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1. REPORT DATE (DD-MM-YYYY) 11-09-2018	2. REPORT TYPE Final Report	3. DATES COVERED (From - To) 25-Feb-2018 - 24-Aug-2018
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4. TITLE AND SUBTITLE Final Report: 2018 Batteries Gordon Research Conference	5a. CONTRACT NUMBER W911NF-18-1-0113
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER 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
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211	10. SPONSOR/MONITOR'S ACRONYM(S) ARO
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) 72827-CH-CF.1

12. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.
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13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.
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14. ABSTRACT
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15. SUBJECT TERMS
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16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Nina Balke
a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 865-241-5470

# RPPR Final Report

## as of 24-Sep-2018

Agency Code:

Proposal Number: 72827CHCF

Agreement Number: W911NF-18-1-0113

### INVESTIGATOR(S):

**Name:** Nina Balke

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**Principal:** Y

Organization: **Gordon Research Conferences, Inc.**

Address: 512 Liberty Lane, West Kingston, RI 028921502

Country: USA

DUNS Number: 075712877

EIN: 050300482

**Report Date:** 24-Nov-2018

Date Received: 11-Sep-2018

**Final Report** for Period Beginning 25-Feb-2018 and Ending 24-Aug-2018

**Title:** 2018 Batteries Gordon Research Conference

**Begin Performance Period:** 25-Feb-2018

**End Performance Period:** 24-Aug-2018

**Report Term:** 0-Other

Submitted By: Nancy Ryan Gray

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**Distribution Statement:** 1-Approved for public release; distribution is unlimited.

**STEM Degrees:** 0

**STEM Participants:** 0

**Major Goals:** The more we know about batteries, the less we take them for granted. The significant research and development of electrochemical energy storage systems have allowed for practical and theoretical descriptions of ionic transport in liquids, solids and across interfaces. Advanced in-situ and in-operando characterization techniques have helped us to gain understanding of fundamental processes in battery materials or battery devices revealing intricate connections between those processes and electrochemical performance.

We are now tasked with an even taller order than just understanding a battery: we have to make a battery so well that we can take it for granted and it becomes "invisible". The performance gains enabled by the above understanding has created consumer batteries that surpass current power and energy densities metrics while lasting longer, all at lower cost.

To meet this challenge and maximize the current opportunity within batteries we must come together as a community to integrate our knowledge across the entire community from Theory to Realization to Safety. This Batteries GRC focused on the big challenges and opportunities we have today utilizing all the information we have at hand and identifying the pathway forward. This requires the identification of still existing knowledge gaps, the transfer of information across different time and length scales, and the alignment with theory. This was done by looking at state-of-the-art in-situ and in-operando characterization techniques that featured new and upcoming techniques which can help close knowledge gaps. At the same time, we focused on theoretical perspectives on multiple length scales. In addition, strategies to improve existing battery concepts were discussed in the context of new materials and material designs as well as new energy storage concepts.

A daily poster session gave opportunities for scientific discussion and a Gordon Research Seminar preceding the meeting gave graduate students and postdocs the chance to present their view on big challenges and opportunities and advances in battery research.

**Accomplishments:** Report Uploaded

**Training Opportunities:** Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference.

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

**RPPR Final Report**  
as of 24-Sep-2018

**Honors and Awards:** Nothing to Report

**Protocol Activity Status:**

**Technology Transfer:** Nothing to Report



## GORDON RESEARCH CONFERENCES

### FINAL PROGRESS REPORT

Army Research Office  
Batteries GRC

Grant Number W911NF-18-1-0113

February 25-March 2, 2018

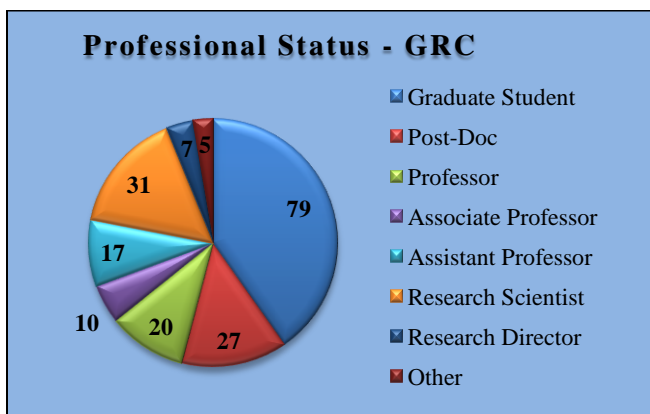
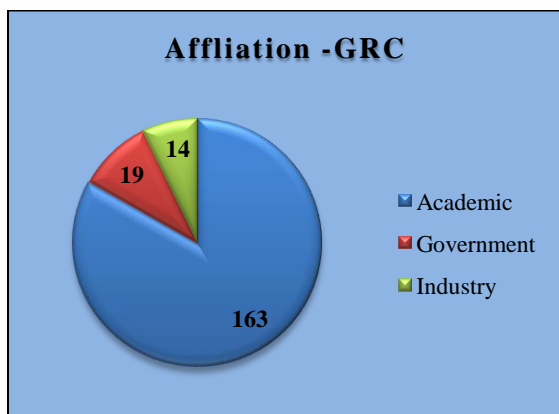
#### Operational Summary

The Gordon Research Conference (GRC) on Batteries was held at the Four Points Sheraton in Ventura, California from February 25-March 2, 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 196 participants. Scientists from academia represented 83% of the participants while attendees from government accounted for 10% and those from industry totaled 7%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 54% of all attendees. Approximately 38% of the participants at the 2018 meeting were women.



#### Conference Program

The more we know about batteries, the less we take them for granted. The significant research and development of electrochemical energy storage systems have allowed for practical and theoretical descriptions of ionic transport in liquids, solids and across interfaces. Advanced *in-situ* and *in-operando* characterization techniques have helped us to gain understanding of fundamental processes in battery materials or battery devices revealing intricate connections between those processes and electrochemical performance.

We are now tasked with an even taller order than just understanding a battery: we have to make a battery so well that we can take it for granted and it becomes "invisible". The performance gains enabled by the above understanding has created consumer batteries that surpass current power and energy densities metrics while lasting longer, all at lower cost.

To meet this challenge and maximize the current opportunity within batteries we must come together as a community to integrate our knowledge across the entire community from Theory to Realization to Safety. This Batteries GRC focused on the big challenges and opportunities we have today utilizing all the information we have at hand and identifying the pathway forward. This requires the identification of still existing knowledge gaps, the transfer of information across different time and length scales, and the alignment with theory. This was done by looking at state-of-the-art *in-situ* and *in-operando* characterization techniques that featured new and upcoming techniques which can help close knowledge gaps. At the same time, we focused on theoretical perspectives on multiple length scales. In addition, strategies to improve existing battery concepts were discussed in the context of new materials and material designs as well as new energy storage concepts.

A daily poster session gave opportunities for scientific discussion and a Gordon Research Seminar preceding the meeting gave graduate students and postdocs the chance to present their view on big challenges and opportunities and advances in battery research.

**Conference Budget**

Funding provided by the Army Research Office supported partial registration for 4 professors and 1 assistant 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 diversity of speakers and topics, networking opportunities and the poster sessions.

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. Nina Balke, Chair  
Oak Ridge National Laboratory

Dr. Dan Steingart, Vice Chair  
Princeton University

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

**Batteries**  
**Gordon Research Conference**  
**The Opportunity in the Invisible: Integrating Theory, Synthesis, Characterization and System Validation for**  
**the Battery of Tomorrow**  
February 25 - March 2, 2018

Chair Nina Balke  
Vice Chair Dan Steingart

**Conference Program**

**Sunday**

- 4:00 pm - 8:00pm      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      Beyond Li-Ion Batteries  
Discussion Leader: **Venkat Viswanathan** (Carnegie Mellon University, USA)
- 7:40 pm - 8:20 pm      **Debra Rolison** (U.S. Naval Research Laboratory, USA)  
"Architectural Design in 3D Physically Thwarts Dendrite Formation—With Zinc Batteries Now Rechargeable, What's Next?"
- 8:20 pm - 8:35 pm      Discussion
- 8:35 pm - 9:15 pm      **M. Rosa Palacin** (Institut de Ciència de Materials de Barcelona, CSIC, Spain)  
"The Long and Winding Road Towards Ca-Based Batteries"
- 9:15 pm - 9:30 pm      Discussion

**Monday**

- 7:30 am - 8:30 am      Breakfast
- 8:30 am - 9:00 am      Group Photo
- 9:00 am - 12:30 pm      Characterization and Quantitative Diagnostics  
Discussion Leader: **Robert Kostecki** (Lawrence Berkeley National Laboratory, USA)
- 9:00 am - 9:40 am      **Erik Berg** (Paul Scherrer Institute, Switzerland)  
"Development and Application of Online Electrochemical Mass Spectrometry for Li-Ion Batteries"
- 9:40 am - 10:00 am      Discussion
- 10:00 am - 10:30 am      Coffee Break
- 10:30 am - 11:10 am      **Vanessa Wood** (ETH Zurich, Switzerland)  
"How Should We Be Designing Separators?"
- 11:10 am - 11:30 am      Discussion
- 11:30 am - 12:10 pm      **Hassina Bilheux** (Oak Ridge National Laboratory, USA)  
"Characterization of Li Batteries Using Neutron Radiography and Computed Tomography"
- 12:10 pm - 12:30 pm      Discussion
- 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.*

Organizer: **Nina Balke** (Oak Ridge National Laboratory, USA)

4:00 pm - 6:00 pm Poster Session

6:00 pm - 7:00 pm Dinner

7:30 pm - 9:30 pm Insights from Industry

Discussion Leader: **Mary Patterson** (EnerDel, Inc., USA)

7:30 pm - 8:10 pm **Quinn Horn** (Exponent, USA)

"An Industry Perspective of Batteries"

8:10 pm - 8:30 pm Discussion

8:30 pm - 9:10 pm **Yan Wang** (Samsung Research America, USA)

"Solid Electrolytes Research in Industry"

9:10 pm - 9:30 pm Discussion

## **Tuesday**

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm Battery Reliability and Safety

Discussion Leader: **Jeff Dahn** (Dalhousie University, Canada)

9:00 am - 9:40 am **Hubert Gasteiger** (Technical University of Munich, Germany)

"Insights into Lithium-Ion Battery Degradation Mechanisms via On-Line Electrochemical Mass Spectrometry"

9:40 am - 10:00 am Discussion

10:00 am - 10:30 am Coffee Break

10:30 am - 11:10 am **Summer Ferreira** (Sandia National Laboratories, USA)

"Battery Failure from a Materials, Electrochemical and Thermal Modeling Perspective"

11:10 am - 11:30 am Discussion

11:30 am - 12:10 pm **Patrik Johansson** (Chalmers University of Technology, Sweden)

"Pure, Hybrid and Polymerized Ionic Liquid Based Electrolytes"

12:10 pm - 12:30 pm Discussion

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 Multi-Scale Theory

Discussion Leader: **Alan West** (Columbia University, USA)

7:30 pm - 8:10 pm **Scott Roberts** (Sandia National Laboratories, USA)

"Modeling Mechano-Electrochemical Phenomena from the Mesoscale to the Macroscale"

8:10 pm - 8:30 pm Discussion

8:30 pm - 9:10 pm **Arnulf Latz** (German Aerospace Center, Helmholtz Institute Ulm, Germany)

"Pore Scale Resolved Simulations and Theory Based Modeling: Tools for Exploring the Inner Life of a Battery"

9:10 pm - 9:30 pm Discussion

### Wednesday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm Solid Electrolytes  
Discussion Leader: **Yan-Yan Hu** (Florida State University, USA)

9:00 am - 9:40 am **Nitash Balsara** (University of California, Berkeley, USA)  
"Ohm's Law and Ion Transport in Solid Polymer Electrolytes"

9:40 am - 10:00 am Discussion

10:00 am - 10:30 am Coffee Break

10:30 am - 11:10 am **Erik Herbert** (Michigan Technological University, USA)  
"Coupling Between the Mechanical Behavior of Lithium and Device Performance"

11:10 am - 11:30 am Discussion

11:30 am - 12:10 pm **Miaofang Chi** (Oak Ridge National Laboratory, USA)  
"Microscopic Insights into Interfacial Ion Conduction in All-Solid-State Batteries"

12:10 pm - 12:30 pm Discussion

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 New Battery Concepts  
Discussion Leader: **Martin Winter** (University of Muenster, Germany)

7:30 pm - 8:10 pm **Yury Gogotsi** (Drexel University, USA)  
"Multidimensional Materials and Electrode Architectures for High-Rate Hybrid Energy Storage"

8:10 pm - 8:30 pm Discussion

8:30 pm - 9:10 pm **Kang Xu** (U.S. Army Research Laboratory, USA)  
"Making Batteries Safe and Flexible with Water"

9:10 pm - 9:30 pm Discussion

### Thursday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm New Compounds for Energy Storage  
Discussion Leader: **Ying Shirley Meng** (University of California, San Diego, USA)

9:00 am - 9:40 am **Veronica Augustyn** (North Carolina State University, USA)  
"Layered and 2D Metal Oxides with Nanoconfined Fluids for Electrochemical Energy Storage"

9:40 am - 10:00 am Discussion

10:00 am - 10:30 am Coffee Break

10:30 am - 11:10 am **Guihua Yu** (University of Texas at Austin, USA)  
"A Chemistry and Material Perspective on Lithium Redox Flow Batteries for Large-Scale Energy Storage"



- 11:10 am - 11:30 am Discussion
- 11:30 am - 12:10 pm **Magdalena Graczyk-Zajac** (TU Darmstadt, Germany)  
"Challenges and Opportunities of the Highly Porous Silicon Embedded in the Carbon/Ceramic Matrix"
- 12:10 pm - 12:30 pm Discussion
- 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 Microstructure Design  
Discussion Leader: **Petr Novak** (Paul Scherrer Institute, Switzerland)
- 7:30 pm - 8:10 pm **Dean Wheeler** (Brigham Young University, USA)  
"Variations in Microstructure and Conductive Properties of Porous Li-Ion Electrodes"
- 8:10 pm - 8:30 pm Discussion
- 8:30 pm - 9:10 pm **Gleb Yushin** (Georgia Institute of Technology, USA)  
"Conversion-Type Active Materials and Processes for Safer, Higher Energy Density Batteries"
- 9:10 pm - 9:30 pm Discussion
- Friday**
- 7:30 am - 8:30 am Breakfast
- 9:00 am Departure

#### Contributors



**Gordon Research  
Conferences**  
*Frontiers of Science*



Carl Storm  
Underrepresented  
Minority Fellowship  
Program



Carl Storm  
International  
Diversity  
Fellowship Program



**Energy &  
Environmental  
Science**  
Editorial Board Chair  
Nathan Lewis  
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**Sustainable  
Energy & Fuels**  
Editor-in-chief  
James Durrant  
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### Batteries GRC Registration List

Adelstein, Nicole	San Francisco State University	Poster Presenter
Adomkevicius, Arturas	Swansea University	Attendee
Ahmad, Zeeshan	Carnegie Mellon University	Poster Presenter
Alexandrov, Vitaly	University of Nebraska-Lincoln	Poster Presenter
Allu, Srikanth	Oak Ridge National Laboratory	Attendee
Amores, Marco	University of Glasgow	Poster Presenter
Angell, Michael R	Stanford University	Poster Presenter
Arnold, Craig B	Princeton University	Poster Presenter
Atanassov, Plamen	University of New Mexico	Attendee
Attanayake, Nuwan Harsha	University of Kentucky	Poster Presenter
Attia, Peter M	Stanford University	Poster Presenter
Au, Heather	Queen Mary University of London	Attendee
Augustyn, Veronica	North Carolina State University	Speaker
Balakrishna, Ananya R	Massachusetts Institute of Technology	Poster Presenter
Balke, Nina	Oak Ridge National Laboratory	Chair
Balsara, Nitash P	University of California, Berkeley	Speaker
Ban, Chunmei	National Renewable Energy Lab	Poster Presenter
Berg, Erik J	Paul Scherrer Institute	Speaker
Bilheux, Hassina Z	Oak Ridge National Laboratory	Speaker
Bommier, Clement	Princeton University	Poster Presenter
Boyd, Shelby	North Carolina State University	Poster Presenter
Brady, Nicholas W	Columbia University	Poster Presenter
Brahim, Sean	YTC America, Inc.	Attendee
Burke, Colin M	University of California, Berkeley	Poster Presenter
Butala, Megan M	National Institute of Standards and Technology	Poster Presenter
Cadiou, Vincent	CEA - Liten / CNRS	Poster Presenter
Carter, Rachel	U.S. Naval Research Laboratory	Poster Presenter
Cernak, Susanne	Institute for Mechanical Process Engineering and Mechanics, Karlsruhe Institute of Technology	Poster Presenter
Chang, Wesley	Princeton University	Poster Presenter
Chen, Juner	Zhejiang University	Poster Presenter
Chi, Miaofang	Oak Ridge National Laboratory	Speaker
Choi, Paul	Carnegie Mellon University	Poster Presenter
Chrisanti, Santi	Phonak, LLC	Attendee
Cobb, Corie L	University of Washington	Attendee
Collis, Gavin E	CSIRO Manufacturing	Attendee
Dahn, Jeff R	Dalhousie University	Discussion Leader
Dasgupta, Neil P.	University of Michigan, Ann Arbor	Poster Presenter
Davies, Greg	Princeton University	Poster Presenter
Dechent, Philipp	RWTH Aachen University	Poster Presenter
Deivanayagam, R	University of Illinois at Chicago	Poster Presenter
Dubarry, Matthieu	University of Hawaii at Manoa / HNEI	Poster Presenter
Euchner, Holger	Helmholtz Institute Ulm	Poster Presenter
Evenstein, Eliran	Bar Ilan University	Poster Presenter
Ferreira, Summer	Sandia National Laboratories	Speaker
Fister, Tim T	Argonne National Lab	Poster Presenter

Fleming, Joe	University of Warwick	Attendee
Freiberg, Anna T.S.	Technical University of Munich	Poster Presenter
Fu, Yangyang	University of Science and Technology of China	Poster Presenter
Fu, Maosen	Northwestern Polytechnical University	Attendee
Ganser, Markus	Robert Bosch GmbH	Poster Presenter
Gasteiger, Hubert A	Technical University of Munich	Speaker
Geise, Natalie	Stanford University	Poster Presenter
Gent, William E	Stanford University	Poster Presenter
Gogotsi, Yury G	Drexel University	Speaker
Gorlin, Yelena	Robert Bosch LLC	Poster Presenter
Grabow, Lars C	University of Houston	Attendee
Graczyk-Zajac, Magdalena	TU Darmstadt	Speaker
Grieder, Andrew	San Francisco State University	Poster Presenter
Gross, Axel	Ulm University	Attendee
Guillot, Sarah L	University of Wisconsin-Madison	Poster Presenter
Hall, Alex T	San Francisco State University	Poster Presenter
Hansell, Claire	Nature	Attendee
Harris, Stephen J	Lawrence Berkeley Lab	Poster Presenter
Hatzell, Kelsey B	Vanderbilt University	Poster Presenter
Helms, Brett A	Lawrence Berkeley National Laboratory	Poster Presenter
Herbert, Erik G	Michigan Technological University	Speaker
Hodson, Thomas	Princeton University	Poster Presenter
Hong, Jihyun	Stanford university	Poster Presenter
Horn, Quinn C	Exponent	Speaker
Houchins, Gregory	Carnegie Mellon University	Poster Presenter
Hu, Yan-Yan	Florida State University	Discussion Leader
Huang, Que	Dalhousie University	Poster Presenter
Hwang, Sooyeon	Brookhaven National Laboratory	Poster Presenter
Jalalian-Khakhshour, Amir	Swansea University	Attendee
Jangid, Manoj K	Indian Institute of Technology Bombay	Poster Presenter
Jensen, Anders C. S.	Queen Mary University of London	Attendee
Johansson, Patrik	Chalmers University of Technology	Speaker
Juran, Taylor R	Binghamton University - SUNY	Poster Presenter
Källquist, Ida	Uppsala University	Poster Presenter
Kasse, Robert M	Stanford University	Poster Presenter
Khetan, Abhishek	Carnegie Mellon University	Poster Presenter
Kim, Andrew	Princeton University	Attendee
Knehr, Kevin	Princeton University	Poster Presenter
Ko, Jesse S	U.S. Naval Research Laboratory	Poster Presenter
Koohbor, Behrad	University of Illinois at Urbana-Champaign	Poster Presenter
Kostecki, Robert	Lawrence Berkeley National Laboratory	Discussion Leader
Kotronia, Antonia E	Uppsala University	Poster Presenter
Krishnamurthy, Dilip	Carnegie Mellon University	Poster Presenter
Kumar Rao, Karun	University of Houston	Poster Presenter
Kwabi, David G	Harvard University School of Engineering and Applied Sciences	Poster Presenter
Latz, Arnulf	German Aerospace Center, Helmholtz Institute Ulm	Speaker

Lee, Min Ah	Stanford University	Poster Presenter
Lee, Jong-Sook	Chonnam National University	Poster Presenter
Leskes, Michal	Weizmann Institute of Science	Poster Presenter
Li, Mengya	Vanderbilt University	Poster Presenter
Lim, Jongwoo	Seoul National University	Poster Presenter
Lim, Kipil	Stanford University	Poster Presenter
Lininger, Christianna N	Columbia University	Poster Presenter
Litster, Shawn E	Carnegie Mellon University	Attendee
Liu, Xinyi M	Princeton University	Poster Presenter
Liu, Hao	Argonne National Laboratory	Poster Presenter
Liu, Changcheng	University of Science and Technology of China	Poster Presenter
Logan, Eric R	Dalhousie University	Poster Presenter
Lopez Silva, Gladys A	Rice University	Poster Presenter
Lorie Lopez, Jose L	The Ohio State University	Poster Presenter
Louli, Alexander J	Dalhousie University	Poster Presenter
Ma, Fuduo	Lawrence Berkeley National Laboratory	Poster Presenter
Malik, Rahul	Cell Press	Attendee
Marbella, Lauren E	University of Cambridge	Poster Presenter
Mascaro, Aaron	McGill University	Poster Presenter
McDowell, Matthew T	Georgia Institute of Technology	Poster Presenter
Meng, Ying Shirley	University of California, San Diego	Discussion Leader
Michenfelder-Schauser, N	University of California, Santa Barbara	Poster Presenter
Miller, Elizabeth C	SLAC National Accelerator Laboratory	Poster Presenter
Miroshnikov, Mikhail	The City College of New York	Poster Presenter
Mistry, Aashutosh N	Purdue University	Poster Presenter
Mitchell, James B	North Carolina State University	Poster Presenter
Mohammadi, Mohaddese	New York University	Poster Presenter
Mohr, Robert C	Feasible Inc.	Poster Presenter
Mukherjee, Partha P	Purdue University	Poster Presenter
Nation, Leah N	Brown University	Poster Presenter
Nelson, George J	University of Alabama in Huntsville	Poster Presenter
Nicholas, Christopher P	Honeywell UOP	Attendee
Novak, Petr	Paul Scherrer Institute	Discussion Leader
Odom, Susan A	University of Kentucky	Attendee
Palacin, M. Rosa	Institut de Ciència de Materials de Barcelona, CSIC	Speaker
Pan, Menghsuan S	Massachusetts Institute of Technology	Poster Presenter
Pande, Vikram	Carnegie Mellon University	Poster Presenter
Park, Juyeon	Samsung SDI	Attendee
Patterson, Mary L	EnerDel, Inc.	Discussion Leader
Paxton, William A	Ford Motor Company	Poster Presenter
Pender, Joshua P	University of Texas at Austin	Poster Presenter
Pesko, Danielle M	University of California, Berkeley	Poster Presenter
Pomerantseva, Ekaterina	Drexel University	Poster Presenter
Preefer, Molleigh B	University of California, Santa Barbara	Poster Presenter
Prosser, Ryan	Imperial College London	Attendee
Raj, Abhi	Princeton University	Poster Presenter
Renfrew, Sara	UC Berkeley	Poster Presenter

Roberts, Scott A	Sandia National Laboratories	Speaker
Rolison, Debra R	U.S. Naval Research Laboratory	Speaker
Ryan, Kevin M	University of Limerick	Poster Presenter
Schroeder, Marshall A	U.S. Army Research Laboratory	Poster Presenter
See, Kimberly A	Caltech	Poster Presenter
Self, Julian	Lawrence Berkeley National Laboratory	Poster Presenter
Senyshyn, Anatoliy	Heinz Maier-Leibnitz Zentrum	Poster Presenter
Shah, Deep B	University of California, Berkeley	Poster Presenter
Sharafi, Asma	Ford Motor Company	Poster Presenter
Solchenbach, Sophie	Technical University of Munich	Poster Presenter
Song, Seung-Wan	Chungnam National University	Attendee
Sonia, Farjana J	Indian Institute of Technology Bombay	Poster Presenter
Spencer, Michael	North Carolina State University	Poster Presenter
Sripad, Shashank	Carnegie Mellon University	Poster Presenter
Steingart, Dan	Princeton University	Vice Chair
Steinrueck, Hans-Georg	Stanford Synchrotron Radiation Lightsource	Poster Presenter
Stephan, Alexandra K	Brown University	Poster Presenter
Su, Dong	Brookhaven National Lab	Poster Presenter
Su, Laisuo	Carnegie Mellon University	Poster Presenter
Sun, Ju	University of New South Wales	Poster Presenter
Syzdek, Jaroslaw S	Bio-Logic USA LLC	Attendee
Tang, Maureen H	Drexel University	Poster Presenter
Thole, Violet	Michigan Technological University	Poster Presenter
Thompson, Lauren M	Dalhousie University	Poster Presenter
Timachova, Ksenia	University of California, Berkeley	Poster Presenter
Toney, Michael F	SLAC National Lab	Attendee
Tozier, Dylan	California Institute of Technology	Poster Presenter
Tsao, Yuchi	Stanford	Poster Presenter
Turner, John A.	UT-Battelle / Oak Ridge National Lab	Poster Presenter
Vendola, Emma	Imperial College London	Attendee
Vinckeviciute, Julija	University of California, Santa Barbara	Attendee
Viswanathan, Venkat	Carnegie Mellon University	Discussion Leader
Wang, Xuefeng	University of California, San Diego	Poster Presenter
Wang, Ruocun	North Carolina State University	Poster Presenter
Wang, Yan Eric	Samsung Research America	Speaker
Weber, Rochelle	Dalhousie University	Poster Presenter
Wei, Vanessa Y.Z.	San Francisco State University	Poster Presenter
Wei, Xia	ZPower, LLC	Attendee
West, Alan	Columbia University	Discussion Leader
Wheeler, Dean	Brigham Young University	Speaker
Winter, Martin	University of Muenster	Discussion Leader
Wong, Andrew A	Harvard School of Engineering and Applied Science	Poster Presenter
Wood, Vanessa	ETH Zurich	Speaker
Xiao, Neng	The Ohio State University	Poster Presenter
Xu, Guiliang	Argonne National Laboratory	Poster Presenter
Xu, Kang	U.S. Army Research Laboratory	Speaker
Yang, Wanli	Lawrence Berkeley National Laboratory	Poster Presenter

Yao, Yan	University of Houston	Poster Presenter
Yu, Guihua	University of Texas at Austin	Speaker
Yu, Xiaoyun	Stanford University	Poster Presenter
Yushin, Gleb	Georgia Institute of Technology	Speaker
Zeng, Dongli	Microsoft Corp.	Attendee
Zenyuk, Iryna	Tufts University	Poster Presenter
Zhang, Lu	Phonak LLC	Attendee
Zhang, Wei	Brown University	Poster Presenter
Zhang, Zheng	Brookhaven National Laboratory	Poster Presenter
Zhang, Sanliang	YTC America	Attendee
Zheng, Jin	Florida State University	Poster Presenter