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| 2:00 PM–4:30 PM | POSTER SESSION                            | Price Center West Ballroom  
210+ Graduate Students display their research results |
| 2:30 PM– 4:30 PM | FACULTY LIGHTNING TALKS                    | Price Center Forum (4th Floor)                                        |
| 2:30 PM      | SIMULATION-BASED DISASTER PREDICTION AND DAMAGE ASSESSMENT | Jiun-Shyan (J.S.) Chen  
Center for Extreme Events Research |
| 3:00 PM      | VISUAL COMPUTING: GRAND OPPORTUNITIES      | Ravi Ramamoorthi  
Center for Visual Computing                                             |
| 3:30 PM      | THE FUTURE OF SUSTAINABLE POWER AND ENERGY | Shirley Meng  
Sustainable Power and Energy Center                                    |
| 4:00 PM      | SEAMLESS INTEGRATION OF WEARABLE MEDICAL DEVICES | Patrick Mercier  
Center for Wearable Sensors                                                |
| 4:30 PM–6:00 PM | NETWORKING RECEPTION                       | Price Center East Ballroom  
Network with faculty, students and industry partners                      |
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| Research Expo Poster Judges               | 36, 38 |
| Notes                                     | 40–41 |
| Map – Poster Session                      | 42 – 43 |
| Map – Price Center                        | back cover |
Manmade and natural disasters including blasts, fragment impacts, penetration, earthquakes and landslides pose severe threats to our living environment. Disaster damage prediction and mitigation are now timely research topics for safeguarding our society. Computer simulations with robust numerical algorithms are one effective approach for disaster damage prediction and mitigation. I will introduce meshfree-based computation methods for multi-scale, multi-physics simulation of damage initiation, propagation, and total collapse in structures and systems subjected to extreme events. I will also discuss how verification and validation of numerical simulation play an important role in the reliability of disaster damage prediction.

- Posters from the Center for Extreme Events Research are listed on page 13.

ABOUT: CENTER FOR EXTREME EVENTS RESEARCH

The Center for Extreme Events Research (CEER) at UC San Diego specializes in developing state-of-the-art computational and experimental technologies for protection of critical infrastructure and biosystems from extreme hazardous events, and for mitigation of structures and systems after disasters. The center’s unique testing facilities, including the blast simulator and impact testing laboratory, will be highlighted along with our advanced computational techniques developed by CEER researchers, including the Reproducing Kernel Particle Method and Isogeometric Analysis.

CEER.UCSD.EDU
Mobile phones with associated imaging devices are now ubiquitous. Most of human perception, however, is from visually rich content, and the mobile revolution should fundamentally be about visual computing. Indeed, we are seeing a revolution in mobile image sensors from Kinect-style hand-held RGBD cameras, to light field cameras used for 3D and range imaging, to wearable see-through and head-mounted augmented reality displays. In short, visual computing at the interface of computer vision and computer graphics is undergoing a major transformation that impacts our daily lives.

Visual content can increasingly be created in more realistic ways, rivaling real photographs and fulfilling the long-term goal of photorealism in computer graphics. Numerous blockbuster movies featuring computer-generated visual effects that are indistinguishable from reality have had tremendous success. But a key challenge remains: creating these effects in real-time and integrating them with mobile augmented reality systems to extend human perception and enable entirely new tasks.

Another major trend is the coming of age of computer vision, where tasks like scene comprehension and gesture recognition are now becoming commonplace on mobile devices. The confluence of these trends opens up great challenges and opportunities.

- Posters from the Center for Visual Computing are listed on page 11.

ABOUT: CENTER FOR VISUAL COMPUTING

The UC San Diego Center for Visual Computing seeks to develop the fundamental technologies needed to take full advantage of the opportunities at the intersection of computer vision, graphics, imaging and augmented reality. Center research projects are transforming the way we experience and display visual content and indeed the way we live.

VISCOMP.UCSD.EDU
Energy storage in the electrochemical form is attractive because of high efficiency and fast response time. New and improved materials for electrochemical energy storage are urgently needed to make more efficient use of our finite supply of fossil fuels and to enable the effective use of renewable energy sources. In this talk, I will discuss new perspectives for energy storage materials being pursued at our new Sustainable Power and Energy Center. The work includes new-generation lithium-ion batteries, new sodium-ion batteries and other battery chemistries with lower costs and longer life cycles. I hope to demonstrate how to combine knowledge-guided synthesis-and-characterization with computational modeling to develop and optimize new higher energy/power density electrode materials for energy storage. With recent advances in characterization tools and computational methods, we are able to map out the structure-properties relations in functional materials for energy storage and conversion, and design and optimize next-generation energy storage technologies.

• Posters from the Sustainable Power and Energy Center are listed on page 13.

ABOUT: SUSTAINABLE POWER AND ENERGY CENTER
The Sustainable Power and Energy Center at UC San Diego develops high performance and low cost materials and devices for energy generation, storage and conversion for electric vehicles, microgrids, photovoltaic panels, wind turbines, wearable power devices and more. UC San Diego's world-renowned microgrid serves as a real-world test-bed for the Center's new materials, devices and power-management systems, which are rooted in thoughtful analyses of the economics of distributed energy. At every point along the way, the Center trains and mentors students to become tomorrow's workforce for green and advanced energy.

SPEC.UCSD.EDU
Wearable devices have the potential to revolutionize how we practice health care, train athletes and support the health and performance of our troops. Unfortunately current-generation wearables can be large and bulky with limited battery life and only measure a small handful of parameters that have limited clinical utility. The Center for Wearable Sensors endeavors to build new sensing devices that measure useful parameters that can help directly affect patient healthcare and behavior, while doing so with ultra-miniaturized sensing electronics that are either extremely energy-efficient or support energy harvesting for seamless integration into daily life. This talk outlines these challenges and proposes several promising solutions, with an emphasis on new bio-energy harvesting technologies.

• Posters from the Center for Wearable Sensors are listed on page 12.

ABOUT: CENTER FOR WEARABLE SENSORS

The Center for Wearable Sensors brings together top UC San Diego faculty, students and researchers in sensors, low-power circuits, materials, electrochemistry, bioengineering, wireless network technologies, preventive medicine, the life sciences and more. This coordinated environment fosters the acceleration of research and system development, and it helps prepare our students to become leaders in the wearable systems workforce.

WEARABLESENSORS.UCSD.EDU
CENTER FOR VISUAL COMPUTING

1. PHOTOMETRIC STEREO IN A SCATTERING MEDIUM
   Student: Zachary Paul Murez
   Faculty: David Kriegman, Ravi Ramamoorthi

2. AUTOMATED ANNOTATION OF CORAL REEF SURVEY IMAGES
   Student: Oscar O Beijbom | Faculty: David Kriegman, Serge Belongie

3. UNIFIED MULTI-CUE 3D SHAPES FROM LIGHT FIELD CAMERAS
   Student: Jong-Chyi Su | Faculty: Ravi Ramamoorthi

4. A GENERIC LIGHT SCATTERING MODEL FOR RENDERING
   PHOTOREALISTIC ANIMAL FUR FIBERS
   Student: Chiwei Tseng | Faculty: Ravi Ramamoorthi, Henrik Wann Jensen

5. AXIS-ALIGNED FILTERING AND ADAPTIVE SAMPLING FOR
   INTERACTIVE PHYSICALLY-BASED RENDERING
   Student: Krishna B Mullia Lakshminarayana | Faculty: Ravi Ramamoorthi

6. AN APPEARANCE MODEL FOR GLINTS ON FALLEN SNOW
   Student: Matteo Toti Mannino
   Faculty: Ravi Ramamoorthi, Henrik Wann Jensen

7. REGION-BASED DISCRIMINATIVE FEATURE POOLING FOR SCENE
   TEXT RECOGNITION
   Student: Chenyu Lee | Faculty: Zhuowen Tu, Pamela Cosman

8. DEEPLY SUPERVISED NETS
   Students: Saining Xie, Chen-Yu Lee | Faculty: Zhuowen Tu

9. MEDICAL IMAGE SEGMENTATION FOR CARDIOVASCULAR BLOOD
   FLOW SIMULATION
   Student: Jameson Tyler Merkow
   Faculty: David Kriegman, Alison Marsden, Zhuowen Tu

10. AUTOMATIC GENERATION OF GEOMETRICALLY CORRECT STEREO
    PANORAMA IMAGES
    Student: Jason Juang | Faculty: Truong Q. Nguyen, Jurgen Schulze
11. A MINIATURIZED ULTRASONIC POWER DELIVERY SYSTEM  
Student: Jiwoong Park | Faculty: Patrick Mercier

12. MINIATURIZED POWER CONVERTERS USING RECURSIVE SWITCHED CAPACITOR TOPOLOGIES  
Student: Loai Galal Bahgat Salem | Faculty: Patrick Mercier

13. DRY-TEMPLATED HIGH-RESOLUTION PATTERNING OF CONDUCTIVE METAL NANOPARTICLES  
Student: David A Rolfe | Faculty: Albert P. Pisano

14. LARGE-AREA GRAPHENE TRANSFER FROM INDEFINITELY REUSABLE COPPER SUBSTRATE  
Student: Aliaksandr Zaretski | Faculty: Darren Lipomi

15. ORGANIC SOLAR CELLS FOR EPIDERMAL ELECTRONICS  
Student: Timothy Francis Oconnor | Faculty: Darren Lipomi

16. LANGUAGE OF “GLOVE” – WIRELESS COMMUNICATION OF HAND GESTURES USING PEDOT:PSS SENSORS  
Student: Kirtana Mohan Rajan | Faculty: Darren Lipomi, Patrick Mercier

17. WEARABLE TATTOO SENSOR FOR REAL-TIME TRACE-METAL MONITORING IN HUMAN SWEAT  
Student: Jayoung Kim | Faculty: Joseph Wang

18. TATTOO-BASED NON-INVASIVE GLUCOSE MONITORING  
Student: Amay Jairaj Bandodkar | Faculty: Joseph Wang
19. POROUS SILICON-BASED LITHIUM ION ANODES FOR SECONDARY BATTERIES  
Students: Daniel Estrada, David Roberts  
Faculty: Michael Sailor, Shirley Meng

20. REDUCED THERMAL CONDUCTIVITY DUE TO ELASTIC SOFTENING IN NANOSTRUCTURES FOR THERMOELECTRIC APPLICATIONS  
Students: Matthew Christopher Wingert, Soonshin Kwon  
Faculty: Renkun Chen, Jie Xiang

21. CONJUGATED POLYMERS FOR ROBUST, STRETCHABLE, AND WEARABLE ELECTRONIC DEVICES  
Student: Adam David Printz | Faculty: Darren Lipomi

22. INVESTIGATION OF ANATASE-TIO2 AS AN EFFICIENT ELECTRODE MATERIAL FOR MAGNESIUM-ION BATTERIES  
Students: Minghao Zhang, Alex MacRae | Faculty: Ying Meng

23. INVESTIGATION ON NOVEL OXIDE AND SULFIDE COMPOUNDS AS ANODE MATERIALS FOR NA-ION BATTERIES  
Student: Chuze Ma | Faculty: Shirley Meng

24. TOWARDS A STABILIZED MESHFREE FORMULATION FOR HYDRAULIC FRACTURING SIMULATION  
Student: Haoyan Wei | Faculty: Jiun-Shyan Chen

25. MESHFREE METHODS FOR FRAGMENT-IMPACT MODELING AND HOMELAND SECURITY APPLICATIONS  
Students: Edouard Marc Yreux, Michael Hillman, Guohua Zhou  
Faculty: Jiun-Shyan Chen

26. AN IMAGE-BASED COMPUTATIONAL MECHANICS FRAMEWORK FOR SKELETAL MUSCLE SIMULATION  
Students: Ramya Rao Basava, Yantao Zhang | Faculty: Jiun-Shyan Chen

27. COMPUTATIONAL TWO-PHASE FLUID-STRUCTURE INTERACTION: AQUATIC SPORTS, OFFSHORE FLOATING WIND TURBINES AND NUMERICAL WAVE GENERATION  
Student: Jinhui Yan | Faculty: Yuri Bazilevs
28. METABOLIC VULNERABILITIES OF MUTANT TUMORS
   Student: Seth Jameson Parker | Faculty: Christian Michael Metallo

29. ENTERAL BLOCKADE OF DIGESTIVE PROTEASES ATTENUATES VASOPRESSOR RESISTANCE AFTER HEMORRHAGIC SHOCK
   Student: Marco Henry Santamaria | Faculty: Geert Schmid-Schönbein

30. A CMOS 4-CHANNEL MIMO BASEBAND RECEIVER WITH 65DB HARMONIC REJECTION OVER 48MHZ AND 50DB SPATIAL SIGNAL SEPARATION OVER 3MHZ AT 1.3MW
   Students: Siddharth Joshi, Chul Kim, Chris Thomas, Sohmyung Ha, Abraham Akinin | Faculty: Gert Cauwenberghs, Larry Larson

31. CONTINUOUS WAVE ULTRASONIC DOPPLER TONOMETRY
   Student: Abraham Akinin | Faculty: Gert Cauwenberghs

32. A 16-CHANNEL WIRELESS NEURAL INTERFACING SOC WITH RF-POWERED ENERGY-REPLENISHING ADIABATIC STIMULATION
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33. ONLINE RECURSIVE INDEPENDENT COMPONENT ANALYSIS FOR REAL-TIME SOURCE SEPARATION OF HIGH-DENSITY EEG
   Student: Shenghsiou Hsu | Faculty: Gert Cauwenberghs

34. A 144MHZ INTEGRATED RESONANT REGULATING RECTIFIER WITH HYBRID PULSE MODULATION
   Student: Chul Kim | Faculty: Gert Cauwenberghs, Patrick Mercier

35. AN ONLINE BIOSENSOR FOR THE PROTECTION OF WATER SUPPLIES
   Student: Garrett Cook Graham | Faculty: Jeff Hasty

36. ORTHOGONAL QUORUM SENSING: COMMUNICATING IN MIXED POPULATIONS
   Student: Spencer Raoul Scott | Faculty: Jeff Hasty

37. ASSESSING THE SAFETY OF BIOMATERIAL INJECTION IN THE HEART
   Student: Sophia Lynn Suarez | Faculty: Karen Christman

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41. CUSTOMIZED OSTEOCHONDRAL GRAFTS FOR CARTILAGE RESURFACING: EFFECTS OF CONTOUR AND PLACEMENT ON BIOMECHANICS OF FEMORO-TIBIAL CONTACT IN THE GOAT
Student: Jason Patrick Caffrey | Faculty: Robert Sah

42. EFFECT OF TEMPERATURE AND UV ILLUMINATION ON CHARGE TRANSPORT MECHANISMS IN DNA
Student: Alaleh Golkar Narenji | Faculty: Samuel Kassegne, Michael Heller

43. BIOMATERIAL-MEDIATED BONE TISSUE ENGINEERING
Students: Vikram G Rao, Heemin Kang | Faculty: Shyni Varghese

44. A BIOENGINEERED APPROACH TO CELL-BASED THERAPIES FOR MUSCULAR DYSTROPHY
Student: Sara Hariri | Faculty: Shyni Varghese

45. 3D PATTERNING AS A PLATFORM OF CELLULAR ANALYSIS, WITH APPLICATIONS IN QUANTITATIVE STUDY OF CANCER PROLIFERATION
Student: Shruti Krishna Kumar Davey | Faculty: Shyni Varghese

46. BIOMINERALIZED MATRICES DOMINATE SOLUBLE CUES TO DIRECT OSTEOGENIC DIFFERENTIATION OF HUMAN MESENCHYMAL STEM CELLS THROUGH ADENOSINE SIGNALING
Students: Heemin Kang, Yu-Ru Shih | Faculty: Shyni Varghese

47. THREE-DIMENSIONAL CARDIAC MICROTISSUES IN A PERFUSION-BASED DEVICE: AN IN VITRO PLATFORM
Student: Ivneet Singh Bhullar | Faculty: Shyni Varghese

48. EFFICIENT BAYESIAN INFERENCE METHODS VIA CONVEX OPTIMIZATION AND OPTIMAL TRANSPORT
Student: Diego Alberto Mesa | Faculty: Todd Coleman
49. NATIVE AND LABELED NUCLEOTIDE INCORPORATION KINETICS MEASURED USING BY COMPETITIVE PARALLEL REACTIONS
Student: Matthew T Walsh | Faculty: Xiaohua Huang

50. SEQUENTIAL SIGNALING OF FAK, SRC AND FOCAL ADHESION DYNAMICS IN CANCER CELL ADHESION
Student: Yiqian Wu | Faculty: Yingxiao Wang
51. DESIGN GUIDELINES AND OPTIMIZATION OF DRAM INTERCONNECT  
Student: Mulong Luo | Faculty: Andrew B. Kahng

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Faculty: Chung-Kuan Cheng

53. EPLACE-3D: ELECTROSTATICS BASED 3D IC PLACEMENT USING NESTEROV’S METHOD  
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Students: Jeng-Hau Lin, Xinan Wang | Faculty: Chung-Kuan Cheng

55. ANALYZING SOCIAL MEDIA TO CHARACTERIZE HIV AT-RISK POPULATIONS AMONG MSM IN SAN DIEGO  
Student: Narendran Thangarajan | Faculty: Nadir Weibel

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Students: Xun Jiao, Abbas Rahimi | Faculty: Rajesh Gupta

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Faculty: Rajesh Gupta, Anthony Acampora, Yuvraj Agarwal

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Faculty: Tajana Simunic-Rosing

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Faculty: Tajana Simunic-Rosing

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Faculty: Tajana Simunic-Rosing
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Student: Elina Nayebi | Faculty: Bhaskar Rao

77. OPTIMAL OPPORTUNISTIC SCHEDULING FOR WIRELESS SYSTEMS VIA CLASSIFICATION TECHNIQUES
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Faculty: Bhaskar Rao

78. DOWNLINK CHANNEL ESTIMATION IN MASSIVE MIMO SYSTEMS BASED ON DICTIONARY LEARNING
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79. BAYESIAN SPARSE SIGNAL RECOVERY FRAMEWORKS: TYPE I OR TYPE II?
Student: Ritwik Giri | Faculty: Bhaskar Rao

80. CARPET CLOAK WITH GRADED DIELECTRIC METASURFACE
Student: Liyi Hsu | Faculty: Boubacar Kante

81. PLASMONIC BIOSENSORS
Student: Ashok Kodigala | Faculty: Boubacar Kante

82. FABRICATION AND PERFORMANCE OF DILUTE NITRIDE GAP/GANP CORE/ SHELL NANOPILLAR-BASED SOLAR CELLS
Student: Supanee Sukrittanan
Faculty: Charles Tu, Shadi Ahmad Dayeh
83. GROWTH OF DILUTE NITRIDE GAINNAS/GAAS CORE/SHELL NANOWIRES ON SI(111) BY GAS SOURCE MOLECULAR BEAM EPITAXY
   Student: Rui La | Faculty: Charles Tu

84. NONLINEAR METAMATERIALS FOR MICROWAVE ABSORBERS
   Student: Sanghoon Kim | Faculty: Daniel Sievenpiper

85. METASURFACE BASED MICRO-PLASMA DEVICES
   Students: Shiva Piltan, Ebrahim Forati | Faculty: Daniel Sievenpiper

86. W-BAND SPATIAL POWER COMBINER
   Student: Minu Mariam Jacob | Faculty: Daniel Sievenpiper

87. GENERATION AND MANIPULATION OF DOMAIN WALLS USING A THERMAL GRADIENT IN A FERRIMAGNETIC COTB WIRE
   Student: Robert Douglas Tolley | Faculty: Eric Fullerton

88. MODEL-BASED HIERARCHICAL TOPIC MODELS
   Student: Arya Iranmehr | Faculty: Gert Lanckriet

89. SCALING LIMITS OF MEMS OPTICAL BEAM-STEERING SWITCHES FOR DATA CENTER NETWORKS
   Student: William Maxwell Mellette | Faculty: Joseph Ford

90. AUTOMATIC DRIVE ANALYSIS BY CONTINUOUS VISUAL OBSERVATION OF DRIVER FOR LARGE NATURALISTIC DRIVING STUDIES
   Student: Sujitha Catherine Martin | Faculty: Mohan Trivedi

91. NIGHT-TIME DRIVE ANALYSIS USING STEREO-VISION FOR DATA REDUCTION IN NATURALISTIC DRIVING STUDIES
   Students: Morten Borno Jensen, Mark Philip Philipsen
   Faculty: Mohan Trivedi

92. OBJECT DETECTION WITH APPEARANCE PATTERNS FOR DRIVER ASSISTANCE
   Student: Eshed Meir Ohn-Bar | Faculty: Mohan Trivedi

93. VIVA 2015: VISION FOR INTELLIGENT VEHICLES & APPLICATIONS’ FACE CHALLENGE
   Students: Kevan Chun Yiu Yuen, Dennis Shen
   Faculty: Mohan Trivedi
94. VIVA CHALLENGE 2015: DRIVER HANDS IN ACTION
Students: Nikhil Ranjan Das, Rakesh Nattoji Rajaram
Faculty: Mohan Trivedi

95. DYNAMIC POOLING FOR COMPLEX EVENT RECOGNITION
Student: Weixin Li | Faculty: Nuno Vasconcelos

96. LEARNING RECEPTIVE FIELDS FOR POOLING FROM TENSORS OF FEATURE RESPONSE
Student: Can Xu | Faculty: Nuno Vasconcelos

97. SCENE CLASSIFICATION WITH CONVOLUTIONAL NEURAL NETWORKS
Students: Mandar Dilip Dixit, Si Chen | Faculty: Nuno Vasconcelos

98. MULTIHEAD MULTITRACK DETECTION WITH REDUCED STATE SEQUENCE ESTIMATION
Student: Bing Fan | Faculty: Paul Siegel

99. TUNNELING-BASED MODELLING OF LEAKAGE CURRENT IN GRAPHENE ELECTROCHEMICAL CAPACITORS
Student: Hidenori Yamada | Faculty: Prabhakar Bandaru, Peter M Asbeck, Yuan Taur, Paul K.L. Yu

100. STRUCTURE FROM MOTION IN MARITIME ARCHAEOLOGY
Student: Perry W Naughton | Faculty: Ryan Kastner

101. SMART FIBER SENSOR ASSISTED IN VIVO NEEDLE GUIDANCE FOR MINIMALLY INVASIVE PROCEDURES
Student: Saharnaz Baghdadchi | Faculty: Sadik Esener

102. MONOLITHIC INTEGRATION OF ULTRA-SCALED HIGH PERFORMANCE PIN-SIZE WEARABLE ELECTRONICS
Student: Namseok Park | Faculty: Shadi Ahmad Dayeh

103. NOVEL NEURAL PROBE TECHNOLOGIES: TOWARD HIGH DENSITY, FIDELITY, AND FLEXIBILITY
Students: Sang Heon Lee, Renjie Chen | Faculty: Shadi Ahmad Dayeh

104. BEYOND 10-M THICK CRACK-FREE GAN GROWTH ON SI FOR HIGH POWER DEVICE APPLICATIONS
Student: Atsunori Tanaka | Faculty: Shadi Ahmad Dayeh

105. SURFACE PASSIVATION STUDIES ON VERTICAL JUNCTION SILICON MICROWIRE SOLAR CELLS
Students: Yun Goo Ro, Renjie Chen | Faculty: Shadi Ahmad Dayeh
106. LARGE SCALE CORTICAL SINGLE NEURON RECORDINGS
Student: Mehran Ganji | Faculty: Shadi Ahmad Dayeh

107. TRANSPARENT, FLEXIBLE, AND SCALABLE ZNO THIN-FILM TRANSISTOR PRESSURE SENSORS
Students: Siarhei Vishniakou, Namseok Park, Phat Phan, Brian Lewis, Jacob Stanley, James Wingert
Faculty: Shadi Ahmad Dayeh, Deli Wang

108. IS TODAY’S CMOS-COMPATIBLE SILICON TOMORROW’S UBIQUITOUS QUANTUM KEY DISTRIBUTION TECHNOLOGY?
Student: Ranjeet Kumar | Faculty: Shayan Mookherjea

109. SILICON PHOTONIC WDM NODE INTEGRATED IN UCSD CIRCUIT-SWITCHED RING NETWORK
Student: Hannah Rae Grant | Faculty: Shayan Mookherjea

110. POWER-EFFICIENT BASE STATION OPERATION THROUGH USER QOS-AWARE ADAPTIVE RF CHAIN SWITCHING TECHNIQUE
Student: Po-Han Chiang | Faculty: Sujit Dey

111. ACCESS PREDICTION FOR KNOWLEDGE WORKERS IN ENTERPRISE DATA REPOSITORIES
Student: Chetan Kumar Verma | Faculty: Sujit Dey

112. OPTIMIZING CLOUD MOBILE 3D DISPLAY GAMING USER EXPERIENCE BY ASYMMETRIC OBJECT OF INTEREST RENDERING
Student: Yao Lu | Faculty: Sujit Dey

113. MODELING AND CHARACTERIZATION OF IMAGING FIBER BUNDLES
Student: Nojan Motamedi | Faculty: Vitaliy Lomakin, Joseph Ford

114. GAIN-ENHANCED TRANSMISSION IN NEAR-INFRARED HYPERBOLIC METAMATERIALS
Student: Joseph Stephen Thomas Smalley | Faculty: Yeshiaahu (Shaya) Fainman, Boubacar Kante, Eric Fullerton, Zhaowei Liu

115. CARTRIDGE LAB ON A CHIP (CLOC) FOR MOBILE HEALTH
Students: Brandon John Sung Hyun Hong, Lindsay Freeman, Alexei Smolyaninov, Lin Pang, Maxim Abashin
Faculty: Yeshiaahu (Shaya) Fainman
116. CAPACITIVE MICRO SCALE SENSOR FOR MONITORING OIL DROPLETS IN THE OCEAN
Student: Xiaoyue Jiang | Faculty: Albert P. Pisano

117. A MICRO LOOP HEAT PIPE THERMAL MANAGEMENT SYSTEM WITH AN INTERLINE OPTIMIZED EVAPORATOR AND A COHESENT POROUS SILICON WICK
Student: Lilla M Smith | Faculty: Albert P. Pisano

118. TOWARDS SEPARATING DNA AND MRNA IN SINGLE CELLS
Student: Gordon Donald Hoople | Faculty: Albert P. Pisano

119. NANO-COMPOSITE DIELECTRIC MATERIALS FOR HIGH PERFORMANCE ENERGY STORAGE
Student: Anju Toor | Faculty: Albert P. Pisano

120. NANOWIRE SENSORS FOR IONIC SPECIES MEASUREMENT
Student: Maria Pace | Faculty: Albert P. Pisano

121. TRANSGLUMINAL ATTENUATION GRADIENT FOR THROMBOTIC RISK ASSESSMENT IN KAWASAKI DISEASE PATIENTS WITH CORONARY ARTERY ANEURYSMS
Student: Noelia Grande Gutierrez | Faculty: Alison Marsden

122. NEW MODEL FOR CELL MOTILITY
Student: Kimoon Um | Faculty: Daniel Tartakovsky, Padmini Rangamani

123. A ROBOTIC HYBRID PLATFORM FOR AUTOMATED MULTISPECTRAL IMAGING AND SPECTROSCOPY OF CULTURAL ARTIFACTS
Student: Samantha Stout | Faculty: Falko Kuester

124. IMPACT OF PRE-PLASMA AND PULSE LENGTH ON FAST ELECTRON GENERATION ON THE HIGH INTENSITY TITAN LASER
Student: Jonathan Lee Peebles
Faculty: Farhat Beg, Sergei Krasheninnikov

125. STUDY OF HEAT ASSISTED MAGNETIC RECORDING AND HYDROCARBON CONTAMINATION IN HARD DISK DRIVES
Students: Benjamin Ying-Xiu Suen, Young Woo Seo, Longqiu Li
Faculty: Frank E. Talke
126. DEVELOPMENT OF A OPTICAL-BASED INTRAOCULAR PRESSURE SENSOR
   Student: Alex Minh Giang Phan | Faculty: Frank E. Talke

127. DESIGN AND FINITE ELEMENT ANALYSIS OF COLLOCATED SUSPENSIONS IN HARD DISK DRIVES
   Students: Karcher William Morris, Youyi Fu, Yangfan Wang, Longqiu Li
   Faculty: Frank E. Talke

128. HEAVY IMPURITY TRANSPORT IN CSDX PLASMA
   Student: Jordan James Gosselin | Faculty: George Tynan

129. MODEL DEVELOPMENT OF HYDROGEN RETENTION IN ION BEAM DAMAGED TUNGSTEN FOR NUCLEAR FUSION APPLICATIONS
   Student: Joseph Lincoln Barton | Faculty: George Tynan

130. LAGRANGIAN COHERENT STRUCTURES WITH HIGH-ORDER DISCONTINUOUS-GALERKIN METHODS
   Student: Daniel A Nelson | Faculty: Gustaaf Jacobs, Sutanu Sarkar

131. PLANAR MICROFLUIDIC DROP SPLITTING AND MERGING
   Student: Sean Collignon | Faculty: James Friend

132. SPATIO-TEMPORAL CORRELATION OF SOLAR RADIATION INCORPORATING CLOUD SPEED AND DIRECTION
   Student: Shahrouz Alimohammadi | Faculty: Jan Kleissl

133. SIZING OF PHOTOVOLTAIC REVERSE OSMOSIS (PVRO) FOR SOLAR DESALINATION SYSTEM BASED ON HISTORICAL DATA AT THE SOUTHWEST USA
   Student: Abdulelah Habib | Faculty: Jan Kleissl, Raymond de Callafon

134. FACTORS CONTROLLING STRATOCUMULUS CLOUD DISSIPATION OVER THE COAST
   Student: Mohamed Sherif Ghonima | Faculty: Jan Kleissl

135. MICROSTRUCTURE AND BIOINSPIRED APPLICATION OF ARISTOTLE’S LANTERN: URCHINS FROM THE SEA TO MARS
   Students: Wei Huang, Michael Frank, Steven Naleway, Jae-Young Jung
   Faculty: Joanna Mckittrick, Marc A. Meyers
136. EASING THE FABRICATION OF BIOINSPIRED COMPOSITES THROUGH THE USE OF CLATHRATE HYDRATES IN FREEZE CASTING
Student: Steven Eric Naleway
Faculty: Joanna Mckittrick, Marc A. Meyers

137. DEVELOPMENT OF PHOSPHORS FOR SOLID-STATE LIGHTING
Students: Jungmin Ha, Zhenbin Wang, Ekaterina Novitskaya
Faculty: Joanna Mckittrick, Olivia A Graeve, Shyue Ping Ong

138. SPINES OF THE PORCUPINE FISH: STRUCTURE, COMPOSITION, AND MECHANICAL PROPERTIES
Student: Frances Yenan Su | Faculty: Joanna Mckittrick

139. MAGNETIC FREEZE CASTING: POROUS SCAFFOLDS BIO-INSPIRED BY BONE
Students: Michael Brian Frank, Tsuk Haroush, Sze Hei Siu, Jerry Ng, Ivan Torres | Faculty: Joanna Mckittrick

140. MN4+-DOPED PHOSPHORS, A PROMISING CANDIDATE
Student: Seung-Hyo Lee | Faculty: Joanna Mckittrick

141. DENSIFICATION BEHAVIOR AND CONSTITUTIVE MODELING OF ZIRCONIUM NITRIDE CONSOLIDATED BY FIELD ASSISTED SINTERING TECHNIQUES
Student: Geuntak Lee | Faculty: Joanna Mckittrick

142. STRUCTURAL ANALYSIS OF THE WOODPECKER TONGUE AND HYOID APPARATUS
Students: Jae-young Jung, Vincent Sherman, Steven Naleway, Eric Bushong, Esther Cory
Faculty: Joanna Mckittrick, Marc A. Meyers, Robert Sah

143. DEVELOPING A PORTABLE MICRO HYDROKINETIC TURBINE FOR RURAL AND EMERGENCY ELECTRIFICATION
Student: Spencer Riley Ellis | Faculty: John Kosmatka

144. DETECTING DAMAGE IN A UAV COMPOSITE WING SPAR TESTBED USING DISTRIBUTED FIBER OPTIC STRAIN SENSORS
Student: Benjamin Levi Martins | Faculty: John Kosmatka

145. ROBUST DISTRIBUTED ALGORITHM FOR OPTIMIZED POWER GENERATION IN FUTURE GRIDS
Student: Ashish Kumar Cherukuri | Faculty: Jorge Cortes
146. A CLINICAL METHOD FOR MAPPING AND QUANTIFYING BLOOD STASIS IN THE LEFT VENTRICLE
Student: Lorenzo Rossini | Faculty: Juan Carlos del Alamo

147. SPALL STRENGTH DEPENDENCE ON STRAIN RATE AND GRAIN SIZE IN TANTALUM
Student: Tane Perry Remington | Faculty: Marc A. Meyers

148. STRUCTURE AND MECHANICAL BEHAVIOR OF COELACANTH FISH SCALES
Student: Haocheng Quan | Faculty: Marc A. Meyers

149. LIGHTWEIGHT, RIGID, YET COMPLIANT BIOLOGICAL COMPOSITES: THE MECHANICS OF HOW FUNCTION RELATES TO STRUCTURE IN FEATHER BARBS
Student: Tarah Naoe Sullivan | Faculty: Marc A. Meyers

150. PROTECTIVE FUNCTION OF PANGOLIN SCALES: STRUCTURE AND MECHANICAL PROPERTIES
Student: Bin Wang | Faculty: Marc A. Meyers

151. SPARK PLASMA SINTERING OF ZIRCONIUM CARBIDE: DENSIFICATION BEHAVIORS AND MECHANICAL PROPERTIES
Student: Xialu Wei | Faculty: Marc A. Meyers

152. ULTRAFINE-GRAINED TITANIUM BY DYNAMIC DEFORMATION
Student: Zezhou Li | Faculty: Marc A. Meyers

153. MECHANICAL PERFORMANCE, CONSTITUTIVE RESPONSE, AND FRAGMENTATION OF TAILORED MESOSTRUCTURED ALUMINUM-BASED COMPACTS
Student: Andrew Marquez | Faculty: Marc A. Meyers

154. THE GANOID SCALES OF ATRACTOSTEUS SPATULA: POTENTIAL FOR BIOINSPIRED FLEXIBLE ARMOR
Student: Vincent Robert Sherman | Faculty: Marc A. Meyers

155. SPARK PLASMA SINTERING NOVEL TOOLING DESIGN: TEMPERATURE UNIFORMIZATION
Student: Diletta Giuntini | Faculty: Marc A. Meyers, Eugene Olevsky

156. SHOCK INDUCED AMORPHIZATION AND RE-NANOCRYSTALLIZATION OF SILICON
Student: Shiteng Zhao | Faculty: Marc A. Meyers
157. LIPOSOMAL POROUS SILICON NANOPARTICLES AS A GENE DELIVERY SYSTEM
Students: Byungji Kim, Jinyoung Kang | Faculty: Michael Sailor

158. RATIOMETRIC DETECTION OF NEUROTRANSMITTER DOPAMINE VIA LUMINESCENT POROUS SILICON
Student: Geoffrey Ian Hollett | Faculty: Michael Sailor

159. SELF-REPORTING DRUG DELIVERY WITH POROUS SILICON PARTICLES FOR OCULAR THERAPUTICS
Student: Joanna Wang | Faculty: Michael Sailor

160. AUTOMATED TUNING OF ION SOURCE PARAMETERS
Student: Gregory Matthew Mills | Faculty: Miroslav Krstic

161. STATE-OF-CHARGE ESTIMATION FOR LITHIUM-ION BATTERIES VIA A COUPLED THERMAL-ELECTROCHEMICAL MODEL
Student: Shuxia Tang | Faculty: Miroslav Krstic

162. CORRELATION BETWEEN PARTICLE SIZE AND GRAIN SIZE DISTRIBUTIONS IN SINGLE/MULTIPHASE CERAMICS
Student: Keyur Karandikar | Faculty: Olivia A Graeve

163. USING TOOL STEEL IN METAL-CERAMIC COMPOSITES
Student: James Timothy Cahill | Faculty: Olivia A Graeve

164. DEVITRIFICATION BEHAVIOR OF AMORPHOUS METAL FOILS DURING SPARK PLASMA SINTERING
Student: Boyao Zhang | Faculty: Olivia A Graeve

165. FABRICATION OF MONO-SIZED MESOPORES ON GOLD-COATED POLYSTYRENE PARTICLE SURFACES FOR ENZYME IMMOBILIZATION
Student: Seongcheol Choi | Faculty: Olivia A Graeve

166. MORPHOLOGICAL CHARACTERISTICS OF GOLD/COBALT JANUS NANOPARTICLES
Student: Kyungah Seo | Faculty: Olivia A Graeve

167. EXPLORING THE FUNDAMENTAL BEHAVIOR OF TAILORED NANOSCALE CARBIDE MORPHOLOGIES: MATERIALS BY DESIGN FOR ULTRA-HIGH TEMPERATURE APPLICATIONS
Student: Tianqi Ren | Faculty: Olivia A Graeve
168. ELECTRICALLY-CONDUCTIVE MESOPOROUS CERAMICS FOR BIOCATALYSIS APPLICATIONS  
Students: Shuang Qiao, Ekaterina Novitskaya, Grecia Pena, Lauren Lopez, Frida Durazo | Faculty: Olivia A Graeve

169. INCREASING ENERGY STORAGE IN ACTIVATED CARBON BASED ULTRA-CAPACITORS THROUGH PLASMA TREATMENT  
Student: Marcelis L Muriel | Faculty: Prabhakar Bandaru

170. TWENTY-FOLD ENHANCEMENT OF QUANTUM EFFICIENCY IN PHOTOELECTRON EMISSION THROUGH TEXTURE DESIGNED SURFACES  
Student: Anna Alexander | Faculty: Prabhakar Bandaru

171. FLYING HEIGHT CONTROL OF RECORDING HEADS AT SUB-NANOMETER SPACING  
Student: Liane Manuela Matthes  
Faculty: Raymond de Callafon, Frank E. Talke

172. MODULAR BATTERY EXCHANGE AND ACTIVE MANAGEMENT (M-BEAM)  
Student: Xin Zhao | Faculty: Raymond de Callafon

173. EFFECTIVE AND REGENERABLE COOLING USING TOUGH HYDROGELS  
Students: Shuang Cui, Chi Hyung Ahn  
Faculty: Renkun Chen, Shengqiang Cai

174. PUTTING THE SUN INTO A BOX: WHEN HIGH TEMPERATURE PLASMA MEET COLD MATERIAL  
Student: Jerome Guterl  
Faculty: Sergei Krasheninnikov, Roman Smirnov

175. ON ABLATION CLOUD SHIELDING EFFECTS OF TUNGSTEN DUST IN EDGE PLASMA  
Student: Rima Joseph Hajjar | Faculty: Sergei Krasheninnikov

176. ELECTROMAGNETIC EFFECTS ON DYNAMICS OF HIGH-BETA FILAMENTARY STRUCTURES IN FUSION PLASMAS  
Student: Wonjae Lee | Faculty: Sergei Krasheninnikov

177. CONTROL OF USER-SIDE RESOURCES FOR EFFICIENT OPERATION OF THE POWER GRID  
Student: Andres Ivan Cortes | Faculty: Sonia Martínez
178. VIRUS DIFFUSION CONTROL  
Student: Eduardo Jose Ramirez Llanos | Faculty: Sonia Martínez

179. THE PROPAGATION OF TSUNAMI GENERATED ACOUSTIC-GRAVITY WAVES IN THE ATMOSPHERE  
Student: Yue Wu  
Faculty: Stefan Llewellyn Smith, James Rottman, Jean-Bernard Minster

180. DESIGN AND CONTROL OF A MINIATURE BALL-BALANCING ROBOT USING MUTUALLY-ORTHOGONAL OMNIWHEELS  
Students: Daniel Jiaji Yang, Eric Sihite | Faculty: Thomas Bewley

181. DUCTTV2, A TENSEGRITY ROBOT FOR EXPLORING DUCT SYSTEMS  
Student: Jeffrey Michael Friesen | Faculty: Thomas Bewley

182. ENKF-BASED OCEAN WAVE PREDICTION FOR IMPROVED MARINE SAFETY  
Student: Daniele Cavaglieri | Faculty: Thomas Bewley

183. STRONGLY NONLINEAR STRESS WAVES IN DISSIPATIVE METAMATERIALS  
Student: Yichao Xu | Faculty: Vitali Nesterenko

184. AN IDEMPOTENT ALGORITHM FOR A CLASS OF NETWORK-DISRUPTION GAMES  
Student: Amit Prakash Pandey | Faculty: William McEneaney
185. PLASMONIC METAMATERIALS FOR ENHANCED EMISSION & SENSING  
Student: Matthew Joseph Rozin | Faculty: Andrea Tao

186. SELF-ASSEMBLED NANOCRYSTALS FOR TIP-ENHANCED RAMAN SPECTROSCOPY (TERS)  
Student: Tyler Jamison Dill | Faculty: Andrea Tao

187. MECHANICAL PROPERTIES OF SEMI-CONDUCTING POLYMERS AND COMPOSITES: A COARSE-GRAINED MOLECULAR DYNAMICS STUDY  
Student: Samuel Evan Root | Faculty: Darren Lipomi, Gaurav Arya

188. 3-D STRAIN IMAGING OF NANOPARTICLES  
Student: Sohini Manna | Faculty: Eric Fullerton

189. ELECTROCATALYTIC ABILITY OF COBALT FERRITE NANOPARTICLES FOR SOLAR THERMOCHEMICAL HYDROGEN PRODUCTION  
Students: Nicole Shellhammer Pacheco, Neil Verma 
Faculty: Jan Talbot

190. ARTIFICIAL MICROMOTORS IN THE MOUSE’S STOMACH: A STEP TOWARDS IN VIVO USE OF BIOMEDICAL MICRO-ROBOTS  
Student: Jinxing Li | Faculty: Joseph Wang, Liangfang Zhang

191. EXPLORATION OF AGING TIME AND TEMPERATURE ON A SUPERELASTIC FERROUS-BASED ALLOY  
Students: Cheng Zhang, Steven McCloskey 
Faculty: Kenneth S. Vecchio

192. FREE VOLUME AND TOUGHNESS OF WEAR-RESISTANT CU-ZR-BASED BULK METALLIC GLASSES  
Student: Laura Michelle Andersen | Faculty: Kenneth S. Vecchio

193. FIRST PRINCIPLES STUDY OF MASNX3 ORGANOHALIDE PEROVSKITES FOR NEXT GENERATION SOLAR CELLS  
Students: Maziar Alexander Behtash, Camille Bernal, Paul Hyunggyu Joo | Faculty: Kesong Yang
194. DECOY BIOMIMETIC NANOPARTICLES FOR THE CLEARANCE OF HARMFUL ANTIBODIES: A NOVEL APPROACH TO TREATING AUTOIMMUNE DISEASE
Student: Brian Tsengchi Luk | Faculty: Liangfang Zhang

195. ANTIBACTERIAL VACCINATION UTILIZING BACTERIAL MEMBRANE-COATED NANOPARTICLES
Student: Pavimol Angsantikul | Faculty: Liangfang Zhang

196. STRUCTURE AND BIOMECHANICAL BEHAVIOR OF HUMAN HAIR
Student: Yang Daniel Yu | Faculty: Marc A. Meyers

197. EXTREME PLASTIC DEFORMATION: MOLECULAR DYNAMICS SIMULATIONS
Student: Eric Nicholas Hahn | Faculty: Marc A. Meyers

198. CALCIUM SILICATE COATED POROUS SILICON NANOPARTICLES FOR SIRNA DELIVERY
Student: Jinyoung Kang | Faculty: Michael Sailor

199. FACETED SHAPE OF COLLOIDAL GRAPHENE OXIDE NANOPARTICLES
Student: Sejung Kim | Faculty: Michael Heller

200. DETECTION OF PROTEASE ACTIVITY DIRECTLY IN WHOLE BLOOD
Student: Elaine Alexandra Skowronski | Faculty: Michael Heller

201. ENHANCED FLUORESCENT RESONANT ENERGY TRANSFER IN DNA
Student: Taeseok Oh | Faculty: Michael Heller

202. BIO-INSPIRED DETOXIFICATION USING 3D-PRINTED HYDROGEL NANOCOMPOSITES
Student: Wei Zhu | Faculty: Shaochen Chen
STRUCTURAL ENGINEERING

203. CYCLIC BEHAVIOR OF DEEP STEEL WIDE-FLANGE COLUMNS FOR MOMENT FRAME APPLICATIONS
Student: Gulen Ozkula | Faculty: Chia-Ming Uang

204. NONLINEAR AEROELASTIC ANALYSIS OF FLAPPING MICRO AIR VEHICLES
Student: Enrico Santarpia | Faculty: David Benson, Luciano Demasi

205. INFORMING HISTORICAL PRESERVATION WITH THE USE OF NON-DESTRUCTIVE DIAGNOSTIC TECHNIQUES: A CASE STUDY AT ECAB, QUINTANA ROO, MEXICO
Student: Michael Robert Hess | Faculty: Falko Kuester

206. TOMOGRAPHIC IMAGING OF STRUCTURAL FLAWS WITH NEW ADAPTIVE WEIGHTS ON ARRAY
Students: Thompson Vu Nguyen, Simone Sternini
Faculty: Francesco Lanza di Scalea

207. NON-CONTACT ULTRASONIC GUIDED WAVE INSPECTION OF RAILS
Students: Stefano Mariani, Thompson Nguyen
Faculty: Francesco Lanza di Scalea

208. HYBRID SIMULATION OF STEEL BUILDING WITH STIFF ROCKING CORES FOR IMPROVED SEISMIC DRIFT DISTRIBUTION
Student: Alireza Sarebanha | Faculty: Gilberto Mosqueda

209. MODULATED BISTABLE INERTIAL GENERATOR FOR BROADBAND VIBRATION ENERGY HARVESTING
Student: Scott Anthony Ouellette | Faculty: Michael Todd

210. GAUGING THE FEASIBILITY OF A DOWNHOLE ENERGY HARVESTING SYSTEM THROUGH A PROOF-OF-CONCEPT STUDY
Student: Eric John Kjolsing | Faculty: Michael Todd, Charles Farrar

211. MODELING OF DOWEL ACTION IN BRIDGE ABUTMENT SHEAR KEYS
Student: Alexandra Kottari | Faculty: P. Benson Shing, Jose Restrepo
212. TIME-DOMAIN SIMULATIONS OF OFFSHORE FLOATING WIND TURBINES
Student: Seyedeh Sara Salehyar | Faculty: Qiang Zhu

213. DETERMINATION OF SEISMIC PROTECTION FACTORS FOR ANCHORAGE OF NONSTRUCTURAL COMPONENTS INTO CONCRETE
Student: Timothy Paul Johnson
Faculty: Robert Dowell, Tara Hutchinson
## Agile Research Centers

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| Institute of Engineering in Medicine | iem.ucsd.edu |
| Powell Structural Research Labs | structures.ucsd.edu |
| San Diego Supercomputer Center | <a href="http://www.sdsc.edu">www.sdsc.edu</a> |</p>
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<td>Alex Gantman</td>
<td>Qualcomm</td>
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<td>Christopher Hall</td>
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<td>Matthew Hedayat</td>
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<td>R.F. Hemphill</td>
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<td>David Hutches</td>
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<tr>
<td>Robin Ihnfeldt</td>
<td>General Engineering &amp; Research</td>
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<tr>
<td>Darshan Joshi</td>
<td>Informatica</td>
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<td>Jeff King</td>
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<td>Teresa Kruckenber</td>
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<tr>
<td>Ron Mazza</td>
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<tr>
<td>Sami Megally</td>
<td>Kleinfelder</td>
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<tr>
<td>Dwight Navis</td>
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<tr>
<td>Ben Ochoa</td>
<td>Integrity Applications Incorporated</td>
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<thead>
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<th>Name</th>
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<tr>
<td>Gareth Oskam</td>
<td>Solar Turbines</td>
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<td>Gustavo Prado</td>
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<td>Luis Pineda</td>
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<td>William Proffer</td>
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<td>Naomi Ramos</td>
<td>Northrop Grumman</td>
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<td>Amy Rasdal</td>
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<tr>
<td>Tim Rueth</td>
<td>von Liebig Entrepreneurism Center at UC San Diego</td>
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<tr>
<td>Stephen Russell</td>
<td>SPAWAR</td>
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<td>Maurice Sabado</td>
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<td>Rusty Sailors</td>
<td>LP3</td>
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<td>Jeffrey Salas</td>
<td>VA San Diego Healthcare System</td>
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<td>Gimbal</td>
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<td>Sumeet Singh</td>
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<td>Tricia Sur</td>
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<td>Eric Takeuchi</td>
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<td>Koon Hoo Teo</td>
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<tr>
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<td>John Yamauchi</td>
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Poster Session Map

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<td>Sustainable Power and Energy Center</td>
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## ACADEMIC DEPARTMENTS

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<td>Computer Science and Engineering</td>
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<td>Electrical and Computer Engineering</td>
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<tr>
<td>Mechanical and Aerospace Engineering</td>
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<tr>
<td>NanoEngineering</td>
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<tr>
<td>Structural Engineering</td>
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Poster Session: Level 2 (West Ballroom)
Faculty Lightning Talks: Level 4 (the Forum)
Networking Reception: Level 2 (East Ballroom)
Parking Shuttle: 9 AM – 7 PM