National Science Foundation | Civil, Mechanical and Manufacturing Innovation Division

NSF CMMI Engineering Research and Innovation Conference 2012

# BOSTON

## Engineering Transformation Through Partnerships

July 9–12, 2012 | Boston, MA

National Science Foundation
WHERE DISCOVERIES BEGIN

Northeastern

# Welcome Message

Welcome to the National Science Foundation (NSF) Division of Civil, Mechanical and Manufacturing Innovation (CMMI) 2012 Engineering Research and Innovation Conference. Hosted this year by Northeastern University, the conference has the primary function of satisfying CMMI's grant oversight responsibilities. The conference provides a convenient and intensive venue for CMMI Program Directors to meet with the majority of their grantees to review their research progress, plans, and priorities. At the same time, it affords a unique opportunity for Principal Investigators (PIs) to meet and interact with each other to exchange information and form collaborations for future work, and for NSF to convey important information regarding program plans and priorities.

The conference is centered on a series of poster sessions during which PIs report out to their Program Directors and discuss their work with other researchers. It is my hope that you will take advantage of these sessions to learn about research related to your own work as one means of reducing duplication of effort and improving your own research results. In addition, I hope you can attend the plenary and special sessions during which we will provide information to help you better attain your own research goals. Not only will these sessions bring you up to date on NSF activities, but you will also have the opportunity to participate in learning events, including a workshop to help improve your proposal-writing skills. Associated events, including tours of local industrial and civil facilities, are intended to provide new insights into opportunities for academic research that is relevant to the nation's needs.

Concurrent with the Engineering Research and Innovation Conference, we are hosting the Quake Summit 2012 annual meeting of the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) researchers. Co-location and timing of these meetings enables cost-effective oversight of these activities as well, and provides the opportunity for all CMMI grantees to observe the activities of this important aspect of CMMI's overall portfolio. I hope you will find this a useful addition to the conference activities.

Finally, I would like to thank our Northeastern University hosts for providing an excellent venue for this conference, and I hope you find your time here productive and helpful.

Sincerely,

Steven H. McKnight
CMMI Division Director

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# Schedule

## Sunday, July 8, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:00 a.m. | 4:30 p.m. | **INVITATION ONLY Pre-Conference Workshop: ADVANCE Future Faculty— A Workshop to Promote Diversity and Gender Balance for Prospective Faculty in CMMI-related Disciplines**<br><br>Northeastern ADVANCE Future Faculty Workshops are designed for senior graduate students and post docs who are interested in faculty careers. In addition to attending the conference, invited participants will attend a one-day workshop that provides information to stimulate their professional growth.<br><br>Workshop topics include:<br>• Making new contacts<br>• Interviewing<br>• Communicating and sharing ideas<br>• Negotiating a package<br>• Writing proposals<br>• Creating education plans<br>• Discovering and synthesizing teaching resources<br>• Mentoring<br>• Network building<br>• Creating a collaborative interdisciplinary environment<br><br>In addition to excellence in scholarship, acceptance to these workshops is based on the ability of the participant to enhance the diversity of the professoriate in engineering and science, so there is a focus on women and underrepresented minorities. Learn more at www.neu.edu/advance. | **Northeastern University** |
| 9:00 a.m. | 4:30 p.m. | **INVITATION ONLY: Graduate Student Program Boot Camp** | **Northeastern University** |
| 9:00 a.m. | 1:00 p.m. | **INVITATION ONLY Pre-Conference Workshop: Infrastructure Systems—Construction Engineering**<br><br>***Konstantinos Triantis,*** *NSF*<br>***Alexandra Medina-Borja,*** *NSF*<br><br>This workshop is intended to test an evaluation model for science investments in construction engineering that identifies societal needs, enabling technologies and knowledge creation for civil infrastructure systems. This workshop is by invitation only. CMMI Program Directors are welcome to attend and observe the deliberations. | **Room 308** |

# Schedule

## Sunday, July 8, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 9:00 a.m. | 5:00 p.m. | **Pre-Conference Workshop: Junior Geotechnical Engineering Faculty Enclave**<br>***Richard J. Fragaszy,*** *NSF*<br>This workshop is directed toward early career faculty. The goals are to facilitate connections among early career faculty; provide a forum for both oral and poster presentations for those not presenting at the main CMMI conference; explore ways in which early career faculty can best be served; and provide information about NSF that is specifically designed for early career faculty.<br>A variety of activities tied to the research areas of the conference will be available for children and families. Please refer to page 46 for more information. | **Room 310** |
| 9:30 a.m. | 12:30 p.m. | **STEM Sunday**<br>A variety of activities tied to the research areas of the conference will be available for children and families. Please refer to page 46 for more information. | **Northeastern University** |
| 1:30 p.m. | 5:00 p.m. | **INVITATION ONLY Pre-Conference Workshop: Infrastructure Systems—Transportation**<br>***Konstantinos Triantis,*** *NSF*<br>***Alexandra Medina-Borja,*** *NSF*<br>This workshop is intended to test an evaluation model for science investments in transportation that identifies societal needs, enabling technologies and knowledge creation for civil infrastructure systems. This workshop is by invitation only. CMMI Program Directors are welcome to attend and observe the deliberations. | **Room 308** |
| 5:15 p.m. | 8:00 p.m. | **Scheduled Technical Tour (see pages 31–38 for descriptions)** | |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:00 a.m. | 6:00 p.m. | **Registration and Information Desk Open** | **Pre-function Hall A** |
| 8:00 a.m. | 12:00 p.m. | **INVITATION ONLY: Graduate Student Program Panel Sessions** | **Room 302** |
| 8:00 a.m. | 12:00 p.m. | **Pre-Conference Workshop: Breaking Barriers to Innovation**<br>***Katja Hölttä-Otto,*** *University of Massachusetts, Dartmouth*<br>***Carolyn Seepersad,*** *University of Texas, Austin*<br>This workshop will explore the latest techniques to enhance creativity and increase chances for innovative design. Participants will leave this workshop with practical tools to take with them and change how they approach problem solving and engineering design. The workshop presents results of a four-year NSF-sponsored project on innovation. | **Room 306** |
| 8:30 a.m. | 12:00 p.m. | **Pre-Conference Workshop: *TheDesignExchange*—Characterizing, Mapping, and Interacting with Industry on Human-Centered Design Methods**<br>***Alice Agogino,*** *University of California, Berkeley*<br>***Sara Beckman,*** *University of California, Berkeley*<br>***Sean Hewens,*** *IDEO.org*<br>***Erin MacDonald,*** *Iowa State University*<br>***Celeste Roschuni,*** *University of California, Berkeley*<br>***Robert Stone,*** *Oregon State University*<br>***Maria Yang,*** *Massachusetts Institute of Technology*<br>As human-centered design does not fall into any one disciplinary body of knowledge, there is a need to consolidate and organize the many design methods used, develop a community of practitioners to evaluate and categorize those methods, and educate the next generation of design innovators in appropriate methods. Although design research has increased the number of verified design methods, there is still no centralized venue where human-centered design methods can be shared, discussed, and disseminated or where the research community can provide explanations as to how the various methods within the design process relate to each other. | **Room 311** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:30 a.m. | 12:00 p.m. | This workshop will engage participants in an exploration of the needs of the academic branch of the design community in the development of *TheDesignExchange.org*, a site envisioned as an interactive community hub to facilitate the capture, analysis, and widespread use of human-centered design methods. *TheDesignExchange* is an early-stage prototype that attempts to meet those needs and has received early support from Silicon Valley and San Francisco Bay Area design firms who contributed expert feedback, case studies, and methods to develop a prototype system.<br><br>The workshop will present and discuss preliminary ontologies for design problems and design methods, and identify features and functionality to include in the development of *TheDesignExchange* as a useful platform for communication and collaboration between industry and academics. It also will explore collaboration with focused industry sites, such as IDEO.org's HCD Connect (http://www.hcdconnect.org/). The outcomes of this workshop will form the basis of the research agenda for *TheDesignExchange* platform, which we hope will evolve into a multi-institute initiative. | |
| 8:30 a.m. | 12:00 p.m. | **INVITATION ONLY Pre-Conference Workshop: Infrastructure Systems—Infrastructure Management**<br><br>***Konstantinos Triantis,*** *NSF*<br>***Alexandra Medina-Borja,*** *NSF*<br><br>This workshop is intended to test an evaluation model for science investments in infrastructure management that identifies societal needs, enabling technologies and knowledge creation for civil infrastructure systems. This workshop is by invitation only. CMMI Program Directors are welcome to attend and observe the deliberations. | **Room 308** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:30 a.m. | 12:00 p.m. | **INVITATION ONLY Pre-Conference Session: Task Force for Operations Research (OR) as a Catalyst for National Academy of Engineering (NAE) Grand Challenges**<br><br>***Michael Fu,*** *NSF*<br>***Suvrajeet Sen,*** *University of Southern California*<br><br>Over the past several years, a group of leading thinkers from around the world have come together under the auspices of the NAE to identify some grand challenges for engineering. These challenges, broadly classified under the themes of sustainability, security, human health, and the joy of living, identify a few key areas with the potential to reinvent our way of life. The role of the proposed Task Force is to identify new OR directions that will enable the NAE Grand Challenge domains to leverage new OR ideas into their research. In this sense, the proposed effort will identify OR challenges with an eye towards serving as a catalyst for NAE Grand Challenges. (This is the first of three planned meetings of the Task Force). | **Room 305** |
| 8:30 a.m. | 12:00 p.m. | **Pre-Conference Workshop: Data**<br><br>***Clark Cooper,*** *NSF*<br>***Eduardo Misawa,*** *NSF*<br><br>NSF has several recent activities that focus on support of both the research and the infrastructure that are needed to advance science and engineering based on exploration of data beyond the status-quo in our research communities. These initiatives involve modeling, simulation, analysis, visualization, and management of data that may be large scale and/or diverse and heterogeneous. Some activities that have already been announced are Computational and Data-enabled Science and Engineering (CDS&E), BIGDATA, Data Infrastructure Building Blocks (DIBBS), IGERT-CIF21 and DataWay charrette.<br><br>This workshop will be a forum for discussion among CMMI's research community members about the relevance to their research of these data initiatives. The workshop also will include a discussion about support for future activities, such as the necessary data infrastructure.<br><br>The workshop is open to all attendees of the CMMI Engineering Research and Innovation Conference. Workshop participants are encouraged to familiarize themselves with relevant materials such as | **Room 310** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:30 a.m. | 12:00 p.m. | NSF's data sharing and data management requirements and many complementary data-related publications, including: *The Fourth Paradigm: Data Intensive Scientific Discovery (Tony Hey, et al.); Long-Lived Digital Data Collections: Enabling Research and Education in the 21st Century*, the National Science Board report on data collections, (http://www.nsf.gov/pubs/2005/nsb0540/nsb0540.pdf); and magazines with special issues on data such as *Nature* (September 4, 2008 issue) and *Science* (February 2011 issue). | |
| 8:30 a.m. | 12:00 p.m. | **Poster Session 1** | **Exhibit Hall AB** |
| 8:30 a.m. | 12:00 p.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 12:00 p.m. | 12:45 p.m. | **Opening Plenary Session—Welcome**<br>***Steven H. McKnight,*** *Division Director, CMMI, NSF* | **Ballroom** |
| | | **Keynote Speech—The Global and Research Landscape: Implications for Higher Education**<br>***Joseph E. Aoun,*** *President, Northeastern University and Chair, American Council of Education (ACE)* | |
| 1:00 p.m. | 1:30 p.m. | **CMMI Division Cluster Overviews**<br>The CMMI Division is organized into four program clusters, each containing four to six research programs. Each of the clusters will present an overview of research, initiatives, and activities associated with the cluster to provide a context for the individual program presentations that follow. | |
| | | **Advanced Manufacturing**<br>• Manufacturing Machines and Equipment<br>***George Hazelrigg,*** *NSF*<br>• Manufacturing Enterprise Systems<br>***Russell Barton,*** *NSF* | **Room 304** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 1:00 p.m. | 1:30 p.m. | • Materials Processing and Manufacturing<br>***Mary Toney,*** *NSF*<br>• NanoManufacturing<br>***Bruce Kramer,*** *NSF*<br><br>The Advanced Manufacturing cluster supports fundamental research leading to transformative advances in manufacturing and building technologies across size scales from nanometers to kilometers, with emphases on efficiency, economy, and minimal environmental footprint. Research is supported to develop predictive and real-time models; novel experimental methods for manufacturing and assembly of macro, micro, and nanoscale devices and systems; and advanced sensing and control techniques for manufacturing processes. | |
| | | **Mechanics and Engineering Materials** | **Room 312** |
| | | • Geomechanics and Geomaterials<br>***Richard Fragaszy,*** *NSF*<br>• Structural Materials and Mechanics<br>***Yick Grace Hsuan,*** *NSF*<br>• Materials and Surface Engineering<br>***Clark Cooper,*** *NSF*<br>• Mechanics of Materials<br>***Martin Dunn,*** *NSF*<br>• Biomechanics and Mechanobiology<br>***Dennis Carter,*** *NSF*<br><br>The Mechanics and Engineering Materials cluster supports fundamental research aimed at advances in the transformation and use of engineering materials efficiently, economically, and sustainably. The cluster's programs support research topics relating to materials that span multiple time and length scales. | |
| | | **Resilient and Sustainable Infrastructures** | **Room 311** |
| | | • Civil Infrastructure Systems<br>***Konstantinos Triantis,*** *NSF*<br>• Geotechnical Engineering<br>***Richard Fragaszy,*** *NSF*<br>• Hazard Mitigation and Structural Engineering<br>***Kishor Mehta,*** *NSF* | |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 1:00 p.m. | 1:30 p.m. | • Infrastructure Management and Extreme Events<br>***Dennis Wenger,*** *NSF*<br>• Network for Earthquake Engineering Simulation Research and Operations<br>***Joy Pauschke,*** *NSF*<br><br>The Resilient and Sustainable Infrastructures cluster supports research to advance fundamental knowledge and innovation for resilient and sustainable civil infrastructure and distributed infrastructure networks. The cluster funds research on geotechnical, structural, and earthquake engineering; distributed infrastructure systems management; and response to hazardous events. Research on social, behavioral, and economic issues related to natural and technological hazards is also invited. The cluster plays a major role in the National Earthquake Hazards Reduction Program (NEHRP), created by Congress in the Earthquake Hazards Reduction Act of 1977. | |
| | | **Systems Engineering and Design** | **Room 302** |
| | | • Control Systems<br>***George Chiu,*** *NSF*<br>• Dynamical Systems<br>***Eduardo Misawa,*** *NSF*<br>• Engineering and Systems Design<br>***Christina Bloebaum,*** *NSF*<br>• Operations Research<br>***Michael Fu,*** *N*SF<br>• Service Enterprise Systems<br>***Russell Barton,*** *NSF*<br>• Sensors and Sensing Systems<br>***George Hazelrigg,*** *NSF*<br><br>The Systems Engineering and Design cluster supports fundamental research on the decision-making aspects of engineering, including design, control, and optimization as applied at levels ranging from component to enterprise systems. Supported research examples include sensors, sensing, and the use of sensor data in decision-making and control, and extends to service enterprise systems that address healthcare delivery. Support is provided to enable advances in engineering decision-making, optimization and control, and their application to engineered systems. | |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 1:30 p.m. | 2:15 p.m. | **CMMI Program Overviews**<br>The Program Directors for each program will provide state-of-the-program addresses and will identify future directions and opportunities for their research communities. | |
| | | **Service Enterprise Systems**<br>***Russell Barton,*** *NSF* | **Room 303** |
| | | **Engineering and Systems Design**<br>***Christina Bloebaum,*** *NSF* | **Room 306** |
| | | **Control Systems**<br>***George Chiu,*** *NSF* | **Room 305** |
| | | **Manufacturing Machines and Equipment**<br>***George Hazelrigg,*** *NSF* | **Room 312** |
| | | **Materials Processing and Manufacturing**<br>***Mary Toney,*** *NSF* | **Room 302** |
| | | **Mechanics of Materials**<br>***Martin Dunn,*** *NSF* | **Room 310** |
| | | **Geomechanics and Geomaterials**<br>***Richard Fragaszy,*** *NSF* | **Room 301** |
| | | **Infrastructure Management and Extreme Events**<br>***Dennis Wenger,*** *NSF* | **Room 308** |
| | | **Network for Earthquake Engineering Simulation Research and Operations**<br>***Joy Pauschke,*** *NSF* | **Room 304** |
| | | **Biomechanics and Mechanobiology**<br>***Dennis Carter,*** *NSF* | **Room 311** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 2:15 p.m. | 3:00 p.m. | **CMMI Program Overviews**<br>The Program Directors for each program will provide state-of-the-program addresses and will identify future directions and opportunities for their research communities. | |
| | | **Manufacturing Enterprise Systems**<br>***Russell Barton,*** *NSF* | **Room 303** |
| | | **Operations Research**<br>***Michael Fu,*** *NSF* | **Room 306** |
| | | **Dynamical Systems**<br>***Eduardo Misawa,*** *NSF* | **Room 305** |
| | | **Sensors and Sensing Systems**<br>***George Hazelrigg,*** *NSF* | **Room 312** |
| | | **Materials and Surface Engineering**<br>***Clark Cooper,*** *NSF* | **Room 302** |
| | | **NanoManufacturing**<br>***Bruce Kramer,*** *NSF* | **Room 310** |
| | | **Geotechnical Engineering**<br>***Richard Fragaszy,*** *NSF* | **Room 301** |
| | | **Hazard Mitigation and Structural Engineering**<br>***Kishor Mehta,*** *NSF* | **Room 308** |
| | | **Civil Infrastructure Systems**<br>***Konstantinos Triantis,*** *NSF* | **Room 304** |
| | | **Structural Materials and Mechanics**<br>***Yick Grace Hsuan,*** *NSF* | **Room 311** |
| 2:45 p.m. | 5:45 p.m. | **Scheduled Technical Tours (see pages 31–38 for descriptions)** | |
| 3:00 p.m. | 3:30 p.m. | **Networking Break** | **Exhibit Hall AB** |
| 3:00 p.m. | 5:45 p.m. | **Poster Session 2** | **Exhibit Hall AB** |

# Schedule

## Monday, July 9, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 6:30 p.m. | 8:30 p.m. | **Networking Reception** | **Northeastern University** |

Please join your colleagues for a "New England Summer" reception on Northeastern's campus, just a short distance from the John B. Hynes Veterans Memorial Convention Center. Enjoy light refreshments as you network with other conference attendees. Family members are welcome.

Selected Program Directors will be meeting Principal Investigators for informal Office Hours during the reception. These informal Office Hours will still require appointments and will be subject to the same time limits as in formal sessions.

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 7:30 a.m. | 6:00 p.m. | **Registration and Information Desk Open** | **Pre-function Hall A** |
| 7:30 a.m. | 9:30 a.m. | **Poster Session 3** | **Exhibit Hall AB** |
| 9:00 a.m. | 9:30 a.m. | **Light Morning Refreshments Available** | **Ballroom Pre-function** |
| 9:30 a.m. | 3:30 p.m. | **Workshop: Internet-Enabled Manufacturing**<br>***Bruce Kramer,*** *NSF*<br>***George Adams,*** *Purdue University*<br>***Karthik Ramani,*** *Purdue University*<br>***Joseph Beaman,*** *University of Texas at Austin*<br>***Jian Cao,*** *Northwestern University*<br>***Kornel Ehmann,*** *Northwestern University*<br>***Aleksandar Kuzmanovic,*** *Northwestern University*<br>***Fritz Prinz,*** *Stanford University*<br>***Sanjay Sarma,*** *Massachusetts Institute of Technology*<br>***Dawn Tilbury,*** *University of Michigan*<br>***Paul Wright,*** *University of California, Berkeley*<br>***Bjoern Hartmann,*** *University of California, Berkeley*<br>While the Internet has transformed the world of services and commerce, its impact on manufacturing activity is limited and largely restricted to message and file exchanges. Technologies for which richer tools are available, most notably rapid prototyping and NC machining, suggest that both access to and efficient delivery of manufacturing services can be greatly increased if appropriate tools and protocols can implemented. Furthermore, there are ongoing opportunities for testing such protocols on the next-generation Internet, if the appropriate architectures can be defined. This workshop will report on preliminary investigations of the current technical limitations of today's Internet and the current culture of manufacturing that may be impeding such progress. | **Room 308** |

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 9:30 a.m. | 11:15 a.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 9:30 a.m. | 10:30 a.m. | **Plenary Session—Town Hall 1: Partnering Across Academia**<br>***Robin Coger,*** *North Carolina Agricultural and Technical State University*<br>***Wayne Davis,*** *University of Tennessee, Knoxville*<br>***Gerald Holder,*** *University of Pittsburgh*<br>***David Rosowsky,*** *Rensselaer Polytechnic Institute*<br>***Moderator: Steven H. McKnight,*** *NSF*<br>The linkages researchers have forged with colleagues at other institutions have taken many formats. Town Hall moderator and CMMI Director Steven McKnight and engineering deans from universities with NSF Engineering Research Centers will share some of their best practices, provide visions for what partnering across academia should be, and discuss what academics should do to foster and implement a culture of cross-institutional partnership in their own backyards. | **Ballroom** |
| 10:30 a.m. | 11:15 a.m. | **Plenary Session—Town Hall 2: Partnering with Industry**<br>***Charles Buuck,*** *Turner Construction Company*<br>***Lueny Morell,*** *HP Laboratories*<br>***Robert Smith,*** *Raytheon Integrated Defense Systems*<br>***Frank Tempesta,*** *Textron Systems Corporation (retired)*<br>***Moderator: Simon Pitts,*** *Northeastern University*<br>Academia and industry are symbiotically intertwined as universities provide workforce development and basic research while industry provides jobs, opportunities for partnership, and research agendas. This Town Hall plenary will feature industry leaders discussing what they look for in academic partners and ingredients for effective, sustainable partnerships. | **Ballroom** |
| 11:15 a.m. | 11:30 a.m. | **Networking Break** | **Ballroom Pre-function** |

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 11:30 a.m. | 12:15 p.m. | **Plenary Session—Keynote 2: Wyss Institute: New Model for Innovation, Collaboration and Technology Translation**<br>***Donald E. Ingber,*** *Founding Director, Wyss Institute for Biologically Inspired Engineering at Harvard University* | **Ballroom** |
| 12:15 p.m. | 1:45 p.m. | **Lunch on your Own**<br>**NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 1:00 p.m. | 2:30 p.m. | **Special Session: Opportunities for Research Collaboration between the OR and Computer Science/Artificial Intelligence (CS/AI) Communities**<br>***Michael Fu,*** *NSF*<br>***John Hooker,*** *Carnegie Mellon University*<br>***Warren Powell,*** *Princeton University*<br>This session will discuss means for enabling research collaboration between the OR and CS/AI communities, both of which use many of the same methodologies, but often speak different technical languages and have completely separate conferences. At least two specific settings will be discussed. John Hooker will speak about the highly successful integration of the two communities in research on constraint optimization. Warren Powell will report out on a recent NSF workshop at Rutgers University (May 31–June 1), titled "A Conversation between Computer Science and Operations Research on Stochastic Optimization," which focused on connections between stochastic programming, simulation, approximate dynamic programming, and reinforcement learning. The session will provide ample time for feedback from participants for the purpose of converting ideas into concrete steps going forward, (e.g., follow-up workshops, summer schools, and joint sessions at conferences). | **Room 305** |
| 1:45 p.m. | 3:15 p.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 1:45 p.m. | 2:30 p.m. | **Parallel Sessions** | |
| | | **Office of Inspector General (OIG) Ethics/ Research Integrity** | **Room 311** |

***James Kroll,*** *NSF*

Within NSF, OIG investigates allegations of wrongdoing involving organizations or individuals that receive awards from NSF. It is important for grantees to understand what actions violate ethical norms or established rules governing federally-funded research, and be aware of the potential consequences of committing such violations. Issues critical to NSF include, but are not limited to, research misconduct, fraud, conflicts of interest, human subject protections and animal welfare concerns, peer review violations, duplicative research, retaliation, and student/mentor relationships. James Kroll, Head of Administrative Investigations in OIG, will highlight the ethical expectations NSF places on its grantees and present numerous case studies regarding violations that OIG has investigated.

**Systems Challenges and Opportunities in Civil Infrastructures** **Room 301**

***Konstantinos Triantis,*** *NSF*

The Civil Infrastructure Systems (CIS) program supports research leading to the engineering of infrastructure systems for resilience and sustainability without excluding other key performance issues. Research areas include intra- and inter-physical, information and behavioral dependencies of infrastructure systems, infrastructure management, construction engineering, and transportation systems. This session will focus on challenges and opportunities that exist in approaching infrastructure, construction engineering, and transportation, with a systems perspective.

**New Initiatives in the Control Systems (CS) Program** **Room 306**

***George Chiu,*** *NSF*

The CS program supports innovative research on control theory and control technology driven by real-life applications. The program emphasis is on paradigm-shifting ideas for control strategies that may be inspired by nature, unconventional applications, and the combined

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|

1:45 p.m. 2:30 p.m. role of feedback and uncertainty in systems that incorporate large numbers of sensors and actuators. This session will explore new opportunities and initiatives in the CS program. Opportunities that have been recently announced by NSF in research areas such as Cyber-Physical Systems, BIGDATA, Cyber Infrastructure Framework for the 21st Century, and the National Robotics Initiative will be presented.

**New Initiatives on Hazards and Disasters** **Room 312**

***Dennis Wenger,*** *NSF*

This session will be devoted to an informal discussion of future research needs in the areas of hazards and disasters. The Program Director will seek input from participants regarding future research directions and present an assessment of recent and ongoing efforts at NSF to promote innovative research on the topic.

**Future Directions in Geotechnical Engineering** **Room 302**

***Richard Fragaszy,*** *NSF*

The Geotechnical Engineering program supports fundamental research on geotechnical engineering aspects of civil infrastructure, such as site characterization, foundations, earth retaining systems, underground construction, excavations, tunneling, and drilling. Also included in the program scope is research on geoenvironmental engineering; geotechnical engineering aspects of geothermal energy; life-cycle analysis of geostructures; geotechnical earthquake engineering that does not involve the use of Network for Earthquake Engineering Simulation (NEES) facilities; scour and erosion; and geohazards such as tsunamis, landslides, mudslides, and debris flows. This session will explore emergent research areas, new opportunities, and future directions of research in geotechnical engineering.

**Partnering with Movies and Television to Enhance Broader Impacts** **Room 304**

***Leslie Fink,*** *NSF*

Tremendous opportunities exist to enhance the impact of NSF-funded research projects by partnering effectively with various media outlets, including television and movies. Communicating science and

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 1:45 p.m. | 2:30 p.m. | engineering broadly to the public is one key component of the NSF review criteria pertaining to Broader Impacts. This session will explore ways in which partnerships with television and movies can be most effectively leveraged. | |
| | | **When Good Design Goes Bad**<br>***Christina Bloebaum,*** *NSF*<br>***George Hazelrigg,*** *NSF*<br>Many design methods and tools that are used heavily in industry and taught in our classrooms evolved over time in an ad hoc manner to accomplish very specific tasks. Research in the engineering design community and elsewhere (such as economics) has demonstrated the fallacies associated with many of these well-known and highly-used methods and tools. This session will explore several such methods and tools, pointing out the theoretical reasons why they are fundamentally flawed, and will provide an opportunity to discuss the responsibilities of researchers and practitioners in their use. Examples of problematic methods/tools include the House of Quality (which can yield substantially different results depending on the users), pair-wise comparisons (which can lead to suboptimal solutions), requirements-based design (which leads to suboptimal designs), and voting strategies (which can lead to choice of the least desirable solution). | **Room 310** |
| 2:00 p.m. | 5:30 p.m. | **Scheduled Technical Tours (see pages 31–38 for descriptions)** | |
| 2:30 p.m. | 3:15 p.m. | **Plenary Session—Town Hall 3: Partnering for Society**<br>***Gregory Bialecki,*** *Commonwealth of Massachusetts*<br>***Vincent Chun,*** *Allied Minds*<br>***Patrick Larkin,*** *Massachusetts Technology Collaborative*<br>***Christopher Rojahn,*** *Applied Technology Council*<br>***Moderator: Melvin Bernstein,*** *Northeastern University*<br>Partnerships that link state-of-the-art research to societal needs have the potential for the greatest transformative impact. This Town Hall plenary will feature best practices in partnerships that impact society in transformative ways. Panelists will describe examples in entrepreneurship, engineering practice, and government. | **Ballroom** |

# Schedule

## Tuesday, July 10, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 3:15 p.m. | 3:45 p.m. | **Networking Break** | **Exhibit Hall AB** |
| 3:15 p.m. | 5:45 p.m. | **Poster Session 4** | **Exhibit Hall AB** |
| 6:30 p.m. | 9:00 p.m. | **Networking Reception** | **Boston Museum of Science** |

Please join your colleagues at one of Boston's favorite venues, the Museum of Science, for an evening of networking and light refreshments. Check out the exhibits, including special presentations in the Theater of Electricity. Welcoming remarks will be provided by Helen Greiner, Museum of Science Trustee and co-Founder, iRobot.

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 7:30 a.m. | 4:30 p.m. | **Registration and Information Desk Open** | **Pre-function Hall A** |
| 7:30 a.m. | 8:00 a.m. | **Light Morning Refreshments Available** | **Boylston Hallway (Third Level)** |
| 8:00 a.m. | 10:00 a.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 8:00 a.m. | 10:30 a.m. | **Workshop: Research Program Development**<br>***George Hazelrigg,*** *NSF*<br>This workshop will cover many topics that are crucial to the planning, proposal writing, and development of a sound academic research program. The subject matter will be appropriate for graduate students and young faculty about to begin a career involving academic research, and for more senior faculty who would benefit from an update on how one interfaces with NSF. The workshop will be presented by George Hazelrigg, who has overseen the review of more than 5,000 proposals and who has conducted several hundred panel reviews during his 29-year tenure at NSF. He will present many key lessons learned from his experience. | **Room 304** |
| 8:00 a.m. | 9:00 a.m. | **Parallel Sessions** | |
| | | **Design's Role in the U.S. Economy**<br>***Katie Whitefoot,*** *National Academy of Engineering*<br>***W. Ross Morrow,*** *Iowa State University*<br>The importance of manufacturing in renewing the strength of the U.S. economy in this century is now widely acknowledged. If the U.S. is to remain a world leader, however, our historical strength in the innovative design of new products, services, and systems cannot be put aside. With a new program in Manufacturing, Design, and Innovation, NAE has recognized the importance of the coupling of design and manufacturing. This session will focus on future design leadership in the U.S., with a discussion of what we currently know, don't know, and need to know about the role design plays in the U.S. economy. | **Room 302** |

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:00 a.m. | 9:00 a.m. | **Industry/University Research—Grant Opportunity for Academic Liaison with Industry (GOALI) and Small Business Innovation Research (SBIR) Programs** | **Room 306** |

***Donald Senich,*** *NSF*
***Allison Flatau,*** *University of Maryland (GOALI Award Academic PI)*
***Dan J. Clingman (Tentative),*** *Boeing (GOALI Award Industry PI)*
***David B. Spencer,*** *wTe Corp (SBIR Award Phase I and II PI)*

Over the past decade or so, the nature of research in large industrial labs has been going through a transition. Market pressures have forced American corporations to downsize or export a share of their research. During the same period of time, the partnership opportunities for small high-tech, high-risk research companies has grown, in no small measure, due to the Federal SBIR program. Therefore, without healthy interaction with large and small industries, research in the academic sector may become somewhat esoteric. This session will provide a glimpse of successful industry/university research and small business models for future research efforts.

**Effectively Integrating Research and Education** **Room 311**

***Jo Culbertson,*** *NSF*

A deeper public understanding of engineering may augment public support for fundamental research and contribute to the development of the future engineering workforce. CMMI awardees engage in a variety of outreach and dissemination activities that advance public understanding and effectively integrate research and education. This panel discussion will highlight some of these experiences and the challenges and opportunities that researchers face.

**New Initiatives in Materials** **Room 312**

***Clark Cooper,*** *NSF*
***Martin Dunn,*** *NSF*
***Yick Grace Hsuan,*** *NSF*
***Mary Toney,*** *NSF*

In 2011, as part of the Advanced Manufacturing partnership, President Obama announced the Materials Genome Initiative (MGI: more information at http://go.usa.gov/d8j), an ambitious plan to double

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 8:00 a.m. | 9:00 a.m. | the speed with which we discover, develop, and manufacture new materials. NSF—and CMMI specifically—play an important role in the MGI, and in materials-related research more generally. In FY2012, NSF's initial foray into MGI was through a DCL titled, "Designing Materials to Revolutionize and Engineer our Future" (DMREF: see http://www.nsf.gov/pubs/2011/nsf11089/nsf11089.jsp), which focused on the basic research aspects of MGI. This session will describe ongoing and upcoming activities in materials-related research, highlighting collaborations with NSF's Division of Materials Research as well as activities within CMMI. | |
| 9:00 a.m. | 10:00 a.m. | **Parallel Sessions** | |
| | | **CyberInfrastructure Framework for the 21st Century Initiative (CIF21)**<br>***Eduardo Misawa,*** *NSF*<br>***Clark Cooper,*** *NSF*<br>CIF21 is a portfolio of activities to provide integrated cyber resources that will enable new multidisciplinary research opportunities in all science and engineering fields by leveraging ongoing investments and using common approaches and components.<br>Researchers in all fields of science and engineering are being challenged in two key directions. The first challenge is to push beyond the current boundaries of knowledge to provide ever-deeper insights through fundamental disciplinary research by addressing increasingly complex questions, which often requires extremely sophisticated integration of theoretical, experimental, observational, and simulation and modeling results. These efforts, which have relied heavily on observing platforms and other data collection efforts, computing facilities, software, advanced networking, analytics, visualization, and models, have led to important breakthroughs in all areas of science and engineering and represent a very strong bottom-up approach to the necessary research infrastructure.<br>The second, and more extensive, challenge is to synthesize these fundamental ground breaking efforts across multiple fields to transform scientific research into an endeavor that integrates the deep knowledge and research capabilities developed within the universities, industry, and government labs. Individuals, teams, and communities need to be able work together; likewise, instruments, facilities | **Room 312** |

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 9:00 a.m. | 10:00 a.m. | (including MREFCs), datasets, and cyber-services must be integrated from the group to campus to national scale. One can imagine secure, geographically distributed infrastructure components including advanced computing facilities, scientific instruments, software environments, advanced networks, data storage capabilities, and the critically important human capital and expertise. Greater understanding is also needed of how scientific and research communities will evolve in the presence of new cyberinfrastructure.<br><br>This session will describe the funding opportunities available under CIF21 and their relevance to the CMMI research community. | |
| | | **NSF Partnerships with a Focus on Transfer of Basic Research Discoveries**<br><br>***Donald Senich,*** *NSF*<br>***M. Selim Unlu,*** *Boston University (AIR)*<br>***Emel Bulat,*** *Northeastern University (I-Corps)*<br>***Thomas J. Dudley,*** *Boston University (IUCRC)*<br><br>America's prosperity has originated in part from the ability to economically capitalize on ground-breaking discoveries from science and engineering research. Simultaneously, a knowledgeable, creative workforce has maintained the country's leadership in crucial areas of technology. Strong partnerships between academia, government, and the private sector enable the results of research to lead to novel products and services that provide new value. This session will focus on three successful programs in the innovation process: I-Corps, Accelerating Innovation Research (AIR), and Industry/University Cooperative Research Centers (IUCRC). Without a healthy interaction between all partners, research in the academic sector could become somewhat esoteric. This session will provide a glimpse of successful industry and university models for consideration in future research efforts. | **Room 306** |

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 9:00 a.m. | 10:00 a.m. | **Vertical Integration of Smart Materials and Structural Systems**<br>***Martin Dunn,*** *NSF*<br>***Richard Fragaszy,*** *NSF*<br>***Yick Grace Hsuan,*** *NSF*<br>***Kishor Mehta,*** *NSF*<br>***Joy Pauschke,*** *NSF*<br>Research on civil infrastructure materials and structural systems has traditionally been conducted independently without integrative research between these two areas. New research paradigms are needed to accelerate engineering innovations for sustainable life-cycle infrastructure performance through the vertical integration of smart materials and structural systems. The aim of this session is to provide a platform for discussion and exchange of ideas between researchers from two communities: those who are working on advancing smart, sustainable materials for civil infrastructure and those who are working on advancing new and rehabilitated sustainable structural systems for multi-hazard mitigation. | **Room 311** |
| | | **Executing and Implementing Design Research to Strengthen the U.S. Economy**<br>***Katie Whitefoot,*** *National Academy of Engineering*<br>***W. Ross Morrow,*** *Iowa State University*<br>Institutions of higher learning and Federal funding programs, including CMMI's EDI program, are increasingly focusing on education and research in design science. This session, inspired by a new NAE program in Manufacturing, Design, and Innovation and the recent Design Frontiers Symposium at the University of Michigan, will discuss this growing theme in both research and education and how it can impact the U.S. economy. Key elements of the session will focus on what role Federal agencies play in funding design science research, what the structure of design science research should be, and how research results can be disseminated to industrial practice. | **Room 302** |
| 10:00 a.m. | 10:30 a.m. | **Networking Break** | **Boylston Hallway (Third Level)** |

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 10:30 a.m. | 12:15 p.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 10:30 a.m. | 11:30 a.m. | **Parallel Sessions: Cluster Reports of Emerging Research and Workshop Outcomes**<br>In these parallel sessions, critical outcomes from key workshops funded within each cluster will be presented. Additionally, innovative and high-risk research funded through the EAGER mechanism will be presented for each cluster. These sessions will provide PIs with insights into emerging areas of research within the clusters. | |
| | | **Systems Engineering and Design Cluster** | **Room 302** |
| | | **Advanced Manufacturing Cluster** | **Room 304** |
| | | **Resilient and Sustainable Infrastructures Cluster** | **Room 311** |
| | | **Mechanics and Engineering Materials Cluster** | **Room 312** |
| 11:30 a.m. | 12:15 p.m. | **Closing Plenary Session—Report-outs from Town Halls 1-3**<br>***Steven H. McKnight,*** *NSF*<br>***Simon Pitts,*** *Northeastern University*<br>***Melvin Bernstein,*** *Northeastern University*<br>In this final plenary session, key insights, discoveries, and discussion points arising from the previous three plenary Town Halls will be presented. Researchers will have an opportunity to learn about and to further discuss the potential benefits that arise from partnering with other academic institutions, industry, and government. | **Ballroom** |
| 12:15 p.m. | 12:45 p.m. | **State of the CMMI Division and Closing Remarks**<br>***Steven H. McKnight,*** *Division Director, CMMI, NSF* | **Ballroom** |

# Schedule

## Wednesday, July 11, 2012

| Begin Time | End Time | Event | Location |
|---|---|---|---|
| 12:45 p.m. | 4:00 p.m. | **NSF Program Directors' Office Hours**<br>*(Office Hours are by appointment only)* | |
| 1:00 p.m. | 4:30 p.m. | **Scheduled Technical Tours (see pages 31–38 for descriptions)** | |
| 1:00 p.m. | 4:00 p.m. | **Poster Session 5** | **Exhibit Hall AB** |

# Speakers

**Keynote Session—Monday, July 9, 2012**

## Joseph E. Aoun, Ph.D.

President, Northeastern University
Chair, American Council on Education

Joseph E. Aoun, a leader in higher education policy and an internationally renowned scholar in linguistics, is the seventh President of Northeastern University. President Aoun came to Northeastern from the University of Southern California's College of Letters, Arts and Sciences where he was the inaugural holder of the Anna H. Bing Dean's Chair. He received his Ph.D. in linguistics and philosophy from the Massachusetts Institute of Technology (MIT) and advanced degrees from the University of Paris (France) VIII and Saint Joseph University (Beirut, Lebanon).

He is a member of the American Academy of Arts and Sciences, the Chair of the American Council on Education, and was recently named to the Academic Advisory Council for the U.S. Department of Homeland Security. His honors include the Chevalier dans l'Ordre des Palmes Academiques from the French government, and the 2011 Robert A. Muh Award from MIT's School of Humanities, Arts, and Social Sciences.

# Speakers

**Keynote Session—Tuesday, July 10, 2012**

## Donald E. Ingber, M.D., Ph.D.

Founding Director, Wyss Institute for Biologically Inspired Engineering at Harvard University

Don Ingber is Founding Director of the Wyss Institute and a leader in the emerging field of biologically inspired engineering. He oversees a multifaceted effort to identify the mechanisms that living organisms use to self-assemble and to apply these design principles to develop advanced materials and devices. Dr. Ingber has made major contributions to cell and tissue engineering, angiogenesis and cancer research, systems biology, and nanobiotechnology. He was the first researcher to recognize that tensegrity architecture (in which a system stabilizes itself mechanically by balancing local compression with continuous tension) is a fundamental principle in the way living organisms are structured at the nanometer scale.

Dr. Ingber has authored more than 300 publications and 40 patents and has received numerous distinctions including the Pritzker Award from the Biomedical Engineering Society, Lifetime Achievement Award from the Society of In Vitro Biology, the Rous-Whipple Award from the American Society for Investigative Pathology, and the Department of Defense Breast Cancer Innovator Award.

# Technical Tours

## The Boston Harbor Cleanup—An Environmental Transformation

This is a unique tour that blends history, politics, and engineering.

Once said to be the dirtiest harbor in America, the Boston Harbor is now part of a state-of-the-art treatment plan for the disposal of wastewater from Boston and its surrounding communities. Boston Harbor consists of an inner and outer harbor encompassing 50 square miles, a shoreline of 180 miles, and 34 harbor islands. The Boston Harbor cleanup is recognized as one of the nation's greatest environmental achievements, with an investment of more than $4.5 billion in the treatment facilities.

The Boston Harbor tour consists of a 90-minute chartered cruise showing attendees some of the many improvements, including the South Boston Combined Sewer Overflow and Stormwater Tunnel Project, which has made the beaches of North Dorchester Bay the cleanest urban beaches in America. Attendees will also see elements of the Big Dig—including Spectacle Island, which has been capped with dredge spoil from the Central Artery/Ted Williams Tunnel and transformed from a dumpsite into a popular destination in the Boston Harbor Islands National Park. Refreshments will be available for purchase.

The narrated portion of the tour will be led by Bruce Berman, Director of Communications Strategy and Programs for Save the Harbor/Save the Bay, a nonprofit public interest harbor advocacy organization made up of thousands of citizens, as well as scientists and civic, corporate, cultural, and community leaders. Learn more at www.savetheharbor.org.

### SCHEDULE

Sunday, July 8, 2012

| | |
|---|---|
| 5:15 p.m. | Depart Marriott Copley Place |
| 5:45 p.m. | Arrive at Waterfront |
| 6:00–7:30 p.m. | Tour through Boston Harbor |
| 7:30–8:00 p.m. | Depart Waterfront and Return to Marriott Copley Place |

# Technical Tours

## MIT Media Lab

The MIT Media Lab was founded by Massachusetts Institute of Technology (MIT) Professor Nicholas Negroponte and the late Jerome Wiesner (former Science Advisor to President John F. Kennedy and former President of MIT), who foresaw the coming convergence of computing, publishing, and broadcast, fueled by changes in the communications industry. As this convergence accelerated, it spurred interconnected developments in the unusual range of disciplines that the Lab brought together, including cognition, electronic music, graphic design, video, and holography, as well as work in computation and human-machine interfaces. True to the vision of its founders, today's Media Lab continues to focus on the study, invention, and creative use of digital technologies to enhance the ways that people think, express, and communicate ideas, and explore new scientific frontiers.

The MIT Media Lab applies an unorthodox research approach to envision the impact of emerging technologies on everyday life—technologies that promise to fundamentally transform our most basic notions of human capabilities. Unconstrained by traditional disciplines, Lab designers, engineers, artists, and scientists work atelier-style, conducting more than 350 projects that range from neuroengineering, to how children learn, to developing the city car of the future. Lab researchers foster a unique culture of learning by doing, developing technologies that empower people of all ages, from all walks of life, in all societies, to design and invent new possibilities for themselves and their communities.

Conference attendees participating in this technical tour will have the opportunity to view the interdisciplinary research ongoing in the following groups:

- Biomechatronics
- Mediated Matter
- Molecular Machines
- Personal Robots
- Responsive Environments
- Affective Computing
- Cognitive Machines

### SCHEDULE

Monday, July 9, 2012

2:45 p.m. Depart from Hynes Convention Center
3:00 p.m. Arrive at MIT Media Lab and Tour Facility
5:00 p.m. Depart MIT Media Lab and Return to Hynes Convention Center

# Technical Tours

## Green Infrastructure in Action

**Restrictions:** All participants will be required to provide a government-issued picture identification that includes the participant's birth date and an expiration date (e.g., a valid passport) upon arrival at the Wind Technology Testing Center location.

The Green Infrastructure tour will provide attendees with the opportunity to see two cutting-edge facilities that are addressing sustainability in different fashions.

***Genzyme:*** With core values in innovation, collaboration, transparency, and entrepreneurial spirit, Genzyme Corporation, a Sanofi company and one of the world leaders in biotechnology, is committed to helping patients by developing breakthrough treatments for rare genetic diseases, multiple sclerosis, cardiovascular disease, and endocrine disorders. The Genzyme Center, headquarters for the company, reflects these values through its unique design that brings light and greenery into the building in an environmentally friendly way. In this guided walking tour of the 12-story Genzyme Center of 350,000 square feet, participants will go in depth to see not only the green design of the building (a LEED platinum structure), but how all of the support systems contribute to its success. From the WAREMA blinds, controlled by the location of the sun and the milieus of light, to the cutting-edge control room (where literally any door in the building can be opened and closed), this is a unique opportunity to see modern design and engineering at its finest.

***Wind Technology Testing Center:*** To maintain high levels of reliability and meet international certification standards it is critical to test wind turbine blades. The Large Blade Testing Facility, operated by the Massachusetts Clean Energy Center and the largest of its kind in the world, offers a full range of certification tests for blades up to 90 meters in length. The Wind Technology Testing Center offers a full suite of static and fatigue tests per the IEC61400-23 standard. This tour includes a guided visit to the Center's premises at the deep-water port in Charlestown, MA.

### SCHEDULE

Monday, July 9, 2012

| | |
|---|---|
| 2:45 p.m. | Depart Hynes Convention Center |
| 3:00 p.m. | Arrive at Genzyme |
| 3:00–4:00 p.m. | Tour of Genzyme |
| 4:00 p.m. | Depart Genzyme |
| 4:15 p.m. | Arrive at Wind Technology Testing Center |
| 4:15–5:15 p.m. | Tour of Wind Technology Testing Center |
| 5:15 p.m. | Depart Wind Technology Testing Center and Return to Hynes Convention Center |

# Technical Tours

## Working with Small Business—Success Stories

The Working with Small Business tour will showcase some of the exciting developments at two Massachusetts small businesses: Agiltron and NeuroLogica. These firms have leveraged academic relationships that are highlights of both companies' success stories.

***Agiltron, Inc.:*** Participants in this tour will gain insight into a small technology business product manufacturing and R&D facility. Agiltron, a manufacturer of photonic systems and components for the mass market, is leader in the markets for optical switches, high-power optical components, variable optical attenuators, time controls and optical polarization, molded infrared lenses, infrared detectors, and Raman spectrometers. With a world-class team of serial entrepreneurs and veteran engineers, the company developed a unique ability to produce unmatched solutions in combination with cost-effective manufacturing and currently holds over 40 issued or pending U.S. patents for its products. The visit to Agiltron will include a tour of their company headquarters in Woburn, MA, including the touring of facilities dedicated to electro-optic device assembly, optical spectrometer manufacturing, infrared detector processing and testing, and nano-materials processing. The tour will be rounded off by a presentation on Agiltron's venture and its successes.

***NeuroLogica Corporation:*** Located in Danvers, MA, NeuroLogica is a producer of innovative medical imaging equipment for private practices and healthcare facilities worldwide. Established in 2004, their expertise ranges from conceiving, designing, engineering, manufacturing, and marketing of imaging systems including ultrasound, PET, CT, MRI, and radiation therapy. Launched in 2005, one of their renowned products is the CereTom system, which is in use in emergency rooms, stroke centers, clinics, intensive care units, and neurosurgical operating rooms. One of the company's most recent developments in portable computed tomography imaging is the BodyTom, a full-body, portable, 32-slice CT that claims an impressive 85 cm gantry and 60 cm field of view. The tour of NeuroLogica's facilities will showcase state-of-the-art product manufacturing from the small business perspective, incorporating disciplines such as materials science, product design, manufacturing engineering, and beyond. Product demos in to-scale hospital operating rooms and patient suites will demonstrate the issues that must be considered during the product development process, while production facilities will show the inner workings of complex medical devices. Collaboration with academia, one of NeuroLogica's strengths, will also be discussed.

# Technical Tours

## Working with Small Business—Success Stories *(continued)*

### SCHEDULE

Tuesday, July 10, 2012

| | |
|---|---|
| 2:00 p.m. | Depart Hynes Convention Center |
| 2:30 p.m. | Arrive at Agiltron |
| 2:30–2:45 p.m. | Presentation at Agiltron |
| 2:45–3:30 p.m. | Tour of Agiltron |
| 3:30 p.m. | Depart Agiltron |
| 3:50 p.m. | Arrive at NeuroLogica |
| 3:50–4:45 p.m. | Tour of NeuroLogica |
| 4:50 p.m. | Depart NeuroLogica and Return to Hynes Convention Center |

# Technical Tours

## Raytheon Integrated Air Defense Center—An Advanced Design and Production Facility

**Restrictions:** U.S. citizens only; please bring your passport to the tour

Raytheon Integrated Defense Systems invites attendees to tour the Raytheon Integrated Air Defense Center (IADC) in Andover, MA. The Raytheon IADC is an award-winning integrated design and production center encompassing 1.7 million square feet. Attendees will tour capabilities ranging from circuit card assembly through hardware integration.

Raytheon is a technology and innovation leader specializing in defense, homeland security, and other government markets throughout the world. Raytheon provides products and services to customers in 80 nations with 71,000 employees worldwide and $25 billion in 2011 sales.

### SCHEDULE

Tuesday, July 10, 2012

| | |
|---|---|
| 2:00 p.m. | Depart from Hynes Convention Center |
| 2:25 p.m. | Arrive at Raytheon |
| 2:30–5:00 p.m. | Tour of Raytheon Facilities |
| 5:00–5:30 p.m. | Depart from Raytheon and Return to Hynes Convention Center |

Wednesday, July 11, 2012

| | |
|---|---|
| 1:00 p.m. | Depart from Hynes Convention Center |
| 1:25 p.m. | Arrive at Raytheon |
| 1:30–4:00 p.m. | Tour of Raytheon Facilities |
| 4:00–4:30 p.m. | Depart from Raytheon and Return to Hynes Convention Center |

# Technical Tours

## The Future of Manufacturing: Academic-Industrial Alignment

**Restrictions:** No photography will be permitted during the tour

The Future of Manufacturing tour will examine where academia is applying its strengths in support of industrial innovation. Attendees will tour two highly innovative facilities, the Fraunhofer Center for Manufacturing Innovation and the Center for High-rate Nanomanufacturing.

The Fraunhofer Center for Manufacturing Innovation, in collaboration with Boston University (BU), performs government- and industry-funded research and development, and provides advanced technological and engineering solutions to both local and international companies. By bringing together faculty, students, and a full-time engineering staff, the Center goes beyond traditional academic research to develop and deploy complete technology solutions. The Center has extensive experience in the development of instruments, devices, and manufacturing automation systems for a variety of industries, including biotech/biomedical, photonics, semiconductor, and renewable energy. In addition, the Center has in-house biochemistry expertise and often takes on projects that are at the intersection of engineering and life sciences. Whether developing a new bio-assay for a molecular diagnostics chip, a first-of-a-kind medical device, or a next-generation turnkey automation system, the Center takes each project all the way to deployment. Part of the Fraunhofer Gessellschaft, Europe's largest nonprofit R&D organization with 70 institutes and over 18,000 employees worldwide, Fraunhofer performs its own preliminary research as well as being a valuable partner to industry and other research institutes and universities. Fraunhofer's clients include Fortune 500 companies all the way to small start-ups, as well as a number of U.S. and European government agencies. In this tour you will get to see some of the numerous labs on the Fraunhofer-BU premises and learn more about its current research initiatives in advanced manufacturing engineering research, development, and process design.

The visit to the NSF-funded Nanoscale Science and Engineering Center for High-rate Nanomanufacturing (CHN) at Northeastern University (NU) includes a guided tour of the NSF Center for Nano and Micro-Contamination Control and the George J. Kostas Nanoscale Technology and Manufacturing Research Center. Dr. Ahmed Busnaina, CHN Director, and Dr. Siva Somu, CHN Research Scientist & Technology Development Manager, will be talking about the research falling into four categories: large-scale directed assembly and transfer research, applications and products, environmental health and safety research, and regulatory and ethical research. Participants in this tour will also learn about the main goals of the Center's research, including the closing of the gap between nanoscale science research and the creation of commercial products; the developing of processes and tools that will enable high-rate/high-volume, bottom-up, nanoscale directed assembly of nanoelements and polymer nanostructures; and the delivery of much-needed education in nanomanufacturing, including its environmental, economic, and societal implications, to the current and emerging workforce through partnerships among industry, universities, and K–12 teachers and students.

# Technical Tours

## The Future of Manufacturing: Academic-Industrial Alignment *(continued)*

### SCHEDULE

Wednesday, July 11, 2012

1:00 p.m. Depart Hynes Convention Center
1:15 p.m. Arrive at Fraunhofer, BU or CHN, NU
1:25 p.m. Background Briefing
1:40 p.m. Small-Group Tours of Facility
2:25 p.m. Depart Fraunhofer, BU or CHN, NU
2:40 p.m. Arrive at CHN, NU or Fraunhofer, BU
2:50 p.m. Background Briefing
3:05 p.m. Small-Group Tours of Facility
3:50 p.m. Depart CHN, NU or Fraunhofer, BU and Return to Hynes Convention Center

# NSF Program Directors and Program Staff

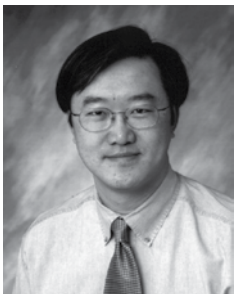
**Steven McKnight – Division Director**

**George Hazelrigg – Deputy Division Director and Program Director**
Manufacturing Machines & Equipment; Sensors & Sensing Systems

**Russell Barton – Program Director**
Manufacturing Enterprise Systems & Service Enterprise Systems

**Christina Bloebaum – Program Director**
Engineering Design & Innovation

**Dennis Carter – Program Director**
Biomechanics & Mechanobiology



**George Chiu – Program Director**
Control Systems

**Clark Cooper – Program Director**
Materials & Surface Engineering

**Martin Dunn – Program Director**
Mechanics of Materials

**Richard Fragaszy – Program Director**
Geomechanics & Geomaterials & Geotechnical Engineering

**Michael Fu – Program Director**
Operations Research

**Yick Grace Hsuan – Program Director**
Structural Materials & Mechanics

**Bruce Kramer – Program Director**
NanoManufacturing

# NSF Program Directors and Program Staff

**Kishor Mehta – Program Director**
Hazard Mitigation &
Structural Engineering

**Eduardo Misawa – Program Director**
Dynamical Systems

**Joy Pauschke – Program Director**
Network for Earthquake Engineering
Simulation Research

**Mary Toney – Program Director**
Materials Processing & Manufacturing

**Konstantinos Triantis – Program Director**
Civil Infrastructure Systems

**Dennis Wenger – Program Director**
Infrastructure Management
& Extreme Events

**Donald Senich – Program Director**
Grant Opportunity for Academic
Liaison with Industry (GOALI)

**Jo Culbertson – Program Manager**
Integrative Activities

**Veronica Calvo – Program Specialist**

**Matthew Carnavos – Program Analyst**

**Elliott Tibor – Science Assistant**

# Conference Organizers

**National Science Foundation**

Division of Civil, Mechanical and Manufacturing Innovation
Christina Bloebaum, Program Director
Veronica Calvo, Program Specialist
Matthew Carnavos, Program Analyst

Northeastern

**Northeastern University**

**Conference Chair:**
Mel Bernstein, Senior Vice Provost for Research and Graduate Education

**Conference Co-Chairs:**
Allen Soyster, Interim Dean of Engineering
Sara Wadia-Fascetti, Associate Dean of Engineering for Research and Graduate Education
Jerome Hajjar, Chair of Civil and Environmental Engineering
Jacqueline Isaacs, Interim Chair of Mechanical and Industrial Engineering
Mohamad Metghalchi, Professor of Mechanical and Industrial Engineering
Andrew Gouldstone, Professor of Mechanical and Industrial Engineering
Sagar Kamarthi, Professor of Mechanical and Industrial Engineering

**Conference Staff:**
Anne-Carina Kelly, Communications Coordinator, Graduate School of Engineering
Mariah Nobrega, Associate Director, Research Development Initiatives, College of Engineering
Claire Duggan, Director of Programs and Partnerships, Center for STEM Education

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**ESI**

Annie Oliver, Program Director
Jennifer Pinder, Program Manager
Michelle Rasper, Meeting Planner

# John B. Hynes Veterans Memorial Convention Center (Hynes Center) Information

## Greater Boston Convention and Visitors Bureau Information Desk

For your convenience, during conference hours, the Greater Boston Convention and Visitors Bureau will have an information desk located on level one adjacent to the hallway where the conference registration and information desk will be. A concierge will be stationed at the desk and available to assist conference attendees and guests with information about the Hynes Center, ground transportation, local dining, shopping, and attractions. The desk will be open during the following hours:

| | |
|---|---|
| Monday, July 9: | 8:30 a.m.–6:00 p.m. |
| Tuesday, July 10: | 7:30 a.m.–6:00 p.m. |
| Wednesday, July 11: | 7:30 a.m.–4:00 p.m. |

## Local Restaurant Information

The Shops at Prudential Center is connected to the Hynes Center and offers a variety of restaurant options, as well as The Terrace Food Court. Please refer to page 44 for a list of local restaurants and page 45 for a map of The Shops at Prudential Center.

## First Aid Station

Medical emergencies and injuries should be reported immediately to the First Aid Station which is located on level one of the Hynes Center, in the main lobby between the Prudential Plaza entrance and the Boylston Street entrance. If an emergency arises and you are unable to report to the First Aid Station, please dial the First Aid Office at extension "2240" from any in-house courtesy phone. The First Aid Office can also be reached from an outside phone at 617-954-2240. A First Aid Station nurse will be on duty during the specified hours listed below:

| | |
|---|---|
| Monday, July 9: | 11:00 a.m.–6:00 p.m. |
| Tuesday, July 10: | 8:00 a.m.–6:00 p.m. |
| Wednesday, July 11: | 7:00 a.m.–2:00 p.m. |

## Nonsmoking Facility

The Hynes Center is committed to providing a smoke-free environment for visitors. Smoking is not allowed in the building at any time. Designated smoking areas are located outside the building. Please inquire at the information desk for the location of areas where smoking is permitted.

## ATM

Guests will find ATMs on level zero of the Hynes Center inside both the Boylston Street and Prudential Street entrances.

# John B. Hynes Veterans Memorial Convention Center (Hynes Center) Information

## FedEx Office

The FedEx Office is located on level one of the Hynes Center, in the main lobby between the Prudential Plaza entrance and the Boylston Street entrance. The hours of operation are 9:00 a.m.–5:00 p.m., Monday through Friday. Services include copying and digital printing, document production, supplies, computer services, pack and ship options, and fax services. The FedEx Office can be reached by calling 617-954-2725.

## American with Disabilities Act (ADA)

The Hynes Center strives to meet the needs of all its patrons. All areas are ADA accessible. Elevators are located on each level, and a limited number of wheelchairs are available at the First Aid Station at no charge. Special hearing devices are also available upon request at the conference registration and information desk.

## Wireless Internet

Complimentary wireless Internet is available throughout the Hynes Center.

## Transportation

- ### Technical Tour Transportation

  All technical tours will depart and return from the Hynes Center. The loading/waiting area for the technical tours is located on level zero outside the Boylston Street entrance. The tour buses will leave promptly; please arrive *at least* 15 minutes before your tour is scheduled to begin to check in and board the bus.

- ### Reception Transportation

  Transportation will be provided to both the reception at Northeastern University on Monday, July 9, and the reception at the Boston Museum of Science on Tuesday, July 10. Shuttle buses will depart and return from the Boston Marriott Copley Place. The loading/waiting area for the shuttles is located outside the hotel lobby on Huntington Avenue. Shuttles will run continuously for the duration of both events.

# The Shops at Prudential Center Restaurant List

## Eatery

| | |
|---|---|
| Ben & Jerry's | The Terrace Food Court |
| Boston Chowda | The Terrace Food Court |
| Cheeseboy | The Terrace Food Court |
| Flamers | The Terrace Food Court |
| Gourmet India | The Terrace Food Court |
| Panda Express | The Terrace Food Court |
| Paradise Bakery & Café | The Terrace Food Court |
| Pizzeria Regina | The Terrace Food Court |
| Poulet | The Terrace Food Court |
| Qdoba Mexican Grill | The Terrace Food Court |
| Sarku Japan | The Terrace Food Court |
| Starbucks Café at Barnes & Noble | Huntington Arcade |

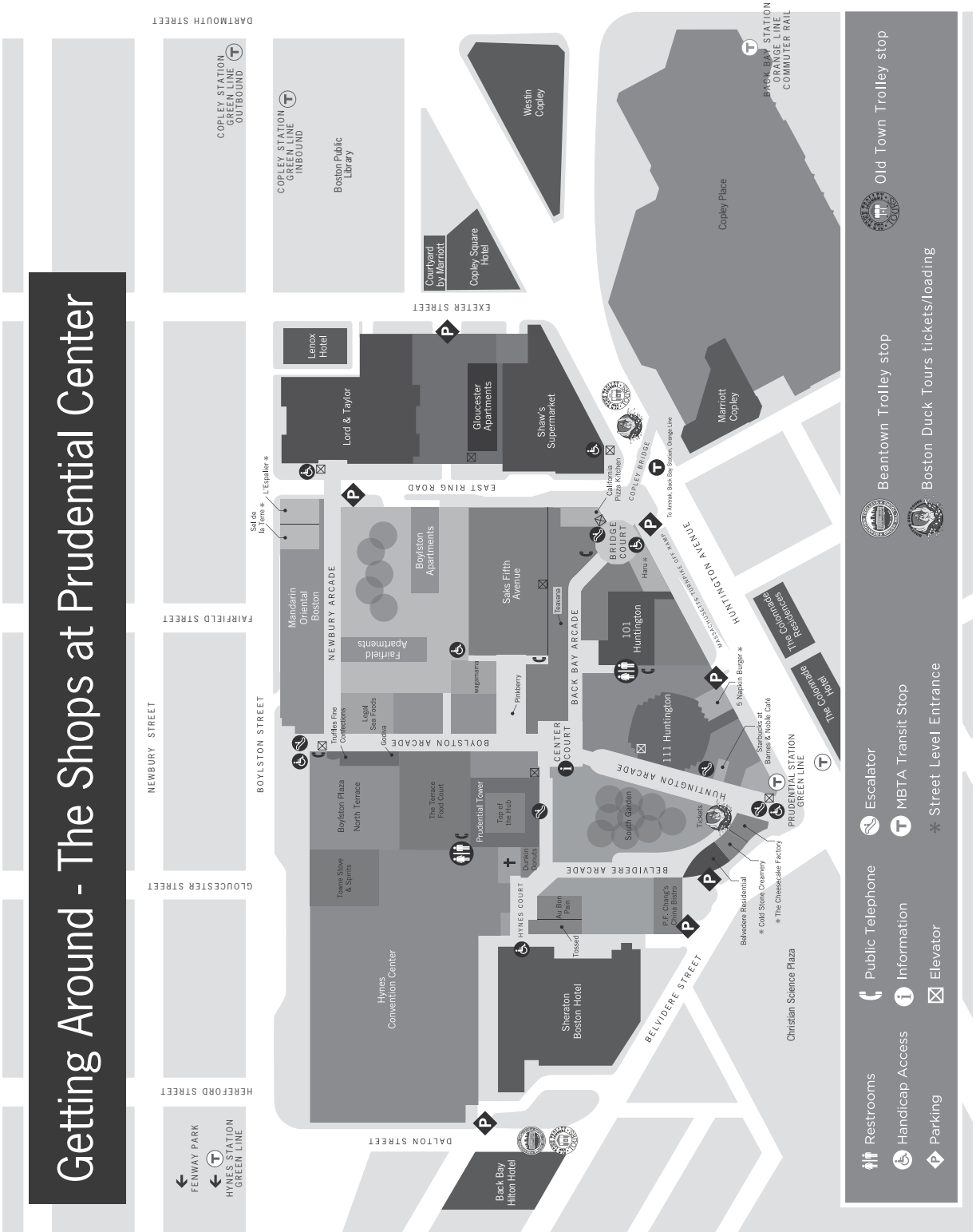
## Restaurant

| | |
|---|---|
| 5 Napkin Burger | Huntington Avenue |
| Au Bon Pain | Hynes Court |
| California Pizza Kitchen | Back Bay Arcade |
| Haru | Huntington Avenue |
| L'Espalier | Mandarin Oriental Boston |
| Legal Sea Foods | Boylston Arcade |
| P. F. Chang's China Bistro | Belvidere Arcade |
| Sel de la Terre | Mandarin Oriental Boston |
| The Cheesecake Factory | Huntington Avenue |
| Top of the Hub | Prudential Tower |
| Tossed | Hynes Court |
| Towne Stove and Spirits | Boylston Street |
| Wagamama | Fashion Court |

## Specialty Food

| | |
|---|---|
| Cold Stone Creamery | Belvidere Street |
| Dunkin' Donuts | Hynes Court |
| Godiva | Boylston Arcade |
| Pinkberry | Fashion Court |
| Teavana | Back Bay Arcade |
| Truffles | Boylston Arcade |

# The Shops at Prudential Center Map



# K–12 Outreach Program

The vision for the K–12 Outreach Program is to provide appropriate means for engagement of a variety of constituencies along the K–12 spectrum.

## STEM Sunday

**Audience:** Elementary and middle school children and families; open to conference participants, participants in science, technology, engineering, and mathematics (STEM) programs at Northeastern University, and the local community

**Where:** Northeastern University's main campus

**When:** Sunday, July 8, 2012, 9:30 a.m.–12:30 p.m.

Children and families will engage in variety of activities tied to the research areas of the conference. University graduate students and undergraduate students, in addition to partner teachers and organizations, will staff the various activities. Children will have a "passport" of all activities represented that will be "stamped" upon completion of each activity station. In addition, all attendees will have the opportunity to engage in at least two 15- to 20-minute "performances/presentations." All participants will receive additional information regarding STEM family activities available across the city in addition to a selection of handouts regarding academic pathways/careers in engineering.

## Day at the Conference for Local High School and Community College Students and Teachers

**Audience:** High school and community college students and teachers, chosen from current participants in and alumni of Research Experiences for Undergraduates (REU), Research Experiences for Teachers (RET), and Young Scholars Programs

**Where:** John B. Hynes Veterans Memorial Convention Center

**When:** Monday, July 9, 2012

Participants will engage in an introductory session and have specific conference sessions identified for participation. They will meet at lunch for roundtable discussion and again at the end of the session day. Continued feedback will be solicited from both cohorts after the conference.

# Graduate Student Program

The vision for the graduate student program is to give students both tools and opportunities to build their future career network. Graduate students chosen for this year's conference fellowships were selected from an extremely accomplished pool of over 700 applicants and represent an excellent cross-section of science, technology, engineering, and mathematics (STEM) innovators. The graduate students will participate in the overall conference as well as their own program, which is divided into three key pieces: a Sunday Boot Camp focused on technical communication, a Monday morning panel series looking at careers in academia and industry, and a student-oriented poster cluster on Tuesday afternoon in which students present a poster on the research topic of their choice.

## Sunday Boot Camp: What We Talk about When We Talk about Work: A Boot Camp for Tomorrow's Professional

Do I even have any intellectual property? If so, what should I present to my colleagues and when? When I present it to them, what's the best way to tell the story so my audience isn't bored? And what do I say to the friend of a friend who asks me what I do? What about the campus newspaper reporter?

This full-day "Boot Camp" offers attendees an opportunity to delve into several areas of scientific communication that aren't part of the core STEM graduate program, yet are critical for success in any field. Each topic will be taught by experts in the field, in a 2-hour brief that allows participants to get a solid understanding of best practices to incorporate professionally. At the end of the workshop, attendees will be better prepared to present their work to others (both within and outside their discipline) in a more disciplined, informative, and ultimately more effective manner.

- Intellectual Property
  Michael Bunis, Partner, Choate Hall and Stewart LLP
- Technical Presentation Skills
  Michael Alley, Associate Professor of Engineering Communication, Penn State University
- Talking to the Media and the Public
  Carol Morton, Freelance Health/Science Journalist
  Karen Weintraub, Freelance Science/Health Journalist

## Monday Panel Sessions: Academic Career Paths and Entrepreneurial Career Paths

These sessions, offered before the formal start of the conference, will allow graduate students to engage with representatives from academia and entrepreneurship. Students will hear about the reality of both of these paths and have the opportunity to ask questions in an informal setting. Academics will be principally assistant professors from local universities, who can speak to some of the opportunities and challenges they have experienced. Entrepreneurs will be alumni of MassChallenge, a program which provides seed funding and support for novice start-ups.

# Student Poster Session Schedule

## Tuesday Graduate Student Poster Cluster

All conference attendees are encouraged to visit the graduate student poster cluster during Poster Session 4 on Tuesday afternoon from 3:15 p.m. to 5:45 p.m. This will give greater exposure to the students and provide them with enhanced opportunities to discuss their research interests and career goals with established engineering professionals. The student poster presenters are listed below in alphabetical order along with the corresponding poster location. Please refer to the accompanying map for the poster session layout.

# A

**Ayman AbdelRahman,** University of South Carolina — **A1**
Lamb Waves Energy & Power Transfer between Structure and Bonded Piezoelectric Wafer Active Sensors for Structural Health Monitoring

**Phillip Ahn,** Northwestern University — **A2**
High Contrast Evanescent Field Detection Using an Ultrasonic Heterodyne Near-Field Scanning Optical Microscopy

**Seyedhamidreza Alaie,** University of New Mexico — **A3**
Phonon Manipulation with Nanoscale Metamaterials

**Ala' Al-Azizi,** The Pennsylvania State University — **A4**
Understanding and Improving Tribological Properties of Diamond-Like Carbon

**Aboelkasim Ali,** Michigan Technological University — **A5**
Micromechanical Modeling of Asphalt Pavement Fatigue Cracking Using eXtended Finite Element Method (XFEM)

**Bryan Allison,** University of Florida — **A6**
Mechanistic Modeling of Fatigue Life Prediction in High Precision Ball Bearings

**William Aquite,** University of Wisconsin, Madison — **A7**
Micropelletization Using Rayleigh Disturbances

**Luis G. Arboleda,** Northwestern University — **A8**
Condition Monitoring of Urban Infrastructure: Time Dependent Effects on Top-down Excavations

**Andrea Arena,** Clarkson University — **A9**
Efficient Reduced-Order Models for Nonlinear Aeroelastic Prediction in Long-Span Suspension Bridges

**David Argudo,** University of Pennsylvania — **A10**
The Effect of Solution Electrostatics on Plectonemic DNA

# Student Poster Session Schedule

**Ingrid Arocho,** North Carolina State University — **A11**
The Impact of Construction Projects and Activities on Emissions

**Tugba Arsava,** University of Massachusetts, Lowell — **A12**
Impact of Providing Real-Time Traffic Information on Emergency Evacuation Efficiency – An Empirical Study Based on Microscopic Traffic Simulation

**Mohammad-Amin Asareh,** Missouri University of Science and Technology — **A13**
Coupled Aero-Elastic Seismic Simulations for Wind Turbines

**Reza Avazmohammadi,** University of Pennsylvania — **A14**
Tangent Second-order Estimates for the Large-strain, Macroscopic Response of Particle-reinforced Elastomers

**Esam Aziz,** Michigan State University — **A15**
Evaluating Fire Resistance of Steel Girders in Bridges

## B

**Pouria Bahmani,** University of Alabama — **A16**
Performance-Based Seismic Retrofit Procedure for Soft-Story Woodframe Buildings

**Emmanuel Baisie,** North Carolina Agricultural & Technical State University — **A17**
Framework for Conditioner Design Optimization

**Jean Batista Abreu,** Johns Hopkins University — **A18**
Structural Response of Oil Storage Tanks Subjected to Elevated Temperatures

**Abhimanyu Bhat,** University of Texas at Austin — **A19**
Electrolytic Infiltration of SLS Manufactured Parts

**Sanket Bhat,** University of Wisconsin, Madison — **A20**
Base-stock Policy for a Manufacturing System with Periodic Demands

**Chandrakanth Bolisetti,** University at Buffalo, The State University of New York — **A21**
Frequency and Time Domain Methods in Numerical Site Response Simulations

**Rajdeep Bondade,** The University of Texas at Dallas — **A22**
Carbon Nanotube Supercapacitor Based On-Chip Auto-Reconfigurable Power Network for Autonomous Wireless Sensor Nodes

**Holly Bonstrom,** University of Colorado — **A23**
Hazard Loss Estimation Using System Reliability

# Student Poster Session Schedule

## C

**Precious Cantu,** University of Utah — **A24**
Diffraction-unlimited Nano-patterning via Optical Saturable Transitions

**Germán Capuano,** Georgia Institute of Technology — **A25**
Dynamic Shape Functions for Multi-scale Wave Propagation

**Brent Chancellor,** Lehigh University — **A26**
Effect of Ground Motion Selection on the Seismic Response of Self-Centering Concentrically-Braced Frames

**Santanu Chandra,** University of Notre Dame — **A27**
Characterization of Native Valvular Hemodynamics and Side Specific Leaflet Stress in a Normal Aortic Valve – A Fluid Structure Interaction Analysis Approach

**Christopher Chaney,** Washington State University — **A28**
High Performance Marine Craft with Aerodynamic Support

**Roland Chen,** University of Michigan — **A29**
Tissue Cutting Mechanics for Better Needle Biopsy

**Tao Cheng,** Georgia Institute of Technology — **A30**
Algorithms for Automated Operator Visibility and Proximity Hazard Evaluation

**Xu Cheng,** Northwestern University — **A31**
Polymer Nanocomposites: Investigating the Modulus of the Interphase Region

**Gabriel Chow,** University of Washington — **A32**
Mechanical Characterization of Porous Thin Films by Laser-induced Surface Acoustic Waves

**Sagar Chowdhury,** University of Maryland — **A33**
Automated Indirect Manipulation of Cells Using Optical Tweezers

**David Christopher,** Clemson University — **A34**
The Effect of Granular Activated Carbon Pretreatment on Membrane Filtration of Greywater

**Ding-Wen Chung,** Purdue University — **A35**
Virtual Electrochemical Strain Microscopy of Polycrystalline LiCoO2 Films

**Seydou Cisse,** North Dakota State University — **A36**
Entrapped Cell Permeable Reactive Barrier to Enhance Acid Mine Drainage Remediation

# Student Poster Session Schedule

**Camila Coria,** University of Nevada, Reno — **A37**
Response of a Full-Scale Seismic Isolated Building During a Shaking Table Test at E-Defense

**Mabel Cristina Cuellar Azcarate,** University of South Carolina — **A38**
Collaborative Research: Resilient and Sustainable Engineered Fiber-Reinforced Earthen Masonry for High Wind Regions

## D

**Yildiz Dak Hazirbaba,** Southern Illinois University, Carbondale — **A39**
Maximum Direction to Geometric Mean Spectral Response Ratios Using Relevance Vector Machines

**Charlotte de Vries,** The Pennsylvania State University — **A40**
Preventing Disproportionate Disaccommodation when Designing for Human Variability

**Carolyn Desrochers,** Villanova University — **A41**
Repurposing Coal Combustion Fly Ash (CCFA) Waste Materials into Sustainable Construction Products

**Anna Domask,** The Pennsylvania State University — **A42**
Novel Contact Materials and Innovative Switch Testing Device for RF Ohmic Contact Switches

**Baiping Dong,** Lehigh University — **A43**
Real-time Hybrid Simulation and Performance Evaluation of a Structure with Large-scale Nonlinear Viscous Dampers

**Li Dong,** University of Alabama at Birmingham — **A44**
Composite Structural Insulated Panels (CSIPs) for Hazards Resistant Structures

**Ke Du,** Stevens Institute of Technology — **A45**
Nanopatterning of Disconnected Metal Nanostructures on PDMS Substrates by Using Free Standing Film as Stencil Lithography Mask

**Li Du,** The University of Akron — **A46**
Parallel Sensing of Metallic Wear Debris in Lubricants using Undersampling Data Processing

**Ping Du,** Boston University — **A47**
Viscoelastic Characterization and Modeling of PDMS Micropillars for Cellular Force Measurement Applications

## E

**Hamid Ebrahimi,** Northeastern University — **A48**
Performance and Failure of Honeycomb Sandwich Panels Subjected to Complex Dynamic Loading

# Student Poster Session Schedule

**Alain El Howayek,** Purdue University — **A49**
Characterization, Rheology and Microstructure of Laponite Suspensions

**Serkan Erbis,** Northeastern University — **A50**
Modeling Approaches for Sustainable Capacity Expansion Planning

**Sebastian Espinoza,** Northeastern University — **A51**
Recycling Infrastructure for Nano Enabled Lithium Ion Batteries

**Allen Eyler,** Washington State University — **A52**
Novel Wetting Behavior and Adhesion Properties of Graphitic Nanofiber-Modified Epoxy Resins with Fabric Reinforcements

## F

**Samira Faegh,** Northeastern University — **A53**
A Self-Sensing MicroCantilever Biosensor for Detection of Ultrasmall Adsorbed Biological Species

**Habib Fathi,** Georgia Institute of Technology — **A54**
A Videogrammetric Framework for Construction Site Surveying: Estimation, Documentation, and Archiving

**Pengzhan Fei,** The University of Akron — **A55**
Shape Memory Behavior of Side-Chain Crystalline Polymers

**Xiaofan Fei,** Georgia Institute of Technology — **A56**
Simulating the Detailed Design Process: Coordination and Communication Between Design Teams

**Erica Fischer,** Purdue University — **A57**
Experimental and Numerical Evaluation of Composite Floor Slabs under Fire

**Robert Fleming,** University of Arkansas — **A58**
Functional Surface Engineering for Surface Wetting Modifications

## G

**Sai Ganapuram,** University of Akron — **A59**
Cracking in Concrete Bridge Decks: Governing Factors and Quantification

**Arnab Ganguly,** Purdue University — **A60**
Accelerating Pharmaceutical Manufacturing through Physics-based Modeling

# Student Poster Session Schedule

**Andre Garcia,** Northwestern University — **A61**
Nature's Defensive Nanostructures: Deformation and Failure of Bioinspired Diatom Glass Spines

**Jose Garcia Capella,** University of Puerto Rico at Mayaguez — **A62**
Structure and Properties of Clathrate Materials

**Yunlong Geng,** University of Nebraska, Lincoln — **A63**
Non-conventional Ways to Obtain L10-Structure Hard Magnetic FeNi

**Amy Getchell,** University of New Hampshire — **A64**
NHDOT Geotechnical Test Embankment on Soft Marine Clay

**Amir Ghavibazoo,** North Dakota State University — **A65**
Fundamental Characterization of Mechanism of Interaction between Crumb Rubber and Asphalt

**Masoud Gheisari,** Georgia Institute of Technology — **A66**
An Ambient Intelligent Environment for Accessing Building Information through a Mobile Augmented Reality Approach

**Arthur Graziano,** University of Florida — **A67**
Surface Functionalization by Magnetic Field Assisted Finishing

**Cameron Gross,** Northwestern University — **A68**
Enhanced Fire Resistance of Steels by Secondary Carbide Strengthening

**Peiqiu Guan,** University at Buffalo, The State University of New York — **A69**
Hazard Prevention by Public and Private Partnership

**Feng Guo,** The Pennsylvania State University — **A70**
Droplet Microfluidic Platform for High-throughput Bioassay

**Akshay Gupte,** Georgia Institute of Technology — **A71**
Mixed Integer Bilinear Programming and Pooling Problem

## H

**Babak Haghpanah Jahromi,** Northeastern University — **A72**
Intricate Mechanics of Hierarchical Honeycombs

**Raha Hakimdavar,** Columbia University — **A73**
Predicting Hydrologic Behavior of an Extensive Green Roof Using a 1-D Infiltration Model

# Student Poster Session Schedule

**Ali Hakimian,** Northeastern University — **A74**
Life Cycle Assessment of CNT Lithium-ion Batteries and PSL Biosensors

**Tamer Hamouda,** North Carolina State University — **A75**
Sensing Characteristic of Embedded POF into Composite structure for Structural Health Monitoring Systems

**Yu Han,** The University of Akron — **A76**
A Novel Biosensor chip for High Throughput Detection of Macromolecular Biomarkers

**Jared Hann,** University of Florida — **A77**
Magnetic Field-assisted Nanomachining of Ultraprecision Surfaces

**Anahita Hassanzadeh,** Lehigh University — **A78**
Two Stage Stochastic Optimization with Mixed Integer Recourse

**Celine Hayot,** University of Nebraska, Lincoln — **A79**
Effect of Insect Dimorphism on the Mechanical Properties of Rubber-like Cuticle Determined by Nanoindentation

**Alexander Haywood,** Auburn University — **A80**
Adapting MEMS Processing for Cellulose Nanocrystal Films

**Fang He,** University of Florida — **A81**
Integrated Management of Road and Power Networks Coupled by Electric and Plug-in Hybrid Electric Vehicles

**Zahra Heidary,** University of Illinois at Chicago — **A82**
Multiphysics Modeling for Quantitative Acoustic Emission Testing of Civil Structures

**Pete Hondred,** Iowa State University — **A83**
Thermal-Mechanical Properties of Tung-Oil Based Thermosetting Bio-Polymers

**Yifeng Hong,** Georgia Institute of Technology — **A84**
Fabrication of Interconnected Porous Elastomers by A Microsphere-Templating Approach

**Amy Hopkins,** California State University, Sacramento — **A85**
Seismically Enhanced Non-Structural Partition Walls for Unibody Residential Construction

**Rachel Howser,** University of Houston — **A86**
Development of Carbon Nanofiber Aggregate for Damage Detection in Concrete Structures

**Jia Hu,** University of Florida — **A87**
Decision-making Framework for Selection of Daylighting Systems

# Student Poster Session Schedule

**Arthur Huang,** University of Minnesota — **A88**
Accessibility, Network Structure, and Shopping Destination Choice: A Microscopic Analysis of GPS Travel Data in the Twin Cities

**Ching Hung,** Columbia University — **A89**
Implementation of an Enhanced Elastoplastic Bounding Surface Model in PLAXIS and its Verification

## J

**Rishee Jain,** Columbia University — **A90**
An Algorithmic Approach to Detect the Role of Social Influence on Energy Savings of Building Occupants Exposed to Eco-feedback

**Angelina Jay,** Northeastern University — **A91**
Structural Performance of Tapered Spirally Welded Wind Turbine Towers

**Elaina Jennings,** University of Alabama — **A92**
Shape Memory Alloy Dampers for Response Modification of Light-frame Wood Buildings

**Namin Jeong,** Georgia Institute of Technology — **A93**
A Method for Reverse Engineering of Material microstructure for Heterogeneous CAD

**Dan Jia,** University of North Carolina at Charlotte — **A94**
Structural Analysis on Magnetic Gear of Ocean Energy Power Take-Off System

**Hady Joumaa,** University of Illinois at Urbana-Champaign — **A95**
Elastodynamics and Wave Propagation in Fractal Media

## K

**Harjyoti Kalita,** North Dakota State University — **A96**
Nanoarchitectonic Designs for Polymer Application to Enhance Nanoparticle Dispersion in Aqueous Media

**Rahul Kapadia,** University of California, San Diego — **A97**
A Comparison of the Thermal Conductivity Values of Carbon Nanotube-polymer Composites Probed by the (1) Steady State, and the (2) 3 w Method

**Monica Kapoor,** Northwestern University — **A98**
Design and Development of BCC Cu Precipitation Strengthened Steels - BCC Cu Strengthens the Steel and Enhances Ductility

**Nishant Karasala Kotaiah,** University of South Carolina — **A99**
Parameter Identification of Polythene Glycol Diacrylate

# Student Poster Session Schedule

**Payman Karvanirabori,** Rensselaer Polytechnic Institute **A100**
Thermal-Mechanical Modeling and Simulation of III-Nitride Semiconductors

**Elnaz Kermani,** The Pennsylvania State University **A101**
Energy Dissipation during Collapse of Granular Columns

**Kristi Kern,** Northwestern University **A102**
Determining the Initiation of Cracking Using Real Time Automated Monitoring of an Urban Excavation

**Shahrzad Khansari,** University of Illinois at Chicago **A103**
Green Materials: Strength of Soy Protein Nanofiber Mats

**Maryam Khorshidi,** Arizona State University **A104**
Holistic Ideation Testbed for Creative Design

**Jeongmin Kim,** University of California, Berkeley **A105**
Development of Maskless Plasmonic Nanolithography Tool

**Jihoon Kim,** Wayne State University **A106**
Development of a Framework for Supporting Technology Planning in Product Lifecycle: The Perspective of Actor Network Theory

**Steven Klankowski,** Kansas State University **A107**
High Performance Lithium Ion Battery Anode Based On Core-Shell Heterostructure of Silicon Coated Vertically Aligned Carbon Nano Fibers

**Philip Kwong,** University of Southern California **A108**
Patterning Porous Materials with Functional Polymer Coatings

## L

**Samrakshak Lamichhane,** Howard University **A109**
Mitigation Provisions of Bridges Under Tsunami Effects

**Seung-Woo Lee,** University of Nebraska, Lincoln **A110**
Multianalyte Electrochemical Biosensor on a Single Monolith Electrode

**Ming Li,** University of Connecticut, Storrs **A111**
Kinetics of Lipid Nanodiscs – Potential Targeting Carriers for Therapeutics: Disk Growth and Lipid Exchange

**Sha Li,** University of Michigan, Ann Arbor **A112**
Assembly System Design Considering Product Variety with Application to Automotive Battery Packs

# Student Poster Session Schedule

**Engui Liu,** Polytechnic Institute of New York University — **A113**
Sensing High pH and ASR (Alkali-Silica- Reaction) Detection in Cementitious Materials

**Kaibo Liu,** Georgia Institute of Technology — **A114**
Health Index Development Based on Sensory Data Fusion for Degradation Modeling and Prognostic Analysis

**Xuelian Liu,** Rensselaer Polytechnic Institute — **A115**
A Beyond-CMOS Approach for Addressing Single Thread Performance for Amdahl's Law Effects

**Ying Liu,** University of Connecticut — **A116**
Self-Assembled Lipid-Based Nanodiscs for Hydrophobic Drug Delivery

**Gilson Lomboy,** Iowa State University — **A117**
Particle Interaction and Rheological Behavior of Cement-Based Materials

**Luisa Lopez,** University of Wisconsin, Madison — **A118**
Fiber Motion during Injection Molding

**Cheng Lu,** University of California, Berkeley — **A119**
Normalized Cut: Approximation to Cheeger Constant and its Practical Performance in Image Segmentation

**Michelle Lueck,** Colorado State University — **A120**
Barriers to Hurricane Evacuation: Development of a Scale

**Bismarck Luna,** University at Buffalo, The State University of New York — **A121**
Seismic Response of Low Aspect Ratio Reinforced Concrete Shear Walls

**Albert Luu,** University of California, Irvine — **A122**
Seismic Soil Pressures Measured during a Large Scale Soil-Structure Interaction Experiment on Underground Structures at E-Defense

**Joseph Lydon,** California Institute of Technology — **A123**
Nonlinear Dynamics of 1-D Granular Crystals

## M

**Teng Ma,** Arizona State University — **A124**
Topographic Evolution of Silicon Anode on Soft Substrate for Lithium Ion Battery

**Prakash Manandhar,** University of Massachusetts, Dartmouth — **A125**
Hydrogel Sensor Array for Multiple Degree of Freedom Proprioception in Soft Structured Robots

# Student Poster Session Schedule

**James Manimala,** Purdue University — **A126**
Dynamic Load Reduction using Locally Resonant Periodic Structures

**Hamed Maraghechi,** The Pennsylvania State University — **A127**
Assessment of the Pozzolanic Behavior of Alkali Activated Soda-lime Glass Powder

**Armin Masroor,** University at Buffalo, The State University of New York — **A128**
Impact Model Considering Surface Compliance For Simulation of Base Isolated Buildings Impacting Moat Wall

**Toni-Gaye McCulloch,** University of Central Florida — **A129**
Unlikely Partners? The Fusion of Biology, Engineering, and Architecture to Develop Revolutionary Materials for Sustainable Construction

**Hector Medina,** Virginia Commonwealth University — **A130**
Fracture of Random Rough Surfaces of Poly Methyl Methacrylate: An Experimental and FEM Study

**Farid Moghim,** Northeastern University — **A131**
Computer-generated Random Trajectories of Wind-borne Debris in Turbulent Wind for Estimating Debris Impact against Tall Buildings

**Irshad Mohammad,** University of Texas at Arlington — **A132**
Passive Wireless Sensors for Crack Detection and Shear/compression Sensing

**Chike Monwuba,** Purdue University — **A133**
Geoenvironmental Influences on Raman Spectroscopic Monitoring of Chlorinated Solvents

**David Morrison,** University of Illinois at Urbana-Champaign — **A134**
A Wide Branching Algorithm for Optimization Problems

**Ali Mostafavi,** Purdue University — **A135**
Simulation and Visualization of Financing Policies in Infrastructure Systems

**Paul Mountford,** University of Colorado at Boulder — **A136**
Microbubbles: a platform for studying the mechanics of biological monolayers

**Adam Mueller,** Western Michigan University — **A137**
Geographically Distributed Hybrid Testing in Earthquake Engineering

**Madhuri Murali,** Texas A&M University — **A138**
Development of experimental methods for modeling of offshore wind turbines

# Student Poster Session Schedule

## N

**Roshanak Nateghi,** Johns Hopkins University — **A139**
Modeling Atlantic Hurricane Activity and Reliability of Power Distribution Systems Impacted by Hurricanes in the U.S.

**Man Kwan (Trista) Ng,** Northwestern University — **A140**
Micro-rolling for Surface Texturing at High Rate

**Chilan Ngo,** University of California, Los Angeles — **A141**
Effect of Growth Parameters on the Self-Catalyzed Growth of InP1-xSbx “nanocream cones”

**Esmeralda Nino,** University Of Puerto Rico at Mayaguez — **A142**
Process Discovery through sensitivity analysis in multiple criteria optimization: preliminary results

## O

**Daniel Odoh,** Howard University — **A143**
Full Field Measurements of the Dynamic Response of AA 6061 T6 Aluminum Alloy Under High Strain Rate Loads

**Andrew O’Donnell,** University of Notre Dame — **A144**
Calibration of a Reusable Nonlinear Frame Structure for an Experimental Ground Motion Scaling Study

**Jong G. Ok,** University of Michigan — **A145**
Continuous and Scalable Micronano-manufacturing/patterning for Optoelectronic and Energy Conversion Applications

**David Olawale,** Florida State University — **A146**
Triboluminescent Multifunctional Cementitious Composites with In-situ and Real-time Damage Sensing Capability

**Thomas Omwando,** University of Wisconsin, Milwaukee — **A147**
A Reinforcement Learning Based Decision Support System for Optimizing Maintenance of Wind Energy Conversion Systems

**Alexander Orsi,** Northeastern University — **A148**
Anterior Cruciate Ligament Tear Initiation Locus: A 3D Finite Element Analysis

**James Otoo,** Missouri University of Science and Technology — **A149**
Differences between Traces, Natural Facets, and Induced Facets

# Student Poster Session Schedule

## P

**Nicholas Paine,** University of Texas at Austin — **A150**
UT-SEA: High Power Electric Actuation in a Compact Form Factor

**Smruti Panigrahi,** Michigan State University — **A151**
Bifurcations of Equilibria in Snap-Through Oscillators

**David Pelot,** University of Illinois at Chicago — **A152**
Creating Self Healing Materials through Core-shell Electrospinning

**Jonathan Pham,** University of Massachusetts, Amherst — **A153**
Macroscopic Nanoparticle Ribbons, Helices and Fabrics

**David Pisani,** University of California, Los Angeles — **A154**
Design, Development and Manufacturing of Piezoelectric Sensor/Actuator Rosettes

**Elisabetta Pistone,** University of Pittsburgh — **A155**
Hazard Mitigation of Water Mains by means of Immersed Active Inspection Systems

**Matthew Plumlee,** Georgia Institute of Technology — **A156**
Cohesive Control for Variation Reduction in Scale Up of Advanced Material Manufacturing Processes

**Nimish Pujara,** Cornell University — **A157**
Measurements of Run-up and Bed Shear Stress of Long Waves

## R

**Stefania Radopoulou,** Georgia Institute of Technology — **A158**
Visual Pattern Recognition Models of Infrastructure Elements

**Devarajan Ramanujan,** Purdue University — **A159**
Modeling Environmental Sustainability for Product Lifecycle Management

**Pradeep Ramiah Rajasekaran,** Southern Illinois University, Carbondale — **A160**
Nano-Editor: A Dynamic Nano Plotting and Erasing system

**Prahalada Rao,** Oklahoma State University — **A161**
Real-time Monitoring of Nano-scale Surface Morphology in Ultra-Precision Manufacturing Processes

**Amin Rasekh,** Texas A&M University — **A162**
Integrated Contamination Emergency Management System for Drinking Water Networks Security

# Student Poster Session Schedule

**Xiang Ren,** Drexel University — **A163**
Solid Freeform Fabrication of a Conceptual Artificial Photosynthesis Device

**Sara Rimer,** University of Michigan — **A164**
An Agent-Based Evacuation Model with Hazardous Contaminant

**Daniel Robertson,** Brigham Young University — **A165**
A Small Punch Test to Characterize Anisotropic Soft Tissue Properties

**Ruth Roman,** West Virginia University — **A166**
Fatigue Strength of Composite Materials Considering Hygrothermal Degradation

**Celeste Roschuni,** University of California, Berkeley — **A167**
The DesignExchange

**Yeontack Ryu,** Texas A&M University — **A168**
Correlations between HighEelectrical Conductivity and Debundling of Carbon Nanotubes and P-doping Effects from a Chlorosulfonic Acid

## S

**Sourabh Saha,** Massachusetts Institute of Technology — **A169**
Processes, Techniques, and Tools for Scalable and Affordable Nanomanufacturing: Perspectives from Dip Pen Nanolithography, Wrinkling, and DNA Imprinting

**Samir Sahyoun,** University of Tennessee — **A170**
Optimal Model Reduction for Aerodynamics Boundary Feedback Control

**Sonia Samir,** University of Texas at Arlington — **A171**
Evaluation of Methane Generation Potential of Municipal Solid Waste (MSW) in a Closed Landfill

**Nicholas Schneider,** University of Pennsylvania — **A172**
Dynamic in situ Electron Microscopy of Liquid Systems

**Doug Schweizer,** North Carolina State University — **A173**
Large-scale Experiments to Validate an Innovative Seismic Performance Enhancement Technique for Steel Building Beam-column Connections

**Dong-Woo Seo,** Northeastern University — **A174**
Estimating Life-cycle Monetary Losses of Slender Bridges due to Wind Hazards

**S.M. Sadegh Shams,** University of Wisconsin, Milwaukee — **A175**
Progressive Failure and Repair of Scratch Damage of Laminated Carbon Fiber/Epoxy Composites

# Student Poster Session Schedule

**Bai Shao,** University of Nebraska, Lincoln **A176**
Study of Titanium Alloy micro-Machining Using micro-EDM

**Pankaj Sharma,** Pankaj Kumar Sharma **A177**
Nanoscale Studies of Ferroelectric PVDF-TrFE Copolymer using Piezoresponse Force Microscopy

**Tripp Shealy,** Clemson University **A178**
Resilience Education through Building Codes: Current Status and Best Practices

**Bradley Sherman,** Northwestern University **A179**
Laser Generation of Finite Amplitude Surface Acoustic Waves Using the Phase Velocity Scanning Method

**Ping-Chang Shih,** Georgia Institute of Technology **A180**
Computer Vision for Ocean Sciences: 4-D Variational Stereo Reconstruction of Ocean Waves

**Jessica Snyder,** Drexel University **A181**
Physiologically Relevant In Vitro Microfluidic Liver by Heterogenous Cell Printing

**Hongyun So,** University of California, Berkeley **A182**
Nanowire-Assisted Micro Loop Heat Pipe with Porous Silicon Wicks

**Ruiqiang Song,** Michigan Technological University **A183**
Assessment of Steel Structures Subjected to Earthquake Mainshock-aftershock Sequences

**John Steuben,** Colorado School of Mines **A184**
NURBs-Based Metamodels: Applications in Robotics and Automation

**Stephanie Stockar,** The Ohio State University **A185**
A System Dynamics Modeling Methodology to Predict Transient Phenomena in Compressible Fluid Flow Systems

**Scott Swensen,** Stanford University **A186**
Seismically Isolated Unibody Light-Frame Residential Structures

## T

**Jacopo Tani,** Rensselaer Polytechnic Institute **A187**
High-rate Estimation and Identification of Adaptive Optics Systems using Slow-rate Image Sensors

**Aaron Thornton,** Missouri University of Science and Technology **A188**
Freeze-form Extrusion Fabrication of Functionally Gradient Material Parts

# Student Poster Session Schedule

**Ye Tian,** University of Massachusetts, Lowell **A189**
Finite Element Analysis of Fiber-optic Photoacoustic Generator using Nanocomposite as Absorption Material

**Anton Tokranov,** Brown University **A190**
Study of SEI Formation Using In Situ Stress Measurements

**Alison Trachet,** University of Florida **A191**
Processing-Structure-Property Relationships in Ultrahigh Strength Silicon Carbides

**Patrick Trasborg,** Lehigh University **A192**
Development of a Blast and Ballistic Resistant Precast Concrete Armored Wall System

**Luis Traverso,** Purdue University **A193**
Scalable Nanomanufacturing Machine Based on Parallel Optical Antenna Array

**Yu-Cheng Tsai,** Princeton University **A194**
Near-field Multiphoton Absorption Polymerization Using Optically Trapped Microspheres

**Zeynep Tuna,** University of California, Los Angeles **A195**
2010 E-Defense Four-Story Reinforced Concrete Building - Comparative Study of Experimental and Analytical Results

## V

**Vahid Valamanesh,** Northeastern University **A196**
Aerodynamic Damping and Seismic Response of Wind Turbine Structures

## W

**Anthony Waldenmaier,** North Dakota State University **A197**
Sustainable Engineering and Material Testing Methods for Reclaimed Asphalt Pavement

**Bu Wang,** Lehigh University **A198**
The Role of Surface Roughness on Immunoaffinity Cell Capture in Microfluidic Devices

**Ranran Wang,** Yale University **A199**
Understand, Simulate, and Optimize the Water-Energy Nexus from a System Dynamics Perspective: Challenges and Opportunities

**Siwei Wang,** University of South Carolina **A200**
Novel Chemically Stable Proton Conducting Ceramics with Improved Proton Conductivity

# Student Poster Session Schedule

**Wei Wang,** Michigan State University — **A201**
Reinforcement of Open-cell Aluminum Foam for Enhanced Energy Absorption Capacity

**Ying Wang,** University of Connecticut — **A202**
Signal-Amplifying Fluorescent Nanofibers for Naked Eyes-Based Ultrasensitive Detection of Explosives

**Zhichao Wang,** University of Maryland, College Park — **A203**
Strategic Product Design for Uncertain, Converging and Service Oriented Markets

**Xiaolei Wen,** Purdue University — **A204**
Interferometric-Spatial-Phase-Imaging (ISPI) for Parallel Optical Nanolithography

**Scott Wilcox,** University of Washington — **A205**
Velocity Control of a Piezo-Actuated Nanostepper

**Ai-Lun Wu,** University of California, Irvine — **A206**
A Damage Detection Technique for A Reinforced Concrete Frame

**Chenglin Wu,** Missouri University of Science and Technology — **A207**
Engineering Application of Polymer Cross-Linked Aerogel

**Teng Wu,** University of Notre Dame — **A208**
Modeling Unsteady Nonlinear Bridge Aerodynamics and Aeroelasticity

## X

**Jianyong Xie,** Georgia Institute of Technology — **A209**
Multi-Physics Numerical Modeling and Characterization of 3D Integrated Electronic Systems

**Changxue Xu,** Clemson University — **A210**
Scaffold-free Fabrication of Three-dimensional Cellular Tubes

**Siyang Xu,** Carnegie Mellon University — **A211**
Magnetic Nanoparticle-based Solder Composites for Electronic Packaging Applications

## Y

**Hooman Yadollahi Farsani,** Clarkson University — **A212**
Aerodynamics of Bluff Bodies with Application to Fluid-Structure Interaction of Civil Structures

**Shifei Yang,** University of Wisconsin, Madison — **A213**
A Lifting Algorithm for Output-only Continuous Scan Laser Doppler Vibrometry

# Student Poster Session Schedule

**Yu Yang,** Texas A&M University — **A214**
Laser Induced Nano Droplet Ejection With Optical Devices

**Hui Yao,** Michigan Technological University and Central South University — **A215**
Performance of Asphalt Binder Blended with Non-Modified and Polymer-Modified Nanoclay

**Jun Yin,** Binghamton University, State University of New York — **A216**
Nanoparticle Assemblies on Flexible Devices for Cleaner Energy and Cleaner Environment

**Kai Yu,** University of Colorado at Boulder — **A217**
Mechanisms of multi-shape memory effects and associated energy release in shape memory polymers

**Xiaokong Yu,** Worcester Polytechnic Institute — **A218**
Microscopic morphology and mechanical properties of bitumen

## Z

**Nan Zhang,** University of Minnesota — **A219**
A Modeling Analysis of Global Flows in the solvent of a Convective Assembly system

**Qing Zhang,** University of Delaware — **A220**
Energy Retention and Self-discharge Mechanisms of Carbon-based Electrochemical Capacitors

**Jiahua Zhu,** Lamar University — **A221**
Soft Conductive Nanocomposites with Negative Permittivity

**Xiaotian Zou,** University of Massachusetts, Lowell — **A222**
Cutting Temperature in Rotary Ultrasonic Machining of Titanium: Experimental Study using Novel Fabry-Perot Fiber Optic Sensors

# Grantee Poster Session Schedule

For the 2012 CMMI conference, NSF expects each grantee to display one poster related to each grant award. Posters should describe the objectives of the grant and summarize results to date. Each poster has been assigned to a session where the PI is expected to be at the poster to explain the grantee's work and answer questions. Each poster has also been assigned a location. All poster sessions will take place in Exhibit Hall AB.

| Poster Session | Day and Time |
|---|---|
| Poster Session 1 | Monday, July 9, 8:30 a.m.–12:00 p.m. |
| Poster Session 2 | Monday, July 9, 3:00 p.m.–5:45 p.m. |
| Poster Session 3 | Tuesday, July 10, 7:30 a.m.–9:30 a.m. |
| Poster Session 4 | Tuesday, July 10, 3:15 p.m.–5:45 p.m. |
| Poster Session 5 | Wednesday, July 11, 1:00 p.m.–4:00 p.m. |

## Program Area Clusters

| Section A: Students | |
|---|---|
| **Section B: Advanced Manufacturing** | |
| Materials Processing and Manufacturing | Nanoscale Science & Engineering Center |
| Manufacturing and Construction Machines & Equipment | Manufacturing Enterprise Systems |
| NanoManufacturing | Interdisciplinary Research |
| Nanoscale Interdisciplinary Research Team | |
| **Section C: Mechanics and Engineering Materials** | |
| Mechanics of Materials | Structural Materials and Mechanics |
| Materials and Surface Engineering | Biomechanics and Mechanobiology |
| Geomechanics and Geomaterials | |
| **Section D: Resilient and Sustainable Infrastructures** | |
| Civil Infrastructure Systems | Infrastructure Management and Extreme Events |
| GeoTechnical Engineering | George E. Brown, Jr. Network for Earthquake Engineering Simulation Research |
| Hazard Mitigation and Structural Engineering | George E. Brown, Jr. Network for Earthquake Engineering Simulation Operations |
| **Section E: Systems Engineering and Design** | |
| Engineering and Systems Design | Service Enterprise Systems |
| Control Systems | Operations Research |
| Sensors and Sensing Systems | Dynamical Systems |

# Grantee Poster Session Schedule

The poster presenters are listed below in alphabetical order by PI along with the corresponding poster location. Please refer to the accompanying map for the poster session layout.

## A

**Magdy Abdelrahman,** North Dakota State University, Fargo — **C160**
**Program Area:** Structural Materials and Mechanics
CAREER: A Program of Research Focused on Understanding of Interaction of Recycled Materials with Asphalt, Outreach, Academic and Engineering Development
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Daniel Abrams,** University of Illinois at Urbana-Champaign — **D154**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Hybrid Masonry Seismic Structural Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Warren Adams,** Clemson University — **E194**
**Program Area:** Operations Research
Collaborative Research: Reformulation-Linearization Technique for Discrete and Continuous Nonconvex Optimization with Applications
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mohammadreza Aghajani,** Brown University — **E213**
**Program Area:** Operations Research
Analysis of Large-Scale Stochastic Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Sajjad Ahmad,** University of Nevada, Las Vegas — **D111**
**Program Area:** Infrastructure Management and Extreme Events
CAREER: Vulnerability of Water Infrastructure to Climate Variability and Change: Implications for Sustainable Water Management
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Shabbir Ahmed,** Georgia Institute of Technology — **E231**
**Program Area:** Operations Research
Exploiting Submodularity in Integer Programming
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Elif Akcali,** University of Florida — **B224**
**Program Area:** Manufacturing Enterprise Systems
Analytical Approaches for Assessing the Revenue Aspects and Environmental Impacts of Demanufacturing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Marwan Al-Haik,** Virginia Polytechnic Institute and State University **C174**
**Program Area:** Structural Materials and Mechanics
CAREER: Next Generation Multifunctional Composites for Radiations and Impact Hazards Mitigation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Farid Alizadeh,** Rutgers University, Newark **E195**
**Program Area:** Operations Research
Optimization Over Positive or Sum-of-Square Functions with Applications to Constrained Approximation and Shape Constrained Learning
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Matthew Allen,** University of Wisconsin, Madison **E249**
**Program Area:** Dynamical Systems
Methods for Experimental Identification of Nonlinear Dynamic Systems of Unknown Form and Order With Application to Human Gait
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mahmoud Almasri,** University of Missouri, Columbia **E125**
**Program Area:** Sensors and Sensing Systems
MEMS Capacitive Plates with Large Tunable Dynamic Range for Voltage Conversion and Power Harvesting
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Khalid Alshibli,** University of Tennessee, Knoxville **C136**
**Program Area:** Geomechanics and Geomaterials
Experimental Measurements of Stresses and Strains of Granular Materials Using 3D Non-Destructive Technologies
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Annalingam Anandarajah,** Johns Hopkins University **C116**
**Program Area:** Geomechanics and Geomaterials
Mechanisms Controlling Swelling of Clays
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Annalingam Anandarajah,** Johns Hopkins University **C117**
**Program Area:** Geomechanics and Geomaterials
A Fundamental Study on Suction and Hysteresis of Soil-Water Characteristic Relation of Cohesive Soil
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kurt Anderson,** Rensselaer Polytechnic Institute **E266**
**Program Area:** Dynamical Systems
Framework for the Adaptive Multiscale Modeling of Biopolymers
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Sean Andersson,** Trustees of Boston University — **E65**
**Program Area:** Control Systems
CAREER: Nonlinear Control for Single Molecule Tracking
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sean Andersson,** Trustees of Boston University — **E66**
**Program Area:** Control Systems
DynSyst_Special_Topics: A formal approach to the control of stochastic dynamic systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Bassem Andrawes,** University of Illinois at Urbana-Champaign — **D66**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Innovative Confinement Technology for Strong Main Shock-Aftershock Damage Mitigation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Nagaraj Arakere,** University of Florida — **C48**
**Program Area:** Materials and Surface Engineering
GOALI: Monotonic and Cyclic Response of Plastically Graded Surfaces Subject to Rolling Contact Fatigue
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Helim Aranda-Espinoza,** University of Maryland, College Park — **C199**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Mechanotaxis of Axons and Neurons
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Alan Argento,** University of Michigan, Dearborn — **C175**
**Program Area:** Structural Materials and Mechanics
GOALI: Dynamic Response of Rigid, Foamed Biocomposites
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Craig Arnold,** Princeton University — **B51**
**Program Area:** Materials Processing and Manufacturing
EAGER: Multiphoton Polymerization with Optical Trap Assisted Nanopatterning
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Craig Arnold,** Princeton University — **B146**
**Program Area:** NanoManufacturing
Self-positioning Microspheres for Direct-write Nanolithography using Bessel Beam Optical Traps
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Raymundo Arroyave,** Texas A&M University — **C72**
**Program Area:** Materials and Surface Engineering
Advanced High Strength Multiphase Steels through a Combined Alloy-Microstructural Design
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Harry Asada,** Massachusetts Institute of Technology — **E267**
**Program Area:** Dynamical Systems
A Multi-Cellular PZT Actuator/Generator with Tunable Stiffness and Resonant Frequencies
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jeramy Ashlock,** Iowa State University — **D155**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR Payload: Characterization of Dynamic Soil-Pile Interaction by Random Vibration Methods
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Domniki Asimaki,** Georgia Institute of Technology — **D41**
**Program Area:** Geotechnical Engineering
Topographic Amplification of Seismic Motion: Observations and Simulations in 3D
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Alper Atamturk,** University of California, Berkeley — **E214**
**Program Area:** Operations Research
A Unifying Study of the Capacitated Fixed-Charge Network Flow Polyhedron
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Adda Athanasopoulos-Zekkos,** University of Michigan, Ann Arbor — **D50**
**Program Area:** Geotechnical Engineering
Feasibility Study of High-Performance Cut-off Walls for Levees in Seismic Regions: Dynamic Wall Analyses and Ductile Slurry Development
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Shorya Awtar,** University of Michigan, Ann Arbor — **B116**
**Program Area:** Manufacturing Machines and Equipment
Multi-axis Parallel-Kinematic Motion Systems with a Large Dynamic Range
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ashraf Ayoub,** University of Houston — **C181**
**Program Area:** Structural Materials and Mechanics
Establishing the Shear Constitutive Laws of Fiber-Reinforced Polymer (FRP)-Strengthened Concrete Elements
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Shapour Azarm,** University of Maryland, College Park — **E1**
**Program Area:** Engineering and Systems Design
EAGER: Design for Bundling Decisions with Marketing and Public Policy Considerations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

## B

**Charles Bakis,** Pennsylvania State University, University Park — **C148**
**Program Area:** Structural Materials and Mechanics
High Temperature and Sustained Load Effects on Structural Bonded Repairs in Civil Infrastructure
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Balakumar Balachandran,** University of Maryland, College Park — **E268**
**Program Area:** Dynamical Systems
Stochastic Resonance in Coupled, Nonlinear Oscillators
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Hari Jagannatha Balasubramanian,** University of Massachusetts, Amherst — **E159**
**Program Area:** Service Enterprise Systems
Balancing Timely Access and Patient-Physician Continuity in Primary Care
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Anna Balazs,** University of Pittsburgh — **C49**
**Program Area:** Materials and Surface Engineering
Harnessing Light to Control the Autonomous Functionality of Soft Active Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Thomas Balk,** University of Kentucky — **C91**
**Program Area:** Materials and Surface Engineering
GOALI: Understanding the Microstructural Evolution and High-Temperature Behavior of Osmium-Ruthenium Coatings for Dispenser Cathodes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Oluwaseyi Balogun,** Northwestern University — **E148**
**Program Area:** Sensors and Sensing Systems
Surface Plasmon Photoacoustic Imaging of Subsurface Objects
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Oluwaseyi Balogun,** Northwestern University — **E149**
**Program Area:** Sensors and Sensing Systems
A Novel Non-Contact Technique for Dynamic Loading of Thin Film Materials Using Finite Amplitude Mechanical Stress Waves
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Xuegang Ban,** Rensselaer Polytechnic Institute — **D1**
**Program Area:** Civil Infrastructure Systems
Collaborative Research: Mobile Sensors as Traffic Probes– Addressing Transportation Modeling and Privacy Protection in an Integrated Framework
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xuegang Ban,** Rensselaer Polytechnic Institute — **D2**
**Program Area:** Civil Infrastructure Systems
CAREER: Using Mobile Sensors for Traffic Knowledge Extraction and Dynamic Network Management
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Amit Bandyopadhyay,** Washington State University — **B82**
**Program Area:** Manufacturing Machines and Equipment
Porous Nitinol for Load Bearing Implants Using Rapid Prototyping
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Zeb Barber,** Montana State University — **B95**
**Program Area:** Manufacturing Machines and Equipment
GOALI: Accurate, High Resolution Ladar for 3D Metrology at Large Standoff Distances
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kash Barker,** University of Oklahoma, Norman Campus — **D130**
**Program Area:** Infrastructure Management and Extreme Events
Collaborative Research: Modeling the Efficacy of Inventory for Extreme Event Preparedness Decision Making in Interdependent Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Justin Barone,** Virginia Polytechnic Institute and State University — **C50**
**Program Area:** Materials and Surface Engineering
Mechanics of Self-assembled Peptide Structures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**John Bassani,** University of Pennsylvania — **C1**
**Program Area:** Mechanics of Materials
Mechano-Chemical Coupling in the Adhesion of Thin Shell Structures: Transitions Between Weakly- and Well-Bonded States
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Romesh Batra,** Virginia Polytechnic Institute and State University — **C27**
**Program Area:** Mechanics of Materials
Fracture of Adhesive Bonds under Mixed Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Haim Bau,** University of Pennsylvania — **B159**
**Program Area:** NanoManufacturing
GOALI: Real Time, Nanoscale Imaging of Electrochemistry and Electroplating in Liquid Media
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Christopher Baxter,** University of Rhode Island — **C126**
**Program Area:** Geomechanics and Geomaterials
Unique Relationship Between Small Strain Shear Modulus and Effective Stresses at Failure for Dilative Soils
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Sarah Baxter,** University of South Carolina at Columbia — **B20**
**Program Area:** Materials Processing and Manufacturing
Synergistic Modeling: Manufacture and Design of 'Nano' Microstructures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Saif Benjaafar,** University of Minnesota, Twin Cities — **B225**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Proposal: Optimizing the Supply Chain for Cost and Carbon Footprint
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Lawrence Bennett,** George Washington University — **C92**
**Program Area:** Materials and Surface Engineering
Magnetic Tunable Nanostructures: Property Characterization and Modeling
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Joseph Bentsman,** University of Illinois at Urbana-Champaign — **E75**
**Program Area:** Control Systems
GOALI: Hybrid Control of Continuous Casting for Whale and Crack Prevention
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Ahmed-Amine Benzerga,** Texas A&M University — **C12**
**Program Area:** Mechanics of Materials
CAREER: Bridging Experiments and Multiscale Modeling of Size- and Temperature-dependent Phenomena in Polycrystalline Plasticity
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jay Berger,** Earthquake Engineering Research Institute — **D176**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
RAPID Awardee Workshop to Identify Research Needs Emerging from the 2010 and 2011 New Zealand Earthquakes and the 2011 Japan Earthquake and Tsunami
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jeffrey Berman,** University of Washington — **D67**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Structural Integrity of Steel Gravity Framing Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jeffrey Berman,** Portland State University — **D156**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-II: Toward Rapid Return to Occupancy in Unbraced Steel Frames
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jeffrey Berman,** University of Washington — **D157**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Smart and Resilient Steel Walls for Reducing Earthquake Impacts
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Dionisio Bernal,** Northeastern University — **D198**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Next Generation Dissipation Guidelines for New and Existing Structures using the NEES Database
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Berry,** Montana State University — **C161**
**Program Area:** Structural Materials and Mechanics
Building Green: Development and Evaluation of an Environmentally Friendly Concrete
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Vikas Berry,** Kansas State University — **C93**
**Program Area:** Materials and Surface Engineering
Detailed Surface Engineering and Electrical Characterization of pi-Functionalized Graphene Sheets and Ribbons with Preserved Lattice and Electronic Characteristics
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Jack Beuth,** Carnegie Mellon University — **B117**
**Program Area:** Manufacturing Machines and Equipment
GOALI/Collaborative Research: Integrated Microstructure and Melt Pool Dimension Control for Electron Beam Additive Manufacturing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jack Beuth,** Carnegie Mellon University — **C218**
**Program Area:** Biomechanics and Mechanobiology
Nanomechanical Material Size Effects Using an In-Situ, On-Chip Test Platform
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Bharat Bhushan,** Ohio State University — **B52**
**Program Area:** Materials Processing and Manufacturing
Mechanically Reliable Surfaces for Superhydrophobicity
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jacobo Bielak,** Carnegie Mellon University — **D199**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: High-fidelity site characterization by experimentation, field observation, and inversion-based modeling
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Joseph Biernacki,** Tennessee Technological University — **C182**
**Program Area:** Structural Materials and Mechanics
RUI: Controlling the Properties and Performance of Concrete Using Computer Aided Molecular Design
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Giovanna Biscontin,** Texas A&M University — **D158**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Capacity and Performance of Foundations for Offshore Wind Towers
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Douglas Bish,** Virginia Polytechnic Institute and State University — **E160**
**Program Area:** Service Enterprise Systems
Evacuation Planning with Demand Management
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Ebru Bish,** Virginia Polytechnic Institute and State University — **E161**
**Program Area:** Service Enterprise Systems
Optimal Blood Screening Strategies for Infectious Agents: Mathematical Models and Decision Support Tools
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Subir Biswas,** Michigan State University — **D15**
**Program Area:** Civil Infrastructure Systems
Collaborative Research: Protocols for Wireless Networking and Multi-application Data Handling for Freeway Traffic Safety Applications
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Denis Blackmore,** New Jersey Institute of Technology — **E269**
**Program Area:** Dynamical Systems
Collaborative Research: A Unified Dynamical Systems-Simulation-Visualization Approach to Modeling and Analyzing Granular Flow Phenomena
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jose Blanchet,** Columbia University — **E232**
**Program Area:** Operations Research
CAREER: Efficient Monte Carlo Methods in Engineering and Science: From Coarse Analysis to Refined Estimators
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jose Blanchet,** Columbia University — **E233**
**Program Area:** Operations Research
Efficient Monte Carlo Methods for Gaussian Random Fields
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Antonio Bobet,** Purdue University — **C137**
**Program Area:** Geomechanics and Geomaterials
Mechanical and Geophysical Characterization of Damage in Anisotropic Rock
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Dominic Boccelli,** University of Cincinnati — **D27**
**Program Area:** Civil Infrastructure Systems
Real-Time Distribution System Network Modeling and Fault Diagnosis
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Dennis Bong,** Ohio State University — **C51**
**Program Area:** Materials and Surface Engineering
Selective Aqueous-phase Adhesion by Molecularly Engineered Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ronaldo Borja,** Stanford University — **D58**
**Program Area:** Geotechnical Engineering
Coupled Solid-Deformation/Fluid-Flow Simulation of Failure Initiation in Variably Saturated Slopes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ronaldo Borja,** Stanford University — **D177**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Properties of Cohesionless Soil Subsequent to Liquefaction and Resedimentation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Francesco Borrelli,** University of California, Berkeley — **E85**
**Program Area:** Control Systems
CAREER: Distributed Control and Constraints Satisfaction in Complex Networked Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**David Bourell,** University of Texas at Austin — **B105**
**Program Area:** Manufacturing Machines and Equipment
Electrochemical Infiltration of Selective Laser Sintered Preforms
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Anton Bowden,** Brigham Young University — **C238**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Biomechanical Consequences of Spinal Ligament Microstructure
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Carleen Bowers,** University of Rochester — **B169**
**Program Area:** NanoManufacturing
Biocatalytic Nanolithography
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Stephen Boyles,** University of Texas at Austin — **D3**
**Program Area:** Civil Infrastructure Systems
Collaborative Research: Stochastic and Dynamic Hyperpath Equilibrium Models
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Scott Brandenberg,** University of California-Los Angeles — **D200**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-II: Evaluation of Seismic Levee Deformation Potential by Destructive Cyclic Field Testing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Stanko Brankovic,** University of Houston — **B178**
**Program Area:** NanoManufacturing
GOALI: Electrochemical Nanofabrication of High-Anisotropy Bit-Patterned Magnetic Arrays using Self-Limiting Ion Milling Fabricated Templates
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Jonathan Bray,** University of California, Berkeley **D42**
**Program Area:** Geotechnical Engineering
Collaborative Research: Geoengineering Extreme Events Reconnaissance (GEER) Association: Turning Disaster Into Knowledge
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jonathan Bray,** University of California, Berkeley **D43**
**Program Area:** Geotechnical Engineering
Earthquake Surface Fault Rupture Interaction with Building Foundations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jonathan Bray,** University of California, Berkeley **D178**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Seismic Performance Assessment in Dense Urban Environments
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**John Brigham,** University of Pittsburgh **D87**
**Program Area:** Hazard Mitigation and Structural Engineering
Computational Methods for Optimized Reliability and Efficiency in Smart Structural Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ioannis Brilakis,** Georgia Institute of Technology **D16**
**Program Area:** Civil Infrastructure Systems
Progressive Site Modeling with Videogrammetry
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ioannis Brilakis,** Georgia Institute of Technology **D17**
**Program Area:** Civil Infrastructure Systems
CAREER: Visual Pattern Recognition Models for Remote Sensing of Civil Infrastructure
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ioannis Brilakis,** Georgia Institute of Technology **D18**
**Program Area:** Civil Infrastructure Systems
Reciprocal Reconstruction and Recognition for Modeling of Constructed Facilities
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**L. Brinson,** Northwestern University **C28**
**Program Area:** Mechanics of Materials
New Approach to Nanoindentation Experiments and Modeling: Toward Fundamental Understanding of Thin Polymer Films and Polymer Nanocomposites
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Samuel Brody,** Texas A&M University — **D112**
**Program Area:** Infrastructure Management and Extreme Events
Examining the 100-Year Floodplain as a Metric of Risk, Loss, and Household Adjustment
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**James Brumbelow,** Texas A&M University — **D131**
**Program Area:** Infrastructure Management and Extreme Events
Agent-Based Modeling for Planning Emergency Response to Contamination Emergencies in Water Utilities
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Satish T. S. Bukkapatnam,** Oklahoma State University — **B118**
**Program Area:** Manufacturing Machines and Equipment
Characterization and Real Time Defect Mitigation in Chemical/Mechanical Polishing of Microelectronic Wafers Using Decision Theory and MultiSensor Fusion
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Rigoberto Burgueno,** Michigan State University — **C149**
**Program Area:** Structural Materials and Mechanics
Hybrid Nanostructured Material Systems for Tailored Stress-Wave Mitigation of Impact and Blast Effects
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Eric Butcher,** New Mexico State University — **E270**
**Program Area:** Dynamical Systems
Collaborative Research: Stability, Identification, and Stochastic Resonance in Stochastic Delayed Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**William Buttlar,** University of Illinois at Urbana-Champaign — **C150**
**Program Area:** Structural Materials and Mechanics
GOALI: A Hybrid Failure Approach using Digital Image Correlation for Functionally Graded Thin-Bonded Overlays
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Oral Buyukozturk,** Massachusetts Institute of Technology — **C183**
**Program Area:** Structural Materials and Mechanics
Debonding in Bi-layer Material Systems under Moisture Effects : A Multi-scale Fracture Approach
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Oral Buyukozturk,** Massachusetts Institute of Technology — **D68**
**Program Area:** Hazard Mitigation and Structural Engineering
A Robust Methodology for the Standoff Condition Assessment of FRP-Retrofitted Concrete Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

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**Steve C.S. Cai,** Louisiana State University & Agricultural and Mechanical College **D88**
**Program Area:** Hazard Mitigation and Structural Engineering
Investigation and Damage Mitigation of Low-lying Coastal Bridges under Hurricane-induced Wind and Wave Actions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Wei Cai,** Stanford University **C2**
**Program Area:** Mechanics of Materials
CAREER: Bridging Defect Models and Micro-Deformation Experiments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Juan Caicedo,** University of South Carolina at Columbia **D69**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Cooperative Human-Computer Model Updating Cognitive Systems (MUCogS)
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**James Calvin,** New Jersey Institute of Technology **E196**
**Program Area:** Operations Research
Algorithms and Complexity for Global Optimization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jaime Camelio,** Virginia Polytechnic Institute and State University **B206**
**Program Area:** Manufacturing Enterprise Systems
GOALI: Quality Mining–A Novel Framework for Quality Monitoring and Control for Data-rich Manufacturing Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Fred Cannon,** Pennsylvania State University, University Park **B21**
**Program Area:** Materials Processing and Manufacturing
GOALI: Novel Low-Polluting Collagen-Alkali Silicate
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Guozhong Cao,** University of Washington **B147**
**Program Area:** NanoManufacturing
Solution-Based Fabrication of Coherent Nanocomposite Film Electrodes for Li-Ion Batteries
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Jian Cao,** Northwestern University — **B22**
**Program Area:** Materials Processing and Manufacturing
Incremental Forming at Multi-Scales
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jian Cao,** Northwestern University — **B23**
**Program Area:** Materials Processing and Manufacturing
GOALI: Process Analysis and Variation Control in Micro-stamping
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Luca Caracoglia,** Northeastern University — **D89**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: An Innovative Performance-Based Simulation Framework for High-Rise Buildings against Wind Hazards
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**JoAnn Carmin,** Massachusetts Institute of Technology — **D132**
**Program Area:** Infrastructure Management and Extreme Events
Preparing Cities for Climate Change: An International Comparative Assessment of Urban Adaptation Planning
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Cassidy,** University of California, Berkeley — **D28**
**Program Area:** Civil Infrastructure Systems
Theories of Multimodal Urban Mobility
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**David Castelbaum,** Colorado State University — **D51**
**Program Area:** Geotechnical Engineering
Collaborative Research: Experimental and Computational Investigation of Consolidation-Induced Contaminant Transport for High Water Content Geo-Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Oana Cazacu,** University of Florida — **B24**
**Program Area:** Materials Processing and Manufacturing
GOALI: High-strain Rate Deformation and Failure of Magnesium Alloys
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Amy Cerato,** University of Oklahoma, Norman Campus — **C118**
**Program Area:** Geomechanics and Geomaterials
CAREER: The Role of Specific Surface Area and Cation Exchange Capacity in Understanding and Predicting Expansive Soil Behavior
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Shantanu Chakrabartty,** Michigan State University — **E135**
**Program Area:** Sensors and Sensing Systems
CAREER: Integrated Research and Education in Self-powered Micro-sensing for Embedded and Implantable Structural Health Monitoring
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Jayajit Chakraborty,** University of South Florida — **D113**
**Program Area:** Infrastructure Management and Extreme Events
Collaborative Research: Advancing Environmental Equity Research: Vulnerability to Air Pollution and Flood Risks in Houston and Miami
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Abhijit Chandra,** Iowa State University — **B83**
**Program Area:** Manufacturing Machines and Equipment
Chemical Mechanical Paired Grinding
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ching Chang,** University of Massachusetts, Amherst — **C127**
**Program Area:** Geomechanics and Geomaterials
Deformation and Failure Behavior of Soils under Erosion
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Shih-Ho Chao,** University of Texas at Arlington — **D179**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Steel Truss Systems with Enhanced Seismic Safety and Performance
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Shih-Ho Chao,** University of Texas at Arlington — **D180**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Full-Scale RC and HPFRC Frame Subassemblages Subjected to Collapse-Consistent Loading Protocols for Enhanced Collapse Simulation and Internal Damage Characterization
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xiuli Chao,** University of Michigan, Ann Arbor — **E180**
**Program Area:** Service Enterprise Systems
Collaborative Research on Studies of Multichannel Opaque Service Enterprise
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ioannis Chasiotis,** University of Illinois at Urbana-Champaign — **C52**
**Program Area:** Materials and Surface Engineering
CAREER: Nanoscale Confinement in Polymers: Integrated Research and Education in Nanoscale Experimental Mechanics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Fanglin (Frank) Chen,** University of South Carolina at Columbia — **C94**
**Program Area:** Materials and Surface Engineering
Self-Rising Approach to Synthesize Hierarchically Porous Mixed Ionic and Electronic Conducting Cathodes for Solid Oxide Fuel Cells
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Genda Chen,** Missouri University of Science and Technology — **D70**
**Program Area:** Hazard Mitigation and Structural Engineering
Exploring Polymer Cross-Linked Aerogels for Their Strength and Energy Absorption in Seismic Retrofit of RC Structures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jian Chen,** University of Wisconsin, Milwaukee — **C53**
**Program Area:** Materials and Surface Engineering
Advanced Carbon Nanotube-Liquid Crystalline Elastomer Nanocomposites and Their Actuation Properties
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Junhong Chen,** University of Wisconsin, Milwaukee — **B2**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Exploration of Graphene-Nanocrystal Metamaterials
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Li-Han Chen,** University of California-San Diego — **B148**
**Program Area:** NanoManufacturing
Collaborative Research: High-Throughput Nanomanufacturing of 10 NM Feature Patterns Using Ultra-Sharp Probe Arrays
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Peng Chen,** University of Pittsburgh — **B1**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Laser Manufacturing of Three-Dimensional Lightwave Circuits and Nano-Optical Devices
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Peng Chen,** University of Pittsburgh — **B179**
**Program Area:** NanoManufacturing
Nuclear Nano-Engineering
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Peng Chen,** University of Pittsburgh — **E110**
**Program Area:** Sensors and Sensing Systems
EAGER: Fiber Sensors Networks for Crude Oil Migration Monitoring In Ocean
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Shaochen Chen,** University of California-San Diego — **B170**
**Program Area:** NanoManufacturing
Surface Plasmon-Assisted Nanolithography
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Suren Chen,** Colorado State University — **D90**
**Program Area:** Hazard Mitigation and Structural Engineering
Reliability-Based Analysis and Design Loads For Slender Long-Span Bridges
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Wei Chen,** Northwestern University — **E2**
**Program Area:** Engineering and Systems Design
Stochastic Multiscale Computational Design Methodology
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xi Chen,** Columbia University — **C13**
**Program Area:** Mechanics of Materials
CAREER: The Science Underpinning Mechanical Self-Assembly
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xin Chen,** University of Illinois at Urbana-Champaign — **E215**
**Program Area:** Operations Research
Tractable Approximation of Dynamic Decision Making Models Under Uncertainty
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Youping Chen,** University of Florida — **C219**
**Program Area:** Biomechanics and Mechanobiology
Reproducing the Extraordinary Mechanical Properties of Biominerals through Multiscale Simulation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gary Cheng,** Purdue University — **B96**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Electromagnetic Peening Assisted Laser Micromachining (EPALM)–A Hybrid Micromachining Process with Enhanced Mechanical Properties
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yang-Tse Cheng,** University of Kentucky — **C95**
**Program Area:** Materials and Surface Engineering
GOALI: Understanding and Controlling Coupled Mechanical and Chemical Degradation Phenomena within Insertion Electrodes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Yet-Ming Chiang,** Purdue University — **C96**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Mechanical and Electrical Reliability Maximization of Rechargeable Lithium-Ion Batteries through Microstructure Design
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yong Cho,** University of Nebraska at Omaha — **D4**
**Program Area:** Civil Infrastructure Systems
CAREER: Hybrid 3D Unstructured Workspace Modeling: A Critical Component in Developing an Automated Construction Site
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jongeun Choi,** Michigan State University — **E86**
**Program Area:** Control Systems
CAREER: Multi-Agent Systems and Gaussian Processes: Applications in Environmental Sciences
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Stephen Chou,** Princeton University — **B180**
**Program Area:** NanoManufacturing
Cutting, Selecting, and Transfer-Printing Technology for Graphene-on-Demand over Entire Wafers and FET Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Eugene Chow,** Palo Alto Research Center Incorporated — **B149**
**Program Area:** NanoManufacturing
Mesoscale Printer
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Arindam Chowdhury,** Florida International University — **D71**
**Program Area:** Hazard Mitigation and Structural Engineering
Development of Effective Approaches to the Large-Scale Aerodynamic Testing of Low-Rise Buildings
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mashrur Chowdhury,** Clemson University — **D19**
**Program Area:** Civil Infrastructure Systems
Vehicle-Infrastructure Integration Enabled Plug-In Hybrid Electric Vehicles for Energy Management
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Cristian Ciobanu,** Colorado School of Mines — **C239**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Structural Helicity in Ultra-Thin Alloy Nanowires
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Cinzia Cirillo,** University of Maryland, College Park — **D29**
**Program Area:** Civil Infrastructure Systems
Dynamic Choice Models for Challenging Societies with an Application to Car Ownership Decisions
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jonathan Clark,** Florida State University — **E250**
**Program Area:** Dynamical Systems
Collaborative Research: Dynamics of Running on Variable Inclines
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Laura Clarke,** North Carolina State University — **B3**
**Program Area:** Materials Processing and Manufacturing
Utilizing the Photothermal Effect of Metal Nanoparticles for Processing of Polymers
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Peggi Clouston,** University of Massachusetts, Amherst — **C184**
**Program Area:** Structural Materials and Mechanics
Modeling the Design Limit States of Structural Composite Lumber
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Randy Cogill,** University of Virginia — **E234**
**Program Area:** Operations Research
Optimal Time-Reversible Policies for Markov Decision Processes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Daniel Cole,** University of Pittsburgh — **B160**
**Program Area:** NanoManufacturing
Dynamic Maskless Holographic Lithography
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Emmanuel Collins,** Florida State University — **E285**
**Program Area:** Dynamical Systems
Modeling and Motion Planning for Autonomous Skid-Steered Vehicles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Gerard Cornuejols,** Carnegie Mellon University — **E197**
**Program Area:** Operations Research
Integer and Combinatorial Optimization: Intersection Cuts from Multiple Rows
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ross Corotis,** University of Colorado at Boulder — **D91**
**Program Area:** Hazard Mitigation and Structural Engineering
Structural Reliability and Sustainable Resilience
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**John Coulter,** Lehigh University — **B53**
**Program Area:** Materials Processing and Manufacturing
GOALI: Intelligent Melt Rotation for Enhanced Injection Molding of Polymer and Nanocomposite Products
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Coulter,** Lehigh University — **B195**
**Program Area:** Interdisciplinary Research
IDR: Mesenchymal Stem Cells and Mechanotransduction: An Investigation of Nano-Structured Injection Molded Polymeric Biointerfaces
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Thomas Cova,** University of Utah — **D133**
**Program Area:** Infrastructure Management and Extreme Events
Protective Action Triggers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Daniel Cox,** Oregon State University — **D201**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR II: Mitigating the Risk of Coastal Infrastructure through understanding Tsunami-Structure Interaction and Modeling
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Nathan Crane,** University of South Florida — **B35**
**Program Area:** Materials Processing and Manufacturing
High Yield Self Assembly of Functional Thermoelectric Devices
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nathan Crane,** University of South Florida — **B119**
**Program Area:** Manufacturing Machines and Equipment
Large Stroke Microscale Actuators Based on Electrowetting
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Gianluca Cusatis,** Northwestern University — **D72**
**Program Area:** Hazard Mitigation and Structural Engineering
Man-made Hazard Mitigation of Reservoir Dams: Monte Carlo Simulation with Multiscale Modeling of Concrete and Accurate Fluid-Structure Interaction
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

## D

**Narendra Dahotre,** University of North Texas — **B36**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Composite Surfacing of Amorphous Materials by Laser Interference Nanopatterning
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Narendra Dahotre,** University of North Texas — **B37**
**Program Area:** Materials Processing and Manufacturing
Laser-Assisted Rapid Surface Microstructuring of Alumina Ceramic
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jiangang Dai,** Georgia Institute of Technology — **E216**
**Program Area:** Operations Research
Analysis and Control of Large-scale Service Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Liming Dai,** Case Western Reserve University — **B134**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
NIRT: Fabrication of carbon nanotube based dry adhesive surfaces mimicking gecko-feet
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Liming Dai,** Case Western Reserve University — **B171**
**Program Area:** NanoManufacturing
The Mechanistic Study on N-doped Carbon Nanomaterials as Highly Efficient Cathode for Fuel Cells
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Samantha Daly,** University of Michigan, Ann Arbor — **C29**
**Program Area:** Mechanics of Materials
Experimental Investigation of Microstructural Effects on Deformation and Fracture Mechanisms in Nanostructured Metallic Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Mohammed Daqaq,** Clemson University — **B68**
**Program Area:** Manufacturing Machines and Equipment
Understanding the Macroscopic Dynamics of Ultrasonic Consolidation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mohammed Daqaq,** Clemson University — **E111**
**Program Area:** Sensors and Sensing Systems
A Novel Concept for Micro-Power Generation Using Flow-induced Self-excited Oscillations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Chiara Daraio,** California Institute of Technology — **C3**
**Program Area:** Mechanics of Materials
CAREER: Experimental Investigation of Highly Nonlinear Granular Crystals for the Development of New Mechanical Systems and Acoustic Metamaterials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Tuhin Das,** University of Central Florida — **E51**
**Program Area:** Control Systems
Controlling Transient Behavior of Solid Oxide Fuel Cells Using an Invariant Property
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Shideh Dashti,** University of Colorado at Boulder — **D159**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Seismic Response of Shallow Underground Structures in Dense Urban Environments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Alexandre d'Aspremont,** Princeton University — **E235**
**Program Area:** Operations Research
Collaborative Research: Mathematical Programming for Streaming Data
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Joseph Davidson,** Arizona State University — **B69**
**Program Area:** Manufacturing Machines and Equipment
Math Based Precision Manufacturing and Metrology for Complex Mechanical Assemblies
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Rachel Davidson,** University of Delaware — **D114**
**Program Area:** Infrastructure Management and Extreme Events
RAPID: Post-Earthquake Fires in the March 2011 Japan Earthquake and Tsunami
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Angela Davies,** University of North Carolina at Charlotte — **B84**
**Program Area:** Manufacturing Machines and Equipment
In Situ Form Metrology in Manufacturing by Combining Engineered Optical Scattering and Photogrammetry
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Lauren Davis,** North Carolina Agricultural & Technical State University — **E162**
**Program Area:** Service Enterprise Systems
Collaborative Research: Engineering Efficient and Equitable Food Distribution Under Uncertainty
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Stephen Davis,** Northwestern University — **B25**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Dynamics and Stability of Metallic Foams: Network Modelling
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Anirban De,** Manhattan College — **D59**
**Program Area:** Geotechnical Engineering
RUI: Understanding the Role of Flexible and Rigid Barriers in Mitigating Surface Blast Effects on Underground Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Maarten P. de Boer,** Carnegie Mellon University — **C14**
**Program Area:** Mechanics of Materials
Collaborative Research: Stick-slip Dynamics of Micromachined Interfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gregory Deierlein,** Stanford University — **C185**
**Program Area:** Structural Materials and Mechanics
Collaborative Research: Multi-Scale Simulation of Low-Triaxiality Fracture and Ultra Low Cycle Fatigue in Steel Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Gregory Deierlein,** Stanford University — **D92**
**Program Area:** Hazard Mitigation and Structural Engineering
Integrated System and Component Reliability in Seismic Collapse Safety of Structures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Gregory Deierlein,** Stanford University — **D181**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Seismically Isolated Unibody Residential Buildings for Enhanced Life-Cycle Performance
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jason DeJong,** University of California-Davis — **C138**
**Program Area:** Geomechanics and Geomaterials
Bio-Mediated Improvement of Soil and Soil-Structure Interface Behavior
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jason DeJong,** University of California-Davis — **D182**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-II: Biological Improvement of Sands for Liquefaction Prevention and Damage Mitigation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Brian Denton,** North Carolina State University — **E163**
**Program Area:** Service Enterprise Systems
CAREER: Optimization of Screening and Treatment Delivery Systems for Chronic Diseases
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Brian Denton,** North Carolina State University — **E164**
**Program Area:** Service Enterprise Systems
Optimization of Medical Treatment Decisions for Type 2 Diabetes
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jaydev Desai,** University of Maryland, College Park — **E52**
**Program Area:** Control Systems
Mechanical Phenotyping of Cells: Haptics-Enabled Atomic Force Microscopy
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Salil Desai,** North Carolina Agricultural & Technical State University — **B85**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Hybrid Approach to Direct-Write Based Micro and Nano Manufacturing
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Hans DeSmidt,** University of Tennessee, Knoxville — **E286**
**Program Area:** Dynamical Systems
CAREER: Vibration-Based Active and Passive Damage Identification of Time-Varying Dynamical Systems with Applications to Rotating Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Reginald DesRoches,** Georgia Institute of Technology — **D73**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Machine Vision Enhanced Post Earthquake Inspection and Rapid Loss Estimation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Reginald DesRoches,** Georgia Institute of Technology — **D160**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR–Innovative Seismic Retrofits for Resilient Reinforced Concrete Buildings
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Vijaya Kumar Devabhaktuni,** University of Toledo — **E20**
**Program Area:** Engineering and Systems Design
New Methodologies for System-Level Electromagnetic Compatibility (EMC) Analysis of Electronic Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Santosh Devasia,** University of Washington — **E53**
**Program Area:** Control Systems
Control of Distributed Nanosteppers
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Santosh Devasia,** University of Washington — **E287**
**Program Area:** Dynamical Systems
Vibration Mitigation in Inchworm Nanopositioners for SPMs
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Elizabeth Dickey,** North Carolina State University — **C54**
**Program Area:** Materials and Surface Engineering
GOALI: Laser Surface Processing of Ceramic Eutectics for Enhanced Cutting Tool Performance
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yifu Ding,** University of Colorado at Boulder — **C73**
**Program Area:** Materials and Surface Engineering
Instabilities in Patterned Polymer Surfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Seddik Djouadi,** University of Tennessee, Knoxville — **E54**
**Program Area:** Control Systems
Optimal Model Reduction for Aerodynamics Boundary Feedback Control
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Zvonimir Dogic,** Brandeis University — **C200**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Mechanics and Structural Polymorphism of Bacterial Flagellar Assemblies
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Denis Dorozhkin,** University of Connecticut — **E34**
**Program Area:** Engineering and Systems Design
CAREER: Geometric Singularities in Engineering Design and Manufacturing: A Generic Spacetime Approach
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Denis Dorozhkin,** University of Connecticut — **E35**
**Program Area:** Engineering and Systems Design
Geometric Skeletons for Topologically Evolving Domains
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Thomas Dow,** North Carolina State University — **B150**
**Program Area:** NanoManufacturing
GOALI: Nanocoining
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Vinayak Dravid,** Northwestern University — **C220**
**Program Area:** Biomechanics and Mechanobiology
Implementation of Fluidic-Scanning Near Field Ultrasound Holography with Integrated Electronic Detection for Nano-Bio-Mechanics
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Traian Dumitrica,** University of Minnesota, Twin Cities — **C240**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Nanomechanics from First principles: A Symmetry-Adapted Methodology
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Rebecca Dupaix,** Ohio State University — **B54**
**Program Area:** Materials Processing and Manufacturing
CAREER: Integrated Approach to Modeling, Simulation, and Design for Manufacture of Micro-hot Embossing Using a Polymer Glass Transition Modeling Framework
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Shirley Dyke,** Purdue University — **D202**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
Workshop/Collaborative Research: Vision 2020: An Open Space Technology Workshop on the Future of Earthquake Engineering; St. Louis, Missouri; January 2010
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Shirley Dyke,** Purdue University — **D203**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Performance-Based Design and Real-time Large-scale Testing to Enable Implementation of Advanced Damping Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yuris Dzenis,** University of Nebraska, Lincoln — **B135**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
NIRT: NanoManufacturing and Analysis of Active Hierarchical Nanofilamentary Nanostructures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

## E

**Christopher Eamon,** Wayne State University — **D93**
**Program Area:** Hazard Mitigation and Structural Engineering
Accurate and Efficient Reliability Analysis of Complex Structural Engineering Problems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Demetre Economou,** University of Houston — **B181**
**Program Area:** NanoManufacturing
Large Area, Rapid Manufacturing of Virtually Any Nanopattern Using Nanopantography
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ronald Eguchi,** ImageCat, Inc. — **D134**
**Program Area:** Infrastructure Management and Extreme Events
RAPID: The Role of Urban Development Patterns in Mitigating the Effects of Tsunami Run-up
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Kornel Ehmann,** Northwestern University — **B38**
**Program Area:** Materials Processing and Manufacturing
Laser-Induced Plasma Micro-Machining (LIP-MM)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Herbert Einstein,** Massachusetts Institute of Technology — **D57**
**Program Area:** Geotechnical Engineering
Cavern Design for the Deep Underground Science and Engineering Laboratory (DUSEL)
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Kamil Ekinci,** Trustees of Boston University — **C97**
**Program Area:** Materials and Surface Engineering
Tailor-made Superhydrophobic Surfaces for MEMS and NEMS
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Usama El Shamy,** Southern Methodist University — **C119**
**Program Area:** Geomechanics and Geomaterials
Multiscale Experimental and Computational Investigations of Erosion-Induced Failure of Levee Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ahmed Elgamal,** University of California-San Diego — **D161**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-II: A Seismic Study of Wind Turbines for Renewable Energy
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ryan Elliott,** University of Minnesota, Twin Cities — **E126**
**Program Area:** Sensors and Sensing Systems
CAREER: Branch-Following and Bifurcation Methods to Identify Active Materials for Tomorrow's Sensors and Actuators
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Michael Engelhardt,** University of Texas at Austin — **D94**
**Program Area:** Hazard Mitigation and Structural Engineering
Elevated Temperature Performance of Shear Connectors for Composite Beams
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Bogdan Epureanu,** University of Michigan, Ann Arbor — **E288**
**Program Area:** Dynamical Systems
Micro-Fluid-Structural Sensing Based on Sensitivity Vector Fields and Morphing Modes Created by Nonlinear Feedback Excitation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**F. Safa Erenay,** University of Wisconsin, Madison — **E165**
**Program Area:** Service Enterprise Systems
CAREER: Optimizing Disease Screening & Diagnosis
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Ozlem Ergun,** Georgia Institute of Technology — **E176**
**Program Area:** Service Enterprise Systems
Managing Debris Collection and Disposal Operations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ozlem Ergun,** Georgia Institute of Technology — **E177**
**Program Area:** Service Enterprise Systems
Fair and Efficient Implementation of Extended Producer Responsibility Legislation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**David Erickson,** Cornell University — **B194**
**Program Area:** Interdisciplinary Research
IDR: Self-Reliant, Autonomous Microsystems for Biophysical Monitoring of Small Animals (Lab-on-a-Bird)
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ozan Erol,** Washington State University — **E76**
**Program Area:** Control Systems
New Magnetorheological Actuator with Embedded Hall-Effect Sensor for Hysteresis Elimination
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

## F

**Larry Fahnestock,** University of Illinois at Urbana-Champaign **D108**
**Program Area:** Hazard Mitigation and Structural Engineering
Innovative Self-Centering Braces for Advanced Seismic Performance
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Falk,** Johns Hopkins University **C55**
**Program Area:** Materials and Surface Engineering
Extended Time Scale Simulation Studies of Nanoscale Friction
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Falvo,** University of North Carolina at Chapel Hill **C201**
**Program Area:** Biomechanics and Mechanobiology
Tuning Morphology and Mechanics of Fibrin Assemblies
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jun Fan,** Missouri University of Science and Technology **E136**
**Program Area:** Sensors and Sensing Systems
Novel Coaxial Cable Bragg Grating Sensors for Large Strain Measurement in SHM
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Tai-Hsi Fan,** University of Connecticut **C221**
**Program Area:** Biomechanics and Mechanobiology
CAREER: The Role of Mobility in Antibody Aggregation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nicholas Fang,** Massachusetts Institute of Technology **B136**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM: Digital Optofluidic Self Assembly of Heterogeneous Metamaterials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Vivek Farias,** Massachusetts Institute of Technology **E198**
**Program Area:** Operations Research
CAREER: Large Scale Stochastic Control: A Math Programming and Discrete Optimization Lens
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ronald Fearing,** University of California, Berkeley **C241**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Electrically Controlled Nanofibrillar Surfaces for Cleaning and Adhesion
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Brian Feeny,** Michigan State University — **E289**
**Program Area:** Dynamical Systems
A Positive Effect of Negative Stiffness: Wave Behavior and Energy Management
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Eugene Feinberg,** SUNY at Stony Brook — **E217**
**Program Area:** Operations Research
Constrained Optimization of Markov Decision Processes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Qianmei Feng,** University of Houston — **B207**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Integrated Modeling and Optimization of Manufacturing Variability and Product Reliability for Advanced and Evolving Technologies
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Flavio Fenton,** Cornell University — **E251**
**Program Area:** Dynamical Systems
Nonlinear Dynamics and Bifurcations in Cardiac Tissue
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Scott Ferguson,** North Carolina State University — **E3**
**Program Area:** Engineering and Systems Design
GOALI: A Multidisciplinary Approach to Simultaneous Market Segmentation and Product Family Definition
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Ferris,** University of Wisconsin, Madison — **E236**
**Program Area:** Operations Research
Extended Mathematical Programs: Hierarchical Models and Solution
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Richard Finno,** Northwestern University — **D52**
**Program Area:** Geotechnical Engineering
Advancing the Capabilities of Adaptive Management Techniques in Geotechnics
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Alison Flatau,** University of Maryland, College Park — **E252**
**Program Area:** Dynamical Systems
GOALI: Dynamic Coupling of Synthetic Jet Actuators and Flow Fields
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Robert Fleischman,** University of Arizona — **D204**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Inertial Force-Limiting Floor Anchorage Systems for Seismic Resistant Building Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ernst-Ludwig Florin,** University of Texas at Austin — **C222**
**Program Area:** Biomechanics and Mechanobiology
Controlling the Mechanical Properties of Fiber Bundles through their Molecular Architecture
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Sean Fontenot,** University of Oregon, Eugene — **B4**
**Program Area:** Materials Processing and Manufacturing
Self-Assembled Liquid Crystal Thermoset 3-D Nano-Composites With Functionally Graded Properties
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Craig Foster,** University of Illinois at Chicago — **C186**
**Program Area:** Structural Materials and Mechanics
Numerical and Experimental Analysis of Earth-Based Structural Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Diane Foster,** University of New Hampshire — **D205**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Tsunami Induced Coherent Structures and their Impact on our Coastal Infrastructure
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Patrick Fox,** University of California-San Diego — **D162**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Earthquake Performance of Full-Scale Reinforced Soil Walls
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Joelle Frechette,** Johns Hopkins University — **C74**
**Program Area:** Materials and Surface Engineering
CAREER: Engineering Surface Interactions to Modulate a Confined Fluid
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Terry Friesz,** Pennsylvania State University, University Park — **D5**
**Program Area:** Civil Infrastructure Systems
Stochastic Dynamic Game-Theoretic Models of Urban Freight Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Gary Fry,** Texas A&M University — **D206**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Multi-Scale, Mechanistic Fracture Prediction and Optimal Panel Zone Participation in Steel Moment Frame Buildings
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Peter Furth,** Northeastern University — **D20**
**Program Area:** Civil Infrastructure Systems
Self-Organizing Traffic Signals
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Barry Fussell,** University of New Hampshire — **B106**
**Program Area:** Manufacturing Machines and Equipment
Minimization of Force Model Uncertainty for CNC Milling Process Improvement
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Barry Fussell,** University of New Hampshire — **D60**
**Program Area:** Geotechnical Engineering
'Smart Rocks' for Debris-Flow Landslide Research
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## G

**Evan Galipeau,** University of Pennsylvania — **C30**
**Program Area:** Mechanics of Materials
Fiber-Reinforced Polymeric Material Systems: A Multi-Scale, Elasto-Viscoplastic Homogenization Approach
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Evan Galipeau,** University of Pennsylvania — **C31**
**Program Area:** Mechanics of Materials
Pattern-Changing Instabilities and Giant Magnetostriction in Periodic Magnetoelastic Composites
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Daniel Gall,** Rensselaer Polytechnic Institute — **C56**
**Program Area:** Materials and Surface Engineering
Adaptive High-Temperature Lubrication through Nanopore Channels
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**David Gamarnik,** Massachusetts Institute of Technology — **E199**
**Program Area:** Operations Research
Statistical Physics Methods and Algorithmic Applications in Graphical Games and Combinatorial Optimization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Mahdi Ganji,** University of Arizona **E290**
**Program Area:** Dynamical Systems
Dynamics of Nanometer Gap Formation in Thermo-Tunneling Devices for Energy Conversion
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Di Gao,** University of Pittsburgh **C75**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Condensation and Icing at Superhydrophobic Surfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Huajian Gao,** Brown University **C242**
**Program Area:** Biomechanics and Mechanobiology
Effects of Elasticity and Geometry on Cellular Uptake of Nanoparticles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jianbo Gao,** Wright State University **E253**
**Program Area:** Dynamical Systems
Collaborative Research: Quantifying Predictability in Nonlinear Multiscale Systems with Applications to Tropical Cyclone Prediction
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Robert Gao,** University of Connecticut **B55**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Multivariate Remote Process Sensing for Improved Observability in Injection Molding
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Maria Garlock,** Princeton University **D95**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Fire Damage Mitigation and Post-Fire Evaluation of Steel Girder Bridges
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**James Garrett,** Carnegie Mellon University **D30**
**Program Area:** Civil Infrastructure Systems
Indirect Bridge Health Monitoring Using Moving Vehicles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Laurie Garrow,** Georgia Institute of Technology **E181**
**Program Area:** Service Enterprise Systems
Integrating Flexible Discrete Choice and Revenue Management Models
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Henri Gavin,** Duke University — **D163**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
RAPID: Performance of the Base-Isolated Christchurch Women's Hospital during the Sequence of Strong Earthquakes and Aftershocks in New Zealand from September 2010 through 2011
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Tomas Gedeon,** Montana State University — **E271**
**Program Area:** Dynamical Systems
Fluid-Structure Interaction in Arthropod Mechanoreceptors with Application to Bio-Inspired Micro-Fluidic Sensors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Brian Gerber,** University of Colorado at Denver — **D115**
**Program Area:** Infrastructure Management and Extreme Events
Managing Evacuee Ingress: Network Interactions and Community Hosting Performance
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Leonid Germanovich,** Georgia Institute of Technology — **D44**
**Program Area:** Geotechnical Engineering
Collaborative Research: Development of a Fracture Processes Facility at DUSEL Homestake
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Joseph Geunes,** University of Florida — **B226**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Mitigating the Cost of Anarchy in Complex Supply Chain Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Gevelber,** Trustees of Boston University — **B182**
**Program Area:** NanoManufacturing
Real-Time Control for Engineering Electrospun Nanofiber Diameter Distributions for Advanced Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Masoud Ghandehari,** Polytechnic University of New York — **B196**
**Program Area:** Interdisciplinary Research
IDR: Optical Imaging of High pH Dependent Degradation in Infrastructure Materials
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Pritha Ghosh,** Texas A&M University — **C15**
**Program Area:** Mechanics of Materials
Modeling and Computational Methodologies for the Simulation of the Response of Multifunctional Programmable Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Somnath Ghosh,** Johns Hopkins University — **C32**
**Program Area:** Mechanics of Materials
Collaborative Proposal: Integrated Computational System for Probability Based Multi-Scale Model (PMM) of Ductile Fracture in Lightweight Alloys
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Victor Giurgiutiu,** University of South Carolina at Columbia — **E94**
**Program Area:** Sensors and Sensing Systems
Exact Modeling of Power and Energy Transduction for Optimum Design of Structurally-Integrated Thin-Film Active Sensors
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**William Goddard,** California Institute of Technology — **B133**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM: Electronically Controlled Surface Assembly of DNA Nanostructures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Alejandro Gonzalez Ruiz,** University of New Mexico — **E87**
**Program Area:** Control Systems
CAREER: Compressive Cooperative Sensing and Navigation in Mobile Networks
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Keith Gooch,** Ohio State University — **C202**
**Program Area:** Biomechanics and Mechanobiology
Biomechanical Regulation of Cellular Signaling and Organization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jonathan Goodall,** University of South Carolina at Columbia — **D6**
**Program Area:** Civil Infrastructure Systems
Simulation of Integrated Urban Infrastructure Systems using Component-based Modeling
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Russell Gorga,** North Carolina State University — **B56**
**Program Area:** Materials Processing and Manufacturing
A Mechanistic Understanding of the Process-Property Relationships in an Alternative Electrospinning Process
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Nakhiah Goulbourne,** University of Michigan, Ann Arbor — **E112**
**Program Area:** Sensors and Sensing Systems
CAREER: Multiphysics Modeling and Experiments for Pulastile Membrane Sensors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Andrew Gouldstone,** Northeastern University — **B197**
**Program Area:** Interdisciplinary Research
IDR/Collaborative Research: Activities in Thermal Spray Processing and Volcanology
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Sanjay Govindjee,** University of California, Berkeley — **E127**
**Program Area:** Sensors and Sensing Systems
High Performance Simulation Tools for Complex MEMS Resonator Design
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nabil Grace,** Lawrence Technological University — **C151**
**Program Area:** Structural Materials and Mechanics
GOALI/RUI: Development of Innovative New Highway Bridge System
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Samuel Graham,** Georgia Institute of Technology — **B161**
**Program Area:** NanoManufacturing
High Throughput Process Screening and in-situ Characterization for Graphene Synthesis
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Lori Graham-Brady,** Johns Hopkins University — **C187**
**Program Area:** Structural Materials and Mechanics
Collaborative Research Strain-rate Dependent Properties of Cement-Based Materials: A Multi-Scale Experimental and Modeling Effort
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Zachary Grasley,** Texas A&M University — **C188**
**Program Area:** Structural Materials and Mechanics
CAREER: Linking Nanoscale and Macroscale Viscoelastic Responses of Cementitious Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Itzhak Green,** Georgia Institute of Technology — **C189**
**Program Area:** Structural Materials and Mechanics
Degradation and Fault Detection of Rotordynamic Machinery Using Real-Time Experimental Modal Analysis
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christopher Gregg,** East Tennessee State University — **D135**
**Program Area:** Infrastructure Management and Extreme Events
Effects of Environmental Cues and Informal and Official Warnings on Protective Action Decision Making: A Case Study for Earthquakes and Tsunamis in the Indian Ocean
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Mircea Grigoriu,** Cornell University — **C16**
**Program Area:** Mechanics of Materials
Effective Properties of Multi-phase Materials by Stochastic Reduced Order Models (SROMs)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Joanna Groza,** University of California-Davis — **B172**
**Program Area:** NanoManufacturing
GOALI: Rapid Sintering to Manufacture Fully Dense and Bioactive Nanoscrystalline Hydroxyapatite
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**David Grummon,** Michigan State University — **C98**
**Program Area:** Materials and Surface Engineering
High-Authority Two-Way Surface Form Memory
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Zhiyong Gu,** University of Massachusetts, Lowell — **B39**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Microscale Joining Using Nanoheater Structures
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yongpei Guan,** University of Florida — **E218**
**Program Area:** Operations Research
CAREER: A Study of Stochastic and Robust Integer Programming: Algorithms, Computations and Applications
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Madhav Guatam,** University of Toledo — **C57**
**Program Area:** Materials and Surface Engineering
Fabrication of Zinc Nitride and Zinc-Oxy-Nitride Thin Films for Photovoltaic and Optoelectronic Applications
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kevin Gue,** Auburn University — **B227**
**Program Area:** Manufacturing Enterprise Systems
Storage Systems with Virtual Aisles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**James Guest,** Johns Hopkins University — **E21**
**Program Area:** Engineering and Systems Design
Optimal Topology Design under Fabrication and Demand Uncertainties
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Seth Guikema,** Johns Hopkins University — **D21**
**Program Area:** Civil Infrastructure Systems
Drinking Water Distribution System Management Incorporating Health and Asset Risk
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Seth Guikema,** Johns Hopkins University — **D116**
**Program Area:** Infrastructure Management and Extreme Events
Multi-Scale Modeling of Interdependent Critical Infrastructure System Performance During Hurricanes
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Lingjie Guo,** University of Michigan, Ann Arbor — **B183**
**Program Area:** NanoManufacturing
Nanomanufacturing Process and Applications Based on Dynamic Nano-Inscribing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Rui (Ray) Guo,** Duke University — **C139**
**Program Area:** Geomechanics and Geomaterials
Chemo-Mechanical Nano-Scale Mechanisms of Aging of Soils
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yuebin Guo,** University of Alabama, Tuscaloosa — **B70**
**Program Area:** Manufacturing Machines and Equipment
GOALI: Six-Sigma Based Robust Process Design Under Tool Deterioration for Giga Fatigue Life of Precision Machined Components in Hard Turning
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Yuebin Guo,** University of Alabama, Tuscaloosa — **B71**
**Program Area:** Manufacturing Machines and Equipment
Hybrid Dry Cutting–Finish Burnishing of Novel Biodegradable Magnesium-Calcium Implants for Superior Corrosion Performance
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Zhanhu Guo,** Lamar University, Beaumont — **B5**
**Program Area:** Materials Processing and Manufacturing
Synergistic Conductive Multifunctional Polymer Nanocomposites with Soft and Hard NanoFillers
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Diwakar Gupta,** University of Minnesota, Twin Cities — **E182**
**Program Area:** Service Enterprise Systems
Speed and Efficiency in Government Procurement of Transportation-Related Construction Services
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Satyandra Gupta,** University of Maryland, College Park **E36**
**Program Area:** Engineering and Systems Design
Collaborative Research: Automatic Generation of Context-Dependent Simplified Models to Support Interactive Virtual Assembly
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Varun Gupta,** University of Illinois at Urbana-Champaign **C33**
**Program Area:** Mechanics of Materials
GOALI: Validated Multiscale Simulations of Ceramic Matrix Composites for Power Generation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Vijay Gupta,** University of California-Los Angeles **C4**
**Program Area:** Mechanics of Materials
Loading Metal Nanostructures Under Extreme Conditions Using Stress Waves with Rarefaction Shock Profiles
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Maria Paz Gutierrez,** University of California, Berkeley **D74**
**Program Area:** Hazard Mitigation and Structural Engineering
Biologically Inspired Self-Activated Building Envelope Regulation System (SABERS)
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Maria Paz Gutierrez,** University of California, Berkeley **E150**
**Program Area:** Sensors and Sensing Systems
Biologically Inspired Self-Activated Building Envelope Regulation System (SABERS)
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

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**Raphael Haftka,** University of Florida **E4**
**Program Area:** Engineering and Systems Design
Estimating Probability of Improvement in Next Cycle of Surrogate Based Design Optimization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yacov Haimes,** University of Virginia **D31**
**Program Area:** Civil Infrastructure Systems
Adaptive Systems-Based Prioritization of Bridge Infrastructure Maintenance: Integrated Modeling of Technical, Socio-Economic, and Normative Dimensions
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Muhammad Hajj,** Virginia Polytechnic Institute and State University — **D96**
**Program Area:** Hazard Mitigation and Structural Engineering
A Functional Approach for the Analysis of Peak Wind Loads on Houses Exposed to Hurricanes and Validation of Wind Tunnel Simulations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Samer Hamdar,** George Washington University — **D7**
**Program Area:** Civil Infrastructure Systems
Collaborative Research: New Methods for Measuring, Evaluating and Predicting the Safety Impact of Road Infrastructure Systems on Driver Behavior
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Paul Hansma,** University of California-Santa Barbara — **B198**
**Program Area:** Interdisciplinary Research
IDR: Bio-Inspired Actuators for Next Generation Infrastructure Systems
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Julie Zhili Hao,** Old Dominion University — **E22**
**Program Area:** Engineering and Systems Design
Robust Design of High Performance MEMS Resonators
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yaowu Hao,** University of Texas at Arlington — **C223**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Hierarchically Structured Polycrystalline Hollow Gold Nanoparticles–a Model System for Integrated Experimental and Multiscale Computational Nanomechanics
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Md Haque,** Pennsylvania State University, University Park — **C243**
**Program Area:** Biomechanics and Mechanobiology
Mechanics of Materials at the Extreme Length-Scales
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sandip Harimkar,** Oklahoma State University — **B40**
**Program Area:** Materials Processing and Manufacturing
EAGER: Spark Plasma Sintering of Bulk Nanostructured Thermoelectric Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Tequila Harris,** Georgia Institute of Technology — **B6**
**Program Area:** Materials Processing and Manufacturing
Understanding the Relationship Between Processing and Performance for Functional Materials
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Judith Harrison,** United States Naval Academy — **C58**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Atomistic Simulations of the Nanotribology of Carbon-based Materials: Establishing Links between Structure, Chemistry, and Performance
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Anastasios John Hart,** University of Michigan, Ann Arbor — **B151**
**Program Area:** NanoManufacturing
Fabrication of Freeform Hierarchical Micro/Nanostructures by Control of Capillary Interactions with Aligned Carbon Nanotubes
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Youssef Hashash,** University of Illinois at Urbana-Champaign — **C128**
**Program Area:** Geomechanics and Geomaterials
Towards an Integrated Computational-Experimental Laboratory Testing Framework for Soil Behavior Characterization and Modeling
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Tasnim Hassan,** North Carolina State University — **D183**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: An Innovative Seismic Performance Enhancement Technique for Steel Building Beam-Column Connections
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kianoosh Hatami,** University of Oklahoma, Norman Campus — **C140**
**Program Area:** Geomechanics and Geomaterials
Developing Sensor-Enabled Geosynthetics using Conducting Carbon Networks: A Proof-of-Concept Study
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Taviare Hawkins,** University of Massachusetts, Amherst — **C203**
**Program Area:** Biomechanics and Mechanobiology
Physical Regulation of Microtubule Biomechanics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kurt Hebert,** Iowa State University — **C47**
**Program Area:** Materials and Surface Engineering
Modeling the Formation of Self-Ordered Nanoporous Anodic Oxides
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Jonathan Helm,** University of Michigan, Ann Arbor — **E166**
**Program Area:** Service Enterprise Systems
Hospital Systems Occupancy Prediction and Control to Increase Access, Smooth Provider Workload, and Reduce Cost
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Clifford Henderson,** Georgia Institute of Technology — **B57**
**Program Area:** Materials Processing and Manufacturing
Understanding and Exploiting the Transport Behavior of Polymers in Confined Geometries
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sunderesh Heragu,** University of Louisville — **B228**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Proposal: EArly-concept Grants for Exploratory Research (EAGER): Design Principles for Warehouses with Autonomous Vehicles (WAVE)
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Henry Hess,** Columbia University — **C204**
**Program Area:** Biomechanics and Mechanobiology
Accelerated Degradation of Active Nanosystems by Biomolecular Motors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Illya Hicks,** William Marsh Rice University — **E237**
**Program Area:** Operations Research
Branch Decomposition Techniques for Submodular Optimization
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Andrew Hirsh,** University of Michigan, Ann Arbor — **E254**
**Program Area:** Dynamical Systems
Predicting the Torsional Dynamics of DNA
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Dean Ho,** Northwestern University — **B162**
**Program Area:** NanoManufacturing
CAREER: Scalable Fabrication of Nanodiamond Patch Platforms for Sustained Drug Release
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Erik Hobbie,** North Dakota State University, Fargo — **C224**
**Program Area:** Biomechanics and Mechanobiology
Nanoscale Structural Rearrangement and Strain Softening in Ultra-Pure Nanotube Membranes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Dorit Hochbaum,** University of California, Berkeley **E200**
**Program Area:** Operations Research
New Optimization Techniques in Data Mining
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Dorit Hochbaum,** University of California, Berkeley **E201**
**Program Area:** Operations Research
Novel Efficient Clustering Techniques for Data Mining, Ranking, Pattern Recognition and Segmentation of Large Scale Data Sets
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jose Holguin-Veras,** Rensselaer Polytechnic Institute **D136**
**Program Area:** Infrastructure Management and Extreme Events
RAPID: Field Investigation on Post-Disaster Humanitarian Logistic Practices under Cascading Disasters and a Persistent Threat: The Tohoku Earthquake Disasters
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Katja Holtta-Otto,** University of Massachusetts, Dartmouth **E23**
**Program Area:** Engineering and Systems Design
Collaborative Research: Extreme Experience Design for Breaking Barriers to Innovation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**John Hooker,** Carnegie Mellon University **E219**
**Program Area:** Operations Research
Multivalued Decision Diagrams in Optimization
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jennifer Horney,** University of North Carolina at Chapel Hill **D117**
**Program Area:** Infrastructure Management and Extreme Events
The Effects of Pre-Disaster Recovery Plans on Post-Disaster Recovery Among Socially Vulnerable Populations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**David Horsley,** University of California-Davis **E137**
**Program Area:** Sensors and Sensing Systems
CAREER: Nonlinear Mechanically Amplified MEMS for Sensing and Communication
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Anette (Peko) Hosoi,** Massachusetts Institute of Technology **E255**
**Program Area:** Dynamical Systems
Collaborative Research: Optimal Gaits and Design for Locomoting Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Sandra Houston,** Arizona State University — **C141**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: Surface Flux for Cracked and Intact Clays for Ponded and Sloped Conditions
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Roman Hryciw,** University of Michigan, Ann Arbor — **C129**
**Program Area:** Geomechanics and Geomaterials
Laboratory, Field and In-Situ Soil Characterization Through Image Processing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**S. Jack Hu,** University of Michigan, Ann Arbor — **B229**
**Program Area:** Manufacturing Enterprise Systems
GOALI: Modeling Product Variety Induced Manufacturing Complexity for Assembly System Design
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Haiying Huang,** University of Texas at Arlington — **E95**
**Program Area:** Sensors and Sensing Systems
CAREER: Passive Wireless Sensor Networks for Bio-inspired Sensor Skins
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Hanchen Huang,** University of Connecticut — **C76**
**Program Area:** Materials and Surface Engineering
A New Characteristic Length Scale on Surfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Pao-Tsung Huang,** Purdue University — **C130**
**Program Area:** Geomechanics and Geomaterials
CAREER: Linking Rheology to Performance–An Integrated Approach to the Evaluation and Design of Trenchless Technology Fluids
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Qiang Huang,** University of Southern California — **B208**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Nanostructure Growth Process Modeling and Optimal Experimental Strategies for Repeatable Fabrication of Nanostructures for Application in Photovoltaics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Qiang Huang,** University of Southern California — **B209**
**Program Area:** Manufacturing Enterprise Systems
In Situ Nanomanufacturing Process Control Through Multiscale Nanostructure Growth Modeling
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Rui Huang,** University of Texas at Austin — **C17**
**Program Area:** Mechanics of Materials
Nonlinear Mechanics of Graphene-Based Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Samuel Huang,** University of Cincinnati — **E183**
**Program Area:** Service Enterprise Systems
GOALI: Robust and Efficient Knowledge Discovery With Application in Gene Expression Based Diagnosis
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Wenzhen Huang,** University of Massachusetts, Dartmouth — **E37**
**Program Area:** Engineering and Systems Design
GOALI: Collaborative Research: A Mode-based Simulation Enabling Model and Methodologies for Geometric Variation and Tolerance Control
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yinlun Huang,** Wayne State University — **B41**
**Program Area:** Materials Processing and Manufacturing
Development of a Multiscale Modeling and Simulation Methodology for Predictive Paint Material Application in Automotive Coating
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yong Huang,** Clemson University — **B86**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Understanding Process-Induced Damage in Laser-Assisted Cell Direct Writing–Bridging Manufacturing Science and Biomedical Research
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yong Huang,** Clemson University — **B87**
**Program Area:** Manufacturing Machines and Equipment
Fabrication of Double-Layer Cellular Spheroid using Acoustic Excitation-Assisted Compound Jetting
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mont Hubbard,** University of California-Davis — **E67**
**Program Area:** Control Systems
Human Control of Bicycle Dynamics with Experimental Validation and Implications for Bike Handling and Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**James Hubbard,** National Institute of Aerospace Associates — **E256**
**Program Area:** Dynamical Systems
GOALI: Phased Array Synthetic Jets for Influencing Dynamics of Complex Flows
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Daniel Huber,** Carnegie Mellon University — **D22**
**Program Area:** Civil Infrastructure Systems
Automating the Creation of As-built Building Information Models
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**James Hubner,** University of Alabama, Tuscaloosa — **E113**
**Program Area:** Sensors and Sensing Systems
CAREER: Molecular Luminescent Sensing for Global Strain Measurement
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Samuel Hunter,** Pennsylvania State University, University Park — **E24**
**Program Area:** Engineering and Systems Design
Enhancing Creativity with a Concept Generator–Evaluation and Team Training
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Mahmoud Hussein,** University of Colorado at Boulder — **B199**
**Program Area:** Interdisciplinary Research
IDR: Phononic Surfaces for Flow Control
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Mahmoud Hussein,** University of Colorado at Boulder — **E291**
**Program Area:** Dynamical Systems
A Building Block Approach to Controlling Phonon Dynamics in Nanostructures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Tara Hutchinson,** University of California-San Diego — **D207**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Full-Scale Structural and Nonstructural Building System Performance During Earthquakes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## I

**Olusegun Ilegbusi,** University of Central Florida — **B7**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Synthesis and Modeling of Novel Nanoparticle-Polymer Composite Films for Sensor Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jacqueline Isaacs,** Northeastern University — **B137**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM: Designing and Integrating LCA Methods for Nanomanufacturing Scale-up
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Albena Ivanisevic,** North Carolina State University **C99**
**Program Area:** Materials and Surface Engineering
Surface Engineering of Gallium Nitride with Biomolecules
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Tetsuya Iwasaki,** University of California-Los Angeles **E68**
**Program Area:** Control Systems
Central Pattern Generator (CPG) Control of Locomotion for Adaptive Gait Generation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

## J

**Sheldon Jacobson,** University of Illinois at Urbana-Champaign **D137**
**Program Area:** Infrastructure Management and Extreme Events
New Approaches to Protecting Transportation Infrastructure
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Anand Jagota,** Lehigh University **B200**
**Program Area:** Interdisciplinary Research
IDR: Coupling Theory and Experiment to Quantify Biomolecule-Nanomaterial Interactions
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Patrick Jaillet,** Massachusetts Institute of Technology **E202**
**Program Area:** Operations Research
Online Optimization for Dynamic Resource Allocation Problems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mona Jarrahi,** University of Michigan, Ann Arbor **E128**
**Program Area:** Sensors and Sensing Systems
MEMS Reconfigurable Subwavelength Metallic Slits for Broadband Terahertz Modulation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Iwona Jasiuk,** University of Illinois at Urbana-Champaign **C34**
**Program Area:** Mechanics of Materials
Image-Based Characterization and Multi-Scale Modeling of Bone
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Suhada Jayasuriya,** University of Central Florida **E88**
**Program Area:** Control Systems
EAGER: Local Control Strategies for Predicting Emergent Behavior and Cooperative Control in Real Time under Minimal Communication
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Seokho Jeong,** Virginia Polytechnic Institute and State University — **D164**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Topographic Effects in Strong Ground Motion–From Physical and Numerical Modeling to Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Peng Jiang,** University of Florida — **B184**
**Program Area:** NanoManufacturing
Scalable Self-Assembly of Colloidal Nanoparticles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Xiaoning Jiang,** North Carolina State University — **E138**
**Program Area:** Sensors and Sensing Systems
Flexoelectric Strain Gradient Sensors- a New Sensing Technology for In-situ Structure Health Monitoring
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Andrew Johnson,** Texas A&M University — **E167**
**Program Area:** Service Enterprise Systems
EAGER: Engineering Incentives for Health Care Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Drew Johnson,** University of Texas at San Antonio — **C120**
**Program Area:** Geomechanics and Geomaterials
Plant Root Templated GeoTextiles
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mihailo Jovanovic,** University of Minnesota, Twin Cities — **E55**
**Program Area:** Control Systems
CAREER: Enabling Methods for Modeling and Control of Transitional and Turbulent Wall-Bounded Shear Flows
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mihailo Jovanovic,** University of Minnesota, Twin Cities — **E56**
**Program Area:** Control Systems
Collaborative Research: Algorithms for Design of Structured Distributed Controllers with Application to Large-Scale Vehicular Formations
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**John Judge,** Catholic University of America — **E272**
**Program Area:** Dynamical Systems
CAREER: Dynamics of Micro- and Nanomechanical Resonator Arrays
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Maria Juenger,** University of Texas at Austin **C162**
**Program Area:** Structural Materials and Mechanics
Inorganic Polymers for Sustainable Civil Infrastructure
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Anak Agung Julius,** Rensselaer Polytechnic Institute **E69**
**Program Area:** Control Systems
Collaborative Research: Motion Control of Bacteria-Powered Microrobots
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yung Joon Jung,** Northeastern University **B163**
**Program Area:** NanoManufacturing
Highly Organized Two and Three Dimensional Singlewalled Carbon Nanotubes- Polymer Hybrid Structures for Diverse Flexible Devices and Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

## K

**Pierre Kabamba,** University of Michigan, Ann Arbor **E77**
**Program Area:** Control Systems
GOALI: Control of Cyclic Systems–Theory, Applications, and Experiments
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kyriaki Kalaitzidou,** Georgia Institute of Technology **B97**
**Program Area:** Manufacturing Machines and Equipment
Freeform Fabrication of Multifunctional Nanocomposites via Selective Laser Sintering
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Vibha Kalra,** Drexel University **B58**
**Program Area:** Materials Processing and Manufacturing
EAGER: Confined Self Assembly of Fully Conjugated Rod-Rod Diblock Copolymers in Nanofibers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Vineet Kamat,** University of Michigan, Ann Arbor **D32**
**Program Area:** Civil Infrastructure Systems
A Robust Method for Resolving Incorrect Visual Occlusion in Dynamic Augmented Reality Environments of Animated Engineering Operations
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Vineet Kamat,** University of Michigan, Ann Arbor — **D33**
**Program Area:** Civil Infrastructure Systems
Context-Aware Information Access for Rapid On-Site Decision Making in Construction, Maintenance, and Inspection of Civil Infrastructure Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Edwin Kan,** Cornell University — **E96**
**Program Area:** Sensors and Sensing Systems
Non-Self-Jamming Passive Telemetry with Sensor Integration
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Shiv Kapoor,** University of Illinois at Urbana-Champaign — **B88**
**Program Area:** Manufacturing Machines and Equipment
Design of CNT Composite Microstructural Characteristics for Enhanced Engineering Functionality and Manufacturability
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Levent Kara,** Carnegie Mellon University — **E25**
**Program Area:** Engineering and Systems Design
Creativity Meets Constraints–Sketch-Based CAD for Industrial Designers with Engineering Constraint Management
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Adam Kareem,** University of Maryland, College Park — **C100**
**Program Area:** Materials and Surface Engineering
Influence of thin-fluid-film effects on surface characterization with dynamic atomic force microscopy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Adam Kareem,** University of Maryland, College Park — **C205**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Sub-NanoNewton Force Spectroscopy in Liquids with Dual-Frequency-Modulation AFM
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Anette Karlsson,** University of Delaware — **C18**
**Program Area:** Mechanics of Materials
The Mechanics of Debonding of Foam Core Sandwich Structure Under Cyclic Loading
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jagannadham Kasichainula,** North Carolina State University — **B8**
**Program Area:** Materials Processing and Manufacturing
EAGER: Processing and Characterization of Novel Indium-graphene and Copper-graphene Composites for Heat Spreader Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Edward Kavazanjian,** Arizona State University — **C131**
**Program Area:** Geomechanics and Geomaterials
Microbially-Induced Cementation of Sands by Denitrification
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kazem Kazerounian,** University of Connecticut — **C225**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Hierarchies of Repair in Damaged Bone–A Role for Osteocytes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kazem Kazerounian,** University of Connecticut — **E38**
**Program Area:** Engineering and Systems Design
A Mechanics Framework for the Analysis and Design of Protein Based Nano Machines
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Steven Keating,** Massachusetts Institute of Technology — **E26**
**Program Area:** Engineering and Systems Design
EAGER: Bio-Beams–Functionally Graded Rapid Design & Fabrication
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Leehyun Keel,** Tennessee State University — **E78**
**Program Area:** Control Systems
A Collaborative Research on Multivariable Fixed Order Controller Synthesis and Design from Data
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Scott Kelly,** University of North Carolina at Charlotte — **E257**
**Program Area:** Dynamical Systems
Constrained Lagrangian and Hamiltonian Mechanics in Fluid-Body Interactions: Analytical Modeling and Computational Methods
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Scott Kelly,** University of North Carolina at Charlotte — **E258**
**Program Area:** Dynamical Systems
Collaborative Research: Manipulation of Suspended Microparticles via Localized Fluid Boundary Dynamics: Modeling, Simulation, and Experiments
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**James Kendra,** University of Delaware — **D138**
**Program Area:** Infrastructure Management and Extreme Events
RAPID: The Tohoku Catastrophe: Volunteers and Non-Profit Organizations in Post-Kobe Japan
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**James Kendra,** University of Delaware — **D165**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
Workshop on Deploying Post-Disaster Quick-Response Reconnaissance Teams: Methods, Strategies, and Needs
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Benjamin Keselowsky,** University of Florida — **C206**
**Program Area:** Biomechanics and Mechanobiology
Mechanical Strain Modulation of Dendritic Cell-Directed Adaptive Immune Responses
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kapil Khandelwal,** University of Notre Dame — **D75**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Multiscale Topology Optimization: Design of Structural-Material Systems Under Extreme Events
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jeffrey Kharoufeh,** University of Pittsburgh — **B210**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Adaptive Maintenance Planning Based on Evolving Residual Life Distributions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Milind Khire,** Michigan State University — **C142**
**Program Area:** Geomechanics and Geomaterials
A Lattice Boltzmann Based Model for Predicting Unsaturated Flow through Soil Macropores and Capillary Pores
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Behrokh Khoshnevis,** University of Southern California — **B107**
**Program Area:** Manufacturing Machines and Equipment
Digital Fabrication of High-Temperature Metals Using Selective Inhibition of Sintering
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Gap-Yong Kim,** Iowa State University — **B26**
**Program Area:** Materials Processing and Manufacturing
Novel Manufacturing of Bio-inspired Metal Matrix Composites by Semisolid Forming-Joining
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**MinJun Kim,** Drexel University — **B173**
**Program Area:** NanoManufacturing
CAREER: The Integration of Biomolecular Motors for Bacterial Actuation, Sensing, and Transport (BAST) at Micro/Nanoscale
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Nam Kim,** University of Florida — **E5**
**Program Area:** Engineering and Systems Design
Uncertainty Reduction by Testing, Inspection, Health Monitoring, and Maintenance (THIM) in Probabilistic Product Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Seong Kim,** Pennsylvania State University, University Park — **C101**
**Program Area:** Materials and Surface Engineering
Understanding and Preventing Frictional Polymer Formation in MEMS
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Brad Kinsey,** University of New Hampshire — **B42**
**Program Area:** Materials Processing and Manufacturing
GOALI: Characterization, Modeling, and Optimization of Magnetic Pulse Welding Processes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Diego Klabjan,** Northwestern University — **B230**
**Program Area:** Manufacturing Enterprise Systems
Approximate Dynamic Programming in Complex Multi-Echelon Inventory and Production Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**William Klug,** University of California-Los Angeles — **C226**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Membrane-Protein Interactions and the Mechanics of Cell Organelles
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Melissa Knothe Tate,** Case Western Reserve University — **C244**
**Program Area:** Biomechanics and Mechanobiology
Mechanical Modulation of Stem Cell Shape and Fate
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Suneel Kodambaka,** University of California-Los Angeles — **C59**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Engineering the Morphology and Microstructure of Group III-V Compound Semiconducting Nanowires
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Zhenyu (James) Kong,** Oklahoma State University — **E39**
**Program Area:** Engineering and Systems Design
GOALI: Collaborative Research: A Mode-Based Simulation Enabling Model and Methodologies for Geometric Variation and Tolerance Control
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Nikhil Koratkar,** Rensselaer Polytechnic Institute — **C207**
**Program Area:** Biomechanics and Mechanobiology
Collaborative: Brittle Epoxies Rendered Ductile- Crazing in Thermosetting Epoxy Nanocomposites
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Nikhil Koratkar,** Rensselaer Polytechnic Institute — **C208**
**Program Area:** Biomechanics and Mechanobiology
Next Generation Li-Ion Rechargeable Batteries Featuring Nano-Engineered Anode Architectures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ioannis Korkolis,** University of New Hampshire — **B27**
**Program Area:** Materials Processing and Manufacturing
GOALI: Fundamental Studies and Modeling of Pulsed Tube Hydroforming
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Konstantin Kornev,** Clemson University — **C77**
**Program Area:** Materials and Surface Engineering
Design and Surface Engineering of Nanofiber-based Probes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Marisol Koslowski,** Purdue University — **C102**
**Program Area:** Materials and Surface Engineering
Microstructural Evolution of Molecular Crystals
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sridhar Kota,** University of Michigan, Ann Arbor — **E6**
**Program Area:** Engineering and Systems Design
Collaborative Research: Design Framework for Biomimetic Elasto-Fluidic Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Steven Kramer,** University of Washington — **D184**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Evolutionary Intensity Measures for More Accurate and Informative Liquefaction Hazard Evaluation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Matthew John Krane,** Purdue University — **B28**
**Program Area:** Materials Processing and Manufacturing
GOALI: The Origin of Slag-Metal Interface Defects in Electroslag Remelting
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ananth Krishnamurthy,** University of Wisconsin, Madison — **B204**
**Program Area:** Manufacturing Enterprise Systems
i-PICS: Integration of Advance Demand Information with Pull-Type Production Control Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Swaminathan Krishnan,** California Institute of Technology — **D97**
**Program Area:** Hazard Mitigation and Structural Engineering
Quantifying the Risk Posed to Tall Steel Frame Buildings in Southern California from Earthquakes on the San Andreas Fault
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**James Krzanowski,** University of New Hampshire — **B120**
**Program Area:** Manufacturing Machines and Equipment
A New Strategy for the Design of Wear Resistant Nitride Coatings for Dry Machining
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Simge Kucukyavuz,** Ohio State University — **B231**
**Program Area:** Manufacturing Enterprise Systems
Mixed-Integer Optimization for Multi-Item Multi-Echelon Production and Distribution Planning
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Simge Kucukyavuz,** Ohio State University — **E220**
**Program Area:** Operations Research
CAREER: Mixed-Integer Optimization under Joint Chance Constraints
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ashok Kumar,** University of South Florida — **B108**
**Program Area:** Manufacturing Machines and Equipment
Study of Reliability and Modeling for Process Optimization and Yield Improvements in Chemical Mechanical Planarization
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Ashok Kumar,** University of South Florida — **B109**
**Program Area:** Manufacturing Machines and Equipment
GOALI/Collaborative Research: Interface Engineered Diamond Coatings for Dry Machining
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Sanjay Kumar,** University of California, Berkeley — **C227**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Microscale Mechanobiology of Actomyosin Stress Fiber Bundles: An Integrated Program for Research and Education in Cellular Bioengineering
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Yue Kuo,** Texas A&M University — **B9**
**Program Area:** Materials Processing and Manufacturing
A Novel Fabrication Process for Polysilicon Thin Film Solar Cells
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Yue Kuo,** Texas A&M University — **B211**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Nonparametric Bayesian Modeling of Reliability of Nanoelectronics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yahya Kurama,** University of Notre Dame — **D208**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Post-Tensioned Coupled Shear Wall Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pradeep Kurup,** University of Massachusetts, Lowell — **D45**
**Program Area:** Geotechnical Engineering
A Hybrid Electronic Tongue for Geoenvironmental Site Characterization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Bruce Kutter,** University of California-Davis — **D166**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Design of Soil and Structure Compatible Yielding to Improve System Performance
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Changhyun Kwon,** SUNY at Buffalo — **D118**
**Program Area:** Infrastructure Management and Extreme Events
Collaborative Research: Regulating Hazardous Materials Transportation by Multi-Objective Dual Toll Pricing
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Eil Kwon,** University of Minnesota, Duluth — **C163**
**Program Area:** Structural Materials and Mechanics
RUI: Self-sensing Concrete Pavement
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Stelios Kyriakides,** University of Texas at Austin — **C35**
**Program Area:** Mechanics of Materials
Mechanical Behavior and Crushing of Cellular Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Jeffrey Kysar,** Columbia University **C245**
**Program Area:** Biomechanics and Mechanobiology
Monoatomically Thin Films: Nonlinear Mechanical Response and Mechanical-Electrical Coupling
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## L

**Guanghui Lan,** University of Florida **E238**
**Program Area:** Operations Research
Theory and Applications of Stochastic First-order Methods for Large-scale Stochastic Convex Optimization
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Chris Landry,** Pennsylvania State University, University Park **D53**
**Program Area:** Geotechnical Engineering
CAREER: A Study of Predominant Flow Mechanisms and Parameters Controlling Contaminant Migration in Fractured Heterogeneous Rocks
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Cedric Langbort,** University of Illinois at Urbana-Champaign **E89**
**Program Area:** Control Systems
EAGER: Extensible Linear Distributed Controllers for Large Multi-Input-Multi-Output Systems, with Applications to Control of Networked Printers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Lannutti,** Ohio State University **B59**
**Program Area:** Materials Processing and Manufacturing
Laser Machined Vascular Wall Engineering for Blood Vessel Manufacturing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Samuel Lasley,** Virginia Polytechnic Institute and State University **D61**
**Program Area:** Geotechnical Engineering
CAREER: Determination of Performance-Based Earthquake Engineering Parameters using Paleoseismic Techniques
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Samuel Lasley,** Virginia Polytechnic Institute and State University **D62**
**Program Area:** Geotechnical Engineering
Energy-based Approach for Evaluating and Mitigating Liquefaction Potential
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Jorge Laval,** Georgia Institute of Technology — **D8**
**Program Area:** Civil Infrastructure Systems
CAREER: Impact of Freeway Geometric Design on Congestion Characteristics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kam Leang,** University of Nevada, Reno — **B185**
**Program Area:** NanoManufacturing
A Novel Multifunctional SPM Probe with Modular Quick-Change Tips for Fully Automated Probe-Based Nanomanufacturing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Deborah Leckband,** University of Illinois at Urbana-Champaign — **C209**
**Program Area:** Biomechanics and Mechanobiology
Force Transduction and Tension Sensing at Intercellular Junctions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Eva Lee,** Georgia Institute of Technology — **E203**
**Program Area:** Operations Research
Investigations in Mixed Integer Programming
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Taeyoung Lee,** Florida Institute of Technology — **E259**
**Program Area:** Dynamical Systems
Collaborative Research: Computational Geometric Uncertainty Propagation for Hamiltonian Systems on a Lie Group
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Justin Legleiter,** West Virginia University — **C228**
**Program Area:** Biomechanics and Mechanobiology
CAREER: The Role of Mechanical Properties in Amyloid Binding to Cellular Surfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Shuting Lei,** Kansas State University — **B98**
**Program Area:** Manufacturing Machines and Equipment
Defect Free and Robust Microstructuring Using Femtosecond Axicon-lens-focused Beam (FAB) with Application Focus in Thin Film Solar Cell Manufacturing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yu Lei,** University of Connecticut — **B201**
**Program Area:** Interdisciplinary Research
IDR/Collaborative Research: Magnetic Beads Linked Immunoassay Meets Micro Coulter Counter: Novel Multiplexed Biosensor System for Food Safety
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

# Grantee Poster Session Schedule

**Tanmay Lele,** University of Florida — **C246**
**Program Area:** Biomechanics and Mechanobiology
Maintenance of Tension in Dynamic Stress Fibers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Tanmay Lele,** University of Florida — **C247**
**Program Area:** Biomechanics and Mechanobiology
CAREER: The Function of Nuclear-Cytoskeletal Tethers in Cell Mechanosensing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Anne Lemnitzer,** University of California-Irvine — **D167**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
RAPID: U.S. Instrumentation and Data Processing of a Large-Scale Experiment on Soil-Structure Interaction of Underground Structures on the E-Defense Shake Table in Miki, Japan
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Donald Leo,** Virginia Polytechnic Institute and State University — **E114**
**Program Area:** Sensors and Sensing Systems
Auditory Mimics using Membrane-based Biomolecular Arrays
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kristina Lerman,** University of Southern California — **D139**
**Program Area:** Infrastructure Management and Extreme Events
INTEROP: Rapid Deployment of Humanitarian Assistance Social Networks for ad hoc Geospatial Data Sharing (GeoNets)
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Zayd Leseman,** University of New Mexico — **E292**
**Program Area:** Dynamical Systems
Collaborative Research: Improvement of MEMS Performance by Structural Vibrations–Theory and Practical Implementations
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Susan Lessner,** University of South Carolina at Columbia — **C210**
**Program Area:** Biomechanics and Mechanobiology
Novel Experimental and Theoretical Approaches to Understand Biomechanics of Atherosclerotic Plaque Rupture
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ming Leu,** Missouri University of Science and Technology — **B121**
**Program Area:** Manufacturing Machines and Equipment
GOALI: Freeze-form Extrusion Fabrication of Composite Structures Using Ultra High Temperature Ceramics and Refractory Metals
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ming Leu,** Missouri University of Science and Technology — **B122**
**Program Area:** Manufacturing Machines and Equipment
Bio-Inspired Design, Fabrication and Testing of Bipolar Plates for PEM Fuel Cells
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Retsef Levi,** Massachusetts Institute of Technology — **E221**
**Program Area:** Operations Research
CAREER: New Algorithmic Approaches to Computationally Challenging Stochastic Supply Chain and Revenue Management Models
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Scott Levin,** Johns Hopkins University — **E168**
**Program Area:** Service Enterprise Systems
Forecasting Demand for Pediatric Critical Care
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mark Lewis,** Cornell University — **E184**
**Program Area:** Service Enterprise Systems
Upgrades, Reneging and Retrials: Advanced Dynamic Control of Service Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Changzhi Li,** Texas Tech University — **E151**
**Program Area:** Sensors and Sensing Systems
Software-Defined MIMO Radar Fusion for Structural Health Monitoring Sensor Network
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christopher Li,** Drexel University — **C176**
**Program Area:** Structural Materials and Mechanics
Depletion Mechanisms of Antioxidants in Polyethylene-Clay Nanocomposites
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Guoqiang Li,** Louisiana State University & Agricultural and Mechanical College — **C19**
**Program Area:** Mechanics of Materials
A Self-Healing Smart Syntactic Foam
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Jacqueline Li,** CUNY City College — **B202**
**Program Area:** Interdisciplinary Research
IDR: Optimization of Nanodielectric Composites for Energy Storage Applications
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Ji Li,** University of Connecticut — **E27**
**Program Area:** Engineering and Systems Design
EAGER: Visualization of Protein Folding for Nano-Machine Design
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jiangyu Li,** University of Washington — **B10**
**Program Area:** Materials Processing and Manufacturing
Processing Nanocrystalline Thermoelectric Oxides for High Efficiency Energy Harvesting
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jing Li,** Arizona State University — **B212**
**Program Area:** Manufacturing Enterprise Systems
Regression-based Quality Improvement in Complex Systems with Consideration of Data Uncertainty
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jing Li,** Lehigh University — **E293**
**Program Area:** Dynamical Systems
New Model and Methodology for Signal Estimation and Decoding
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jingshan Li,** University of Wisconsin, Madison — **E169**
**Program Area:** Service Enterprise Systems
EAGER: Improvability Theory for Hospital Emergency Department: A System-Theoretic Method to Reduce Crowding
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jr-Shin Li,** Washington University — **E79**
**Program Area:** Control Systems
CAREER: Ensemble Control with Applications to Spectroscopy, Imaging, and Computation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Mo Li,** Georgia Institute of Technology — **C36**
**Program Area:** Mechanics of Materials
EAGER: Constitutive Relations in Amorphous Metals
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Teng Li,** University of Maryland, College Park — **B152**
**Program Area:** NanoManufacturing
Collaborative Research: Deciphering the Reliability of Nano Ceramic Films on Polymer Substrates: A Mechanistic Study
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Teng Li,** University of Maryland, College Park — **E129**
**Program Area:** Sensors and Sensing Systems
Graphene-based Ultrasensitive Nanostructures
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Wei Li,** University of Texas at Austin — **B164**
**Program Area:** NanoManufacturing
GOALI/Collaborative Research: Fabrication of Multifunctional Nanofoams from Polymer Nanocomposites
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xiaodong Li,** University of South Carolina at Columbia — **B47**
**Program Area:** Materials Processing and Manufacturing
High Throughput Manufacturing of Carbide Nanowire-Carbon Microfiber Hybrid Structures and Polymer Composites from Cotton Textiles
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Yue Li,** Michigan Technological University — **D98**
**Program Area:** Hazard Mitigation and Structural Engineering
Integration of Mainshock-Aftershock Sequences Into Performance-Based Engineering Using Publicly Available NEEShub Data
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Zhichao Li,** North Carolina Agricultural & Technical State University — **B110**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Fundamental Research on Rotary Ultrasonic Machining of Dental Ceramic Materials
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Daan Liang,** Texas Tech University — **D119**
**Program Area:** Infrastructure Management and Extreme Events
Development of a Quantitative Model for Measuring Regional Economic Resilience to Hurricanes
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Daan Liang,** Texas Tech University — **D120**
**Program Area:** Infrastructure Management and Extreme Events
HI2: A New Measure of Hurricane Impact for Innovation in Enterprise Risk Management
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Shuangshuang Liang,** Texas A&M University — **E57**
**Program Area:** Control Systems
CAREER: Model-Based Control and Diagnostics for Transcritical CO2 Vapor Compression Cycle Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Haitao Liao,** University of Tennessee, Knoxville — **B213**
**Program Area:** Manufacturing Enterprise Systems
Exploration of a Statistically Accurate and Energy Efficient Accelerated Testing Methodology
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Peter Liaw,** University of Tennessee, Knoxville — **C60**
**Program Area:** Materials and Surface Engineering
Surface Modification of Bulk-Metallic Glasses by a Laser-Peening Process
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Andrew Lim,** University of California, Berkeley — **E239**
**Program Area:** Operations Research
Coordinating Multiple Decision Makers in a Service Environment
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Liwei Lin,** University of California, Berkeley — **B174**
**Program Area:** NanoManufacturing
Direct Synthesis, Assembly and Integration of Graphene via Micro CVD
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yingzi (Lynn) Lin,** Northeastern University — **E139**
**Program Area:** Sensors and Sensing Systems
CAREER: Bridging Cognitive Science and Sensor Technology: Non-intrusive and Multi-modality Sensing in Human-Machine Interactions
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Zhiqun Lin,** Georgia Institute of Technology — **B186**
**Program Area:** NanoManufacturing
Collaborative Research: Large-Scale Nanomanufacturing of Well-Positioned and Highly Aligned DNA Wires from a Capillary Bridge
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Lindell,** Texas A&M University — **D140**
**Program Area:** Infrastructure Management and Extreme Events
RAPID: Immediate Behavioral Response to Earthquakes in New Zealand and Japan
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Vadim Linetsky,** Northwestern University — **E204**
**Program Area:** Operations Research
Multivariate Dynamic Stochastic Models of Credit Risk
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Julie Linsey,** Texas A&M University — **E7**
**Program Area:** Engineering and Systems Design
Enhancing Engineering Innovation through Physical Representation: Identifying the Cognitive Enhancements Provided by Representation and Creating Novel Design Methods
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Cliff Lissenden,** Pennsylvania State University, University Park — **E97**
**Program Area:** Sensors and Sensing Systems
Continuous Piezoelectric Health Monitoring Systems Based on Ultrasonic Guided Waves
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Philip Liu,** Cornell University — **D185**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SD: Measuring Runup and Bed Shear Stress Using Long Stroke Wave-Makers
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Zhaowei Liu,** University of California-San Diego — **B138**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM: Continuous and Scalable Nanomanufacturing for 3-Dimensional Functional Biomedical Devices
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Stefan Llewellyn Smith,** University of California-San Diego — **E260**
**Program Area:** Dynamical Systems
Collaborative Research: Beyond Point Vortices: Moving Singularities and Wave Fields in Fluid Mechanics
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Rasaratnam Logendran,** Oregon State University — **B232**
**Program Area:** Manufacturing Enterprise Systems
A Generalized Framework for Scheduling of Printed Circuit Boards
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Kenneth Loh,** University of California-Davis — **E115**
**Program Area:** Sensors and Sensing Systems
Bio-Inspired Sensing using Optoelectronic Nanocomposites (BISON)
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Hongbing Lu,** University of Texas at Dallas **C103**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Measurements of Yield Strength and Local Viscoelastic Properties Using Nanoparticle Embedment Methods
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Kathy Lu,** Virginia Polytechnic Institute and State University **B43**
**Program Area:** Materials Processing and Manufacturing
Multi-Scale Study of Nanoparticle Sintering
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Hongbing Lu,** University of Texas at Dallas **C78**
**Program Area:** Materials and Surface Engineering
Collaborative Research: Characterization and Modeling of Natural Fiber Polymer Matrix Composites for Correlating Natural Fiber/Matrix Morphology with Viscoelastic Properties
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Wu Lu,** Ohio State University **E130**
**Program Area:** Sensors and Sensing Systems
III Nitride NEMS Devices for Chemical and Biological Sensing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gunnar Lucko,** Catholic University of America **D23**
**Program Area:** Civil Infrastructure Systems
Financial Analysis and Optimization for Linear Scheduling Model of Construction Projects with Integrated Singularity Functions
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**James Luedtke,** University of Wisconsin, Madison **E185**
**Program Area:** Service Enterprise Systems
Collaborative Research: Staffing and Routing in Service Systems with Uncertain Arrival Rates: An Integrated Stochastic Programming and Asymptotic Analysis Approach
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**James Luedtke,** University of Wisconsin, Madison **E240**
**Program Area:** Operations Research
CAREER: Risk Management via Stochastic Programming: Models, Computation, and Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Peter Luh,** University of Connecticut — **D141**
**Program Area:** Infrastructure Management and Extreme Events
Building Emergency Evacuation: Innovative Modeling and Optimization
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Cheng Luo,** University of Texas at Arlington — **B60**
**Program Area:** Materials Processing and Manufacturing
Generation Of Sidewall Patterns Using A Thermal Shape-Memory Polymer
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Craig Lusk,** University of South Florida — **E8**
**Program Area:** Engineering and Systems Design
Uncertainty Quantification for the Kinematic Approach to Compliant Mechanism Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Yuri Lvov,** Louisiana Tech University — **B165**
**Program Area:** NanoManufacturing
Tubule Nanocontainers for Corrosion Inhibitors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Christopher Lynch,** University of California-Los Angeles — **E140**
**Program Area:** Sensors and Sensing Systems
Piezoelectric Sensor/Actuator Rosettes For Noise And Vibration Control
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Jerome Lynch,** University of Michigan, Ann Arbor — **D209**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Damage Detection and Health Monitoring of Buried Pipelines after Earthquake-Induced Ground Movement
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jerome Lynch,** University of Michigan, Ann Arbor — **E141**
**Program Area:** Sensors and Sensing Systems
CAREER: Nanoengineered Sensing Skins for Structural Health Monitoring–An Integrated Research and Education Career Experience
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Patrick Lynett,** Texas A&M University — **D168**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: TSUNAMOS: A Validated, Multi-Scale Tsunami Model for Hybrid Numerical-Experimental Simulation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

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**Hideo Mabuchi,** Stanford University — **E70**
**Program Area:** Control Systems
Tracking Individual Biomolecules via Fluorescence Modulation and Feedback
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Norbert Maerz,** Missouri University of Science and Technology — **C121**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: Extracting 3-D Fracture Orientations for Rock Failure Analysis by Combining Optical Imaging and LIDAR Scanning Technologies
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Stephen Mahin,** University of California, Berkeley — **D186**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
Coordinating Workshops for the NEES/E-Defense Collaborative Research Program in Earthquake Engineering (Phase 2)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gnanamanikam Mahinthakumar,** North Carolina State University — **D34**
**Program Area:** Civil Infrastructure Systems
An Adaptive Leak Detection and Risk Analysis Framework for Urban Water Distribution Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Brian Maicke,** University of Tennessee Space Institute — **E294**
**Program Area:** Dynamical Systems
GOALI: Predicting Acoustic Wave Dynamics in Solid and Hybrid Rocket Motors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Lisa Maillart,** University of Pittsburgh — **E170**
**Program Area:** Service Enterprise Systems
Optimizing Implanted Cardiac Device Follow-Up Care
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Lisa Maillart,** University of Pittsburgh — **E171**
**Program Area:** Service Enterprise Systems
Markov Decision Process Models for Optimizing Vaccine Administration
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Richard Malak,** Texas A&M University — **E40**
**Program Area:** Engineering and Systems Design
GOALI/Collaborative Research: A Methodology for Utility-Based Decision Making in Large Design Organizations Using Empirically-Derived Risk Indicators
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Arif Malik,** Saint Louis University — **B123**
**Program Area:** Manufacturing Machines and Equipment
GOALI: Reliability-Based Design and Operation of Metal Rolling Mills using Bayesian Theory and a New Rolling Model
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Rajib Mallick,** Worcester Polytechnic Institute — **C152**
**Program Area:** Structural Materials and Mechanics
Collaborative Research: Use of Novel Heat Spreader Technology for Reduction of High Temperature Related Rutting in Asphalt Pavements
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Noah Malmstadt,** University of Southern California — **B175**
**Program Area:** NanoManufacturing
Engineered Microfluidic Mixing for Green Nanocrystal Manufacturing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ajay Malshe,** University of Arkansas — **B89**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Design and Fundamental Understanding of Advanced Minimum Quantity Lubrication (MQL) Machining using Nanolubricants
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Antoinette Maniatty,** Rensselaer Polytechnic Institute — **C5**
**Program Area:** Mechanics of Materials
GOALI/Collaborative Research: Understanding Cracking and Defect Formation During AlN Crystal Growth
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Dinesh Manocha,** University of North Carolina at Chapel Hill — **E41**
**Program Area:** Engineering and Systems Design
GOALI: Digital Layout and Assembly of Large CAD Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Majid Manzari,** George Washington University — **D46**
**Program Area:** Geotechnical Engineering
Multiscale Meshfree Analysis of Failure in Geostructures Founded on or Containing Liquefiable Soils
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Scott Mao,** University of Pittsburgh — **C37**
**Program Area:** Mechanics of Materials
Integrated Experiment and Atomistic Computation on Moisture-Induced Interfacial Embrittlement
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Scott Mao,** University of Pittsburgh — **C229**
**Program Area:** Biomechanics and Mechanobiology
Nanoscale Characterization of Nanostructured Thin Film with Ultrahigh Strength and Ductility
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Francois Margot,** Carnegie Mellon University — **E186**
**Program Area:** Service Enterprise Systems
Real Option Management of Commodity and Energy Conversion Assets
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Laurence Marks,** Northwestern University — **C61**
**Program Area:** Materials and Surface Engineering
Tribology in Full View
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Maria Marshall,** Purdue University — **D142**
**Program Area:** Infrastructure Management and Extreme Events
Small Business Demise and Recovery After a Natural Disaster
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pier Marzocca,** Clarkson University — **E295**
**Program Area:** Dynamical Systems
Efficient Reduced-Order Modeling Tools for Aeroelastic Predictions in Super Long-Span Bridges
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Stephen Mascaro,** University of Utah — **E80**
**Program Area:** Control Systems
Optimal Control of Actuator Arrays with Electric and Thermofluidic Inputs
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Forrest Masters,** University of Florida — **D76**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Behavior of Hurricane Wind and Wind-Driven Rain in the Coastal Suburban Roughness Sublayer
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Carlos Mastrangelo,** University of Utah — **E98**
**Program Area:** Sensors and Sensing Systems
Particle Imaging Manometry
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Karel Matous,** University of Notre Dame — **C38**
**Program Area:** Mechanics of Materials
EAGER: Multiscale Modeling of Heterogeneous Interfaces
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Fabio Matta,** University of South Carolina at Columbia — **D99**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Resilient and Sustainable Engineered Fiber-Reinforced Earthen Masonry for High Wind Regions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Konstantin Matveev,** Washington State University — **E261**
**Program Area:** Dynamical Systems
Dynamics of Novel Air-Assisted Marine Vehicles
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**George Mavroeidis,** Catholic University of America — **D77**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: A Comprehensive Approach for Investigating the Effects of Near-Fault Dynamic Ground Deformations on Engineering Structures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Constantinos Mavroidis,** Northeastern University — **E116**
**Program Area:** Sensors and Sensing Systems
Customizable Sensors for Humans Using an Integrated Polymer: C-SHIP
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Peter May,** University of Washington — **D9**
**Program Area:** Civil Infrastructure Systems
Collaborative Research: Critical Infrastructure Policy
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**J. Michael McCarthy,** University of California-Irvine — **E9**
**Program Area:** Engineering and Systems Design
Geometric Synthesis of Articulated Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**John McCartney,** University of Colorado at Boulder — **D54**
**Program Area:** Geotechnical Engineering
Soil Structure Interaction in Geothermal Foundations
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Leigh McCue-Weil,** Virginia Polytechnic Institute and State University — **E262**
**Program Area:** Dynamical Systems
CAREER: A Unified Research and Outreach Program in Nonlinear Vessel Dynamics
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Cole McDaniel,** California Polytechnic State University — **D169**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Ultra-Low Forced Vibration Testing
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Brian McFall,** Georgia Institute of Technology — **D187**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Tsunami Generation by Landslides: Integrating Laboratory Scale Experiments, Numerical Models and Natural Scale Applications
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Laura McLay,** Virginia Commonwealth University — **D121**
**Program Area:** Infrastructure Management and Extreme Events
CAREER: Extreme Weather Events and Emergency Medical Services: A Discrete 0ptimization Modeling Framework
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kurt McMullin,** San Jose State University — **D188**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Experimental Determination of Performance of Drift-Sensitive Nonstructural Systems under Seismic Loading
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Laine Mears,** Clemson University — **B99**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Model-Based Control of Machining Processes and Scalability for Manufacturing System Control
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Sanjay Mehrotra,** Northwestern University — **E178**
**Program Area:** Service Enterprise Systems
Multi-objective Robust Stochastic Planning and Scheduling of Healthcare Service Providers
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Sanjay Mehrotra,** Northwestern University — **E179**
**Program Area:** Service Enterprise Systems
Addressing Geographical Disparities in Transplant Organ Accessibility Across United States
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sanjay Mehrotra,** Northwestern University — **E222**
**Program Area:** Operations Research
Distribution and Moment-Robust Optimization Models and Algorithms
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Sanjay Mehrotra,** Northwestern University — **E223**
**Program Area:** Operations Research
Models and Algorithms for Risk Adjusted Optimization with Robust Utilities
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Carol Menassa,** University of Wisconsin, Madison — **D24**
**Program Area:** Civil Infrastructure Systems
BRIGE: Integrated Social, Environmental, Economic, and Technical (SEET) Model for Sustainable Retrofit of Existing Buildings
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Cindy Menches,** Illinois Institute of Technology — **D35**
**Program Area:** Civil Infrastructure Systems
Flexible Decision-making in Response to Disruptive Events on Construction Sites
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**David Mendonca,** Rensselaer Polytechnic Institute — **D143**
**Program Area:** Infrastructure Management and Extreme Events
CAREER: Improvisation in Response to Extreme Events
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Chia-Hsiang Menq,** Ohio State University — **B124**
**Program Area:** Manufacturing Machines and Equipment
Modeling and Control of Magnetically Actuated Compliant Micromanipulators Enabling Multi-axis Scanning of 3D Micro/Nano Objects
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Chia-Hsiang Menq,** Ohio State University — **B125**
**Program Area:** Manufacturing Machines and Equipment
Six-Axis Visual Sensing and Visual Servo Control Rendering Direct Metrology for Manipulation of Multiple Micro Objects
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Vincent Mercado,** Rensselaer Polytechnic Institute — **D189**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-II: Advanced Site Monitoring and Effective Characterization of Site Nonlinear Dynamic Properties and Model Calibration
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**William Merryman,** Vanderbilt University — **C248**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Deconvoluting Fibroblast Mechanobiology
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Bernie Mettler,** University of Minnesota, Twin Cities — **E71**
**Program Area:** Control Systems
Analyzing and Modeling Human Adaptive Spatial Control Skills Using General Principles of Optimal Control
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Edgar Meyhofer,** University of Michigan, Ann Arbor — **C211**
**Program Area:** Biomechanics and Mechanobiology
Probing the Effects of Highly Bent and Twisted DNA on Transcription by RNA Polymerase
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jeremy Michalek,** Carnegie Mellon University — **E10**
**Program Area:** Engineering and Systems Design
CAREER: Driving Design–Modeling the Influence of Market Forces and Public Policy on Vehicle Design Decisions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Miles,** Brigham Young University — **B111**
**Program Area:** Manufacturing Machines and Equipment
High Speed Friction Stir Spot Welding: A New Approach to Spot Joining of Ultra High Strength Steel
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Michael Miles,** Brigham Young University — **C104**
**Program Area:** Materials and Surface Engineering
GOALI: Defect Detection Microscopy: Microstructure Design for Formability of Wrought Magnesium Alloys
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Scott Miles,** Western Washington University — **D122**
**Program Area:** Infrastructure Management and Extreme Events
Repeat Disaster Impacts to Infrastructure Networks and their Effects on Economic Agent Recovery
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Elise Miller-Hooks,** University of Maryland, College Park — **D10**
**Program Area:** Civil Infrastructure Systems
Resilience in Rail-Based Intermodal Transportation Systems: Performance Measurement and Decision Support
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Alex Mills,** University of North Carolina at Chapel Hill — **E172**
**Program Area:** Service Enterprise Systems
Collaborative Research: Priority Dispatching of Patients in the Aftermath of a Mass-Casualty Event
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Sergiy Minko,** Clarkson University — **B153**
**Program Area:** NanoManufacturing
Collaborative Research: Forests of Magnetic Nanofibers for Liquid Transport and Manipulation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Eduardo Miranda,** Stanford University — **D210**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Collapse Simulation of Multi-Story Buildings through Hybrid Testing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Anil Misra,** University of Kansas Center for Research, Inc. — **C190**
**Program Area:** Structural Materials and Mechanics
Relationship of Theoretical Nano-scale Structure/Properties of Calcium Silicate Hydrate (CSH) and Experimental Micro-scale Properties of Cement Paste
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Devesh Misra,** University of Louisiana at Lafayette — **C230**
**Program Area:** Biomechanics and Mechanobiology
Nanoscale Near-Surface Deformation Response in Nanostructured Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Samy Missoum,** University of Arizona — **E11**
**Program Area:** Engineering and Systems Design
Advances in Explicit Design Space Decomposition for Computational Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Farrokh Mistree,** University of Oklahoma, Norman Campus — **E28**
**Program Area:** Engineering and Systems Design
Collaborative Research: EAGER–Managing Uncertainty by Integrating Information Economics and Robust Design
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Judith Mitrani-Reiser,** Johns Hopkins University — **D144**
**Program Area:** Infrastructure Management and Extreme Events
Modeling Building Downtime Due to Hurricane Impacts
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Panagiotis Mitropoulos,** Arizona State University — **D25**
**Program Area:** Civil Infrastructure Systems
CAREER: Safety as an Emergent Property of the Production System: Production Practices and Team Processes of High Reliability Crews
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gregory Mocko,** Clemson University — **E42**
**Program Area:** Engineering and Systems Design
Integrative Situated Design: Linking Functions and Affordances Through Form
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jack Moehle,** University of California, Berkeley — **D190**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-GC: Mitigation of Collapse Risk in Vulnerable Concrete Buildings
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jeffrey Moehlis,** University of California-Santa Barbara — **E273**
**Program Area:** Dynamical Systems
Controlling Populations of Neurons
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Louay Mohammad,** Louisiana State University & Agricultural and Mechanical College — **C164**
**Program Area:** Structural Materials and Mechanics
A New Approach to Recycle Asphalt Shingles in Hot Mix Asphalt
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Benjamin Mohr,** Tennessee Technological University — **C153**
**Program Area:** Structural Materials and Mechanics
Nanoscale Characterization of Expansion Due to Delayed Ettringite Formation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Pal Molian,** Iowa State University — **B72**
**Program Area:** Manufacturing Machines and Equipment
Shock Wave Induced Freeform Technique (SWIFT) for Manufacturing of Diamond Microtools
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Pal Molian,** Iowa State University — **B187**
**Program Area:** NanoManufacturing
A Hybrid Nanomanufacturing Approach for the Synthesis of Artificial Nacres
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Michael Mooney,** Colorado School of Mines — **C132**
**Program Area:** Geomechanics and Geomaterials
Exploring the Relationship between Vibratory Roller-Based
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Diego Moran,** Georgia Institute of Technology — **E241**
**Program Area:** Operations Research
Collaborative Research: Fundamentals of Convex Mixed Integer Nonlinear Programming
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Elise Morgan,** Boston University — **C212**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Micro- and Nano-Scale Characterization and Modeling of Bone Tissue
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**K. Morsi,** San Diego State University — **B44**
**Program Area:** Materials Processing and Manufacturing
Novel Current-Activated Tip-based Sintering (CATS)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**David Morton,** University of Texas at Austin — **E205**
**Program Area:** Operations Research
Prioritization via Stochastic Optimization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Khalid Mosalam,** University of California, Berkeley — **D211**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
EAGER: Next Generation Hybrid Simulation–Evaluation and Theory
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Donald Moynihan,** University of Wisconsin, Madison — **D123**
**Program Area:** Infrastructure Management and Extreme Events
The Network Governance of Crisis Response: Analyzing the Incident Command System
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Pallab Mozumder,** Florida International University **D145**
**Program Area:** Infrastructure Management and Extreme Events
Communicating Forecast Information to Optimize Evacuation Behavior
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christopher Muhlstein,** Pennsylvania State University, University Park **C249**
**Program Area:** Biomechanics and Mechanobiology
Synthesis and Nanomechanical Properties of Crystalline Boron-based Nanofilaments
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ranjan Mukherjee,** Michigan State University **E81**
**Program Area:** Control Systems
Impulsive Control of Under-Actuated Dynamical Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Anastasia Muliana,** Texas A&M University **C39**
**Program Area:** Mechanics of Materials
Nonlinear Field-Coupling Responses of Adaptive Functionally Graded Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Brigid Mullany,** University of North Carolina at Charlotte **B90**
**Program Area:** Manufacturing Machines and Equipment
CAREER: An Innovative Look at Precision Polishing Dynamics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

## N

**Satish Nagarajaiah,** William Marsh Rice University **D191**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Development of Next Generation Adaptive Seismic Protection Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ahmed Naguib,** Michigan State University **E58**
**Program Area:** Control Systems
Collaborative Research: IDR-Model-based Feedback Control of Transient Growth in a Laminar Boundary Layer: Bridging the Gap between CFD and Experiments
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Clay Naito,** Lehigh University **D100**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Development of a Blast and Ballistic Resistant Precast Concrete Armored Wall System
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Narutoshi Nakata,** Johns Hopkins University — **D78**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Advanced Acceleration Control Methods and Substructure Techniques for Shaking Table Tests
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Marvin Nakayama,** New Jersey Institute of Technology — **E224**
**Program Area:** Operations Research
Modeling and Simulation of Complex Stochastic Systems and Cascading Failures, with Applications to the Electric Power Grid
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Roger Narayan,** University of North Carolina at Chapel Hill — **B100**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Laser Processing of Microstructured Medical Devices
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Angelia Nedich,** University of Illinois at Urbana-Champaign — **E242**
**Program Area:** Operations Research
CAREER: Cooperative Multi-Agent Optimization
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Barry Nelson,** Northwestern University — **E206**
**Program Area:** Operations Research
GOALI: Quantifying Input Uncertainty in Stochastic Simulation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ian Nettleship,** University of Pittsburgh — **B61**
**Program Area:** Materials Processing and Manufacturing
Manufacturing the Microstructural Niche for Liver Tissue Bioreactors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jun Ni,** University of Michigan, Ann Arbor — **B73**
**Program Area:** Manufacturing Machines and Equipment
High-Performance Micromachining of Glass using Electrochemical Discharge Machining (ECDM) for Mems Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xianglei Ni,** University of Pittsburgh — **E274**
**Program Area:** Dynamical Systems
Collaborative Research: Novel NDE/SHM Approach Based on Highly Nonlinear Dynamics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Yu Nie,** Northwestern University — **D36**
**Program Area:** Civil Infrastructure Systems
Toward More Reliable Mobility: Improved Decision Support Tools for Transportation Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christopher Niezrecki,** University of Massachusetts, Lowell — **E296**
**Program Area:** Dynamical Systems
Dynamic Stress-Strain Prediction of Vibrating Structures in Operation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jorge Nocedal,** Northwestern University — **E187**
**Program Area:** Service Enterprise Systems
Collaborative Research: Market-Based Calibration of Pricing Models for Financial and Energy Option Contracts
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Andrew Norris,** Rutgers University, New Brunswick — **C6**
**Program Area:** Mechanics of Materials
Cloaking Mechanical Waves
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

## O

**Motohiro Ohno,** University of Michigan, Ann Arbor — **C165**
**Program Area:** Structural Materials and Mechanics
Development and Characterization of Durable Geopolymer Composites for Truly Sustainable Infrastructure Applications
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Okenwa Okoli,** Florida State University — **E131**
**Program Area:** Sensors and Sensing Systems
Development of a Triboluminescence and Photocatalysis Based System for Intrinsic Structural Health Monitoring
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Guney Olgun,** Virginia Polytechnic Institute and State University — **D63**
**Program Area:** Geotechnical Engineering
The Use of Energy Piles for Sustainable Energy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Oliver O'Reilly,** University of California, Berkeley — **E275**
**Program Area:** Dynamical Systems
The Dynamics of a Novel Wave Energy Converter
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**James Orlin,** Massachusetts Institute of Technology — **E225**
**Program Area:** Operations Research
Nearly Optimal Solutions for Stochastic Optimization Problems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nina Orlovskaya,** University of Central Florida — **B11**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Mixed Ionic Electronic Conducting (MIEC) Cathodes for Intermediate Temperature Solid Oxide Fuel Cells
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Nina Orlovskaya,** University of Central Florida — **C20**
**Program Area:** Mechanics of Materials
Time Dependent Creep Deformation of Non Polar Mixed Conducting Ferroelastic Perovskites
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Thomas O'Rourke,** Cornell University — **D212**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Earthquake Response and Rehabilitation of Critical Lifelines
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christine Ortiz,** Massachusetts Institute of Technology — **C213**
**Program Area:** Biomechanics and Mechanobiology
Nanomechanics of Cartilage Extracellular Matrix Macromolecules from Aged, Diseased, and Engineered Tissues
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Tim Osswald,** University of Wisconsin, Madison — **B48**
**Program Area:** Materials Processing and Manufacturing
Modeling Fiber-Matrix Separation and Fiber Jamming During Processing of Fiber Filled Composites
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Yanfeng Ouyang,** University of Illinois at Urbana-Champaign — **D11**
**Program Area:** Civil Infrastructure Systems
CAREER: Information Mechanisms and Robust Stabilization of Nonlinear, Stochastic Transportation Networks
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Tugrul Ozel,** Rutgers University, New Brunswick **B12**
**Program Area:** Materials Processing and Manufacturing
EAGER: Pulsed Laser Assisted Exfoliation of Single Crystalline SiC Thin Layers for Cost Effective Micro-Device Fabrication
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Tugrul Ozel,** Rutgers University, New Brunswick **B101**
**Program Area:** Manufacturing Machines and Equipment
Predictive Modeling and Optimization of Machining Induced Surface Integrity with Applications in Titanium and Nickel-Based Alloyed End Products
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

## P

**Jamie Padgett,** William Marsh Rice University **D146**
**Program Area:** Infrastructure Management and Extreme Events
IT-Enabled Continuous Risk Assessment of Bridge Networks for Customized and Actionable Multi-Hazard Interventions
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jamie Padgett,** William Marsh Rice University **D147**
**Program Area:** Infrastructure Management and Extreme Events
CAREER: A Risk-Based Model to Achieve Sustainable Solutions for Bridge Infrastructure Subjected to Multiple Threats
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Shamim Pakzad,** Lehigh University **E152**
**Program Area:** Sensors and Sensing Systems
A Wirelessly Preemptive Sensing System for Quasi-Realtime Earthquake Monitoring of Bridges
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Derek Paley,** University of Maryland, College Park **E263**
**Program Area:** Dynamical Systems
Collaborative Research: Targeting Observations of Tropical Cyclones using Cooperative Control of Unmanned Aircraft
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Luther Palmer,** University of South Florida **E72**
**Program Area:** Control Systems
BRIGE: Running Over Rough Terrain–Enhancing Biological Hypotheses
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Sibel Pamukcu,** Lehigh University — **C143**
**Program Area:** Geomechanics and Geomaterials
Engineering Soils with Thermally Controlled Wettability on Command
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sibel Pamukcu,** Lehigh University — **E142**
**Program Area:** Sensors and Sensing Systems
Wireless Signal Networks for Subsurface Modeling and Geo-Event Characterization
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Rong Pan,** Arizona State University — **B214**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Efficient Experimentation for Product and Process Reliability Improvement
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Santosh Pandey,** Iowa State University — **E99**
**Program Area:** Sensors and Sensing Systems
High-Resolution Electrical Sensing of Surface Charges and Currents of Living Cells
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Harold Park,** Trustees of Boston University — **C79**
**Program Area:** Materials and Surface Engineering
CAREER: Multiscale Design of the Coupled Optomechanical Properties of Silicon Nanowires
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Matthew Parkinson,** Pennsylvania State University, University Park — **E12**
**Program Area:** Engineering and Systems Design
GOALI: Accelerating Digital Design Through Web-Accessible Anthropometric Data and Digital Human Models
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Gustavo Parra-Montesinos,** University of Michigan, Ann Arbor — **D170**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Assessment of Punching Shear Vulnerability of Slab-Column Connections with Shear Stud Reinforcement
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Gregory N. Parsons,** North Carolina State University — **B154**
**Program Area:** NanoManufacturing
Continuous Atmospheric Pressure Atomic Layer Deposition Process for Controlled Nanoscale Thin Film Coatings
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Robert Peattie,** Tufts University — **C231**
**Program Area:** Biomechanics and Mechanobiology
A Combined Experimental-Computational Method to Evaluate Abdominal Aortic Aneurysm Wall Stress
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Zhijian Pei,** Kansas State University — **B91**
**Program Area:** Manufacturing Machines and Equipment
Ultrasonic Vibration-Assisted Pelleting of Cellulosic Biomass for Biofuel Manufacturing
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Assimina Pelegri,** Rutgers University, New Brunswick — **C250**
**Program Area:** Biomechanics and Mechanobiology
Multi-Scale Modeling of Central Nervous System White Matter
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Javier Pena,** Carnegie Mellon University — **E207**
**Program Area:** Operations Research
Computing Equilibria for Large Sequential Games
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Feniosky Pena-Mora,** Columbia University — **D12**
**Program Area:** Civil Infrastructure Systems
Interactive Ubiquitous Visualization of Construction Progress Monitoring with D4AR (4 Dimensional Augmented Reality) Models
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**John Perepezko,** University of Wisconsin, Madison — **C105**
**Program Area:** Materials and Surface Engineering
The Design and Analysis of Aluminide Surface Layers for Low Temperature Synthesis
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Juan Pestana-Nascimento,** University of California, Berkeley — **C122**
**Program Area:** Geomechanics and Geomaterials
Improved Description of the Seismic Response of Deep Soft Clay Deposits
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Catherine Peters,** Princeton University — **C133**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: DUSEL CO2–A Deep Underground Laboratory for Geologic CO2 Sequestration Studies: Design of the Facility and Experiments
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Kara Peters,** North Carolina State University — **C177**
**Program Area:** Structural Materials and Mechanics
Self-Healing Sandwich Composites
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**George Pharr,** University of Tennessee, Knoxville — **C62**
**Program Area:** Materials and Surface Engineering
Indentation-Induced Damage Initiation and Evolution in Single- and Poly-Crystalline Ceramics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**George Pharr,** University of Tennessee, Knoxville — **C214**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Aging and Disease Effects on Viscous Energy Dissipation of Bone as Characterized by Nanoindentation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ramana Pidaparti,** Virginia Commonwealth University — **C232**
**Program Area:** Biomechanics and Mechanobiology
Multiscale Study of the Respiratory Airway Mechanics for Cellular Inflammation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Olivier Pierron,** Georgia Institute of Technology — **C251**
**Program Area:** Biomechanics and Mechanobiology
Fabrication and Thermomechanical Characterization of NiTi Shape Memory Alloy Nanowires
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Marek-Jerzy Pindera,** University of Virginia — **C215**
**Program Area:** Biomechanics and Mechanobiology
Microstructural Effects in Tayloring the Response of Engineered Bio-Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Pinedo,** New York University — **B215**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Container Scheduling–Complexity, Algorithms and Heuristics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Claire Poh,** Clemson University — **C166**
**Program Area:** Structural Materials and Mechanics
Development of Performance-Based Design Guidelines for Integrating Phase Change Materials in Buildings
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Michael Pollino,** Case Western Reserve University — **D192**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Seismic Rehabilitation of Substandard Building Structures through Implementation of Stiff Rocking Cores (SRCRehab)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Andreas Polycarpou,** University of Illinois at Urbana-Champaign — **C80**
**Program Area:** Materials and Surface Engineering
Synthesis and Tribological Behavior of Metal Diboride-Nitride Coatings: Optimizing the Hard and Compliant Response
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Peter Polyvas,** University of Arizona — **E143**
**Program Area:** Sensors and Sensing Systems
Wearable Micro-Sensors for Digital Palpation Tonometry and Soft Tissue Analysis
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Elmira Popova,** University of Texas at Austin — **E226**
**Program Area:** Operations Research
Collaborative Research: Decision-Dependent Stochastic Processes  Inference and Optimization
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Maurizio Porfiri,** Polytechnic University of New York — **E117**
**Program Area:** Sensors and Sensing Systems
Little Eddies and Small Vibrations: Untapped Sources for Energy Harvesting in Aquatic Environments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Maurizio Porfiri,** Polytechnic University of New York — **E264**
**Program Area:** Dynamical Systems
CAREER: Guidance and Control of Fish Shoals using Bio-Mimetic Robots
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Maurizio Porfiri,** Polytechnic University of New York — **E265**
**Program Area:** Dynamical Systems
Collaborative Research: Geometry of Group Behaviors with Application to Fish Schooling
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Siavash Pourkamali Anaraki,** University of Denver — **E132**
**Program Area:** Sensors and Sensing Systems
Development of a Hybrid Nano-Electro-Mechanical Sensor Technology for Nanoscale Aerosol Mass and Momemtumprobing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Monica Prezzi,** Purdue University — **D47**
**Program Area:** Geotechnical Engineering
Integrated Framework for 3D Analysis of Soil-Pile Interaction
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Oleg Prokopyev,** University of Pittsburgh — **E243**
**Program Area:** Operations Research
Novel Optimization-Based Biclustering Algorithms for Biomedical Data Analysis
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**David Y.H. Pui,** University of Minnesota Institute of Technology — **B166**
**Program Area:** NanoManufacturing
Real Time Measurement of Agglomerated or Aggregated Airborne Nanoparticles Released From a Manufacturing Process and Their Transport Characteristics
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Anand Puppala,** University of Texas at Arlington — **C144**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: SWCC Based Models for Realistic Simulation of Swell Behavior of Expansive Soils
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Prashant Purohit,** University of Pennsylvania — **C233**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Entropic Elasticity of Fluctuating Filaments and Networks
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

## Q

**Hang (Jerry) Qi,** University of Colorado at Boulder — **C252**
**Program Area:** Biomechanics and Mechanobiology
Mechanics of Cell Alignment due to Contact Guidance by Nanoscale Surface Topography
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Wei Qi,** University of California, Berkeley — **E188**
**Program Area:** Service Enterprise Systems
Collaborative Research: Effective Management of Smart Grids and Smart Meters for Creating a Sustainable Energy Future
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Xiaoping Qian,** Illinois Institute of Technology **B102**
**Program Area:** Manufacturing Machines and Equipment
Direct Measurement from Scan Data with Adaptive Moving Least-Squares Surfaces under Controlled Spatial Dependency
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Zhiguang Qian,** University of Wisconsin, Madison **B216**
**Program Area:** Manufacturing Enterprise Systems
A Statistical Framework for the Design and Analysis of Multi-Fidelity Computer Experiments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xiaoping Qian,** Illinois Institute of Technology **E43**
**Program Area:** Engineering and Systems Design
GOALI: Computing Tip-Specimen Shape Interaction for Accurate, High Throughput Nano-Imaging of General Three-Dimensional Structures by Atomic Force Microscopy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Tong Qiu,** Pennsylvania State University, University Park **D55**
**Program Area:** Geotechnical Engineering
Analytical and Experimental Study of Pore Fluid Induced Damping and Effective Density in Saturated Soil During Shear Wave Excitations
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

## R

**Sharif Rahman,** University of Iowa **E13**
**Program Area:** Engineering and Systems Design
Reliability-Based Design Optimization of Large-Scale Complex Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Binod Rai,** University of Memphis **C106**
**Program Area:** Materials and Surface Engineering
Grain Refined Nanocomposites: A Study on the Effect of Additives on Microstructure and Magnetic Properties of Permanent Magnets
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Anne Raich,** Lafayette College **D64**
**Program Area:** Geotechnical Engineering
RUI: Pervious Concrete Piles: An Innovative Ground Improvement Alternative
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Masoud Rais-Rohani,** Mississippi State University — **E14**
**Program Area:** Engineering and Systems Design
Computational Design Tool Development for Multilevel Optimization of Product-Material Systems Under Uncertainty
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Farshad Rajabipour,** Pennsylvania State University, University Park — **C167**
**Program Area:** Structural Materials and Mechanics
Engineering and Life Cycle Assessment of Activated Recycled Glass-Based Concretes
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Rajesh Rajamani,** University of Minnesota, Twin Cities — **E82**
**Program Area:** Control Systems
Active Noise Control Systems for Windows Using Transparent Carbon Nanotube Actuators
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kamlakar Rajurkar,** University of Nebraska, Lincoln — **B74**
**Program Area:** Manufacturing Machines and Equipment
Theoretical and Experimental Study of Debris Removal and Tool Wear in Micro Electro Discharge Machining (Micro-EDM)
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Theodore Ralphs,** Lehigh University — **E208**
**Program Area:** Operations Research
Decomposition-Based Optimization: A New Solver Paradigm
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Arvind Raman,** Purdue University — **E276**
**Program Area:** Dynamical Systems
GOALI: Nonlinear, Multi-modal, and Stochastic Dynamics of Low-stiffness Microcantilevers in Liquid Environment Atomic Force Microscopy
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ainissa Ramirez,** Yale University — **B29**
**Program Area:** Materials Processing and Manufacturing
Rapid Fabrication of Three-Dimensional Structures Using Magnetically-Responsive Low-Melting-Point Alloys
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Julio Ramirez,** Purdue University — **D220**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Operations
NEES Operations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**C. Andrew Ramsburg,** Tufts University — **D48**
**Program Area:** Geotechnical Engineering
Exploration of the Mechanisms Controlling Emulsion-Based Alkalinity Release during Subsurface Remediation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Hayder Rasheed,** Kansas State University — **C168**
**Program Area:** Structural Materials and Mechanics
EAGER: Engineered Bio-Composites for Sustainable Concrete
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Richard Regueiro,** University of Colorado at Boulder — **C7**
**Program Area:** Mechanics of Materials
Collaborative Proposal: Bridging and Coupling Particle to Continuum Length-Scale Mechanics for Simulating Deformation and Flow of Dense Dry Particulate Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Benjamin Rehder,** Arizona State University — **C154**
**Program Area:** Structural Materials and Mechanics
CAREER: Linking Pore Structure, Performance, and Material Design of a Sustainable Macroporous Concrete for Multifunctional Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Dacheng Ren,** Syracuse University — **C81**
**Program Area:** Materials and Surface Engineering
CAREER: Patterned Biofilm Formation by Surface Design: Linking Structure to Physiology and Genetics
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Spiridon Reveliotis,** Georgia Institute of Technology — **B233**
**Program Area:** Manufacturing Enterprise Systems
Optimized Scheduling of Complex Resource Allocation Systems through Approximate Dynamic Programming
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jeffrey Rhoads,** Purdue University — **E277**
**Program Area:** Dynamical Systems
Exploiting Parametric Effects in Resonant Nanosystems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jeffrey Rhoads,** Purdue University — **E278**
**Program Area:** Dynamical Systems
CAREER: Exploiting Collective Behaviors in Coupled Micro- and Nanosystems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**John Rice,** Utah State University — **C123**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: Critical Hydraulic Conditions for Piping in Sandy Soils, Laboratory Measurement and Numerical Simulation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kyle Riding,** Kansas State University — **C169**
**Program Area:** Structural Materials and Mechanics
Collaborative Research: New Natural Supplementary Cementitious Materials for Concrete
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**H. Ronald Riggs,** University of Hawaii — **D213**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Impact Forces from Tsunami-Driven Debris
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Liesel Ritchie,** University of Colorado at Boulder — **D124**
**Program Area:** Infrastructure Management and Extreme Events
Effects of Technological Disasters on Dimensions of Social Capital: A Longitudinal Study of the 2008 TVA Kingston Fossil Plant Ash Release
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Giorgio Rizzoni,** Ohio State University — **E297**
**Program Area:** Dynamical Systems
A System Dynamics Modeling Methodology to Predict Transient Phenomena in Compressible Fluid Flow Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Rogers,** University of Illinois at Urbana-Champaign — **B143**
**Program Area:** NanoScale Engineering Center
NSEC: Center for Nano-Chemical-Electrical-Mechanical Manufacturing Systems\Nano-CEMMS
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gonzalo Romero,** Massachusetts Institute of Technology — **E189**
**Program Area:** Service Enterprise Systems
Alleviating Travel Delay Uncertainties in Traffic Assignment and Traffic Equilibrium
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Donald Roper,** University of Arkansas — **E153**
**Program Area:** Sensors and Sensing Systems
Gold Nanoparticle Ensembles on Optical Plasmon Capillaries for Virus/DNA Sensing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**David Rosen,** Georgia Institute of Technology **E15**
**Program Area:** Engineering and Systems Design
A Multiscale Heterogeneous Foundation for Computer-Aided Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jamal Rostami,** Pennsylvania State University, University Park **C134**
**Program Area:** Geomechanics and Geomaterials
Study of Soil Abrasivity and Development of a Reliable Soil Abrasivity Index
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jamal Rostami,** Pennsylvania State University, University Park **C145**
**Program Area:** Geomechanics and Geomaterials
GOALI: Study of Advance Rate of Hard Rock Tunnel Boring Machines (TBMs) and the Impacts of Ground Conditions and Machine Specifications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Paat Rusmevichientong,** University of Southern California **E227**
**Program Area:** Operations Research
CAREER: Real-Time Stochastic Optimization with Large Structured Strategy Sets and High-Volume Data Streams
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Andrzej Ruszczynski,** Rutgers University, New Brunswick **E244**
**Program Area:** Operations Research
Collaborative Research: Successive Risk-Neutral Approximations of Dynamic Risk-Averse Optimization Problems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Massimo Ruzzene,** Georgia Institute of Technology **E279**
**Program Area:** Dynamical Systems
Nonlinear Acoustic Meta-Materials for Wave Propagation Management and Control
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Keri Ryan,** University of Nevada, Reno **D101**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: An Innovative Gap Damper to Control Seismic Isolator Displacements in Extreme Earthquakes
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Keri Ryan,** University of Nevada, Reno **D193**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: TIPS–Tools to Facilitate Widespread Use of Isolation and Protective Systems, a NEES/E-Defense Collaboration
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

## S

**Nikolaos Sahinidis,** Carnegie Mellon University **E209**
**Program Area:** Operations Research
Novel Relaxations for Global Optimization
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mehdi Saiidi,** University of Nevada, Reno **D214**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG; Seismic Performance of Bridge Systems with Conventional and Innovative Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Srinivasa Salapaka,** University of Illinois at Urbana-Champaign **E90**
**Program Area:** Control Systems
A Tractable Computational Framework for Dynamic Coverage and Clustering
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Christopher Saldana,** Pennsylvania State University, University Park **B112**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Deformation Phenomena in Surface Texturing by Machining-Based Processes
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Rodrigo Salgado,** Purdue University **C124**
**Program Area:** Geomechanics and Geomaterials
A Novel Method of Analysis of Single Piles and Pile Groups Subjected to Lateral Loads
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sanjay Sampath,** SUNY at Stony Brook **B45**
**Program Area:** Materials Processing and Manufacturing
GOALI: Novel Interface Driven Phenomena in Thermal Sprayed Systems: Mechanics, Materials Processing and Industrial Linkages
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Johnson Samuel,** Rensselaer Polytechnic Institute **B75**
**Program Area:** Manufacturing Machines and Equipment
Physics-Based Study of Graphene Colloidal Systems as Metal Working Fluids for Micro-Machining Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Florence Sanchez,** Vanderbilt University **C191**
**Program Area:** Structural Materials and Mechanics
CAREER: An Integrated Research and Education Program in Long-Term Durability of Nano-Structured Cement-Based Materials during Environmental Weathering
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Brett Sanders,** University of California-Irvine **D148**
**Program Area:** Infrastructure Management and Extreme Events
Data Integration and Model Development to Mitigate Urban Flooding Hazards Linked to Sea Level Rise
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Brett Sanders,** University of California-Irvine **D149**
**Program Area:** Infrastructure Management and Extreme Events
Prediction and Mitigation of Beach Overwash and Resultant Urban Flooding in Coastal California
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**David Sanders,** University of Nevada, Reno **D171**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Seismic Simulation and Design of Bridge Columns under Combined Actions, and Implications on System Response
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Gaurav Sant,** Arizona State University **C155**
**Program Area:** Structural Materials and Mechanics
Phase Change Materials in Concrete: A New Strategy to Improve the Thermal Damage Resistance and Thermal Energy Efficiency of Concrete Structures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Gaurav Sant,** University of California-Los Angeles **C170**
**Program Area:** Structural Materials and Mechanics
Collaborative Research: Fundamental Studies on Composition-Microstructure-Performance Relationships of Sustainable Cementitious Binders
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Ravi Saraf,** University of Nebraska, Lincoln — **B188**
**Program Area:** NanoManufacturing
Regulating Current Through a Nanoparticle Necklace by Microorganism: A Transformative Technology for Biofuel Cells and Biosensors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Partha Sarkar,** Iowa State University — **D79**
**Program Area:** Hazard Mitigation and Structural Engineering
Study of Microburst Winds and Their Loading Effects on Built Structures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mehrdad Sasani,** Northeastern University — **D194**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Near Collapse Performance of Existing Reinforced Concrete Frame Buildings
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Richard Sause,** Lehigh University — **D215**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Performance-Based Design for Cost-Effective Seismic Hazard Mitigation in New Buildings Using Supplemental Passive Damper Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Andrew Schaefer,** University of Pittsburgh — **E173**
**Program Area:** Service Enterprise Systems
Optimizing Flu Shot Design Under Uncertainty
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Andrew Schaefer,** University of Pittsburgh — **E174**
**Program Area:** Service Enterprise Systems
Collaborative Research: The Optimal Timing of Kidney Exchanges: A Markov Game Approach
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Benjamin Schafer,** Johns Hopkins University — **D172**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Enabling Performance-Based Seismic Design of Multi-Story Cold-Formed Steel Structures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Caroline Schauer,** Drexel University — **C63**
**Program Area:** Materials and Surface Engineering
GOALI: Mechanically Robust Structural Color System Based on Biomimetic Principles
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Tony Schmitz,** University of North Carolina at Charlotte **B92**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Applying Bayesian Predictive Modeling and Decision Theory to Milling Profit Optimization under Uncertainty
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Tony Schmitz,** University of North Carolina at Charlotte **B93**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Unified Three-Dimensional Dynamic Modeling for Drilling and Milling Tool Assemblies (STaRC-3D)
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**John Schroeder,** Texas Tech University **D109**
**Program Area:** Hazard Mitigation and Structural Engineering
Documenting the Engineering-Relevant Aspects of Extreme Thunderstorm Winds
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jan Schroers,** Yale University **B30**
**Program Area:** Materials Processing and Manufacturing
GOALI: Miniature Net-Shape Fabrication Method Using Thermoplastic Forming with Bulk Metalic Glass
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jan Schroers,** Yale University **B155**
**Program Area:** NanoManufacturing
Nanoimprinting with Amorphous Metals
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Mark Schulz,** University of Cincinnati **B139**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM GOALI: Carbon Nanotube Superfiber to Revolutionize Engineering Designs
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Axel Schulzgen,** University of Central Florida **E144**
**Program Area:** Sensors and Sensing Systems
GOALI: Developing Piezospectroscopic Sensing Systems in Adhesives and Coatings
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Justin Schwartz,** North Carolina State University **B13**
**Program Area:** Materials Processing and Manufacturing
Magnetic Field-Assisted Processing of Piezoelectric/Magnetostrictive Thin Film Composites to Enhance Properties
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Michael Scott,** Oregon State University — **D80**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Particle Finite Element Response Sensitivity Analysis of Fluid-Structure Interaction
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jeffrey Scruggs,** University of Michigan, Ann Arbor — **E59**
**Program Area:** Control Systems
CAREER: Control of Vibratory Energy Harvesting and Energy Constrained Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Paul Selvadurai,** University of California, Berkeley — **D56**
**Program Area:** Geotechnical Engineering
Fundamental Physical Mechanisms Leading to Initiation of Fault Rupture, With Application to Induced Seismicity at the Geysers Geothermal Field
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Venkat Selvamanickam,** University of Houston — **B14**
**Program Area:** Materials Processing and Manufacturing
GOALI: Epitaxial Growth of Superconducting Thin Film Tapes with Prefabricated Nanostructures
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Vladimir Semak,** Pennsylvania State University, University Park — **B103**
**Program Area:** Manufacturing Machines and Equipment
Fundamental Study of Pulse Length Dependency for Laser Ablation and Melt Formation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Suvrajeet Sen,** Ohio State University — **E228**
**Program Area:** Operations Research
Stochastic Mixed-Integer Optimization: Polyhedral Theory, Large-Scale Algorithms and Computations
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Carlo Sequin,** University of California, Berkeley — **E44**
**Program Area:** Engineering and Systems Design
Inverse 3D Modeling
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Halil Sezen,** Ohio State University — **D102**
**Program Area:** Hazard Mitigation and Structural Engineering
Experimental and Computational Simulation of Progressive Collapse of Buildings
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Devavrat Shah,** Massachusetts Institute of Technology **E245**
**Program Area:** Operations Research
What Do Customers Like: A New Approach That Lets The Data Decide
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jami Shah,** Arizona State University **E29**
**Program Area:** Engineering and Systems Design
EAGER: Holistic Ideation for Creative Design
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jami Shah,** Arizona State University **E30**
**Program Area:** Engineering and Systems Design
EAGER: MyDesignSpace: Discovering Design Patterns from Holistic Ideation Web Tool
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jami Shah,** Arizona State University **E45**
**Program Area:** Engineering and Systems Design
Identification, Characterization & Measurement of Design Skills and Designer Profiles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jami Shah,** Arizona State University **E46**
**Program Area:** Engineering and Systems Design
Major: Understanding and Aiding Problem Formulation in Creative Conceptual Design
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Reza Shahbazian-Yassar,** Michigan Technological University **C107**
**Program Area:** Materials and Surface Engineering
A New Perspective on Energy Harvesting Nanowires: The Role of Chemistry and Structure of Nanowires
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**M. Ravi Shankar,** University of Pittsburgh **B31**
**Program Area:** Materials Processing and Manufacturing
Self-Assembling Ductile and Tough Bulk Nanostructured Alloys of High Thermal-Stability
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**M. Ravi Shankar,** University of Pittsburgh **B32**
**Program Area:** Materials Processing and Manufacturing
Deformation Mechanics and Microstructure Evolution During Microforming of Metals
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**M. Ravi Shankar,** University of Pittsburgh — **B126**
**Program Area:** Manufacturing Machines and Equipment
Measuring Thermomechanical Material Response During Micromachining by In Situ Scanning Electron Microscopy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Gang Shao,** University of Central Florida — **E154**
**Program Area:** Sensors and Sensing Systems
Micromachinable Polymer-Derived Ceramic Ultrahigh-Temperature Sensors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Vadim Shapiro,** University of Wisconsin, Madison — **E31**
**Program Area:** Engineering and Systems Design
EAGER: Virtual Engineering for Conservation and Sustainability of Cultural Heritage
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Vadim Shapiro,** University of Wisconsin, Madison — **E47**
**Program Area:** Engineering and Systems Design
Collaborative Research: Engineering Analysis of Imprecise Models
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Vadim Shapiro,** University of Wisconsin, Madison — **E48**
**Program Area:** Engineering and Systems Design
Configuration Modeling, Design, and Analysis
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pradeep Sharma,** University of Houston — **B140**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
NIRT: Active Electromechanical Nanostructures Without the Use of Piezoelectric Constituents
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Pradeep Sharma,** University of Houston — **C40**
**Program Area:** Mechanics of Materials
Size-Dependent Super-Piezoelectricity in Nanostructures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pradeep Sharma,** University of Houston — **C41**
**Program Area:** Mechanics of Materials
EAGER/Collaborative Research: Coaxing Graphene to be Piezoelectric
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Pradeep Sharma,** University of Houston **C82**
**Program Area:** Materials and Surface Engineering
The Origins of the Dead-Layer in High Energy Storage Density Nanocapacitors
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Leon Shaw,** University of Connecticut **B33**
**Program Area:** Materials Processing and Manufacturing
Novel Processing of WC/Co Hardmetals with Simultaneous Improvements in Hardness and Toughness Derived From Nanocrystalline Powder
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Brian Sheldon,** Brown University **C108**
**Program Area:** Materials and Surface Engineering
GOALI: Stress Evolution and Related Phenomena in Composite Electrodes for Li Ion Batteries
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**I-Yeu Shen,** University of Washington **E118**
**Program Area:** Sensors and Sensing Systems
Performance Enhancement of PZT Thin-Film Microactuators via a Multi-Scale, Multi-Domain Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**I-Yeu Shen,** University of Washington **E119**
**Program Area:** Sensors and Sensing Systems
Bio-Inspired Inner-Ear Microphones via a Piezoelectric Substrate and Nanorods
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**I-Yeu Shen,** University of Washington **E298**
**Program Area:** Dynamical Systems
Vibration Analysis and Health Diagnosis of Spinning Cyclic Symmetric Rotors with Flexible Bearing and Housing Supports
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jinglai Shen,** University of Maryland, Baltimore County **E73**
**Program Area:** Control Systems
Collaborative Research: A Constrained Optimal Control Approach to Nonparametric Estimation with Applications to Biological, Biomedical and Engineering Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mengyan Shen,** University of Massachusetts, Lowell **E133**
**Program Area:** Sensors and Sensing Systems
Sensing Mechanism and Persistence of Semiconductor Gas Sensors on Nanostructured Surfaces
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Jianjun Shi,** Georgia Institute of Technology — **B217**
**Program Area:** Manufacturing Enterprise Systems
GOALI: Causation-Based Quality Control–A New Paradigm to Achieve Effective Monitoring, Diagnosis, and Control for Complex Manufacturing Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jianjun Shi,** Georgia Institute of Technology — **B218**
**Program Area:** Manufacturing Enterprise Systems
Metamodel-Based Measurement, Control, and Optimization of Engineered Surfaces
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sheldon Shi,** Mississippi State University — **C83**
**Program Area:** Materials and Surface Engineering
Impregnated Inorganic Nanoparticles at the Natrual Fiber-Thermoplastic Polymer Interface
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yunfeng Shi,** Rensselaer Polytechnic Institute — **C64**
**Program Area:** Materials and Surface Engineering
Quantitative Understanding of Atomic Wear Using Accelerated Molecular Simulation
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Albert Shih,** University of Michigan, Ann Arbor — **B127**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Tissue Cutting Mechanics–Investigation of the Effective and Minimally Invasive Biopsy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yung Shin,** Purdue University — **B113**
**Program Area:** Manufacturing Machines and Equipment
High Speed Picosecond Laser Scribing of Multilayer Thin Films in Solar Cell
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Rajiv Shivpuri,** Ohio State University — **E16**
**Program Area:** Engineering and Systems Design
GOALI: Bayesian Hierarchical Network based Computational Framework for Risk Tolerant Process Design
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Andrei Shkel,** University of California-Irvine — **E100**
**Program Area:** Sensors and Sensing Systems
Folded Nuclear Magnetic Resonance Gyroscope
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Pranav Shrotriya,** Iowa State University **B76**
**Program Area:** Manufacturing Machines and Equipment
Two-Dimensional Cutting of Polycrystalline Diamond and CBN Tools and Dies using a Novel Laser/Waterjet Hybrid Manufacturing Process
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Kenneth Shull,** Northwestern University **C84**
**Program Area:** Materials and Surface Engineering
Crack Propagation in Self-Healing Polymer Gels with High Toughness
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Gennady Shvets,** University of Texas at Austin **B189**
**Program Area:** NanoManufacturing
Development of Ultra-Dense Plasmonic Sensors Arrays Using Epitaxial Periodically-Perforated Silver Films
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pedro Silva,** George Washington University **D81**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Damage Compliant Inelastic Design Parameters for Performance-Based-Seismic-Design of Slender RC Columns
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Dan Simon,** Cleveland State University **E17**
**Program Area:** Engineering and Systems Design
GOALI: Biogeography-Based Optimization of Multiple Related Complex Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Joseph Sinfield,** Purdue University **D65**
**Program Area:** Geotechnical Engineering
Geoenvironmental Influences on Raman Spectroscopic Monitoring of Chlorinated Solvents
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Joseph Sinfield,** Purdue University **C146**
**Program Area:** Geomechanics and Geomaterials
Engineering the Pore Fluid of Sands with Highly Plastic Nano-Particles for Liqefaction revention
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Puneet Singla,** SUNY at Buffalo **B203**
**Program Area:** Interdisciplinary Research
IDR/Collaborative Research: Characterizing Uncertainty in the Motion of Volcanic Plumes Advected by Wind Fields
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

# Grantee Poster Session Schedule

**Puneet Singla,** SUNY at Buffalo — **E74**
**Program Area:** Control Systems
Image Guided Tracking of Tumor Motion for Conformal Radiation Therapy
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Nicholas Sitar,** University of California, Berkeley — **D195**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Seismic Earth Pressures on Retaining Structures
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Karen Smilowitz,** Northwestern University — **E175**
**Program Area:** Service Enterprise Systems
Design and Control Principles for Mobile Health Care Operations Management -- The Case of Asthma Control
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**J. Cole Smith,** University of Florida — **E210**
**Program Area:** Operations Research
Integrating Dynamic Programming within Mixed-Integer Programming Techniques
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Smith,** Trustees of Boston University — **C234**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Molecular Mechanics Dictate the Mechanical Behavior of an Extracellular Matrix Fiber
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Stuart Smith,** University of North Carolina at Charlotte — **B114**
**Program Area:** Manufacturing Machines and Equipment
Material Removal Mechanisms in Vortex Machining
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Andrew Smyth,** Columbia University — **D103**
**Program Area:** Hazard Mitigation and Structural Engineering
Data Fusion of Heterogeneous Sensor Measurements for Enhanced Structural Modeling
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Nathan Sniadecki,** University of Washington — **C253**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Mechanics of Vascular Smooth Muscle Cell Contraction–Subcellular Structure-Function Relationships
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Amir Soleimanpour,** University of Toledo — **E120**
**Program Area:** Sensors and Sensing Systems
Fundamental Investigation of Pulsed Laser Irradiation on Metal Oxide Gas Sensor Performance
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Junho Song,** University of Illinois at Urbana-Champaign — **D125**
**Program Area:** Infrastructure Management and Extreme Events
Risk-informed Management and Post-disaster Operations of Lifeline Networks by Rapid, Condition-based System Reliability Analysis
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Gangbing Song,** University of Houston — **D173**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR Payload: Damage Detection of Reinforced Concrete Columns Subjected to Combined Actions
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Eric Sonnenthal,** University of California, Berkeley — **C147**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: Coupled Thermal-Hydrological-Mechanical-Chemical-Biological Experimental Facility at DUSEL Homestake
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Siavash Sorooshian,** University of Nevada, Reno — **D216**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-GC: Simulation of the Seismic Performance of Nonstructural Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sabrina Spatari,** Drexel University — **C171**
**Program Area:** Structural Materials and Mechanics
Enhancing the Life Cycle of Plastic Pipes Through Nano-reinforcement
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Douglas Spearot,** University of Arkansas — **B156**
**Program Area:** NanoManufacturing
Fundamental Understanding of Nanoparticle-Based Lubricants Tuned to Respond to Harsh Boundary Lubrication Conditions
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Billie Spencer,** University of Illinois at Urbana-Champaign — **E145**
**Program Area:** Sensors and Sensing Systems
Bio-Informed Framework Enabling Multimetric Infrastructure Monitoring
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

# Grantee Poster Session Schedule

**Jelena Srebric,** Pennsylvania State University, University Park — **C192**
**Program Area:** Structural Materials and Mechanics
Modeling of Natural Plant Materials to Enable Performance Evaluation of Environmentally Friendly Buildings
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Sri Sritharan,** University of Oklahoma, Norman Campus — **D174**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Understanding and Improving the Seismic Behavior of Pile Foundations in Soft Clays
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sri Sritharan,** Iowa State University — **D217**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Unbonded Post-Tensioned Rocking Walls for Seismic Resilient Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Binil Starly,** University of Oklahoma, Norman Campus — **B77**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Bio-Manufacturing Heterogeneous Multi-scale 3D Matrices for Engineering Living Tissue Systems
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Martin Starzewski,** University of Illinois at Urbana-Champaign — **C42**
**Program Area:** Mechanics of Materials
Mechanics of Fractal Materials
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Paul Steen,** Cornell University — **B34**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Manipulating the Contacting and Solidification of Molten Metal in Continuous Casting
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Martin Steinert,** Stanford University — **E32**
**Program Area:** Engineering and Systems Design
EAGER: AnalyzeD–Analyzing Engineering Design Activities
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Daniel Steingart,** CUNY City College — **C65**
**Program Area:** Materials and Surface Engineering
GOALI: A Comparative Study of Electrochemical Codeposition with In-Situ Electron Microscopy
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Dusan Stipanovic,** University of Illinois at Urbana-Champaign — **E91**
**Program Area:** Control Systems
Collaborative Research: Safe Coordination of Multiple Autonomous Vehicles
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Robert Stone,** Oregon State University — **E33**
**Program Area:** Engineering and Systems Design
Collaborative Research: Quantifying Creativity in Automated Design through a Multiagent Coordination Framework
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Alejandro Strachan,** Purdue University — **C8**
**Program Area:** Mechanics of Materials
Cyber-Enabled Predictive Models for Polymer Nanocomposites: Multiresolution Simulations and Experiments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Ji Won Suk,** University of Texas at Austin — **C21**
**Program Area:** Mechanics of Materials
Mechanical Characterization of Atomically Thin Membranes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Tom Suleski,** University of North Carolina at Charlotte — **B104**
**Program Area:** Manufacturing Machines and Equipment
Can Multi-Scale Optics be Fabricated by Ultraprecision Systems–Hierarchical Fabrication Across Seven Orders of Magnitude?
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Wei Sun,** Drexel University — **B46**
**Program Area:** Materials Processing and Manufacturing
A Dual Functional Freeform Microplasma Surface Patterning and Biologics Printing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Vishnu Baba Sundaresan,** Virginia Commonwealth University — **E101**
**Program Area:** Sensors and Sensing Systems
CAREER: Ionic Transistor Devices for Sensing and Controlled Actuation–An Integrated Research, Teaching and Community Outreach Program
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Krishnan Suresh,** University of Wisconsin, Madison — **E18**
**Program Area:** Engineering and Systems Design
CAREER: Next-Generation Shape Optimization of Geometrically Complex Artifacts
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Jeannette Sutton,** University of Colorado at Colorado Springs — **D150**
**Program Area:** Infrastructure Management and Extreme Events
Collaborative Research: Informal Online Communication in Crises and Disaster Events: Content, Structure, and Dynamics
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jeannette Sutton,** University of Colorado at Colorado Springs — **D151**
**Program Area:** Infrastructure Management and Extreme Events
Disaster Resilient Rural Communities: The Effect of Information Access on Rural Collective Efficacy
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Szivek,** University of Arizona — **E121**
**Program Area:** Sensors and Sensing Systems
SENSORS: In Vivo Joint Regeneration Monitoring System to be Able to Establish Rehabilitation Approaches during Healing
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Izabela Szlufarska,** University of Wisconsin, Madison — **C109**
**Program Area:** Materials and Surface Engineering
CAREER: Molecular Basis for Viscoelastic Response on Nano-Mechanical Biosensors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## T

**Ertugrul Taciroglu,** University of California-Los Angeles — **C22**
**Program Area:** Mechanics of Materials
Collaborative Research: Validated Multiscale Simulation Framework for Large-strain Thermo-mechanical Response of Open-Cell Aluminum Foams
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Mahmoud Reda Taha,** University of New Mexico — **C193**
**Program Area:** Structural Materials and Mechanics
Synthesis and Multi-Scale Mechanical Characterization of CSH
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Mitra Taheri,** Drexel University — **C110**
**Program Area:** Materials and Surface Engineering
Multiscale Correlation of Magnetism and Microstructure at Iron/Oxide Interfaces
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Sam Tajbakhsh,** Pennsylvania State University, University Park — **B219**
**Program Area:** Manufacturing Enterprise Systems
On-line Profile-to-Profile Process Adjustment for Robust Parameter Design Scenarios
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Li Tan,** University of Nebraska, Lincoln — **C66**
**Program Area:** Materials and Surface Engineering
Self-Organized Nanolayers for Organic Thin-Film Transistors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xiaobo Tan,** Michigan State University — **E60**
**Program Area:** Control Systems
Nonlinear and Adaptive Control of Smart Material-Actuated Systems with Application to Nanopositioning
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xiaoli Tan,** Iowa State University — **C43**
**Program Area:** Mechanics of Materials
Mechanics of Multi-responsive Ceramics for Electrical Capacitors with High power/Energy density
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Choon Yik Tang,** University of Oklahoma, Norman Campus — **E92**
**Program Area:** Control Systems
Control-Theoretic Approaches to Communication-Efficient, Distributed Convex Optimization over Wireless Networks
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jay Tang,** Brown University — **C235**
**Program Area:** Biomechanics and Mechanobiology
Biomechanics of Actin Networks Regulated by Physical Mechanisms
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jiong Tang,** University of Connecticut — **E280**
**Program Area:** Dynamical Systems
Collaborative Research: Efficient Probabilistic Approach Using Order Reduction and Hybrid Models -- A New Paradigm for Structural Dynamic Analysis
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xiaoduan Tang,** Iowa State University — **C111**
**Program Area:** Materials and Surface Engineering
Development of Scanning Photothermal Microscope for Nanoscale Sub-surface Structural Defect Characterization
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Rafiqul Tarefder,** University of New Mexico — **C194**
**Program Area:** Structural Materials and Mechanics
CAREER: Characterization and Modeling of Asphalt Concrete for Moisture-Induced Damage
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Rafiqul Tarefder,** University of New Mexico — **C195**
**Program Area:** Structural Materials and Mechanics
GOALI: Nanoscale Testing and Molecular Modeling of Aging in Asphalt
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Taylor,** Virginia Polytechnic Institute and State University — **D37**
**Program Area:** Civil Infrastructure Systems
CAREER: Building Occupant Network Dynamics (BOND)–Multi-scale Experimentation and Simulation in the Built Environment to Achieve Sustained Energy Conservation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jochen Teizer,** Georgia Institute of Technology — **D13**
**Program Area:** Civil Infrastructure Systems
Automated Vision-Based Sensing for Site Operations Analysis
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jale Tezcan,** Southern Illinois University at Carbondale — **D82**
**Program Area:** Hazard Mitigation and Structural Engineering
A Bayesian Approach for Modeling and Simulation of Non-Stationary Ground Motions
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Tolga Tezcan,** University of Rochester — **E229**
**Program Area:** Operations Research
CAREER: Robust Design and Control of Parallel Server Systems: Analysis via Augmented Fluid Models and Heavy-Traffic Asymptotic Regimes
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ying Tian,** University of Nevada, Las Vegas — **D104**
**Program Area:** Hazard Mitigation and Structural Engineering
Collaborative Research: Dynamic Disproportionate Collapse in Flat-Plate Buildings
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**John Tichy,** Rensselaer Polytechnic Institute — **C85**
**Program Area:** Materials and Surface Engineering
Limits to Lubrication Theory in Microsystems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Albert To,** University of Pittsburgh — **C9**
**Program Area:** Mechanics of Materials
A New Atomistic-to-Continuum Thermomechanical Model that Enables a Novel Averaging Method for Molecular Dynamics Simulations
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Masayoshi Tomizuka,** University of California, Berkeley — **B193**
**Program Area:** Interdisciplinary Research
IDR/Collaborative Research: Monitoring and Mobility Assistance with Wireless Body Sensor Network and Mechatronic Actuation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Huseyin Topaloglu,** Cornell University — **E190**
**Program Area:** Service Enterprise Systems
Approximate Dynamic Programming for Perishable Asset Management with Applications in Dynamic Pricing, Capacity Allocation and Revenue Management
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Huseyin Topaloglu,** Cornell University — **E191**
**Program Area:** Service Enterprise Systems
A General Framework for Incorporating Choice Models into Operations Management Decisions
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nicolas Triantafyllidis,** University of Michigan, Ann Arbor — **C23**
**Program Area:** Mechanics of Materials
Collaborative Research: Fundamental Experimental and Theoretical Investigation of Finite Strain and High Strain-Rate Electromagnetic Loading Processes in Metals
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Dallas Trinkle,** University of Illinois at Urbana-Champaign — **C24**
**Program Area:** Mechanics of Materials
GOALI: Modeling Solute Effects in Magnesium Alloys: First-principles to Predictive Finite-Element
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Dallas Trinkle,** University of Illinois at Urbana-Champaign — **C112**
**Program Area:** Materials and Surface Engineering
CAREER: First-Principles Modeling of Titanium-Oxygen-Solute Interaction: Materials Design for Improved Energy Efficiency
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Craig Trumbo,** Colorado State University — **D126**
**Program Area:** Infrastructure Management and Extreme Events
Dynamics of Hurricane Risk Perception
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michael Tsapatsis,** University of Minnesota, Twin Cities — **B141**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
NIRT: Precise Building Blocks for Hierarchical Nanomanufacturing of Membranes with Molecular Resolution
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kwok-Leung Tsui,** Georgia Institute of Technology — **B220**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Validation, Calibration, and Prediction of Computer Models with Functional Output
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Cameron Turner,** Colorado School of Mines — **E19**
**Program Area:** Engineering and Systems Design
Design Space Analysis with Hyperdimensional Metamodels
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Kimberly Turner,** University of California-Santa Barbara — **E102**
**Program Area:** Sensors and Sensing Systems
Collaborative Research: Novel Microscale Resonant Sensors for Chemical and Biological Detection
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

## U

**Nasim Uddin,** University of Alabama at Birmingham — **C178**
**Program Area:** Structural Materials and Mechanics
Composite Structural Insulated Panels (CSIPs) for Hazard Resistant Structures
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Nasim Uddin,** University of Alabama at Birmingham — **D38**
**Program Area:** Civil Infrastructure Systems
Developing Bridge Weigh-in-Motion (B-WIM) Health Monitoring Systems for Bridge Infrastructure Safety
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Satish Ukkusuri,** Purdue University — **D152**
**Program Area:** Infrastructure Management and Extreme Events
Collaborative Research: From Warnings to Evacuation in Hurricanes: a Holistic Investigation using an Interdisciplinary Approach
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Merve Unuvar,** Rutgers University, New Brunswick **E246**
**Program Area:** Operations Research
Discrete Moment Problems and Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Reha Uzsoy,** North Carolina State University **B234**
**Program Area:** Manufacturing Enterprise Systems
International Collaboration: Capacity Anticipation and Modeling for Production Planning with Flexible Resources
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Reha Uzsoy,** North Carolina State University **B235**
**Program Area:** Manufacturing Enterprise Systems
Next Generation Algorithms for Planning Production and Inventories with Uncertain Demand and Congestion
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## V

**Hooman Vahedi Tafreshi,** Virginia Commonwealth University **B176**
**Program Area:** NanoManufacturing
Bimodal Nanofiber Mats with Controlled Microstructures for Size-Sensitive Nanoparticle Filtration/Separation and Superhydrophobic Drag Reduction
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Ardalan Vahidi,** Clemson University **E61**
**Program Area:** Control Systems
Predictive Energy Management in Smart Vehicles: Exploiting Traffic and Terrain Preview for Fuel Savings
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Alexander Vakakis,** University of Illinois at Urbana-Champaign **E281**
**Program Area:** Dynamical Systems
Collaborative Research: Global/Local System Identification of Strongly Nonlinear Dynamical Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**John van de Lindt,** University of Alabama, Tuscaloosa **D175**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: NEESsoft-Seismic Risk Reduction for Soft-Story, Wood frame Buildings
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Benjamin Van Roy,** Stanford University — **E211**
**Program Area:** Operations Research
Directed Regression
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Shannon Van Zandt,** Texas A&M University — **D127**
**Program Area:** Infrastructure Management and Extreme Events
Developing A "Living Laboratory" for Examining Community Recovery and Resilience After Disaster
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Judy Vance,** Iowa State University — **E49**
**Program Area:** Engineering and Systems Design
GOALI: A Hybrid Method to Support Natural Interaction of Parts in a Virtual Environment
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Judy Vance,** Iowa State University — **E50**
**Program Area:** Engineering and Systems Design
EAGER: Haptics for Large Scale Virtual Environments to Assess Assembly Tasks
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**John Vande Vate,** Georgia Institute of Technology — **E230**
**Program Area:** Operations Research
Stochastic Control In Semiconductor Supply Chain
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kalman Varga,** Vanderbilt University — **E299**
**Program Area:** Dynamical Systems
Quantum dynamics at the nanoscale
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Semyon Vaynman,** Northwestern University — **C44**
**Program Area:** Mechanics of Materials
Design and Development of Body-Centered Cubic Alloys with Increased Strength and Toughness for Infrastructural and Structural Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Semyon Vaynman,** Northwestern University — **C156**
**Program Area:** Structural Materials and Mechanics
Design and Development of Fire-Resistant Ferritic Steels for Structural Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Franck Vernerey,** University of Colorado at Boulder — **C254**
**Program Area:** Biomechanics and Mechanobiology
Multiscale Biomimetic Study of the Mechanics of Fish Scales
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Narendiran Vitchuli,** North Carolina State University — **B62**
**Program Area:** Materials Processing and Manufacturing
A New Paradigm for Scalable Fabrication of Polymer Nanofibers by Bulk Shear and Phase Separation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Joost Vlassak,** Harvard University — **C25**
**Program Area:** Mechanics of Materials
Stress and Deformation caused by Insertion in Li Ion Batteries
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Paul Voyles,** University of Wisconsin, Madison — **C45**
**Program Area:** Mechanics of Materials
Nanoscale Mechanics of Bulk Amorphous Metals
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## W

**Amy Wagoner Johnson,** University of Illinois at Urbana-Champaign — **B63**
**Program Area:** Materials Processing and Manufacturing
Customized Load-Bearing Scaffolds Using Multiscale Porosity and Multi-Material Domains
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**S. Travis Waller,** University of Texas at Austin — **D39**
**Program Area:** Civil Infrastructure Systems
Predicting Disrupted Network Behavior
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Mark Walter,** Ohio State University — **C67**
**Program Area:** Materials and Surface Engineering
GOALI: Electrode Interface Stresses, Degradation, and Failure
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Hong Wan,** Purdue University — **B221**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Optimal Sampling Plans in Supply Chains with Endogenous Product Quality
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Anbo Wang,** Virginia Polytechnic Institute and State University **E155**
**Program Area:** Sensors and Sensing Systems
Fully-Distributed Fiber-Optic Sensors for Pressure and Transverse Stress Measurement
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Anbo Wang,** Virginia Polytechnic Institute and State University **E156**
**Program Area:** Sensors and Sensing Systems
Fiber-Optic Technology for Fully-Distributed Physical, Chemical, and Biological Sensing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Chuji Wang,** Mississippi State University **E146**
**Program Area:** Sensors and Sensing Systems
A Multi-functional Fiber Optic Sensor Platform Using a Time Domain Sensing Scheme
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Fuyuan Wang,** University of Illinois at Urbana-Champaign **E247**
**Program Area:** Operations Research
Four Mathematical Programming Paradigms with Operations Research Applications
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Herbert Wang,** University of Wisconsin, Madison **C125**
**Program Area:** Geomechanics and Geomaterials
Collaborative Research: Fiber-Optic Strain Monitoring of Rock Masses in Large Underground Facilities
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Howard (Hao) Wang,** SUNY at Binghamton **B15**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Large-Scale Fabrication of Thin Polymer Nanocomposite Films
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jialai Wang,** University of Alabama, Tuscaloosa **C157**
**Program Area:** Structural Materials and Mechanics
Characterization of Environment-Assisted Subcritical Debond of Bonded Repairs/Strengthening of Aging Infrastructure
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jialai Wang,** University of Alabama, Tuscaloosa **C158**
**Program Area:** Structural Materials and Mechanics
Collaborative Research: Geopolymeric Nanocomposite, A Next Generation Material For Infrastructure Sustainability
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Jifeng Wang,** University of Illinois at Urbana-Champaign **C86**
**Program Area:** Materials and Surface Engineering
Design of Transforming Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Junlan Wang,** University of Washington **C87**
**Program Area:** Materials and Surface Engineering
CAREER: Experimental Investigation of Mechanical Properties of Nanoporous Thin Films
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Junmin Wang,** Ohio State University **E62**
**Program Area:** Control Systems
Synergistically Integrated In-Cylinder Condition and Fueling Control for Advanced Multi-Mode Combustion Diesel Engines
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Jyhwen Wang,** Texas A&M University **B49**
**Program Area:** Materials Processing and Manufacturing
Hydroforming of Sandwich Panels
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Kejin Wang,** Iowa State University **C196**
**Program Area:** Structural Materials and Mechanics
Understanding Rheology of Cement-based Materials through Integrated Experiments and Computations at Multiple Scales
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Linbing Wang,** Virginia Polytechnic Institute and State University **C197**
**Program Area:** Structural Materials and Mechanics
Digital Mix Design for Performance Optimization of Asphalt Concrete
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Qian Wang,** Pennsylvania State University, University Park **E93**
**Program Area:** Control Systems
Modeling and Feedback Design for Autonomic Management of Enterprise-scale Virtualized Data Centers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Shi-Qing Wang,** University of Akron **C10**
**Program Area:** Mechanics of Materials
Melt Fracture in Soft Solid-Like Polymeric Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Xingwei Wang,** University of Massachusetts, Lowell — **E103**
**Program Area:** Sensors and Sensing Systems
CAREER: Novel Mechanism for Generation and Receiving of Ultrasound on a Single Fiber Using Nanoparticles
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xudong Wang,** University of Wisconsin, Madison — **B190**
**Program Area:** NanoManufacturing
Self-Controlled Surface-Selective Atomic Layer Deposition for Integrated Vertical Nanowire Field Effect Transistors
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Gordon Warn,** Pennsylvania State University, University Park — **D83**
**Program Area:** Hazard Mitigation and Structural Engineering
Stability of Elastomeric and Lead-Rubber Seismic Isolation Bearings Under Extreme Earthquake Loading
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**April Warnock,** University of Michigan, Ann Arbor — **D128**
**Program Area:** Infrastructure Management and Extreme Events
Detection and Mitigation of Hazardous Releases in Infrastructure Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Joseph Wartman,** Drexel University — **D196**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Seismically Induced Rock-Slope Failure: Mechanisms and Prediction
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**James Watkins,** University of Massachusetts, Amherst — **B144**
**Program Area:** NanoScale Engineering Center
NSEC: Center for Hierarchical Manufacturing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Dean Webster,** North Dakota State University Fargo — **C179**
**Program Area:** Structural Materials and Mechanics
Structural Composites with High Biobased Content
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Bingqing Wei,** University of Delaware — **B16**
**Program Area:** Materials Processing and Manufacturing
Collaborative Research: Manufacturing Deformable Energy Storage Devices from Carbon Nanotube Macro-Films
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Bingqing Wei,** University of Delaware — **B167**
**Program Area:** NanoManufacturing
Collaborative Research: Heterogeneous Integration of Patterned 3-D Nanotube Supercapacitators on CMOS
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Lisa Weiland,** University of Pittsburgh — **E122**
**Program Area:** Sensors and Sensing Systems
CAREER: High Performance, Mechanically Robust Ionomeric Sensors
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Haifang Wen,** Washington State University — **C135**
**Program Area:** Geomechanics and Geomaterials
An Innovative Approach to Mitigate Shrinkage Cracking in Cementitiously Stabilized Soils
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Kris Wernstedt,** Virginia Polytechnic Institute and State University — **D153**
**Program Area:** Infrastructure Management and Extreme Events
DRRC/Collaborative Research: Emergency Management in Rural America: Decision-Makers Use of Climate Science in Flood Planning and Management
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ward Whitt,** Columbia University — **E248**
**Program Area:** Operations Research
Multi-Server Queues with Time-Varying Arrival Rates
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Andrew Whittaker,** SUNY at Buffalo — **D218**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-SG: Performance-Based Design of Squat Reinforced Concrete Shear Walls
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Eric Williams,** Arizona State University — **D14**
**Program Area:** Civil Infrastructure Systems
Urban Form and Energy Use Explored Through Dynamic Networked Infrastructure Model
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Steve Wojtkiewicz,** University of Minnesota, Twin Cities — **D105**
**Program Area:** Hazard Mitigation and Structural Engineering
Rapid Identification, Control, and Uncertainty Analysis of Structural Models
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Colin Wolden,** Colorado School of Mines — **B17**
**Program Area:** Materials Processing and Manufacturing
High Throughput Manufacturing of Nanolaminates
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Shing-Chung Wong,** University of Akron — **B64**
**Program Area:** Materials Processing and Manufacturing
CAREER: Electrospinning-Enabled Bio-Inspired Materials Research and Education
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Robert Wood,** Harvard University — **E63**
**Program Area:** Control Systems
CAREER: Bio-inspired Automatic Control of a Flying Robotic Insect
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**David Wootton,** Cooper Union — **B128**
**Program Area:** Manufacturing Machines and Equipment
GOALI/Collaborative Research: Design and Manufacturing of Bioactive Surgical Fixation Devices Using Injection Molding of Gradient Cellular Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Benxin Wu,** Illinois Institute of Technology — **B18**
**Program Area:** Materials Processing and Manufacturing
EAGER/Collaborative Research: Laser Sintering of Nanolayered Carbon Nanotube Paper for Functionally Gradient Ceramic Nanocomposites
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Benxin Wu,** Illinois Institute of Technology — **B129**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Fundamental Research on a Novel Ultrasound-assisted Water-confined Laser Micromachining Technology
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jason Wu,** William Marsh Rice University — **D26**
**Program Area:** Civil Infrastructure Systems
CAREER: Reliability Assessment and Risk Mitigation Principles for Smart Interdependent Infrastructure Systems
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Junqiao Wu,** University of California, Berkeley — **B191**
**Program Area:** NanoManufacturing
Off-Equilibrium Doping of Semiconductor Nanowires
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Richard Wysk,** North Carolina State University **B205**
**Program Area:** Manufacturing Enterprise Systems
EAGER: Engineering for Regenerative Medicine
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Gerard Wysocki,** Princeton University **E104**
**Program Area:** Sensors and Sensing Systems
CAREER: Coherent Mid-Infrared Molecular Dispersion Spectroscopy for Ultra-Sensitive Chemical Detection
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

## X

**Marino Xanthos,** New Jersey Institute of Technology **B65**
**Program Area:** Materials Processing and Manufacturing
GOALI: Fundamental Material and Processing Studies on Hot-Melt Extrusion-A Novel Pharmaceutical Manufacturing Process
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Zhenhai Xia,** University of Akron **C68**
**Program Area:** Materials and Surface Engineering
Integrated Studies of Interfaces in Nanocomposites and Nanoimprinting
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xinran Xiao,** Michigan State University **C26**
**Program Area:** Mechanics of Materials
GOALI: Stress in a Porous Polymeric Membrane Separator in a Lithium-Ion Battery
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Susan Xu,** Pennsylvania State University, University Park **B236**
**Program Area:** Manufacturing Enterprise Systems
Risk Management of Supply Chain Networks with Dependent Disruptions
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Terry Xu,** University of North Carolina at Charlotte **B157**
**Program Area:** NanoManufacturing
CAREER: Boron-based One-dimensional Nanostructures of Thermoelectric Energy Conversion
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xianfan Xu,** Purdue University **B142**
**Program Area:** Nanoscale Interdisciplinary Research Team and Scalable NanoManufacturing
SNM: Scalable Nanomanufacturing Machine Based on Parallel Optical Antenna Array
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

## Y

**Hitomi Yamaguchi Greenslet,** University of Florida — **B115**
**Program Area:** Manufacturing Machines and Equipment
Magnetic Field Assisted Nanomachining of Ultraprecision Surfaces
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Hitomi Yamaguchi Greenslet,** University of Florida — **C88**
**Program Area:** Materials and Surface Engineering
Surface Functionalization by Magnetic Field Assisted Finishing
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Henry Yang,** University of California-Santa Barbara — **B78**
**Program Area:** Manufacturing Machines and Equipment
Collaborative Research: Controlling Surface Damage in Machining of Hierarchical Biological Composites
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Henry Yang,** University of California-Santa Barbara — **C216**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Nanostructured Alloys With Unprecedented Properties
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jann Yang,** University of California-Irvine — **E157**
**Program Area:** Sensors and Sensing Systems
Finite-Element Based Damage Identification and Tracking of Civil Structures
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jian Yang,** New Jersey Institute of Technology — **E192**
**Program Area:** Service Enterprise Systems
Collaborative Research: The Nonatomic-Game Approach to Revenue Management Under Competition
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Shu Yang,** University of Pennsylvania — **B177**
**Program Area:** NanoManufacturing
From a Single Micropatterned Elastic Membrane to a Library of Complex Patterns of Nanostructures: an Efficient Nanomanufacturing Route via Harnessing of Elastic Instability
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Grantee Poster Session Schedule

**Bin Yao,** Purdue University — **E83**
**Program Area:** Control Systems
EAGER: A Holistic Approach to Adaptive Robust Control of Systems with Uncertain Nonsmooth Nonlinearities with Application to Cable-Conduit Actuated Surgical Robotic Devices
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**David Yao,** Columbia University — **E212**
**Program Area:** Operations Research
Dynamic Scheduling and Resource Control in Stochastic Processing Networks: Beyond Priority Rules
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Donggang Yao,** Georgia Institute of Technology — **B67**
**Program Area:** Materials Processing and Manufacturing
Precision Microprofile Extrusion with a Wall Slip Condition
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Y. Lawrence Yao,** Columbia University — **B66**
**Program Area:** Materials Processing and Manufacturing
Laser Modification of Surface Crystallinity of Biodegradable Polymers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Y. Lawrence Yao,** Columbia University — **B94**
**Program Area:** Manufacturing Machines and Equipment
GOALI: Dissimilar Metal Joining for Micro-Scale Medical Devices
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Matthew Yates,** University of Rochester — **C113**
**Program Area:** Materials and Surface Engineering
Surface Crystallization to Optimize Nanostructure of Proton Conductors in Hydrogen Membrane Fuel Cells
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**M. K. Yegian,** Northeastern University — **D197**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR: Induced Partial Saturation (LPS) Through Transport and Reactivity for Liquefaction Mitigation
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Allen Yi,** Ohio State University — **B79**
**Program Area:** Manufacturing Machines and Equipment
Micro-Optics Based 3D Microfabrication System
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Jingang Yi,** Rutgers University, New Brunswick — **E64**
**Program Area:** Control Systems
GOALI: Safety-Preserved Estimation and Control of Tire/Road Interaction
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Huiming Yin,** Columbia University — **C198**
**Program Area:** Structural Materials and Mechanics
CAREER: Energy in Sustainable Infrastructure–Multi-scale/physical Approach to a Novel Hybrid Solar Roofing Panel
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yong-Kyu Yoon,** University of Florida — **B130**
**Program Area:** Manufacturing Machines and Equipment
Exploration of Multidirectional 3-D UV Lithography for Advanced Microfabrication
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Zhanping You,** Michigan Technological University — **C172**
**Program Area:** Structural Materials and Mechanics
A Microstructure-Based Modeling Approach to Characterize Asphalt Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Zhanping You,** Michigan Technological University — **C173**
**Program Area:** Structural Materials and Mechanics
EAGER: Using Nonmetals Separated from E-Waste and Waste Plastic Bags in Improving the Mechanical Properties of Asphalt Materials
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Mohammad Younis,** SUNY at Binghamton — **E282**
**Program Area:** Dynamical Systems
Collaborative Research: Exploration of the Nonlinear Dynamics of NEMS Carbon Nanotube Resonators
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Cheng Yu,** University of North Texas — **D84**
**Program Area:** Hazard Mitigation and Structural Engineering
CAREER: Comprehensive Research on Cold-Formed Steel Sheathed Shear Walls: Special Detailing, Design, and Innovation
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Choongho Yu,** Texas A&M University — **B192**
**Program Area:** NanoManufacturing
Building Selective Pathways for Electrons and Phonons in Nanocomposites
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Hang Yu,** University of Delaware — **B50**
**Program Area:** Materials Processing and Manufacturing
Tailoring Thermal Conductivity for 3-D Polymer Composites
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Hongyu Yu,** Arizona State University — **B19**
**Program Area:** Materials Processing and Manufacturing
IDR/Collaborative Research: Manufacturing Functional Laminated Composite Structures on Patterned Uneven Three-Dimensional Surfaces
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Miao Yu,** University of Maryland, College Park — **E158**
**Program Area:** Sensors and Sensing Systems
Dexterous Fiber Optic Tweezers for Bio-Particle Manipulation and Force Sensing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Min-Feng Yu,** University of Illinois at Urbana-Champaign — **C236**
**Program Area:** Biomechanics and Mechanobiology
Intrinsically-Nonlinear Broadband Nanoresonator for Ultrahighly Sensitive Sensing of Energy Transfers
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xiong Yu,** Case Western Reserve University — **D106**
**Program Area:** Hazard Mitigation and Structural Engineering
GOALI: An Innovative Real Time Bridge Scour Sensor for Bridge Risk Management
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Xiong Yu,** Case Western Reserve University — **E105**
**Program Area:** Sensors and Sensing Systems
CAREER: Fusion of Multi-scale Sensing and Simulations for Bridge Scour Risk Management: An Integrated Research and Educational Plan
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xiong Yu,** Case Western Reserve University — **E106**
**Program Area:** Sensors and Sensing Systems
GOALI: An Innovative Real Time Bridge Scour Sensor for Bridge Risk Management
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Xiong Yu,** Case Western Reserve University — **E107**
**Program Area:** Sensors and Sensing Systems
A High Resolution Distributed Moisture Sensing System for Direct Measurement of Earthquake Induced Void Redistribution
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Wenqiao Yuan,** Kansas State University — **B131**
**Program Area:** Manufacturing Machines and Equipment
CAREER: Multi-Scale Structured Solid Carriers Enabling Algae Biofuel Manufacturing in the Ocean
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

## Z

**Evan Zamir,** Georgia Institute of Technology — **C255**
**Program Area:** Biomechanics and Mechanobiology
Biomechanical Characterization of the Avian Epiblast during Primitive Streak Formation
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Giovanni Zangari,** University of Virginia — **B158**
**Program Area:** NanoManufacturing
Fundamental Studies of Electrowetting on Tailored Surfaces with Application to High Performance Capillary Force Actuators
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Antonios Zavaliangos,** Drexel University — **C46**
**Program Area:** Mechanics of Materials
GOALI: Processing and Optimization of Multilayered Pharmaceutical Tablets
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Pablo Zavattieri,** Purdue University — **C180**
**Program Area:** Structural Materials and Mechanics
High Performance Cement Composites with Nanocrystalline and Nanofibrillated Cellulose
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Hussein Zbib,** Washington State University — **C11**
**Program Area:** Mechanics of Materials
Mechanical Properties at the Sub-micrometer Length Scale: Multiscale Modeling and Experiments
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Assaf Zeevi,** Columbia University — **E193**
**Program Area:** Service Enterprise Systems
CAREER: Design and Analysis of Differentiated Services
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Alan Zehnder,** Cornell University — **E283**
**Program Area:** Dynamical Systems
Nonlinear Dynamics of Coupled MEMS Oscillators
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Dimitrios Zekkos,** University of Michigan, Ann Arbor — **D219**
**Program Area:** George E. Brown, Jr. Network for Earthquake Engineering Simulation Research
NEESR-CR: Seismic Response of Landfills: In-Situ Evaluation of Dynamic Properties of Municipal Solid Waste, Comparison to Laboratory Testing, and Impact on Numerical Analyses
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Ruijie Zeng,** University of Illinois at Urbana-Champaign — **D129**
**Program Area:** Infrastructure Management and Extreme Events
Planning for Drought Preparedness in the Watershed Context: A Risk-Based Decision Analysis
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Aspasia Zerva,** Drexel University — **D85**
**Program Area:** Hazard Mitigation and Structural Engineering
Spatial Variability Effects on the Seismic Response of RC Highway Bridges
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Aspasia Zerva,** Drexel University — **D86**
**Program Area:** Hazard Mitigation and Structural Engineering
Seismic Response of Concrete Gravity Dams Subjected to Spatially Variable Excitations
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Chun (Chuck) Zhang,** Florida State University — **B222**
**Program Area:** Manufacturing Enterprise Systems
Collaborative Research: Multi-Accuracy Bayesian Models for Improving Property Prediction of Nanotube Buckypaper Composites
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Katherine Y. Zhang,** Trustees of Boston University — **C217**
**Program Area:** Biomechanics and Mechanobiology
CAREER: Integrating Multi-Scale Mechanics and Biomaterials to Study the Translation of Mechanical Forces from Tissue to Cell
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Liangfang Zhang,** University of California-San Diego — **B168**
**Program Area:** NanoManufacturing
Systematic Approaches to Scale-up of Biocompatible Drug Delivery Nanoparticles for High-Rate Production
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Lianyang Zhang,** University of Arizona — **C159**
**Program Area:** Structural Materials and Mechanics
Geopolymerization of Mine Tailings for Sustainable Development
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

# Grantee Poster Session Schedule

**Mingjun Zhang,** University of Tennessee, Knoxville — **C69**
**Program Area:** Materials and Surface Engineering
Nanoparticles to Increase Strength of Surface Adhesion: An Inspiration from Biological Systems
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Sulin Zhang,** Pennsylvania State University, University Park — **C89**
**Program Area:** Materials and Surface Engineering
Perfecting Monolayer Graphene by Defect Removal Using Novel Thermo-Mechanical Methods
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xiang Zhang,** University of California, Berkeley — **B145**
**Program Area:** NanoScale Engineering Center
NSEC: Center for Scalable and Integrated Nanomanufacturing (SINAM)
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xin Zhang,** Trustees of Boston University — **C237**
**Program Area:** Biomechanics and Mechanobiology
Collaborative Research: Elastic and Viscoelastic Characterization and Modeling of Polymer based Structures for Biological Applications
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Xinghang Zhang,** Texas A&M University — **E108**
**Program Area:** Sensors and Sensing Systems
Novel Magnetic Shape Memory Alloy Thin Films for Sensor and Actuator Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**YuMing Zhang,** University of Kentucky — **B80**
**Program Area:** Manufacturing Machines and Equipment
Control of Metal Transfer at Given Arc Variables
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**YuMing Zhang,** University of Kentucky — **B81**
**Program Area:** Manufacturing Machines and Equipment
Machine-Human Cooperative Control of Welding Process
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Yunfeng Zhang,** University of Maryland, College Park — **D107**
**Program Area:** Hazard Mitigation and Structural Engineering
Sensor-Driven Structural Health Prognosis System for Continuous Reliability Assessment of Tubular Steel Structures
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Yunfeng Zhang,** University of Maryland, College Park — **E147**
**Program Area:** Sensors and Sensing Systems
Collaborative Research: Fish-Inspired Ultra-Sensitive Infrasound Sensor for Critical Infrastructure Monitoring and Geo-hazards Early Warning
**Poster Session 5:** Wednesday, July 11, 1:00 p.m.–4:00 p.m.

**Yao Zhao,** Rutgers University, Newark — **B237**
**Program Area:** Manufacturing Enterprise Systems
CAREER: Project-Driven Supply Chains (PDSCs) -- Integrating Supply Chain Planning With Project Management
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yiping Zhao,** University of Georgia — **C256**
**Program Area:** Biomechanics and Mechanobiology
Understanding and Preventing Nanocarpet Effect
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Jiang Zhe,** University of Akron — **E123**
**Program Area:** Sensors and Sensing Systems
A High Throughput Microfluidic Sensor for Real Time Health Monitoring of Rotating Machinery
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Jiang Zhe,** University of Akron — **E124**
**Program Area:** Sensors and Sensing Systems
IDR: A Novel Multiplexed Multichannel Biosensor Chip for High-Throughput Detection of Macromolecular Biomarkers
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Karen Zheng,** University of Texas at Dallas — **B238**
**Program Area:** Manufacturing Enterprise Systems
GOALI: A Phased Approach for Investigating Trust and Trustworthiness in Forecast Information Sharing
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Weihong (Katie) Zhong,** Washington State University — **C114**
**Program Area:** Materials and Surface Engineering
Interfacial Wetting and Adhesion Enhancement in Advanced Organic-Fiber/Polymer Composites through a "Nano-nectar" Methodology
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Guangwen Zhou,** SUNY at Binghamton — **C70**
**Program Area:** Materials and Surface Engineering
Probing Nanoscale Oxidation Mechanism of Metals under Applied Stress
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**H. Susan Zhou, Worcester Polytechnic Institute** **E134**
**Program Area:** Sensors and Sensing Systems
Engineering Rapid and Ultrasensitive Microsystem with Hybrid Nanomaterials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Jack Zhou, Drexel University** **B132**
**Program Area:** Manufacturing Machines and Equipment
EAGER/Collaborative Research: Solid Freeform Fabrication of a Conceptual Artificial Photosynthesis Device
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Shiyu Zhou, University of Wisconsin, Madison** **B223**
**Program Area:** Manufacturing Enterprise Systems
Statistical Analysis and Control of Ultrasonic-based Aluminum Nano-composite Fabrication Processes
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Guoming Zhu, Michigan State University** **E300**
**Program Area:** Dynamical Systems
GOALI/Collaborative Research: A Control Oriented Charge Mixing and Hybrid Combustion Model for SI-HCCI Dual Mode Engines
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Weidong Zhu, University of Maryland, Baltimore County** **E301**
**Program Area:** Dynamical Systems
GOALI: Dynamic Modeling and Analysis of Complex Systems with Application to Elevator Systems
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yimin Zhu, Florida International University** **D40**
**Program Area:** Civil Infrastructure Systems
Stochastic Time, Cost and Environmental Impact Optimization of Construction Processes
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

**Yingxi (Elaine) Zhu, University of Notre Dame** **C90**
**Program Area:** Materials and Surface Engineering
Molecular Engineering of Biomimetic Hydrogel-Based Lubricious Films
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

**Yong Zhu, North Carolina State University** **C115**
**Program Area:** Materials and Surface Engineering
Temperature Effect on Advanced Mechanical Properties of Semiconductor Nanowires
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

# Grantee Poster Session Schedule

**Thomas Zimmie,** Rensselaer Polytechnic Institute — **D49**
**Program Area:** Geotechnical Engineering
RAPID: Flood and Erosion Reconnaissance: Hurricanes Irene and Lee, Upstate New York and Western New England
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Michal Zochowski,** University of Michigan, Ann Arbor — **E284**
**Program Area:** Dynamical Systems
Understanding Multimodal Interactions in Neuronal Networks
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

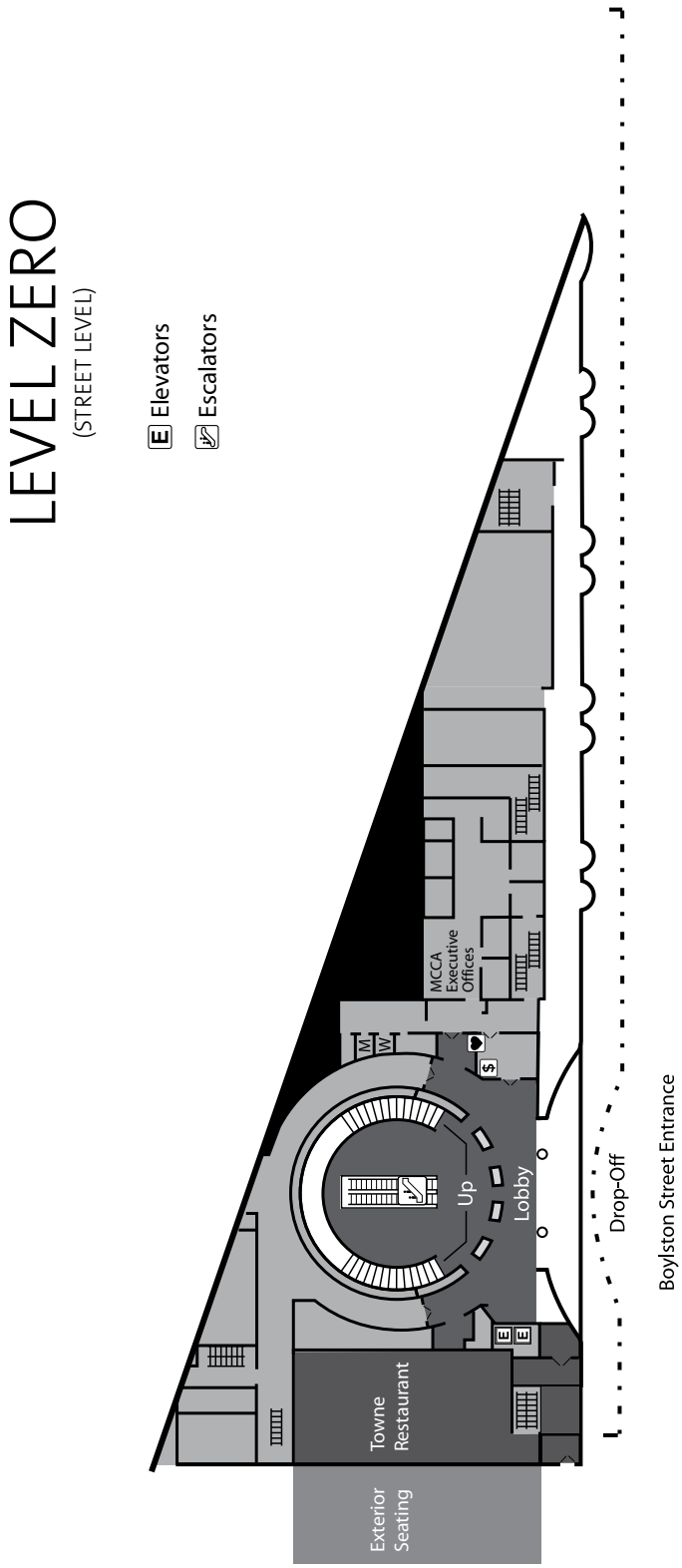
**Jun Zou,** Texas A&M University — **E109**
**Program Area:** Sensors and Sensing Systems
MEMS-Switched Acoustic Delay-Lines Microsystems for Advanced Ultrasonic Imaging Applications
**Poster Session 1:** Monday, July 9, 8:30 a.m.–12:00 p.m.

**Lei Zuo,** SUNY at Stony Brook — **D110**
**Program Area:** Hazard Mitigation and Structural Engineering
Vibration Control of Tall Buildings Using Electricity Generating Tuned Mass Dampers
**Poster Session 4:** Tuesday, July 10, 3:15 p.m.–5:45 p.m.

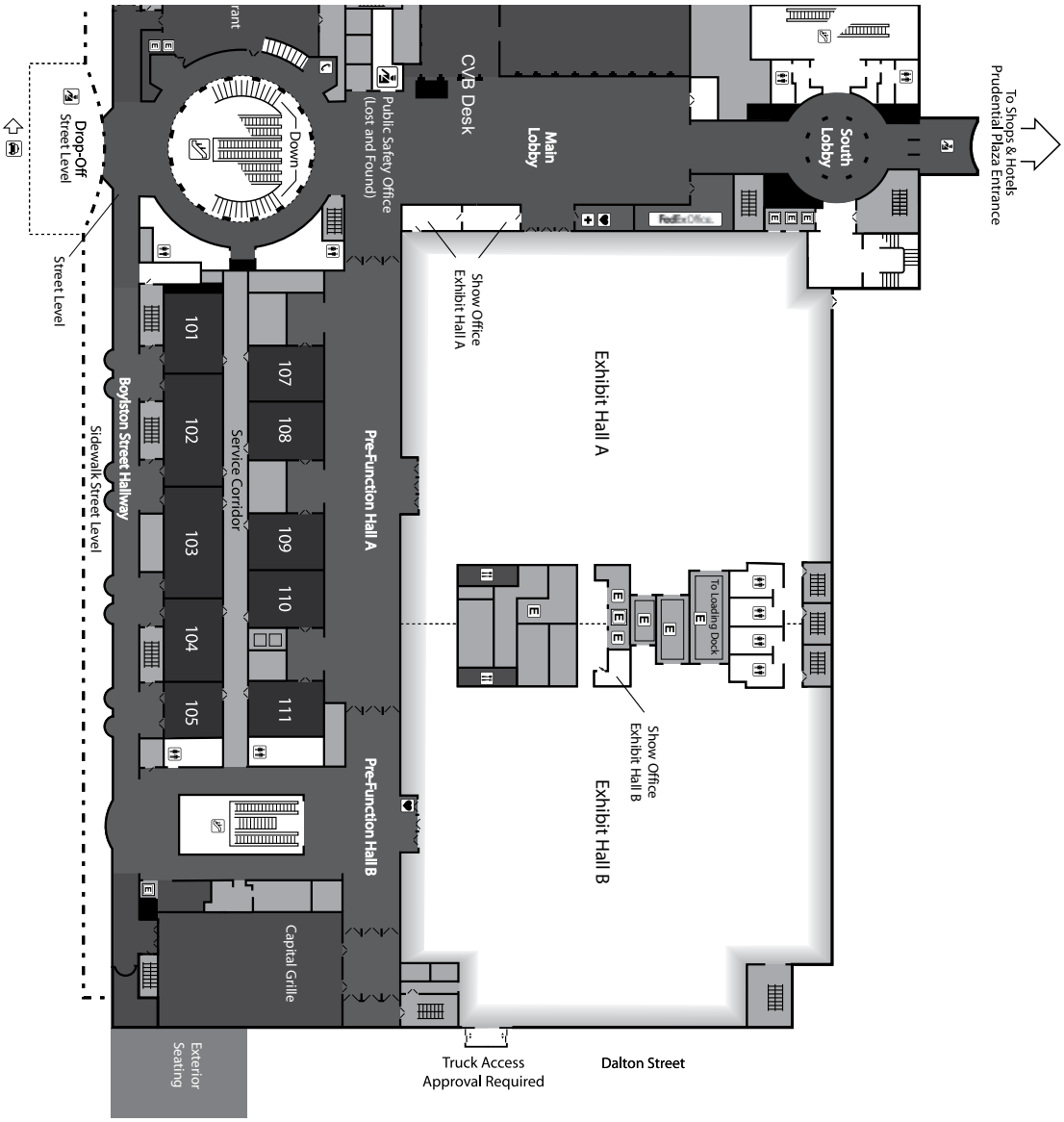
**Min Zou,** University of Arkansas — **C71**
**Program Area:** Materials and Surface Engineering
CAREER: Nano-Engineered Surfaces: Fabrication and Mechanical and Tribological Properties
**Poster Session 2:** Monday, July 9, 3:00 p.m.–5:45 p.m.

**Qingze Zou,** Rutgers University — **E84**
**Program Area:** Control Systems
CAREER: Control Tools for Nanoscale Rapid Broadband Viscoelasticity Measurement and Mapping of Soft Materials
**Poster Session 3:** Tuesday, July 10, 7:30 a.m.–9:30 a.m.

# Hynes Center Maps



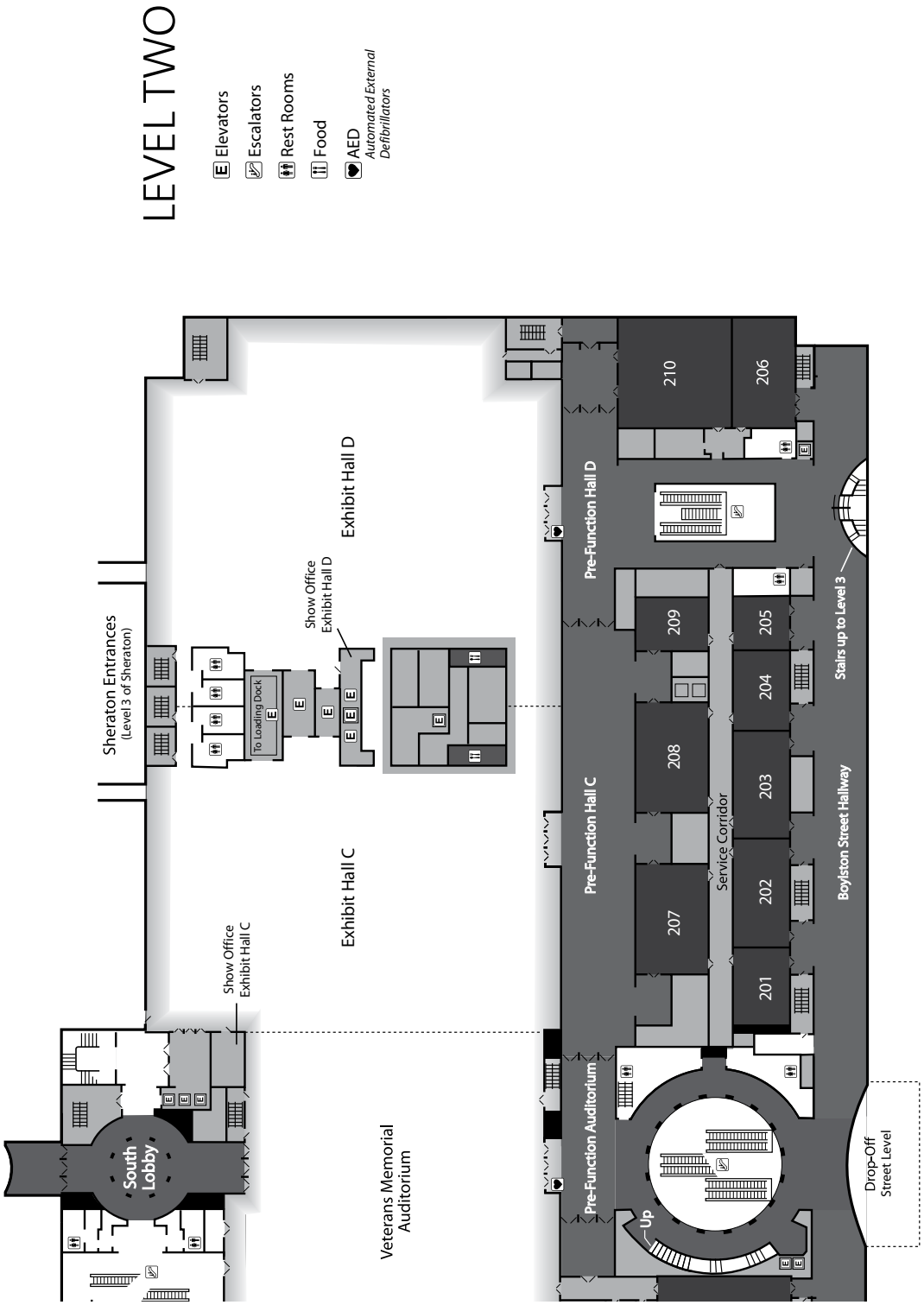
# Hynes Center Maps



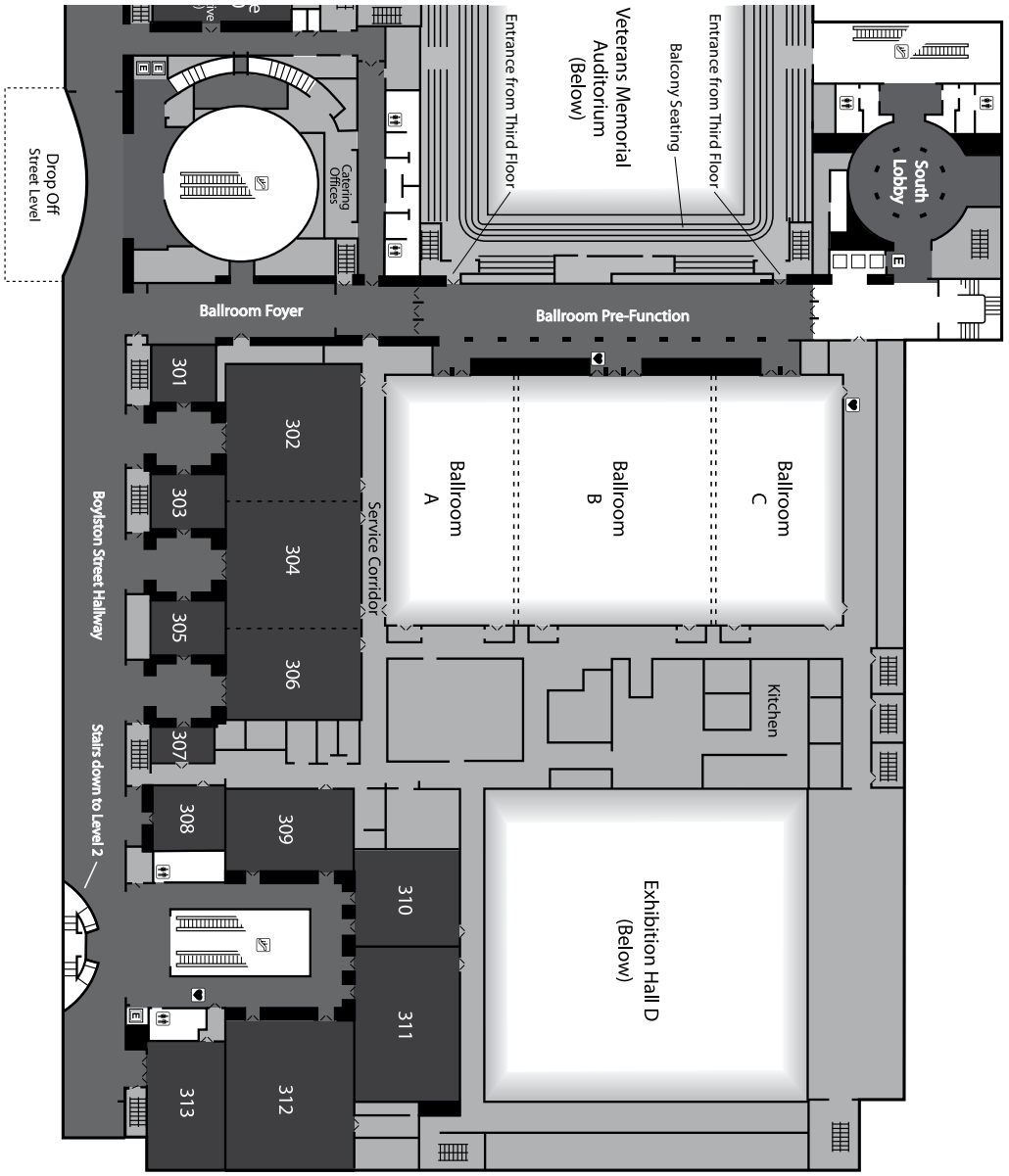

LEVEL ONE
(PLAZA)

- Elevators
- Escalators
- Rest Rooms
- Food
- First Aid
- Telephone
- ATM
- Public Safety
- Taxi Stand
- AED
  *Automated External Defibrillators*

# Hynes Center Maps



# Hynes Center Maps



Photos courtesy of Greater Boston Convention & Visitors Bureau, Northeastern University, and David Fox