Schedule

Engineering Graduate Symposium

Friday, November 12th, 2010
From the Chairs

On behalf of the Symposium Committee, we would like to welcome you to the 5th annual Engineering Graduate Symposium (EGS ’10). This is an exciting gathering of engineering graduate students, prospective students, faculty members, entrepreneurs, and industrial sponsors.

The Engineering Graduate Symposium is a unique one-day event that is organized to boost the spirit of innovation, collaboration, and communication among graduate students in an interdisciplinary environment. The EGS ’10 will consist of keynote lectures, invited talks from industry, research poster sessions presented by graduate students from across the College of Engineering, and an awards ceremony. The symposium will enable graduate students to share their research accomplishments as well as review breakthrough research done by their peers. In addition to the rich technical program, the symposium hosts special sessions and tours for prospective graduate students invited from top schools nationwide, introducing them to the research activities at University of Michigan College of Engineering.

The EGS ’10 theme is “Engineering for EnGreening the World.” The University of Michigan has been a leader in developing green and clean technology for sustaining a great future for this generation and beyond. To further promote this theme, EGS ’10 will include a special award for the best research project that will help create and maintain a green future.

The symposium offers an ideal setting to share time and talent in a friendly environment, which will make a truly memorable experience for all participants. We greatly appreciate your interest and contribution to EGS ’10.

Best regards,

Khaled Al-Ashmouny & Huiyang Li
Co-Chairs, Engineering Graduate Symposium 2010
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<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shima Abadi</td>
<td>ME, Co-Chair of Thermodynamics, Fluids, Vibrations and Acoustics</td>
</tr>
<tr>
<td>Mehdi Abarham</td>
<td>ME, Co-Chair of Energy and Nuclear Sciences Session</td>
</tr>
<tr>
<td>Khaled Alashmouny</td>
<td>Symposium Co-Chair, Technical Program Chair, Chair of Solid-State Circuits, CAD, and VLSI Session</td>
</tr>
<tr>
<td>Sayed Amirreza Rastegari</td>
<td>ME, Co-Chair of Thermodynamics, Fluids, Vibrations and Acoustics</td>
</tr>
<tr>
<td>Ali Besharatian</td>
<td>EECS, Publicity Chair, Chair of Solid-State Physics and Photonics</td>
</tr>
<tr>
<td>Anand Bharath</td>
<td>ME, Chair of MEMS and Microfluidics Session</td>
</tr>
<tr>
<td>Srijanani Bhaskar</td>
<td>MS&amp;E, Co-Chair of Material and Chemical Technology Session</td>
</tr>
<tr>
<td>Cindy Cerna</td>
<td>BME, Prospective Student Committee</td>
</tr>
<tr>
<td>Kieren Chen</td>
<td>MS&amp;E, Event Coordinator</td>
</tr>
<tr>
<td>Gerardo Cruz</td>
<td>Aero, Prospective Student Committee</td>
</tr>
<tr>
<td>Fikadu Dagefu</td>
<td>EECS, Chair of RF and Applied Electromagnetics</td>
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<tr>
<td>Mathieu Davis</td>
<td>ME, Prospective Student Committee</td>
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<tr>
<td>Timothy Deschenes</td>
<td>Aero, Prospective Student Committee</td>
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<tr>
<td>Suyang Dong</td>
<td>CEE, Chair of Civil and Environmental Engineering Session</td>
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<tr>
<td>Alex Emly</td>
<td>MS&amp;E, Prospective Student Committee</td>
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<tr>
<td>Chloe Funkhouser</td>
<td>BME, Co-Chair of Engineering in Biological Systems Session</td>
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<tr>
<td>Carol Girata</td>
<td>ME, Prospective Student Committee</td>
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<tr>
<td>Vaun Greer</td>
<td>BME, Prospective Student Committee</td>
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<tr>
<td>Talore Harrison</td>
<td>IOE, Prospective Student Committee</td>
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<tr>
<td>Ahmed Hassan</td>
<td>EECS, Chair of Computer Science and Engineering Session</td>
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<tr>
<td>Efrain Hernandez-Rivera</td>
<td>NERS, Co-Chair of Energy and Nuclear Sciences Session</td>
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<tr>
<td>Chuan-Yuan Hsu</td>
<td>AOSS, Co-Chair of Atmospheric, Oceanic and Space Sciences Session</td>
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<tr>
<td>Angelique Johnson</td>
<td>EECS, Prospective Student Committee</td>
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<tr>
<td>Ali Kakhbod</td>
<td>EECS, Chair of Signal Processing and Communication, Session</td>
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<tr>
<td>Peter Keros</td>
<td>ME, Co-Chair of Thermodynamics, Fluids, Vibrations and Acoustics</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Role</td>
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<tr>
<td>Jenny Kim</td>
<td>MS&amp;E, Co-Chair of Material and Chemical Technology Session</td>
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<tr>
<td>Jeremy Koehler</td>
<td>ME, Publicity Committee</td>
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<tr>
<td>Huiyang Li</td>
<td>Symposium Co-Chair</td>
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<tr>
<td>Lei Li</td>
<td>InterPro, Prospective Student Committee</td>
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<tr>
<td>Shifang Li</td>
<td>ME, Co-Chair of Power, Control, and Mechatronics Session</td>
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<tr>
<td>Albert Liang</td>
<td>BME, Media Master</td>
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<tr>
<td>Carl McGill</td>
<td>BME, Co-Chair of Engineering in Medicine Session</td>
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<tr>
<td>Liu Ming</td>
<td>IOE, Chair of IOE and Financial Engineering Session</td>
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<tr>
<td>Debby Mitchell</td>
<td>Rackham AGEP, Prospective Student Committee</td>
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<tr>
<td>Mike Nazareth</td>
<td>Associate Director for Graduate Education</td>
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<tr>
<td>Rona Oran</td>
<td>AOSS, Co-Chair of Atmospheric, Oceanic and Space Sciences Session</td>
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<tr>
<td>Hector Perez</td>
<td>ME, Prospective Student Committee</td>
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<tr>
<td>Dominic Piro</td>
<td>NAME, Co-Chair of Design, Manufacturing, Automotive and Marine Engineering</td>
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<tr>
<td>Ines Pons-Siepermann</td>
<td>ChE, Prospective Student Committee</td>
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<tr>
<td>Tianxiang Qi</td>
<td>ME, Prospective Student Committee</td>
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<tr>
<td>Karthik Ram</td>
<td>ME, Prospective Student Committee</td>
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<tr>
<td>Matthew Robertson</td>
<td>ME, Co-Chair of Design, Manufacturing, Automotive and Marine Engineering</td>
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<tr>
<td>Andria Rose</td>
<td>Coordinator for Graduate Education Programs</td>
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<tr>
<td>Pritish Roy</td>
<td>ME, Event Coordinator</td>
</tr>
<tr>
<td>Tom Santoro</td>
<td>ME, Co-Chair of Design, Manufacturing, Automotive and Marine Engineering</td>
</tr>
<tr>
<td>Shashi Singh</td>
<td>NAME, EECS, Sponsor recruiting committee (Chair), Event coordinator</td>
</tr>
<tr>
<td>Shang Sun</td>
<td>NAME, Webmaster</td>
</tr>
<tr>
<td>Auresa Thomas</td>
<td>BME, Co-Chair of Engineering in Medicine Session</td>
</tr>
<tr>
<td>S. Marjan Varedi</td>
<td>ChE, Co-Chair of Engineering in Biological Systems Session</td>
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<tr>
<td>Steve Vozar</td>
<td>ME, Co-Chair of Power, Control, and Mechatronics Session</td>
</tr>
<tr>
<td>Shira Washington</td>
<td>Coordinator for Graduate Education Programs</td>
</tr>
<tr>
<td>Amy Wu</td>
<td>AE, Co-Chair of Design, Manufacturing, Automotive and Marine Engineering</td>
</tr>
<tr>
<td>Jinan Yang</td>
<td>NERS, Co-Chair of Energy and Nuclear Sciences Session</td>
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Thanks to our generous sponsors!

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Graduate Student Information Session

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Review Technical Case Studies
Learn About Technical Consulting

Date: Friday, November 12th
Time: 12:30 – 1:30pm (Presentation and Q&A)
Location: 1200 EECS
Speaker: Kari Danek, Ph.D., P.E.
Senior Engineer and Michigan Alum

Appetizers and Drinks Will Be Provided!

Stop by our booth at the
Engineering Grad Symposium on November 12th!

We would like to meet graduate students at all stages of their academic career.
If you are ready to graduate, please bring your resume.

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- Product Assurance Engineering
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- Reliability Analysis Engineering
- Satellite Integration & Test
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- Spacecraft Development
- Survivability/Vulnerability
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- Technical Cost Schedule Analysis
- Upper State Flight Operations

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Symposium Schedule

Friday, November 12th

8:00 – 4:00  Registration, Information
            Duderstadt Center Gallery

8:30 – 9:30 Outstanding Ph.D. Student Research Award
            Poster Exhibit
            Duderstadt Center Connector Hall

9:00 – 10:15 Admissions and Funding Workshops
            • Monique Washington, Director of Admissions,
              Rackham
            • Douglas Keasal, Senior Fellowship Officer, Rackham
              East Room & Boulevard Room, Pierpont Commons

10:00 – 4:00 Corporate Sponsor Booths
          Duderstadt Atrium

10:30 – 11:45 Welcome and Keynote Speaker
          • Khaled Al-Ashmouny and Huiyang Li, Co-Chairs
          • Erdogan Gulari, Associate Dean for Research and
            Graduate Education
          • David Munson, Robert J. Vlasic Dean of the College of
            Engineering
          • Professor Ken Wise, Keynote Speaker and William
            Gould Dow Distinguished University Professor
          Stamps Auditorium

11:45 – 1:45 Poster Session 1
            Duderstadt Atrium and Connector, EECS Atrium

12:00 – 2:00 Lunch
            Duderstadt Center Gallery

12:00 – 2:00 Exponent Session
            Kari Danek, Senior Engineer, Mechanical Engineering
            & Materials Science
            1200 EECS
1:00 – 1:15  Meet Department Representatives  
_Duderstadt Gallery_

1:15 – 4:00  Engineering Department Visits  
_Department Locations_

3:00 – 4:00  Coffee Break Stands  
_Duderstadt Center Gallery, EECS Atrium_

3:00 – 5:00  Poster Session 2  
_Duderstadt Atrium and Connector, EECS Atrium_

6:30 – 8:30  Award Ceremony  
*Winners of the graduate student poster presentations will be announced.*  
_Tishman Hall, CSE_
# Engineering Department Visit Rooms

1:15 – 4:00 PM

<table>
<thead>
<tr>
<th>Department</th>
<th>Room Name/Number</th>
<th>Contact Person and Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERO</td>
<td>1044 McDivitt Conference Room</td>
<td>Denise D. Phelps 734-615-4406</td>
</tr>
<tr>
<td>AP</td>
<td>267 West Hall</td>
<td>Charles Sutton 734-764-4595</td>
</tr>
<tr>
<td>AOSS</td>
<td>2204 Space Research Building</td>
<td>Margaret Reid 734-936-0482</td>
</tr>
<tr>
<td>BME</td>
<td>2203 LBME (Lurie Biomedical Engineering)</td>
<td>Maria Steele 734-647-1091</td>
</tr>
<tr>
<td>ChE</td>
<td>Podbielinak Room 3158 Dow</td>
<td>Susan Hamlin 734-763-1148</td>
</tr>
<tr>
<td>CEE</td>
<td>153 EWRE and 1371 GGBL</td>
<td>Jessica Taylor 734-764-8405</td>
</tr>
<tr>
<td>CSE</td>
<td>3725 CSE</td>
<td>Dawn Freysinger 734-647-1807</td>
</tr>
<tr>
<td>EE &amp; EE:S</td>
<td>3316 EECS</td>
<td>Becky Turanski 734-764-9387</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amy Wicklund 734-764-2390</td>
</tr>
<tr>
<td>IOE</td>
<td>1602 IOE</td>
<td>Matt Irelan 734-764-6480</td>
</tr>
<tr>
<td>InterPro</td>
<td>2645 CSE</td>
<td>Patti Mackmiller 734-764-3071</td>
</tr>
<tr>
<td>Macro</td>
<td>3062C HH Dow, Macro Office</td>
<td>Nonna Hamilton 734-763-2316</td>
</tr>
<tr>
<td>MSE</td>
<td>MSE Conference Room, 3062A HH Dow</td>
<td>Renee Hilgendorf 734-763-9790</td>
</tr>
<tr>
<td>ME</td>
<td>IOE 1680</td>
<td>Michele Mahler 734-763-4277</td>
</tr>
<tr>
<td>NAME</td>
<td>Conference Room (236 NAME)</td>
<td>Nathalie Fiveland 734-936-0566</td>
</tr>
<tr>
<td>NERS</td>
<td>1916 Cooley</td>
<td>Peggy Jo Gramer 734-615-8810</td>
</tr>
</tbody>
</table>
University of Michigan – North Campus

1. Chrysler Center
2. Gerstacker Building
3. Engineering Research (ERB)
4. Lurie Biomedical Engineering
5. Interdisciplinary Research (IRB)
6. Cooley Building
7. Industrial Operations (IOE)
8. Lurie Center (LEC)
9. Lay Automotive Lab
10. Electrical Engineering and Computer Science (EECS)
11. HH DOW Building
12. Computer Science and Engineering (CSE)
13. GG Brown Laboratory
14. Environmental & Water Research Engineering (EWRE)
15. Engineering Programs Building
16. Wilson Student Team Center
17. Naval Architecture & Marine Engineering (NAME)
18. Radiation Sciences Lab
19. Wind Tunnel
20. François-Xavier Bagnoud Building (FXB)
21. Space Research (SRB)
22. Ann and Robert H. Lurie Tower
Maps

To Pierpont Commons

To Duderstadt Center

Duderstadt Gallery

Atrium

Chesebrough Auditorium

Chrysler Center – 2nd Floor
Outstanding Ph.D. Student Research Award Poster Exhibit

8:30 AM – 5:00 PM Duderstadt Connector
Phillip Christopher
Combining Molecular Level Insights with Advanced Synthesis Strategies to Design Novel (Photo) Catalytic Materials

William Fisher
Solar Power Conversion in Transparent Dielectrics

Peter Galie
An in vitro model for the study of ventricular cardiac fibrosis

Xin Hu
MutantX-S: A framework for Scalable Malware Clustering based on Static Features

Ali Kakhbod
Power Allocation and Spectrum Sharing in Multi-User, Multi-Channel Systems with Strategic Users

Christopher McGuffey
Laser-driven Ultrafast High Brilliance X-ray Source

Hui Joon Park
Toward High-Efficiency and Scalable Organic Solar Cells with Improved Domain Morphology and Plasmonic Transparent Metal Electrode

Kamran Paynabar
High-Dimensional Nonlinear Profile Modeling and Analysis for System Monitoring and Diagnosis

Scott Michael Rudolph
A Broadband Three-Dimensional Isotropic Negative-Refractive-Index Medium

Paul Ullrich
High-order finite-volume schemes for simulating atmospheric flows

Karthik Visvanathan
In-Situ Monitoring and Cauterization of Biopsy Needle Tract Using an Embedded Array of Piezoceramic Microheaters

Katie Whitefoot
Automotive Product Line Optimization under Environmental Regulation

Changgua Zhen
Theoretical and experimental study of singlet generation fraction in organic light-emitting diodes
POSTER PRESENTATIONS

Session 1
11:45 AM – 1:45 PM
MEMS and Microfluidics (MEM)

Session Chair: Anand Bharath

Location: EECS Atrium

MEM1 - Ethem Erkan Aktakka
A New Process for Piezoelectric MEMS

MEM2 - Ali Besharatian
An Integrated, Low-Power, High-Pressure, High-Flow Gas Micropump

MEM3 - Angelique Johnson
A Thin-Film Cochlear Electrode Array

MEM4 - Huai-Ning Chang
Microfluidic Protein Immunoblot

MEM5 - Jack Dong Wang
Development of a Physiologically Relevant In Vitro Model of the Blood-Brain Barrier

MEM6 - Jeffrey A Gregory
Compact Circuits and Control System for Whole-Angle Measuring Gyroscopes

MEM7 - James John McCullagh
Electronics for a Vibration Harvesting System for Bridge Health Monitoring Applications

MEM8 - Jiexi Huang
Nanochannel device for DNA stretching

MEM9 - Jae Yoong Cho
Near-Inertial-Grade High-Performance Rate- and Rate-Integrating Micro-Gyroscopes

MEM10 - Katherine Knisely
MEMS Artificial Cochlea

MEM11 - Niloufar Ghafouri
Thermoelectric Performance Optimization of Co-evaporated Bi2Te3 and Sb2Te3 Thin Films

MEM12 - Fatih Ozkeskin
Double-Cantilever Micro-Relay with Integrated Heat Sink for High Power Applications
MEM13 - Patrick Ingram
Microfluidic Assay to Compare Secretion vs. Contact Based Cell-Cell Interactions Using Dynamic Isolation Control

MEM14 - Razi-ul Haque
Towards an Implantable Intraocular Microsystem

MEM15 - Mahdi Sadeghi
Low-Power Electrostatically Driven Micro-Hydraulic Actuator Arrays

MEM16 - Seow Yuen Yee
Micro-machined Acoustic Ejector for Micro Propulsion

MEM17 - Sameh Tawfick
Design and fabrication of 3D carbon nanotube microarchitectures

MEM18 - Vikram Thakar
Finite element analysis of Acoustically Coupled Filters

MEM19 - Vikrant Gokhale
Q Amplification in Gallium Nitride Thickness-Mode Filters Using Acoustoelectric Effect

MEM20 - Xia Lou
High-throughput Photodynamic Therapy (PDT) Screening Chip with Multiple Parameter Controls

MEM21 - Yonghyun Shim
High-speed tunable capacitor array for low-loss RF tunable filters
Solid-State Physics and Photonics (SPP)

Session Chair: Ali Besharatian

Location: EECS Atrium

SPP1 - Brian Roberts
Physics of Metal-Assisted Light Trapping in Thin-Film Solar Cells

SPP2 - Benjamin Tong Yee
Spectroscopy and Interferometry Measurements in a Pulsed Nanosecond Discharge

SPP3 - Jeremy Moore
Coherent Terahertz Generation in Whispering Gallery Mode Resonators

SPP4 - Serge Gregory
Optimizing Laser Path for Two-Photon Polymerization

SPP5 - Wei-Zung Chang
Evaluation of the Feasibility of Hollow-core Waveguide Beam Combiner

SPP6 - Adrian Bayraktaroglu
Tunable Ferroelectric Thin Film Devices for RF Applications

SPP7 - Michael Abere
Cleaning of Daguerreotypes by Femtosecond Laser Ablation

SPP8 - Adam Duzik
The Atomic Surface Structure of Bi-terminated GaAs(001) Grown by Molecular Beam Epitaxy

SPP9 - Anne Marie Itsuno
Beyond the HgCdTe P-N Junction: Alternative Detector Structures for Performance Improvement

SPP10 - Bing-Yu Hsieh
Optically Assisted Terahertz/Infrared Detector

SPP11 - Chung Chiang Wu
Capacitive Spring Softening in Single-Walled Carbon Nanotube Nanoelectromechanical Resonators

SPP12 - Wayne Y. Fung
Vertical Field-Effect Transistors Based on Ge/Si Core/Shell Nanowires
SPP13 - Seid Hossein Sadat  
Nanoscale Thermometry Using Point Contact Thermocouples

SPP14 - Chang-Hua Liu  
Tuneable Single-walled Carbon Nanotube Diode

SPP15 - Min Kim  
Sub-wavelength Ring Laser

SPP16 - Momchil Mihnev  
THz Dynamics in Epitaxial Graphene

SPP17 - Kuk-Hwan Kim  
Nanoscale a-Si based RRAM memory array

SPP18 - Ryan Murphy  
Ultrafast Formation of Ripples at a Si-glass Interface

SPP19 - Ting Chang  
Tungsten Oxide Memristive Devices – Synaptic Behaviors, Modeling, and Circuits

SPP20 - Seunghyun Lee  
Wafer Scale Growth of Homogeneous Bilayer Graphene film by Chemical Vapor Deposition

SPP21 - Seok-Youl Choi  
Growth and Electrical Properties of Al Catalyzed Si Nanowires
RF and Applied Electromagnetics (RFE)

Session Chair: Fikadu Dagefu

Location: EECS Atrium

RFE1 - Abdulkadir C Yucel
Stochastic Electromagnetic Analysis via High Dimensional Model Representations

RFE2 - Christopher W. Berry
Plasmonic Photoconductive Antennas for Terahertz Generation

RFE3 - Carl Pfeiffer
A Printed Spherical Antenna

RFE4 - Danial Ehyaie
A Novel Approach to design Low cost, low complexity phased arrays

RFE5 - Felipe Andres Valdes-Valenzuela
On the regularization of single source combined integral equations for analyzing scattering from homogeneous penetrable objects

RFE6 - Gurkan Gok
From Transformation Optics to Circuits

RFE7 - Hamid Nejati
Theoretical Investigation of RCS of a Stratified Cylindrical Object Adjacent to a Smooth Rough Surface Utilizing Reciprocity Theorem

RFE8 - Jun-Chieh Wang
Current Focusing and Extraction from Micro-Dielectric Barrier Discharges

RFE9 - Jungsuek Oh
A Novel High Gain Low Profile Miniaturized Vertically Polarized Antenna

RFE10 - David Liaw
Simulation of Self-Neutralization Techniques for Charged Particle Thrusters on Nanospacecraft

RFE11 - Meysam Moallem
Y-band Phenomenology of Indoor Environment

RFE12 - Mehrnoosh Vahidpour
Fabrication and Performance Evaluation of Micromachined Cavity-backed Co-Planar Waveguide to Rectangular Waveguide Transition at Y-band Frequencies
RFE13 - Onur Bakir
Stochastic Characterization of Wave Propagation in Mine Environments

RFE14 - Seyit Ahmet Sis
Intrinsically Switchable Interdigitated Lateral Mode Resonators Based on BaTiO3

RFE15 - Seyedmohammadreza Faghih Imani
Tailoring near field using concentrically corrugated surfaces

RFE16 - Xi Lin
Electromagnetic Analysis of Plasma Engulfed Re-Entry Vehicles via a Hybrid FE-BI-VIE Approach

RFE17 - Zhengzheng Wu
MEMS-Reconfigurable Metamaterials for Broadband Terahertz Modulation

RFE18 - Michael Lee Benson
Extrapolation of LIDAR for Forest Structure Estimation Using SAR, INSAR
Power, Control and Mechatronics (PCM)

Session Chairs: Shifang Li, and Steve Vozar

Location: EECS Atrium

PCM1 - Hamid-Reza Ossareh
Cyclic Control

PCM2 - Jeffrey Dean Bergman
Cable Tension Estimation using Embedded Algorithms on the iMote2

PCM3 - Mads Ronne Almassalkhi
Developing Tools for the Analysis of Large-scale Energy-Hub Power Networks

PCM4 - Michael Kane
Market-Based Control of Shear Structures Utilizing Magnetorheological Dampers

PCM5 - Soumya Kundu
Modeling and control of a population of thermostatically controlled loads

PCM6 - Joshua Langsfeld
Reconfigurable Control for UGV Failure Compensation to Satisfy Mission Constraints

PCM7 - Hae Won Park
Control of Bipedal Walking on Uneven Terrain

PCM8 - Koushil Sreenath
Nonlinear Feedback Control to Achieve Running on MABEL

PCM9 - Abdi Zeynu
Wind Farm Reactive Support and Voltage Control

PCM10 - Changsun Ahn
Distributed optimal charging controller for electric vehicles connected to smart grid

PCM11 - William Smith
Integrated Power System for Improved Mobility and Mission of Ground Robots

PCM12 - Benjamin Pence
Comparing a New Estimator with the Extended Kalman Filter and the Particle Filter
Engineering in Medicine (EMS)

Session Chairs: Carl McGill, and Auresa Thomas

Location: Duderstadt

EMS1 - Sakib Elahi
Longitudinal molecular imaging with single cell resolution of disseminated ovarian cancer in mice with a LED-based confocal microendoscope

EMS2 - Edmund F. Palermo
Polymers That Kill Bacteria: Inspiration from Nature

EMS3 - Yasemin Yuksel Durmaz
Development of Star-Shaped, pH Sensitive, Membrane-Destabilizing-Polymer for Cytoplasmic Delivery of Therapeutic Nucleic Acids

EMS4 - Kiersten Batzli
Rheological Advancement of Misfolding and Aggregation of Bovine Pancreatic Insulin: Toward an Understanding of Amyloid Proteins

EMS5 - Norman Meznarich
The effect of heating rate on the kinetics of Pluronic F127 gelation as studied using rheology and DSC

EMS6 - Kelli Bechly
The effect of vibrotactile feedback on vestibular-deficient postural performance during visual perturbations

EMS7 - Benjamin Sinder
Sclerostin Antibody Improves Skeletal Parameters in Brtl/+ Model of Osteogenesis Imperfecta

EMS8 - Michael Friedman
Mineral-Supplemented Diet Prevents Short-Term Loss of Whole Bone Strength and Quantity in Exercising Mice

EMS9 - Scott Medina
Development of Enzyme-Activated Nano-Conjugates for Hepatic Cancer Therapy

EMS10 - Nathaniel Skinner
Reward System for Altering Distribution of Effort in a Rehabilitative Exercise

EMS11 - Paras Patel
Characterization and use of platinum black functionalization layers on ultramicroelectrodes for electrophysiology and neurochemical recordings
EMS12 - Yen-Ling Lin
Development of “Smart” Particles for Effective Gene Silencing in Head & Neck Cancer

EMS13 - Eugene Daneshvar
Conducting Polymer Actuated Neural Electrodes

EMS14 - Luis Gomez
A Focal Transcranial Magnetic Stimulator (TMS)

EMS15 - Jeremy D Brown
Sensory Feedback for Neuro-Prosthetic Devices

EMS16 - Takashi Daniel Yoshida Kozai
In vivo chronic cortical recordings using novel ultra-small carbon fiber based implantable microthread ultramicroelectrodes

EMS17 - Amir Borna
A Low-Power, Wireless, Multichannel Microsystem for Reliable Neural Recording
Thermodynamics, Fluids,
Vibrations and Acoustics (TFV)

Session Chairs: Amirreza Rastegari, Peter Keros, and Shima Abadi

Location: Duderstadt

TFV1 - Anish Joshi
Reduced-Order Models for Mistuned Blisks with Blade-to-Blade Variability in Damping

TFV2 - James M. Dunkin
Digital Simulation of Thunder from Three-Dimensional Lightning

TFV3 - Shima Hossein Abadi
Blind Deconvolution of Remote-Source Signals from Ocean Acoustic Array Recordings

TFV4 - Sung Kwon Hong
Parametric Reduced Order Models for Predicting the Nonlinear Vibration Response of Cracked Structures with Uncertainty

TFV5 - Mehdi Abarham
Experimental Investigations of Nano-particulate Deposition in Turbulent Channel Flows

TFV6 – Chengyun Hua
The Dynamics of Bubbles Subjected to Ultrasound Pulses in a Compressible Viscoelastic Liquid

TFV7 - Hyung Min Chae
Numerical Modeling of Direct Metal Deposition: Heat Transfer/Solute Transport

TFV8 - Jing Liu
Transport through Ion-Exchange Membranes

TFV9 - Kevin Howard Peterson
Towards Simultaneous High-Speed Infrared PIV

TFV10 – Pooya Movahed
Numerical Investigation of the Richtmyer-Meshkov Instability

TFV11 - Sangmin Lee
Multi-scale Modeling of Carbon Fiber Composite Degradation in High Temperatures Oxidizing Environments
TFV12 - Janardhan Kodavasal

An Energy-Based Multi-Zone Combustion Model for PCI simulation
Design, Manufacturing, Automotive and Marine Engineering (DAN)

Session Chairs: Tom Santoro, Amy Wu, Matthew Robertson, and Dominic Piro

Location: Duderstadt

DAN1 - Kyung Ho Ahn
Ethanol Content Estimation in Flex Fuel Direct Injection Engines under Fuel Injector Drifts

DAN2 - Yi Ren
Design Preference Elicitation

DAN3 - Dongkyoung Lee
Effects of the Laser Beam Distribution on Laser-Material Interaction

DAN4 - Caitlin Ryan
Sustainable Development of Water Resources in Laikipia District, Kenya

DAN5 - Teresa Franklin
Failure of Dissimilar Ultrasonic Spot Welds in Lap-Shear Specimens of Magnesium and Steel Sheets under Cyclic Loading

DAN6 - WonHee Kim
A Design Method for Shape Memory Alloy Actuators Accounting for Cyclic Shakedown with Constrained Allowable Strain

DAN7 - Juil Yum
Two-step feature selection and classifier fusion method for tool wear monitoring using acoustic emission

DAN8 - Dominic Piro
The Use of a Transpiration Velocity Boundary Condition for Applying Structural Deformations to CFD Simulations

DAN9 - Sara Jabbarizadeh
A New Approach in Finite Element Analysis of Partially Submerged Membranes

DAN10 - Simo Makiharju
Perturbed Partial Cavity Drag Reduction at High Reynolds Numbers
IOE and Financial Engineering (IOE)

Session Chair: Liu Ming

Location: Duderstadt

IOE1 - Austin Nagler Chrzanowski
Stochastic Modeling of Total Patient Care Pathway

IOE2 - Chong Hyun Park
Developing a Stochastic Refueling Model

IOE3 - Denny Yu
Development of a hierarchical taxonomy for standardization of microvascular surgery

IOE4 - Fei Peng
Treatment plan optimization for volumetric modulated arc therapy (VMAT)

IOE5 - Weihong Guo

IOE6 - Huiyang Li
Semantics of Touch: How people perceive and interpret vibrotactile signals

IOE7 - Jonathan Helm
Emergency Department Overcrowding and Discharge Management

IOE8 - Jivan Deglise-Favre-Hawkinson
Scheduling of Clinical Trials for Operational Effectiveness

IOE9 - Fang Dong
Dynamic Control of the Flexible Manufacturing System with Application to Flexible Shipbuilding

IOE10 - Li Yang
A Stochastic Model of Traffic Flow and Its Applications
POSTER PRESENTATIONS

Session 2

3:00 – 5:00 PM
Solid-State Circuits, CAD and VLSI (SSC)

Session Chair: Khaled Al-Ashmouny

Location: EECS Atrium

SSC1 - Xi Chen
Memory Access Aware On-Line Voltage Control for Performance and Energy Optimization

SSC2 - Abhishek Roy
Clock Tree load balancing using dummy capacitive elements in ultra low power integrated circuits

SSC3 - Saurabh Chauhan
An Improved Method to Test Differential (LVDS) Pad Interface using IEEE 1149.1 in a Low Cost Industrial Segment Chip

SSC4 - Chia-Hsiang Chen
Error-Resilient Processor Design in Future Devices Technologies

SSC5 - Yun Xiang
System-Level Reliability Modeling for MPSoCs

SSC6 - Andres Tamez/Nick Collins
Energy Efficient Analog-Digital Interfaces

SSC7 - Patrick Sheridan
SPICE Modeling of Digital Resistive Random Access Memory (RRAM) Cells

SSC8 - Khaled Alashmouny
Low Power Analog Front-End For Neural Recording Electrode Arrays
Signal Processing and Communication (SPC)

Session Chair: Ali Kakhbod

Location: EECS Atrium

SPC1 - Antonios Matakos
**Dynamic MR Image and Field Map Joint Reconstruction Accounting for Through-plane Field Map Gradients**

SPC2 - Anush Mohan
**Towards Object Detection and Semantic Modeling of Virtual Environments**

SPC3 - Nicholas Carlevaris-Bianco
**Initial Results in Underwater Image Dehazing**

SPC4 - Daniel J. Lingenfelter
**Predicting Detection Performance under Model Mismatch with Application to Gamma-Ray Imaging**

SPC5 - Ehtsham Elahi
**A novel approach for classification of shapes using topological features**

SPC6 - Sairam Sundaresan
**Hand Gesture Recognition Using Image Processing Techniques**

SPC7 - Se Un Park
**Myopic deconvolution and its application to MRFM**

SPC8 - Sung Jin Hwang
**Information Surface and Image Registration**

SPC9 - Wongun Choi
**Multiple Target Tracking in World Coordinate with Single, Minimally Calibrated Camera**

SPC10 - Sid Ying-Ze Bao
**Coherent Object Detection And Image Understanding**

SPC11 - Praveen Kumar Yenduri
**Rand PPM: An Ultra low power compressive sampling time to digital converter**

SPC12 - Kihyuk Sohn
**Error Bounds for Finite State Channels with Feedback**

SPC13 - Ashish Farmer
**Grid Sampling and Reconstruction for Images: A New Sampling Approach**
SPC14 - Awlok Josan
Reliability-Efficiency Trade-Off in Distributed Coding

SPC15 - Chun Lo
Reference-free Sensor Failure Detection

SPC16 - Cem Tekin
Online Algorithms for Opportunistic Spectrum Access with Markovian Channels

SPC17 - Yi Wang
Sensor Scheduling For Multiple Parameters Estimation Under An Energy Constraint
Computer Science and Engineering (CSE)

Session Chair: Ahmed Hassan

Location: EECS Atrium

CSE1 - Amjad Abu-Jbara
Fluent Summarization of Scientific Papers using Citation Sentences

CSE2 - Ahmed Hassan
A Behavior based Web Search Satisfaction Metric

CSE3 - Kyla McMullen
Plane Mapping and 3-D Sound Localization in a Virtual Spatial Auditory Environment

CSE4 - Lide Zhang
Android power modeling and optimization

CSE5 - Min Sun
Depth-Encoded Hough Voting for joint object detection and shape recovery

CSE6 - Vahed Qazvinian
iOpener: Generating Surveys of Scientific Paradigms

CSE7 - Feng Qian

CSE8 - Hongwei Liao
Modeling, Analysis, and Control of Software Execution for Failure Avoidance

CSE9 - Lan Bai
Archetype-Specific Programming Languages for Sensor Networks
Engineering in Biological Systems (EBS)

Session Chairs: Chloe Funkhouser, and Marjan Varedi

Location: EECS Atrium

EBS1 - Alissa Kerner
Engineering a Synthetic, Tunable Microbial Consortium

EBS2 - Mathieu Scott Davis
Increased Susceptibility to Microdamage in Brtl/+ Mouse Model for Osteogenesis Imperfecta

EBS3 - Jinyong Kim
On the Anatomy and Histology of the Female Pubovisceral Muscle

EBS4 - Jung Kuk Kim
FPGA Implementation of Forward-Projection for X-Ray CT Using Separable Footprints

EBS5 - Stephanie Haggerty
Effects of Vibrotactile Feedback on Dual Task Performance in Older Adults

EBS6 - Brent Utter
Design of an SMA Actuated Mechanotransductive Implant for Correcting Short Bowel Syndrome

EBS7 - Daniel Egert
Parylene Neuroprobes for Chronic Applications

EBS8 - Chloe Funkhouser
Continuum Simulations of Raft-Like Domains in Lipid Vesicles Coupling Composition and Deformation

EBS9 - Mohammad Fallahi-Sichani
Multi-scale analysis of tumor necrosis factor-regulated granuloma formation in tuberculosis

EBS10 - Jennifer Mann
Mechanics of the Dynamic Cytoskeletal Response to Intra- and Extracellular Stretching Forces

EBS11 - Jeremy Minty
A Genomic Approach for Elucidating and Improving Isobutanol Tolerance in Escherichia coli
EBS12 - Fengming Lin
Engineering of oleaginous Escherichia coli for bio-hydrcarbon production

EBS13 - Huanan Zhang
Layer-by-Layer Nanostructures for Neural Interface

EBS14 - S. Marjan Varedi K.
Design and construction of a protein degradation switch

EBS15 - Weiqiang Chen
Cell Sensing of Nanotopology
Energy and Nuclear Sciences (ENS)

Session Chairs: Mehdi Abraham, Efrain Hernandez-Rivera, and Jinan Yang

Location: EECS Atrium

ENS1 - Changi Shujauddin
**Autocatalytic kinetic model for reversible hydrolysis of ethyl oleate in subcritical water**

ENS2 - Chiao-Ting Li
**Plug-In Hybrid Vehicle Charging Control on the Electricity Grid**

ENS3 - Danial Ehyaie
**Battery Free Power Supply Using AM Signal Energy Harvesting**

ENS4 - Jason Lai
**Chemical Modeling of Biodiesel Molecules**

ENS5 - John Whitefoot
**Combined Optimal Design and Control of a Distributed-Energy Microgrid and Plug-In Electric Vehicles**

ENS6 - Max Radin
**Thermodynamics and Kinetics of Intrinsic Defects in Lithium Oxides: Relevance for non-Aqueous Li-air Batteries**

ENS7 - Jacob Dickinson
**Bio-oil Recovery Solvents**

ENS8 - Caitlin Ryan
**Sustainable Development of Energy Resources in Laikipia District, Kenya**

ENS9 - Jason Siegel
**Neutron Imaging of Li-ion Batteries for Model Validation**

ENS10 - Sina Sadeghi Baghsorkhi
**Voltage Sensitivity Analysis of Grids with Large Wind Power Penetration**

ENS11 - Stephen DeWitt
**A Model of Anodic Pore Growth in Alumina using the Smoothed Boundary Method**

ENS12 - Aaron Wysocki
**Oskarshamn-II Stability Analysis with TRACE/PARCS**
ENS13 - Bradley Sommers
*An Investigation of Harmonically Driven Bubbles in a Wire-Plane Electrode Geometry*

ENS14 - Wei Tian
*Different Patterns of High-Energy and Low-Energy Electrons in An Atmospheric-Pressure Microplasma Generated by A Hairpin Resonator*

ENS15 - Sonal Joshi
*Coded Aperture Gamma-Ray Imaging Using 3D Position-Sensitive Semiconductor Radiation Detectors for National Security Applications*

ENS16 - Tiberius Moran
*Modeling of Turbulent Radiative Shocks with Applications to Astrophysics*

ENS17 - Andrew M. Ward
*A fully implicit solution for the AGREE / PARCS code system utilizing the exact Newton iteration*
Civil and Environmental Engineering (CEE)

Session Chair: Suyang Dong

Location: Duderstadt

CEE1 - Alexander DaCosta
Shear Studs as Punching Reinforcement for Two-Way Slabs

CEE2 - Manu Akula
Integration of Infrastructure Based Positioning Systems and Inertial Navigation for Ubiquitous Context-Aware Engineering Applications

CEE3 - Derya Ayral
Impact of Chlorinated Solvents on the Structure of Clay in Low Permeability Zones

CEE4 - Chen Feng
Semi-automatic 3D Reconstruction of Piecewise Planar Building Models from Single Image

CEE5 - Courtney Peckens
Distributed Neural Computations for Embedded Sensor Networks

CEE6 - Suyang Dong
Resolving Incorrect Visual Occlusion in Outdoor Augmented Reality Using TOF Camera and OpenGL Frame Buffer

CEE7 - Honghao Li
Three-Dimensional Modeling for Progressive Collapse of Steel Moment Frame Structures

CEE8 - Jongho Kim
An integrated model for investigating the overland flow characteristics

CEE9 - Lauren Stadler
Physiological study and nitrogen and phosphorous scavenging potential in microalgae isolated from treated municipal wastewater effluents in New Delhi

CEE10 - Monthian Setkit
Seismic Behavior of Slender High-Performance Fiber Reinforced Concrete Coupling Beams

CEE11 - Sean O'Connor
Decentralized Fatigue Life Monitoring of Metallic Structures by Time- and Frequency-domain Analysis Embedded in a Wireless Sensor Network
CEE12 - Margarita Otero Diaz
Impact of Surfactants on the Structure of Clays

CEE13 - Qiaona Hu
Reduction of Formation Energy of Calcite by Carboxyl-Terminated Organic Template

CEE14 - Andhika Sahadewa
Performance Evaluation of the Deep Dynamic Compaction Technique on Municipal Solid Waste Landfills

CEE15 - Sukhoon Pyo
Electrical Impedance Tomography for Structural Health Monitoring

CEE16 - Srinivasa Siddhartha Nadukuru
Numerical Modeling of BuriedSegmented Concrete Pipelines subjected to Permanent Ground Displacement

CEE17 - Sanat Talmaki
Asset Tracking and Collision Avoidance

CEE18 - Xiaohu Fan
Finite Element Analysis of the Behavior of Steel Bridge Bearings under Seismic Loads

CEE 19 – Julian Carpenter
Synchrotron X-ray characterization of mackinawite and uraninite relevant to bio-remediation of uranium contaminated groundwater
Atmospheric, Oceanic, and Space Sciences (AOS)

Session Chairs: Rona Oran, and Chun-Yuan Hsu

Location: Duderstadt

AOS1 – Ahmed Tawfik
Soil moisture controls on inter-annual variability of biogenic isoprene emissions and ozone

AOS2 - Alexander Michael Bryan
Vertical Profiles of HOx Chemistry within a Mixed Hardwood Forest during the 2009 CABINEX Field Campaign: Evaluations with a One-Dimensional Canopy-Chemistry Model

AOS3 - Julie A. Feldt
GITM Synthetic TEC Comparison with GPS Data

AOS4 - Kevin Reed
Evaluating the Impact of the CAM 5 Dynamical Core in Idealized Tropical Cyclone Simulations

AOS5 - Colin M. Zarzycki
How much can the vertical distribution of black carbon affect its global direct radiative forcing?

AOS6 - Catherine Colello Walker
Ice Chemistry and Sea Floor Dynamics on the Earth: Possibilities for a Comparative Planetology Study of Enceladus

AOS7 - Colin Miranda
Gradient-Enhanced Response Surfaces for Uncertainty Quantification

AOS8 - Eric D. Gillman
Cathode Spot Ejected Particle Image Velocimetry (PIV) Calculations

AOS9 - Fang Fang
Simulation of Solar Flux Emergence from Active Region

AOS10 - Iverson Charles Bell, III
Electrodynamic Tethers for ChipSats and Nanospacecrafts

AOS11 - Kiran Balasubramanian
Balance Tab Actuator System for a Rudder

AOS12 - Shannon Curry
Pick-Up Oxygen Ion Loss at Mars
AOS13 - Scott Stapleton
Validated Failure Prediction Tools for Adhesively Bonded Composite Structures

AOS14 - Xing Meng
BATS-R-US with Anisotropic Pressure

AOS15 - Yiqun Yu
Terrestrial responses to solar wind discontinuities

AOS16 - Yuni Lee
Dynamics of Hot Atomic Carbon in the upper thermosphere and the exosphere of Mars

AOS17 - Daniel W. Zaide
Entropy Traces in Lagrangian and Eulerian Calculations

AOS18 - Zhenguang Huang
Testing Nonuniform Heating RTV-Type Models of Coronal Loops with 3D Differential Emission Measure Tomography
Material and Chemical Technology (MCT)

Session Chairs: Srijanani Bhaskar, and Jenny Kim

Location: Duderstadt

MCT1 - Ines Pons-Siepermann
Design of patchy particles with ternary self-assembled monolayers

MCT2 - Jin Zhang
Ultra-Spectroscopy of Silesequioxane Derivatives

MCT3 - Ji Seok Lee
Rapid, Convenient and Selective, Sensitive Biosensor Development using Polydiacetylene liposomes

MCT4 - Lang Sui
Effect of Particle Geometry and Volume Fraction on Mechanical Properties of Layer-by-Layer Films

MCT5 - Michael Katz
Direct Observation of a Very Strong Metal-Support Interaction in Model Planar Pd/LaFeO3 Catalysts

MCT6 - Nhung Nguyen
Indentation of a nonlinear viscoelastic circular membrane

MCT7 - Sindhura Gangireddy
Electro Magnetic Mechanical Apparatus for Non-Contact High Temperature Characterization

MCT8 - Sung Joo Kim
High-Resolution Transmission Electron Microscopy of Oxide Semiconductor Heterojunction Solar Cell

MCT9 - Susan Gentry
Resolving Fine Features Using Ceramic Stereolithography

MCT10 - Xiaopei Deng
Nanocomposite Microstructures with Tunable Mechanical and Chemical Properties

MCT11 - Indranil Saha Dalal
Non monotonic stretch behavior of polymer chains in shear flows
MCT12 - Carolyn L Phillips
GPU Accelerated Molecular Dynamics Algorithms for Soft Matter Systems using HOOMD-Blue
Engineering Graduate Symposium