Hour, which focused on addressing the challenges of women who work in this field, as well as daily free time in the afternoon and after the evening sessions for additional networking.

Conference Budget

Funding provided by the Army Research Office supported partial registration for 14 postdocs, 53 graduate students, 1 professor and 1 associate professor at the GRC.

Conference Feedback

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding the lengthy discussion time, presentation of cutting edge research and the networking opportunities.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Betsy Rice, GRC Chair
US Army Research Laboratory

Dr. Joseph Zaug, GRC Vice Chair
Lawrence Livermore National Laboratory

Dr. Nancy Ryan Gray
President and Chief Executive Officer
Gordon Research Conferences

Energetic Materials

Gordon Research Conference

Exploiting Advances in Additively-Manufactured, Nano- and Non-Crystalline Materials, Synthetic Methods, Modeling and Simulation, and In Situ Diagnostics for Energetic Materials

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June 3 - 8, 2018

Chair Betsy M. Rice

Vice Chair Joseph M. Zaug

Conference Program

Sunday

2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	Rising Trends in Experimental Energetic Materials Research Discussion Leader: **Steven Son** (Purdue University, USA)
7:40 pm - 7:55 pm	Opening Remarks
7:55 pm - 8:10 pm	Introduction by Discussion Leader
8:10 pm - 8:40 pm	**Kyle Ramos** (Los Alamos National Laboratory, USA) "*In Situ* Investigation of Energetic Materials Under Dynamic Loading Using X-Ray Diffraction and Imaging"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	**Alexander Tappan** (Sandia National Laboratories, USA) "There's Plenty of Room in the Middle - Microenergetics, the Mesoscale, and Interfaces"
9:20 pm - 9:30 pm	Discussion

Monday

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Architected Energetic Materials Discussion Leader: **C. Michael Lindsay** (Air Force Research Laboratory, USA)
9:00 am - 9:15 am	Introduction by Discussion Leader
9:15 am - 9:45 am	**H. Keo Springer** (Lawrence Livermore National Laboratory, USA) "Modeling Architected Explosives: Overview, Gaps, and New Frontiers"
9:45 am - 9:55 am	Discussion
9:55 am - 10:25 am	**Alexander Mueller** (Los Alamos National Laboratory, USA) "It's What's Inside that Counts: Exploiting Additive Manufacturing's Control over Internal Structure"
10:25 am - 10:35 am	Discussion
10:35 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Carole Rossi** (Laboratory for Analysis and Architecture of Systems (LAAS-CNRS), France) "Nano-Engineering of Al/CuO Multilayers: Bridging the Gap Between Research and Applications"
11:30 am - 11:40 am	Discussion

11:40 am - 11:55 am	Talk Selected from the GRS
11:55 am - 12:00 pm	Discussion
12:00 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	Power Hour *The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.* Organizers: **Leanna Minier** (Sandia National Laboratories, USA) and **Lori Groven** (South Dakota School of Mines and Technology, USA)
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Interweaving Energetic Materials Synthesis with Engineering Discussion Leader: **Alexander Paraskos** (U.S. Army Armament, Research and Development Engineering Center (ARDEC), USA)
7:30 pm - 7:45 pm	Introduction by Discussion Leader
7:45 pm - 8:10 pm	**Klavs Jensen** (Massachusetts Institute of Technology, USA) "Autonomous and Automated Systems for Chemical Synthesis"
8:10 pm - 8:20 pm	Discussion
8:20 pm - 8:45 pm	**Nathaniel Zuckerman** (Lawrence Livermore National Laboratory, USA) "Continuous Flow Synthesis of High Explosives at Lawrence Livermore National Laboratory: Benefits, Challenges, and Compromise"
8:45 pm - 8:55 pm	Discussion
8:55 pm - 9:20 pm	**David Boruta** (Indian Head EOD Technology Division, Naval Surface Warfare Center, USA) "Approaches to Energetic Material Scale-up"
9:20 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Frontiers in the Chemical Synthesis of Energetic Materials Discussion Leader: **Jesse Sabatini** (U.S. Army Research Laboratory, USA)
9:00 am - 9:15 am	Introduction by Discussion Leader
9:15 am - 9:45 am	**Phil Baran** (The Scripps Research Institute, USA) "Translational Chemistry"
9:45 am - 9:55 am	Discussion
9:55 am - 10:25 am	**David Chavez** (Los Alamos National Laboratory, USA) "Synthesis of Advanced Energetic Materials"
10:25 am - 10:35 am	Discussion
10:35 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Colin Pulham** (University of Edinburgh, United Kingdom)

	"Structure-Property Relationships in Energetic Co-Crystals"
11:30 am - 11:40 am	Discussion
11:40 am - 11:55 am	Talk Selected from the GRS
11:55 am - 12:00 pm	Discussion
12:00 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Modeling Challenges in Energetic Materials Research Discussion Leader: **Scott Stewart** (University of Illinois at Urbana-Champaign, USA)
7:30 pm - 7:45 pm	Introduction by Discussion Leader
7:45 pm - 8:10 pm	**John Reaugh** (Lawrence Livermore National Laboratory, USA) "On Developing a Model to Study Ignition and Post-Ignition Violence from Impact: HERMES and Beyond"
8:10 pm - 8:20 pm	Discussion
8:20 pm - 8:45 pm	**Brian Barnes** (U.S. Army Research Laboratory, USA) "Hierarchical Multiscale Simulation: A Path to Predictive Material Models"
8:45 pm - 8:55 pm	Discussion
8:55 pm - 9:20 pm	**Edward Kober** (Los Alamos National Laboratory, USA) "Formulating Reduced Order Chemistry Models from Reactive Molecular Dynamics"
9:20 pm - 9:30 pm	Discussion
Wednesday	
7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	Pushing the Boundaries: *In Situ* Studies of Energetic Materials Response Discussion Leader: **Keith Nelson** (Massachusetts Institute of Technology, USA)
9:00 am - 9:15 am	Introduction by Discussion Leader
9:15 am - 9:45 am	**Trevor Willey** (Lawrence Livermore National Laboratory, USA) "Carbon Particulate Formation in Overdriven Detonations Measured with Time-Resolved Small-Angle X-Ray Scattering"
9:45 am - 9:55 am	Discussion
9:55 am - 10:25 am	**Katie Brown** (Los Alamos National Laboratory, USA) "Picosecond to Nanosecond Spectroscopy of Shocked Reactive Materials"
10:25 am - 10:35 am	Discussion
10:35 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Volkan Ortalan** (Purdue University, USA) "Dynamic Investigation of Energetic Materials by Transmission Electron Microscopy"
11:30 am - 11:40 am	Discussion
11:40 am - 11:55 am	Talk Selected from the GRS

11:55 am - 12:00 pm	Discussion
12:00 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	Business Meeting *Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair*
7:30 pm - 9:30 pm	Nano and Non-Crystalline Energetic Materials Discussion Leader: **Michelle Pantoya** (Texas Tech University, USA)
7:30 pm - 7:45 pm	Introduction by Discussion Leader
7:45 pm - 8:10 pm	**Denis Spitzer** (Nanomatériaux pour les Systèmes Sous Sollicitations Extrêmes (NS3E), France) "The SFE Process: From Molecular Bricks to Differently Nanostructured Energetic Nano Composites and/or the Challenge to Identify the Structure of These Assemblies with the Highest Time-Space Resolution"
8:10 pm - 8:20 pm	Discussion
8:20 pm - 8:45 pm	**Victor Stepanov** (U.S. Army Armament, Research and Development Engineering Center (ARDEC), USA) "Amorphous Energetics"
8:45 pm - 8:55 pm	Discussion
8:55 pm - 9:20 pm	**Stephen Tse** (Rutgers University, USA) "Synthesis of Nanoenergetics with Novel Reactant Interfaces"
9:20 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Emerging Predictive Methods for Energetic Materials Research Discussion Leader: **William Mattson** (U.S. Army Research Laboratory, USA)
9:00 am - 9:15 am	Introduction by Discussion Leader
9:15 am - 9:45 am	**Evan Reed** (Stanford University, USA) "Statistical Learning of Reduced Kinetic Monte Carlo Models of Complex Chemistry from Molecular Dynamics"
9:45 am - 9:55 am	Discussion
9:55 am - 10:25 am	**Nir Goldman** (Lawrence Livermore National Laboratory, USA) "Accelerating Quantum Simulations of Reactive Materials Towards Experimental Time and Length Scales"
10:25 am - 10:35 am	Discussion
10:35 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Peter Chung** (University of Maryland, USA) "Machine Learning of Energetic Materials"

11:30 am - 11:40 am	Discussion
11:40 am - 11:55 am	Talk Selected from the GRS
11:55 am - 12:00 pm	Discussion
12:00 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 5:30 pm	Poster Session
5:30 pm - 7:30 pm	Keynote Session: Perspectives on Future Directions and Frontiers in Energetic Materials Research Discussion Leader: **Nick Glumac** (University of Illinois at Urbana-Champaign, USA)
5:30 pm - 5:35 pm	Introduction by Discussion Leader
5:35 pm - 6:00 pm	**Ruth Doherty** (Energetics Technology Center, USA) "That's Never Been Done Before! (Has It?)"
6:00 pm - 6:05 pm	Discussion
6:05 pm - 6:30 pm	**David Moore** (Los Alamos National Laboratory, USA) "Elucidation of Shock-Initiation Chemistry Through Spectroscopy"
6:30 pm - 6:35 pm	Discussion
6:35 pm - 7:00 pm	**Craig Tarver** (Lawrence Livermore National Laboratory, USA) "Chasing Exothermic Chemical Energy Release Rates in Gaseous, Liquid, and Solid Explosives"
7:00 pm - 7:05 pm	Discussion
7:05 pm - 7:25 pm	General Discussion
7:25 pm - 7:30 pm	Closing Remarks
8:00 pm - 9:00 pm	Dinner
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

Energetic Materials – Registration List

Name	Organization	Participation
Abere, Michael J	Sandia National Labs	Poster Presenter
Alawode, Ola	SRI International	Poster Presenter
Andrews, Stephen A	Los Alamos National Laboratory	Poster Presenter
Arlington, Shane Q	Johns Hopkins University	Poster Presenter
Atceken, Nurunnisa	University of Edinburgh	Poster Presenter
Baker, Caroline	Purdue University	Poster Presenter
Bari, Rozana	Texas Tech University/Graduate student	Poster Presenter
Barnes, Brian C	U.S. Army Research Laboratory	Speaker
Bassett, William P	Lawrence Livermore National Laboratory	Poster Presenter
Bennion, Jonathan C	U.S. Army Research Laboratory	Poster Presenter
Bhattacharia, Sanjoy K	Texas Tech University	Poster Presenter
Blumenthal, Rik	Auburn Chemistry	Poster Presenter
Boddorff, Andrew	Georgia Institute of Technology	Poster Presenter
Bogle, Mitch	Air Force Research Lab	Attendee
Boruta, David T	Indian Head EOD Tech Division, Naval Surface Warfare Center	Speaker
Brady, Joseph E	Applied Research Associates	Poster Presenter
Brothers, Robert C	NSWC Indian Head EOD Technology Division	Poster Presenter
Brown, Katie E	Los Alamos National Laboratory	Speaker
Brown, Austin C	Applied Research Associates	Attendee
Bukovsky, Eric V	Lawrence Livermore National Laboratory	Poster Presenter
Byrd, Edward F	Army Research Laboratory	Poster Presenter
Campbell, Loudon L	Texas Tech University	Poster Presenter
Chan, Serene H.Y.	Energetics Research Institute	Poster Presenter
Chapman, Clinton J	South Dakota School of Mines	Poster Presenter
Chaudhuri, Santanu	University of Illinois at Chicago	Poster Presenter
Chavez, David E	Los Alamos National Laboratory	Speaker
Chintersingh-Dinnall, K	New Jersey Institute of Technology	Poster Presenter
Chung, Peter W	University of Maryland	Speaker
Clemenson, Michael	Sandia National Laboratories	Attendee
Comte, Sebastien	Ariane Group	Attendee
Corley, John	AIr Force Research Laboratory	Attendee
Crochet, Michael	University of Dayton Research Institute	Poster Presenter
Dalton, Douglas A	Defense Threat Reduction Agency	Attendee
Dandekar, Akshay V	Purdue University	Poster Presenter
Dean, Steven W	US Army Research Laboratory	Poster Presenter
DeHart, Jeff	Pacific Scientific Energetic Materials Corp.	Attendee
Denton, Aric A	Texas Tech University	Poster Presenter
DiSalle, Brian F	US Army ARDEC	Poster Presenter
Doherty, Ruth M	Energetics Technology Center	Speaker
Dongare, Avinash M	University of Connecticut	Poster Presenter
Dreizin, Ed	New Jersey Institute of Technology	Poster Presenter
Dresselhaus-Cooper, L	Massachusetts Institute of Technology	Poster Presenter
Duarte, Camilo A	Purdue University	Poster Presenter
Durban, Matthew	LLNL	Poster Presenter
Dzieminska, Edyta	Sophia University	Poster Presenter

Edwards, Jacob	The Scripps Research Institute	Speaker
Egan, Garth C	Lawrence Livermore National Laboratory	Poster Presenter
Eichen, Yoav	Technion - Israel Institute of Technology	Poster Presenter
Emery, Samuel B	NSWC-IHEODTD	Poster Presenter
Fennell, Kyle	NSWC IHEODTD	Attendee
Fleck, Trevor	Purdue University	Poster Presenter
Fondren, Zachary T	Texas Tech University	Attendee
Friedman, Yoel	Rafael	Poster Presenter
Fritz, Gregory	Draper	Attendee
Frost, David L	McGill University	Attendee
Fuchs, Brian E	US ARMY, ARDEC	Attendee
Furze, Douglas	QinetiQ	Attendee
Galitskiy, Sergey	Uconn	Poster Presenter
Gay, Meagan	NSWC Indian Head	Attendee
Glumac, Nick	University of Illinois at Urbana-Champaign	Discussion Leader
Goldman, Nir	Lawrence Livermore National Laboratory	Speaker
Goldsmith, Claude F	Brown University	Poster Presenter
Goroshin, Samuel	McGill University	Attendee
Gospodinov, Ivan G.	Ludwig Maximilian University of Munich	Poster Presenter
Gottfried, Jennifer L	US Army Research Laboratory	Poster Presenter
Gottlieb, Levi	Rafael	Poster Presenter
Gozin, Michael	Tel Aviv University	Attendee
Grant, Jesse P	Johns Hopkins University	Poster Presenter
Grilli, Nicolò	Purdue University - Mechanical Engineering	Poster Presenter
Groven, Lori J	South Dakota School of Mines and Technology	Attendee
Guerieri, Philip M	Army Research Laboratory	Poster Presenter
Hamilton, Brenden W	Purdue University	Poster Presenter
Hemmer, James R	U.S. Naval Research Laboratory	Poster Presenter
Hng, Huey Hoon	Nanyang Technological University	Attendee
Islam, Md Mahbubul	Purdue University	Poster Presenter
Islam, Shancita	Texas Tech University	Poster Presenter
Jensen, Klavs F	Massachusetts Institute of Technology	Speaker
Jiba, Zetu	CSIR / University of Pretoria	Poster Presenter
Johnson, Eric	Army Research Laboratory	Poster Presenter
Johnson, Belinda P	University of Illinois at Urbana-Champaign	Poster Presenter
Kennedy, Stuart	The University of Edinburgh	Poster Presenter
Kerr, Andrew T	NSWC-IHEODTD	Poster Presenter
Kiselev, Vitaly G.	Brown University	Poster Presenter
Kline, Dylan J.	University of Maryland, College Park	Poster Presenter
Knepper, Robert A	Sandia National Laboratories	Poster Presenter
Kober, Edward M	Los Alamos National Laboratory	Speaker
Kotter, Lance N	South Dakota School of Mines and Technology	Poster Presenter
Koundinyan, S	AFRL - Munitions Directorate	Attendee
Kroonblawd, Matthew	Lawrence Livermore National Laboratory	Poster Presenter
Le, Nam	US Naval Research Laboratory	Poster Presenter
Lee, Yong Joon	Texas Tech University	Poster Presenter
Leininger, Lara D.	Lawrence Livermore National Laboratory	Attendee

Liberatore-Moretti, M	U.S. Army ARDEC (Picatinny Arsenal)	Poster Presenter
Lightstone, james	NSWC IHEODTD	Poster Presenter
Lindsay, C. Michael	Air Force Research Laboratory	Discussion Leader
Lindsey, Rebecca K	Lawrence Livermore National Laboratory	Poster Presenter
Lloyd, Hayleigh	University of Edinburgh	Poster Presenter
Maharrey, Sean P	NSWC IHEODTD	Poster Presenter
Manni, Stacy M	Air Force Research Laboratory	Poster Presenter
Mares, Jr., Jesus O.	National Research Council/Air Force Research Laboratory	Poster Presenter
Mates, Joseph E	AFRL Rocket Lab	Attendee
Mattson, William D	U.S. Army Research Laboratory	Discussion Leader
Matveev, Sergey M	University of Illinois at Urbana Champaign	Poster Presenter
McMullan, Daniel R	Auburn University	Poster Presenter
Mendoza, Jose	Florida State University | National High Magnetic Field Lab	Attendee
Miller, Kelsea	Texas Tech University	Poster Presenter
Minier, Leanna M.G.	Sandia National Laboratories	Attendee
Moore, David S	Los Alamos National Laboratory	Speaker
Moran, Jesse S	NSWC IHEODTD	Poster Presenter
Morrison, Carole A	University of Edinburgh	Poster Presenter
Mueller, Alexander H	Los Alamos National Laboratory	Speaker
Mursalat, Mehnaz	New Jersey Institute of Technology	Poster Presenter
Nelson, Keith A	MIT	Discussion Leader
Nguyen, Thuy-Ai D	Los Alamos National Lab	Poster Presenter
Nielsen, Michael	Lawrence Livermore National Laboratory	Poster Presenter
Olles, Joseph	Sandia National Labs	Poster Presenter
Ortalan, Volkan	Purdue University	Speaker
Overdeep, Kyle R	Air Force Research Laboratory	Poster Presenter
Pantoya, Michelle	Texas Tech University	Discussion Leader
Paraskos, Alexander J	U.S. Army (ARDEC)	Discussion Leader
Parker, James K	U.S. Army Research Office	Attendee
Pascual, Sergio	MaxamCorp Holding S.L. (B-84598754)	Poster Presenter
Patel, Rajen B.	US Army ARDEC	Poster Presenter
Pauls, Joshua	University of Notre Dame	Poster Presenter
Peiris, Suhithi M	AFRL Munitions Directorate, Eglin Air Force Base	Attendee
Piercey, Davin G	Purdue University	Poster Presenter
Portius, Peter	University of Sheffield	Poster Presenter
Powell, Michael	Purdue University/Los Alamos National Lab	Poster Presenter
Pulham, Colin R	University of Edinburgh	Speaker
Ramos, Kyle J	Los Alamos National Laboratory	Speaker
Reaugh, John E	Lawrence Livermore National Laboratory	Speaker
Reed, Evan	Stanford University	Speaker
Reeves, Robert V	Lawrence Livermore National Laboratory	Poster Presenter
Rehwoldt, Miles	University of Maryland, College Park	Poster Presenter
Reinert, Alexandra A	NSWC-IHEODTD	Attendee
Rice, Betsy M	US Army Research Laboratory	Chair
Roberts, Zane A	Purdue University	Poster Presenter
Rossi, Carole	Laboratory for Analysis and Architecture of Systems(CNRS)	Speaker
Ruesch, Morgan	Purdue University	Poster Presenter

Sabatini, Jesse J	U.S. Army Research Laboratory	Discussion Leader
Saceleanu, Florin	University of Waterloo	Poster Presenter
Sakano, Michael N	Purdue University	Poster Presenter
Salvati, Lawrence	University of Illinois	Poster Presenter
Schmidt, Martin J	Air Force Office of Scientific Research	Attendee
Schoenitz, Mirko	New Jersey Institute of Technology	Poster Presenter
Schweigert, Igor V	U.S. Naval Research Laboratory	Poster Presenter
Sewell, Tommy	University of Missouri	Poster Presenter
Shaw, William L	Lawrence Livermore National Laboratory	Poster Presenter
Sims, Adam W	University of Illinois Urbana-Champaign	Poster Presenter
Smith, Dylan K	Air Force Research Laboratory	Poster Presenter
Son, Steven F	Purdue University	Discussion Leader
Soo, Michael	NSWC Indian Head EOD Technology Division	Poster Presenter
Sorensen, Christian J	Purdue University	Poster Presenter
Spitzer, Denis	Nanomatériaux pour les Systèmes Sous Sollicitations Extrêmes	Speaker
Springer, H. Keo	Lawrence Livermore National Laboratory	Speaker
Stepanov, Victor	U.S. Army, ARDEC	Speaker
Stewart, Donald S	University of Illinois at Urbana-Champaign	Discussion Leader
Stoltz, Chad A	Office of Naval Research	Attendee
Straathof, Michiel H	TNO	Poster Presenter
Stukenbroeker, Tyler	Strategic Analysis, Inc.	Attendee
Sullivan, Kyle T	Lawrence Livermore National Laboratory	Poster Presenter
Swanson, Devon	Orbital ATK	Poster Presenter
Szimhardt, Norbert	Ludwig Maximilian University of Munich	Poster Presenter
Tappan, Alexander S	Sandia National Laboratories	Speaker
Tarver, Craig M	Lawrence Livermore National Laboratory	Speaker
Tidey, Jeremiah P	University of Toledo	Poster Presenter
Tse, Stephen D	Rutgers University	Speaker
Valluri, Siva Kumar	New Jersey Institute of Technology and Sciences (NJIT)	Poster Presenter
Wainwright, Elliot R	Johns Hopkins University	Poster Presenter
Walters, Ian T	South Dakota School of Mines & Technology	Poster Presenter
Wang, Haiyang	University of Maryland	Poster Presenter
Ward, Emily E	Bureau of Alcohol, Tobacco, Firearms, and Explosives	Attendee
Wen, John Z.	University of Waterloo	Poster Presenter
Westphal, Eric R	Purdue University	Poster Presenter
White, Bradley W	Lawrence Livermore National Laboratory	Poster Presenter
Willey, Trevor M	Lawrence Livermore National Laboratory	Speaker
Wilson, William H	Energetics Technology Center	Attendee
Wood, Mitchell A	Sandia National Labs	Poster Presenter
Yarrington, Cole D	Sandia National Labs	Poster Presenter
Zamor, David O	NSWC Indian Head	Attendee
Zaug, Joseph M	Lawrence Livermore National Laboratory	Vice Chair
Zdilla, Michael J	Temple University	Poster Presenter
Zeiri, Yehuda	Ben-Gurion University	Attendee
Zhou, Min	Georgia Institute of Technology	Attendee
Zuckerman, Nathaniel	Lawrence Livermore National Laboratory	Speaker