

Schoenborn 2015 Graduate Research Symposium

8:00–8:30 am Continental Breakfast / Welcome

Oral presentations Session I: Biotechnology

- 8:30 am** **Astor Liu** *Morphodynamics of T and B Lymphocyte Migration*
- 8:50 am** **Ashley Jermusyk** *The Role of Negative Feedback in Long-Range Signaling*
- 9:10 am** **Taliman Afroz** *Understanding and engineering individuality in bacterial sugar utilization*
- 9:30 am** **Jeffrey Zurawski** *Comparative analysis of extremely thermophilic *Caldicellulosiruptor* species provides insights into cellular strategies for deconstruction of untreated switchgrass*
- 9:50 am** **Kevin Carlin** *Engineering bivalent affinity ligands for intracellular inhibition and protein detection*

10:10 am Coffee Break

Oral Presentations Session II: Kinetics/Materials

- 10:40 am** **Feng He** *Perovskites and perovskite promoted ferrites for co-production of hydrogen and liquid fuels with exceptional conversion*
- 11:00 am** **Simon Thompson** *Palladium-Rhenium Catalysts for Selective Production of Fuels and Chemicals from Biomass*
- 11:20 am** **Patrick J. Fahey** *Reaction Pathways of Cellulose Pyrolysis through Model-Compound Experiments and Simulation*
- 11:40 am** **Mandi Burns** *Functional Nanofibers via Electrospinning*

12:00 pm Lunch

12:30 pm Announcement of 2014 Stannett Award

Dr. Harold B. Hopfenberg Camille Dreyfus Professor Emeritus

12:45 pm Keynote Address

Dr. Julie Willoughby Nike, Inc.

A career menagerie: charting a course for transdisciplinary innovation

Oral Presentations Session III: Materials

- 1:30 pm** **Collin Eaker** *Electrohydrodynamic Control of a Liquid Metal*
- 1:50 pm** **Daniel Morales** *Fundamentals and Applications of Hydrogel Actuation for Sensing and Soft Robotics*
- 2:10 pm** **Phillip Schoch** *Studying the role of surface topography for marine anti-fouling coatings*
- 2:30 pm** **Alexander Richter** *Towards benign-by-design nanoengineering: Silver ion/lignin antimicrobial nanoparticles with time-limited functionality*

2:50 – 3:20 pm Special address

Dr. JoAnn Lighty Director, CBET, National Science Foundation

Chemical Engineering: Researching the Grand Challenges

3:20 – 4:45 pm Posters (with refreshments)

4:45 – 5:45 pm Symposium Mixer

Poster presentations

Biotechnology

1. **Sophie Carrell** *Robust patterning of the dorsal-ventral axis in the *Drosophila melanogaster* embryo*
2. **Carlos Cruz** *Modeling and design of biosensors based on the tripartite GFP system*
3. **Laura Lee** *Genetics, Genomics, and MetaGenomics of the Extremely Thermophilic Genus *Caldicellulosiruptor**
4. **Ryan Leenay** *Developing genetic tools for undomesticated human gut microbes*
5. **Andrew Loder** *Metabolic engineering strategies for extremely thermophilic microbial hosts are informed by detailed reactions kinetics models for multi-step pathways*
6. **Michelle Luo** *Repurposing endogenous Type I CRISPR-Cas systems for programmable gene repression*
7. **Brittany Mertens** *Characterization and control of Norovirus interactions*
8. **Adam Mischler** *Trophoblast differentiation of human embryonic stem cells*
9. **Michael O'Connell** *Nuclear Trapping of Cactus in the Early *Drosophila* Embryo May Modulate the Effective Concentration of Transcription Factor Dorsal*
10. **Anisur Rahman** *Quantitative Analysis of mTOR Activation Downstream of Akt*
11. **Shah Md Tofiqur Rahman** *Optogenetic Dissection of MAPK cascades*
12. **Mark Schulte** *Process intensification of CO consumption by immobilized *Clostridium ljungdahlii**
13. **Ben Zeldes** *Metabolic engineering of the hyperthermophilic archaeon *Pyrococcus furiosus* for production of fuels and chemicals*

Materials

1. **Daniel Armstrong** *Bimorphic Dielectric Elastomer Actuators*
2. **Steven Benner** *Simulations-based Design of a Biocompatible Oil Dispersant Additive*
3. **Gilbert Castillo** *Solvent Induced Crystallization of Poly(ethylene terephthalate)*
4. **David Chang** *Investigation of surfactant-cell interactions for increased efficiency of commercial bioreactors*
5. **James Daubert** *Atomic Layer Deposition of Pseudocapacitive Materials for Electrochemical Capacitors*
6. **Duncan Davis** *Polymer Origami Induced via Microwave Heating*
7. **Koohee Han** *Assembling Patchy Microcubes into Reconfigurable Soft-Microbots*
8. **Ishan Joshipura** *Actuating liquid metal alloys for reconfigurable electronics*

9. **Matthew Melillo** *Polymer absorbents for organic contaminant removal from water*
10. **Kenneth Mineart** *The Impacts of Water Uptake on a Block Ionomer Hydrogel*
11. **Dishit Parekh** *3D Printing of Electronic Materials using Low Melting Point Alloys*
12. **Mariah Ritz** *Computer-Based Discovery of Surfactants*
13. **Tim Shay** *Novel Human-Device Interfaces: Continual Sweat Sampling and EKG Sensing*
14. **Mohammad Oliuddin Tuhin** *Development of shape memory fibers with sensory functionality.*
15. **Laura Weiser** *Understanding Peptoid Structure Using Multiscale Simulation Models*

Kinetics

1. **Martin Dufficy** *Galactomannans as a new class of lithium-ion battery binders*
2. **Nathan Galinsky** *Perovskite Based Oxygen Carriers for Chemical Looping with Oxygen Uncoupling (CLOU)*
3. **Chengxiang Liu** *Computational studies of additive effects on calcium pyrophosphate crystallization*
4. **Amit Mishra** *Doped perovskites for chemical looping reforming - experimental and DFT studies*
5. **David Rutkowski** *Effect of Charge Separation on the Phase Behavior of 2-D Dipolar Rods*
6. **Arya Shafie-Farhood** *Methane partial oxidation via a cyclic redox scheme - transient pulse studies*
7. **Sara Jo Taylor** *Analysis of stable and transient reaction species via molecular-beam mass spectrometry*
8. **Kye Won Wang** *Design of thermosensitive liposomes using molecular dynamics simulation*
9. **Junjie Zhao** *Deposition of Metal-Organic Framework Thin Films for Functional Materials*