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

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

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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. Zhitaot 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

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
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 Electrospray 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
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

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

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
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
   Roshu Zachariah, CHBE
   Mentor: Dr. Rachel Chen, CHBE

34 **Screening for Xylanase Producing Actinomycetes Using Blue Dyed Corn Bran**
   Roshu Zachariah, CHBE
   Trinh Vo, CHBE
   Mentor: Dr. Rachel Chen, CHBE
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
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. Allessandro Orso, CS

10 Lek Behavior as a Model for Multi-Robot Systems
    Brittany Duncan, CS
    Mentor: Dr. Ron Arkin, CC
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

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 H2/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
Anwesha 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
    Mentor: Dr. David W. Stollberg, GTRI/Electrooptical Systems Labs

45  Carbon Nanotube Based Nanoelectrode Arrays
    Kirsten Kepple, BME
    Mentor: Dr. Jud Ready, GTRI/MSE

46  Carbon Nanotube Based Microbattery
    Philippe Lacasse, CHBE
    Mentor: Dr. Jud Ready, GTRI/MSE

47  Impregnating Exfoliated Graphite Nanoplatelets (xGnP) into Cellulose Fiber Webs for Enhanced Strength and Electrical Properties
    Sana Ali, ME
    Mentor: Dr. Kyriaki Kalaitzidou, ME
48 Developments in Nanotechnology and the Status of Engineering Design Education  
Yasaman Nematbakhsh, ME  
Mentor: Dr. Raghu Pucha, ME

49 Designing DNA Nanostuctures Using Analytical and NanoCAD Tools  
John Semmens, ME  
Mentor: Dr. Raghu Pucha, ME

50 Polymer Nanocomposites for the Automotive Industry  
Vanessa Tseng, ME  
Chun Chu, ME  
Kent Bartlett, ME  
Ashley Stanford, ME  
Mentor: Dr. Kyriaki Kalaitzidou, ME

51 Foaming Aligned Nanoparticle Composites Using Shape-Memory Polymer Epoxies  
Parth Brahmbhatt, ME  
Mentor: Dr. Ken Gall, MSE

52 Inorganic Templating of Pollen Particles for Use as a Catalytic Material  
Adam Jakus, MSE  
Allison Sanders, MSE  
Neil Patel, MSE  
Celeste Mason, MSE  
Alex Soracco, MSE  
Mentor: Dr. Zhong Lin Wang, MSE

53 Synthesis of Acrylate-Based Thermoset Foams with Tailorable Properties  
Amy Varallo, NRE  
Mentor: Dr. Ken Gall, MSE

54 Quantitative Analysis of Wicking Behavior in Performance Textile Fabrics  
Robert Brinson, PTFE  
Mentor: Dr. Haskell Beckham, PTFE

55 Cyclic Macromolecules: Synthesis and Threading Interactions with Linear Chains  
Melissa Wilson, PTFE  
Mentor: Dr. Haskell Beckham, PTFE

56 Quantification of Senescence in Cultured Primary T Cells  
Abby Hill, BME  
Mentor: Dr. Melissa Kemp, BME

57 Impact of Mitral Annular Dilatation on the Efficacy of Edge to Edge Mitral Valve Repair for Posterior Leaflet Prolapse  
Ross Hutchison, BME  
Mentor: Dr. Ajit Yoganathan, BME

58 A Biocompatible Polycation Network for the Controlled Delivery of Growth Factors to Combat Atherosclerosis  
Anh Nguyen, BME  
Mentor: Dr. Yadong Wang, BME

59 Acoustic Absorption of Tubular Structures with Surface Roughness  
Jason Kulpe, ME  
Mentor: Dr. Michael Leamy, ME
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