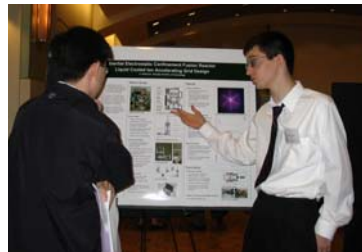
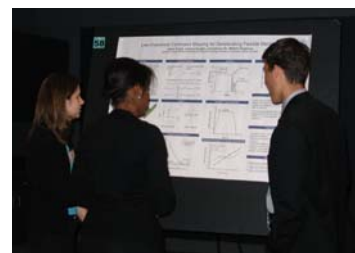
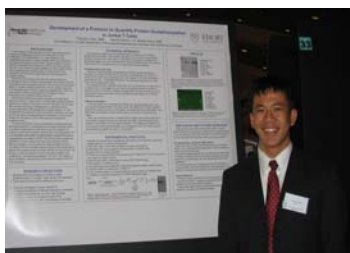


# 4th Annual Undergraduate Research Spring Symposium



# Wednesday April 1, 2009

Sponsored by:  
Undergraduate Research  
Opportunities Program (UROP)

# 4th Annual Undergraduate Research Spring Symposium



**Event:**

Wednesday, April 1, 2009



**Location:**

Student Center Ballroom & Surrounding Rooms



**Times:**

Oral Sessions: 1:00-4:30pm  
Poster Session I: 2:30-3:25pm  
Poster Session II: 3:35-4:30pm  
Reception: 4:30pm  
Awards: 5:15pm



# Oral Presentations

## Student Center, 3rd Floor

### Session A: Chemistry and Biochemistry

Student Center Room 319

Moderator: Dr. Carrie Shepler, Chemistry

- 1:00 Ion Exchange Properties of Polypyrrole Bilayers**  
Roya Kalantari, BCHM  
Mentor: Dr. Mira Josowicz, CHEM/BCHM
- 1:20 Study of In Situ Magnetic Properties of Films Using Magnetic Quartz Crystal Microbalance**  
Kevin Vavra, BCHM  
Mentor: Dr. Jiri Janata, CHEM/BCHM
- 1:40 The Mechanism of Proteoglycan Membrane Anchorage Affects the Endocytic Pathway of Cellular Cargo**  
Kevin Hardin, CHEM  
Mentor: Dr. Christine Payne, CHEM/BCHM
- 2:00 Synthesis of Cyclic di-GMP: Harnessing G-quartet Formation in Organic Synthesis**  
Kenneth Taylor, BCHM  
Mentor: Dr. Nicholas Hud, CHEM/BCHM

### Session B: Public Policy, History, and Literature

Student Center Room 319

Moderator: Dr. Karen Adams, Fellowship Communication Program

- 2:50 Al Qaeda and Unconventional Weapons**  
Kemp Anderson, MGT  
Mentor: Dr. Margaret Kosal, INTA
- 3:10 Technology to Policy - Forecasting Policy Impacts of Targeted Nanovector Chemotherapy**  
Alexandra Henke, INTA  
Travis Horsley, PUBP  
Mentor: Dr. Jennie Lincoln, GTRI/Policy
- 3:30 Women in Nineteenth Century Colonial India Through the Works of Flora Anne Steele**  
Bryn Gravitt, STAC  
Mentor: Dr. Narin Hassan, LCC
- 3:50 Technology to Policy: A Case Study in Biofortification**  
Tobias Tatum, PUBP  
Mentor: Dr. Marlit Hayslett, GTRI/Policy
- 4:10 Deterring Bioterrorism: Re-emerging Infectious Disease and Deterrence Theory**  
Ana Terron, INTA  
Mentor: Dr. Margaret Kosal, INTA

**Session C: Physics and Atmospheric Sciences**  
**Student Center Room 320**  
**Moderator: Dr. Dana Hartley, EAS**

- 1:00 Measurement of Forces on Solid Objects Impacting on a Free Liquid Surface**  
Reuven Ballaban, PHYS  
Mentor: Dr. Michael Schatz, PHYS
- 1:20 Spatial and Temporal Variability of Phytoplankton Chlorophyll and Carbon in the Equatorial Pacific, 2005 to 2008: Observations from Ships and Satellites**  
Joel Craig, EAS  
Mentor: Dr. Pete Strutton, College of Oceanic and Atmospheric Sciences, OSU
- 1:40 The Regime Between Periodic and Turbulent Fluid Flow with Forced Motion**  
Jonathan Paprocki, PHYS  
Mentor: Dr. Michael Schatz, PHYS
- 2:00 Quantum Space-Time: Development and Applications**  
Sarang Shah, PHYS  
Mentor: Dr. David Ritz Finkelstein, PHYS
- 2:20 Towards Laser Excitation of a Nucleus: Trapping and Laser Cooling Triply Charged Thorium**  
Dave Naylor, PHYS  
Mentor: Dr. Alex Kuzmich, PHYS

**Session D: Material Applications and Detection**  
**Student Center Room 320**  
**Moderator: Ms. Ann Blasick, DOPP**

- 2:50 Optimization of Quantum Dots for the Detection of Gamma Radiation**  
Julian James, MSE  
Mentor: Dr. Zhitao Kang, GTRI/Electro optical sys labs
- 3:10 Nanotechnology in Sensing**  
Justin Ratner, PHYS  
Mentor: Dr. Emmanouil Tentzeris, ECE
- 3:30 Monte Carlo Modeling of an X-ray Fluorescence Detection System**  
Nivedh Manohar, NRE  
Tripp Jones, NRE  
Mentor: Dr. Sang Hyun Cho, ME
- 3:50 Evaluation of Gas Diffusion Media for a PEM Fuel Cell with Graduated Porosity.**  
Haley Carney, ME  
Christi Nesmith, ME  
Mentor: Dr. Tequila Harris, ME
- 4:10 Thickness Dependence of Dielectric Extrinsic Contributions in Lead Zirconium Titanate (PZT) Thin Films**  
Joel Weber, ME  
Mentor: Dr. Nazanin Bassiri-Gharb, ME

**Session E: Polymers and Materials**  
**Student Center Room 321**  
**Moderator: Ms. Kathy Tomajko, Library**

- 1:00    Radiation Crosslinking of Novel Shape Memory Polymer Systems**  
Taylor Ware, MSE  
Mentor: Dr. Ken Gall, MSE
- 1:20    Porous Microspheres from Particle Stabilized Emulsions**  
Stephanie England, CHME  
Mentor: Dr. Sven Behrens, CHBE
- 1:40    The Effect of Cross-Linker Densities on Shape-Memory Polymer Composites:  
          Optimizing and Utilizing Component Materials for Orthopedic Casts**  
Liz Norred, BME  
Mentor: Dr. Ken Gall, MSE

**Session F: Aerospace and Fluids**  
**Student Center Room 321**  
**Moderator: Ms. Kathy Tomajko, Library**

- 2:10    Implementation of Plume Navigation in Turbulent Flows**  
Robert Ussery, EE  
Mentor: Dr. Donald Webster, CEE
- 2:30    The Testing and Examination of Unsteady Aerodynamics in a Sling Load System**  
Ranjit Mantri, AE  
Rachel Haga, AE  
Aniel Jardines, AE  
Anand Nallathambi, AE  
Rodney Sumlim, AE  
Mentor: Dr. Narayanan Komerath, AE
- 2:50    Combustion Instabilities in the Wake of a V-Gutter in a Single Flame Holder  
          Augmentor**  
Aimee Fricker, AE  
Mentor: Dr. Ben Zinn, AE
- 3:10    Adaptive Control Experiments for a Slender Launch Vehicle**  
Suyog Benegalrao, AE  
Mentor: Dr. James Craig, AE
- 3:30    Laser Doppler Velocimetry and CH\* Chemiluminescence of a Low Swirl Burner**  
Benjamin Emerson, AE  
Mentor: Dr. Tim Lieuwen, AE

**Session G: Nanotechnology and Sensing**  
**Student Center Room 301**  
**Moderator: Dr. Eric Moschella, Success Programs**

- 1:00**    **Monitoring Mating Mosquitoes to Mitigate Malaria: 3D Tracking with 4D Light Fields**  
Andrew Bardagjy, EE  
Mentor: Dr. Frank Dellaert, Interactive Computing
- 1:20**    **Passive Measurement of a Room Impulse Response**  
Alexander Roan, ME  
Yosef Beck, PHYS  
Mentors: Dr. Erica Ryherd  
          Dr. Karim Sabra, ME
- 1:40**    **Amorphous Silicon Carbon Nanotube Based Photovoltaics**  
Justin Nguyen, MSE  
Mentor: Dr. Jud Ready, GTRI/MSE
- 2:00**    **Electrically Conductive Polymer Nanocomposites: Theoretical Models vs. Experimental Data and the Rheology-Percolation Threshold Relationship**  
Chun Chu, ME  
Mentor: Dr. Kyriaki Kalaitzidou, ME
- 2:20**    **Fully Atomistic Simulation of a Periodic Array of Single Walled Carbon Nanotubes**  
William Hardin, MSE  
William Mateker, MSE  
Mentors: Dr. Seung Soon Jang;  
          Ji Il Choi, PHYS;  
          Giuseppe Brunello, APL PHYS/MSE

**Session H: Computing Applications in Architecture,  
Music, and Psychology**  
**Student Center Room 301**  
**Moderator: Mr. Paul Hurst, Fellowship Communication Program**

- 2:50**    **Applying Content-Based Recommendation to Indian Music**  
Andrew Ash, CS  
Mentors: Dr Parag Chordia,  
          Meghu Adoni  
          Oliver Jan  
          Karan Mehra, Music
- 3:10**    **Errors of Disclosure for Computer Mediated Systems**  
Alan Poole, PSY  
Mentor: Dr. Arthur D. Fisk, PSY
- 3:30**    **BIM-enabled Integrated Optimization Tool for LEED Decisions**  
Shannon Barnes, BC  
Mentor: Dr. Daniel Castro-Lacouture, BC

## **Session I: Biomedical Engineering**

### **Student Center Room 343**

**Moderator: Ms. Monique Tavares, Research and Innovation**

- 1:00 Morphological Characterization of Single Ventricle using Magnetic Resonance Imaging**  
Jin Sol Oh, CHME  
Mentor: Dr. Ajit Yoganathan, BME
- 1:20 Detection of protein S-glutathionylation during T cell receptor activation**  
Theodore Chen, BME  
Mentor: Dr. Melissa Kemp, BME
- 1:40 Engineering Analysis of Basal Chordal Cutting in Treatment of Ischemic Mitral Regurgitation**  
Lazarina Gyoneva, BME  
Mentor: Dr. Ajit Yoganathan, BME
- 2:00 Thrombotic Occlusion in Stenotic Arteries**  
Michael Wildes, BME  
Jeremy Hurwitz, BME  
Mentor: Dr. David Ku, ME
- 2:20 Poly(ethylene)glycol-based Poly(beta-amino esters) for stem cell encapsulation**  
Martha Lesniewski, MSE  
Mentor: Dr. Ken Gall, MSE
- 2:40 Capillary Design and Production For Biological Application**  
Phillip Lee, BME  
Mentor: Dr. Craig Forest, BME

## **Session J: Assistive Technology**

### **Student Center Room 343**

**Moderator: Ms. Yvette Upton, Women's Resource Center**

- 3:10 Development of Kinematic Model for Rehabilitation Robot**  
Jessie Martin, ME  
Mentor: Dr. Jun Ueda, ME
- 3:30 Development of a Wearable Device that Enhances Tactile Sensitivity**  
Maximilian Hertanto, ME  
Mentor: Dr. Jun Ueda, ME
- 3:50 Assistive Technology: The Application and Rhetoric of Cochlear Implants**  
Lindsay Chatel, STAC  
Mentor: Dr. Rebecca Burnett, LCC

# Poster Session I

Student Center Ballroom

2:30 - 3:25 PM



College of Sciences



- 1 Activity of Intact Ankle Extensor Synergists After Peripheral Nerve Injury**  
Shivani Shah, BIO  
Mentor: Dr. Boris Prilutsky, Applied Physiology
- 2 CATEA Wiimote**  
Christa Aaron, BME  
Eric Pointel, Mechanical Engineering  
Oliver Albrecht, Biomedical Engineering  
Mentor: Dr. Stephen Sprigle, Applied Physiology
- 3 Analysis of Temperature and Relative Humidity Variation in Wheelchair Cushion Monitoring Tests**  
Matthew Eicholtz, ME  
Mentor: Dr. Stephen Sprigle, Applied Physiology
- 4 Mechanism for Independent Operation of Power Wheel Chair Center-Mounted Footrest for Transferring Users**  
Xiao Han, BME  
Kimberly Holland, Biomedical Engineering  
Samuel Wells, Mechanical Engineering  
Katie Bell, Biomedical Engineering  
Mentor: Dr. Stephen Sprigle, Applied Physiology
- 5 Inferring Mortality Rates of Bacteriophages from Community Assemblages**  
Sophia Fisher, BIO  
Mentor: Dr. Joshua Weitz, Biology
- 6 Nuclear Magnetic Resonance Based Whale Shark Metabolomics**  
Krista Lim-Hing, BIO  
Mentor: Dr. Julia Kubanek, Biology
- 7 Discovering a Biological Control for the Red Tide using a Competitor Phytoplankton Species**  
Denise Sutter, BIO  
Mentor: Dr. Julia Kubanek, Biology
- 8 The Study of the Protein Myocilin to Find a Treatment for Primary Open Angle Glaucoma**  
Jenna Gallops, BCHM  
Mentor: Dr. Raquel Lieberman, CHEM/BCHM
- 9 Amino Acid Profiling in Serum by on-plate Solid Phase Extraction and Multicapillary Desorption Electro spray Ionization Mass Spectrometry (DESI MS)**  
David Rizzo, CHEM  
Mentor: Dr. Facundo Fernandez, CHEM/BCHM
- 10 Viral Fingerprinting Using SERS**  
Katherine Siemens, CHEM  
Nicole Marotta, Chemistry  
Mentors: Dr. Lawrence Bottomley and Nicole Marotta, CHEM/BCHM



## College of Sciences, continued

- 11 **Thermodynamic Properties of Multi-Component Aerosols Derived through CCN Activation Experiments**  
Daniel Tkacik, EAS  
Mentor: Dr. Athanasios Nenes, EAS
- 12 **X-ray diffraction studies of the temperature dependence of the electronic properties of graphene**  
Michael Clark, Physics  
Mentor: Dr. Ed Conrad, Physics
- 13 **Steady State Potentials as a Correlate of Neural Competition in the Visual System**  
William Alverson, Psychology  
Mentor: Dr. Paul Corballis, Psychology
- 14 **Functional Neuroimaging Investigation of the Neural Mechanisms for Successful Feeling-of-Knowing Judgments**  
Ronit Greenberg, Psychology  
Mentor: Dr. Chris Hertzog, Psychology
- 15 **Training of Novices on Hierarchical Task Analysis**  
Sarah Felipe, Psychology  
Mentor: Dr. Wendy Rogers, Psychology
- 16 **Chinese Self Paced Study**  
Rory Murray, Psychology  
Mentor: Dr. Chris Hertzog, Psychology
- 17 **The Effects of Aging on Contextual Binding for Emotional Stimuli**  
Rachel Newsome, Psychology  
Michael Dulas, Psychology  
Mentors: Dr. Audrey Duarte and Michael Dulas, Psychology



## College of Computing



- 18 **Scalable Video Conferencing**  
Brian Stebar, CS  
Matthew McCawley, CS  
Mentor: Dr. Umakishore Ramachandran, CS



## College of Engineering



- 19 **Characterizing Fibrin-Fibrin Knob Derived Peptide Binding Interactions**  
Wendy Brown, BME  
Mentor: Dr. Thomas Barker, BME
- 20 **Power Loss and PIV Studies in the Total Cavopulmonary Connection of the Fontan Circuit**  
Jessica Kanter, BME  
Mentor: Dr. Ajit Yoganathan, BME
- 21 **Controllable Incorporation of Biodegradable Polymer Microspheres within Embryoid Bodies**  
Scott Seaman, BME  
Mentor: Dr. Todd McDevitt, BME

## College of Engineering, continued

- 22 Effect of Tricuspid Valve Annular Dilatation on Leaflet Coaptation Area: An In-Vitro Study**  
Patrick Shannon, BME  
Mentor: Dr. Ajit Yoganathan, BME
- 23 pH sensitive fluorescent protein mutant for use in QD-FP FRET probe**  
David Sotto, BME  
Mentor: Dr. Gang Bao, BME
- 24 Quantifying Redox buffering Components in Acute Lymphoblastic Leukemia (ALL) Cell Lines EU-1WT, EU-3WT, and EU-3DR**  
John Vaughns, CHEM  
Mentor: Dr. Melissa Kemp, BME
- 25 Cell chemotaxis induced by secreted factors from differentiating embryonic stem cells**  
James Waring, ME  
Mentor: Dr. Todd McDevitt, BME
- 26 Dynamic Deformation Characteristics of Porcine Aortic Valve Leaflet**  
Michael Weiler, BME  
Mentor: Dr. Ajit Yoganathan, BME
- 27 Using topographical cues to enhance the regenerative phenotype of peripheral nerve cells**  
Julie Yeh, BME  
Mentor: Dr. Ravi Bellamkonda, BME
- 28 Singlet Oxygen Photosensitization by Red Fluorescent Proteins**  
Soohee Cho, CHEM  
Mentor: Dr. Andreas Bommarius, CHBE
- 29 Stability of Zeolites in Liquid Hot Water**  
Andrew D'Amico, CHBE  
Mentor: Dr. Carsten Sievers, CHBE
- 30 Maximizing the Yield of Crystallin Protein**  
David Detwiler, CHBE  
Mentor: Dr. Athanassios Sambanis, CHBE
- 31 Automation of Particle Tracking Technology**  
Hyunwoong Lee, CHBE  
Mentor: Dr. Victor Breedveld, CHBE
- 32 Parameters for Automated Microneedle Dipping**  
Anastasia Marchenkova, BIO  
Mentor: Dr. Mark Prausnitz, CHBE
- 33 Discovery of novel actinomycete xylanases for xylan hydrolysis**  
Trinh Vo, CHBE  
Roslu Zachariah, CHBE  
Mentor: Dr. Rachel Chen, CHBE
- 34 Screening for Xylanase Producing Actinomycetes Using Blue Dyed Corn Bran**  
Roslu Zachariah, CHBE  
Trinh Vo, CHBE  
Mentor: Dr. Rachel Chen, CHBE

## College of Engineering, continued

- 35 Particle Mixing in Microfluidic System**  
Boyang Zhang, CHBE  
Mentor: Dr. Lu Hang, CHBE
- 36 Designing Microfluidic device that separates compliant particles**  
John Arata, ME  
Mentor: Dr. Alexander Alexeev, ME
- 37 Molecular Dynamics of Irradiation Effects in Nuclear Waste Forms**  
Justin Branley, NRE  
Mentor: Dr. Chaitanya Deo, ME
- 38 Neutral Particle Density**  
Liang Zhao, PHYS  
Mentor: Dr. Weston Stacey, ME
- 39 Optimization of the Thermo-mechanical Properties of Multilayer Shape-Memory Polymer Composites for Orthopedic Casts**  
Stephanie Drewicz, BME  
Mentor: Dr. Ken Gall, MSE
- 40 Acrylate-Polyurethane Copolymers**  
Nathan Evans, MSE  
Walter Voit, MSE  
Keith Hearon, MSE  
Mentors: Dr. Ken Gall and Walter Voit, MSE
- 41 Constant and Pulse Induction Heating of Shape Memory Polymers with Aerospace Applications**  
Anthony Formica, AE  
Mentor: Dr. Ken Gall, MSE
- 42 Modeling and Simulation of the Impact Response of Maraging Steel Linear Cellular Alloys for Structural Energetic Material Applications**  
Adam Jakus, MSE  
Mentor: Dr. Naresh Thadhani, MSE
- 43 Mechanical Efficiency as an Actuator of Shape Memory Polymer Foams**  
Jeremy Kinnaird, AE  
Mentor: Dr. Ken Gall, MSE
- 44 Evaluation of Thermomechanical Properties of Fiber Reinforced Shape-memory Polymer Systems**  
Agatha Kwasnik, BME  
Mentor: Dr. Ken Gall, MSE
- 45 The Effect of Cross-link Density on the Relationship between Toughness and Chemistry in Photopolymerizable (Meth)Acrylate Networks Under Aqueous Conditions**  
David Millard, BME  
Michelle Hyjek, Biomedical Engineering  
Mentor: Dr. Ken Gall, MSE
- 46 Shape Memory Polymer Emulsions to create novel latexes**  
Melissa Minneci, ME  
Mentor: Dr. Ken Gall, MSE

## College of Engineering, continued

- 47 Time Dependent Transitions in Shape Memory Polymers for Orthodontic Applications**  
Karan Raturi, BME  
Mentor: Dr. Ken Gall, MSE
  
- 48 Fully Recoverable, High Strain Shape Memory Polymers**  
Dustin Simon, MSE  
Mentor: Dr. Ken Gall, MSE
  
- 49 Investigating Steric Protection of DNA in the Presence of Nucleases**  
Taylor Tomassi, MSE  
Mentor: Dr. Valeria Milam, MSE
  
- 50 Design of Photopolymerizable Polymer Surfaces with Tailorable Chemistry and Surface Elasticity for in vitro Cellular Applications**  
Jessica Wyche, BME  
Mentor: Dr. Ken Gall, MSE
  
- 51 Differential Scanning Calorimetry Analysis in Polymer/Carbon Nanotubes**  
Anisha Amatya, PTFE  
Mentor: Dr. Satish Kumar, PTFE
  
- 52 Aerodynamic Characteristics of Airfoils Experiencing Unsteady Aeroelastic Effects**  
Phillip Richards, BIO  
Mentor: Dr. Marilyn Smith, AE
  
- 53 Quantification of Protein Encapsulation and Drug Delivery in Polymer Microneedles**  
Ginger Tsai, BME  
Mentor: Dr. Mark Prausnitz, CHBE

# Poster Session II

## Student Center Ballroom

3:35 - 4:30 PM



Ivan Allen College



- 1 Do U.S. Farm Payments Affect the Demand for Immigrant Agricultural Workers and Total Farm Labor? The Case of Conservation Subsidies and Decoupled Payments**  
Gabrielle Sirow, ECON  
Mentor: Dr. Ruth Uwaifo Oyelere, ECON
- 2 A Study of Public and Private Enforcement of US Antitrust Policy and Its Impact on Innovation**  
Michael Warwick, ECON  
Mentor: Dr. Vivek Ghosal, ECON
- 3 Women in Science and Technology (WST) Inman STEM Initiatives**  
Jimia Head, STC  
Mentor: Dr. Carol Colatrella, LCC
- 4 Gendered Play in Online Worlds**  
Kady Rosier, CM  
Mentor: Dr. Celia Pearce, LCC
- 5 Women in Science and Technology (WST) Inman STEM Project - GEMS**  
Kristin Seiloff, MGT  
Christy Seerley, ARCH  
Robin Snyder, ISYE  
Amanda Chamberlin, PTFE  
Emily Goss, PTFE  
Mentor: Dr. Carol Colatrella, LCC
- 6 Science and Technology Legislative Landscape**  
Travis Horsley, PUBP  
Mentor: Dr. Richard Barke, PUBP
- 7 Tracking the Rise of State-Sponsored Stem Cell Research**  
Ruchir Karmali, BME  
Mentor: Dr. Aaron Levine, PUBP
- 8 Patient Experiences with Unproven Stem Cell Therapies**  
Kirsten Ryan, STAC  
Amanda Sanders, STAC  
Donnie Wang, STAC  
Mentor: Dr. Aaron Levine, PUBP
- 9 Performance Considerations of Symbolic Execution**  
Jonathan Loesch, CS  
Quinn Cone, Computer Science  
Tommy Smith, Computer Science  
Mentor: Dr. Alessandro Orso, CS
- 10 Lek Behavior as a Model for Multi-Robot Systems**  
Brittany Duncan, CS  
Mentor: Dr. Ron Arkin, CC



## College of Computing



- 11 ProveIt: A Tool for Supporting Strong Citation Practices on Wikipedia**  
Matthew Flaschen, CS  
Mentor: Dr. Amy Bruckman, CC
- 12 The Effects of Mobility on Mobile Text Input**  
Daniel Gifford, CS  
Mentor: Dr. Thad Starner, CC
- 13 Using First Order Inductive Learning as an Alternative to a Simulator in a Game Artificial Intelligence**  
Kathryn Long, CS  
Mentor: Dr. Ashwin Ram, CC
- 14 Spirosoft: An Ecocentric Approach to Pediatric Asthma**  
Daniel Sabio, CM  
Mentor: Dr. Rosa Arriaga, CC
- 15 Kermit : Home Network Visualization**  
Jin Yao, CS  
Mentor: Dr. Rebecca E. Grinter, CC
- 16 Humanoid robots for everyone**  
Hyun-Soo Yi, CS  
Mentor: Dr. Mike Stilman, CC
- 17 A Quantitative Analysis Of The Attributes Of Successful Online Collaborative Projects**  
Kevin Ziegler, CS  
Mentor: Dr. Amy Bruckman, CC
- 18 3D Interactive Dinosaur Dictionary**  
Sam Rickles, CM  
Mentor: Dr. Mark Riedl, CC



## College of Engineering



- 19 Flow Control Using A Dimpled Surface**  
Dilip Joy Thekkoodan, ME  
Mentor: Dr. T.T. Lim, National University of Singapore, Faculty of Engineering
- 20 Exploring Helicopter In-Plane Noise Reduction Possibilities via rotor Blade/Airfoil Geometry Designs**  
Natasha Barbely, AE  
Mentor: Dr. Lakshmi N. Sankar, AE
- 21 Analysis and Design of Horizontal Axis Wind Turbines for Feasible Green Energy Production**  
Kreston Barron, AE  
Mentor: Dr. Lakshmi N. Sankar, AE
- 22 An Examination of PIV Methods**  
Kevin Goal, AE  
Mentor: Dr. Narayanan Komerath, AE
- 23 Computational vs. Empirical-Based Drag Prediction of Advanced Concepts**  
Ben Johnson, AE  
Pierre Valdez, AE  
Kishen Raghunath, AE  
Mentor: Dr. Narayanan Komerath, AE

## College of Engineering, continued

- 24 Analysis of Thermal Protection System Alternatives**  
Jessica Juneau, AE  
Mentor: Dr. Robert Braun, AE
- 25 Flame Brush Dynamics of an Acoustically Excited, Turbulent Jet Flame**  
Hsin-Hsiao Ma, AE  
Mentor: Dr. Tim Lieuwen, AE
- 26 Flame Response of Swirl Premix Flames to Transverse Acoustic Excitation**  
Shweta Natarajan, ME  
Mentor: Dr. Tim Lieuwen, AE
- 27 John J. Harper Wind Tunnel Renovation**  
Kishen Raghunath, AE  
Anand R Nallathambi, AE  
Aniel Jardines, AE  
Rachel Haga, AE  
Mentor: Dr. Narayanan Komerath, AE
- 28 Turbulent Flame Speeds of H<sub>2</sub>/CO Blends**  
Alexander Roan, ME  
Jose Antezana, ME  
Juan Pedroza, AE  
Mentor: Dr. Tim Lieuwen, AE
- 29 Closed Gas Cycle Boundary Layer Turbine for Micro Renewable Power**  
Dustin Teuscher, AE  
Mentor: Dr. Narayanan Komerath, AE
- 30 Small-Scale Vertical Axis Wind Turbine Development**  
Dilip Joy Thekkoodan, ME  
Aniel Jardines, AE  
Ranjit Mantri, AE  
Rodney F Sumlin, AE  
Xiaofan Fei, AE  
Mentor: Dr. Narayanan Komerath, AE
- 31 Micro-renewable Energy Solar Collector**  
Pierre Valdez, AE  
Xiao Pan, AE  
Dilip Joy Thekkoodan, AE  
Anwasha Roy Paladhi, AE  
Xiaofan Fei, AE  
Mentor: Dr. Narayanan Komerath, AE
- 32 Ironworker Safety Performance Analysis**  
John O'Har, CE  
Mentor: Dr. Jochen Teizer, CEE
- 33 Digital Forensic Evidence Extraction**  
Kishore Atreya, CMPE  
Kevin Martin, ECE  
Mentor: Dr. Henry Owen, ECE
- 34 Design and Integration of Millimeter-wave Antenna Arrays on Organic Flex Substrate LCP**  
Farzad Nasri, EE  
Mentor: Dr. Emmanouil Tentzeris, ECE

## College of Engineering, continued

- 35 Tongue Driven Robotic Arm Control**  
Asma Qureshi, ECE  
Jeremy Jones, ECE  
Jeremy Thompson, ECE  
Mentor: Dr. Maysam Ghovanloo, ECE
- 36 Autonomous Trajectory Adjustments to Supplement an Automobile Driver's Reactions**  
Andrew Schulz, EE  
Mentor: Dr. Patricio Vela, ECE
- 37 Increasing Ethanol's Energy Ratio Using a Solid Oxide Fuel Cell**  
Cameron Miller, ME  
Mentor: Dr. Comas Haynes, GTRI/AERO-ATAS
- 38 Method of Excitation for Analysis of Surface Modes of Acoustic Guitars**  
Stephen Welch, EE  
Mentor: Dr. William Hunt, ECE
- 39 World Food Programme Supply Chain Optimization**  
James Wade, ISYE  
Santiago Aviles, ISYE  
Elhadj Bah, ISYE  
Manuel Jimenez, ISYE  
Lawrence Li, ISYE  
Mentor: Dr. Ozlem Ergun, ISYE
- 40 Using Predictive Graphical User Interface Elements to Improve Crane Operator Performance**  
Se Joong Kang, ME  
Mentor: Dr. Bill Singhose, ME
- 41 Molecular Dynamic Simulation of S-PEEK Membrane Fuel Cell**  
William Mateker, MSE  
Will Hardin, MSE  
Mentor: Dr. Seung Soon Jang, MSE
- 42 pH-Responsive Layer-by-Layer Hydrogel Microcapsules as Gold Nanoreactors**  
Rachel Muhlbauer, MSE  
Mentor: Dr. Vladimir Tsukruk, MSE
- 43 Nanophosphor Gamma Ray Scintillators**  
Brooke Barta, MSE  
Mentor: Dr. Jason H. Nadler, GTRI/Electro optical sys labs
- 44 Nanogenerator from Piezoelectric Coated Carbon Nanotubes**  
Celeste Mason, MSE  
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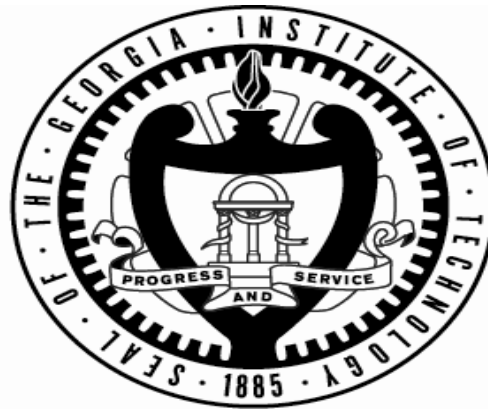
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