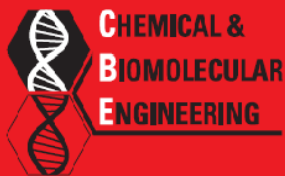


NC STATE UNIVERSITY

The Schoenborn



Graduate Research Symposium

Judged competitions of formal
oral and poster presentations of
graduate research

Monday, January 28, 2019

8:15 AM - 6:00 PM

McKimmon Center

Sponsored by



www.cbe.ncsu.edu/research/schoenborn

Posters: Materials

Heather Barton (M1) *Effect of PCN-222 Crystal Size on Adhesion and Performance of MOF Fabrics for Dual Hydrolysis and Photooxidation of Chemical Warfare Agent Simulants*

E. Daniel Cárdenas-Vásquez (M2) *Shear Induced Microstructural Gradients in Colloidal Gels for Composite Hydrogel Fibers*

Natasha Castellanos (M3) *Formulation of New Responsive and Self-Repairing Magneto-Capillary Gels*

Camden Cutright (M4) *Hydrogel Functionalized Polypropylene Membranes*

Soo Ah Jin (M5) *On the Effect of Electrolytes on the Tunable Mesomorphic Behavior of Cellulose Nanocrystal Films*

Salvatore Luiso (M6) *Melt-blown PVDF as a Li-Ion Battery Separator*

Taylor Neumann (M7) *3D Printing Soft Electronics Using Liquid Metals*

Lilian B. Okello (M8) *Magnetically Actuable Homocomposite 3D Printed Silicone Structures*

Matthew Parker (M9) *Porous Titania Microspheres: Highly-Efficient Catalyst Scaffold for Green Syngas Production*

Srivatsan Ramesh (M10) *Self-Repairing Nonwovens Using Stimuli-Responsive Hydrogels*

Tamoghna Saha (M11) *Self-Pumping Paper Microfluidic Channels for Sweat Sensing Devices*

Austin Williams (M12) *Liquid-Based Manufacture of Soft Dendritic Colloids for Icephobic Coatings and Ultrasoft Actuable Membranes for Live Cell Support*

Jiaqi Yan (M13) *Polymer/Polymer Interfaces with Customized Block Copolymers*

Bharadwaja S.T.P. (M14) *Self-Sterilizing Surfaces: Stimuli Responsive Sulfonated Block Copolymers*

Sabina Islam (M15) *The Nanoscience of Bourbon: Self-Assembled Micro-Webs of Colloids from Whiskey Droplet Evaporation As Unique Identifiers of Bourbon Whiskeys*

A Complete PDF Program Book Can be Found Here



Schoenborn 2019 Graduate Research Symposium

8:15 – 8:50 AM Continental Breakfast / Welcome

8:50 – 10:30 AM Oral Session I: Materials

8:50 AM Amber Hubbard *Stimuli-Responsive Polymers*

9:10 AM Yeongun Ko *Spontaneous Degrafting of Polyelectrolyte Brushes from Solid Substrates*

9:30 AM Sabina Islam *Revisiting the Colloidal Fundamentals and Exploring Nanofilm Formation of Water-Dispersible Polyesters*

9:50 AM Jason Miles *Fabrication of Wettability and Chemical Gradients with Tunable Profiles through Degrafting Organosilane Layers by Tetrabutylammonium Fluoride*

10:10 AM Joseph Tilly *Cross-linking Behavior and Mechanical Performance of Polyester-Urethane Coatings: Role of Backbone Chemistry*

10:30 – 10:50 AM Coffee Break

10:50 – 12:30 PM Oral Session II: Materials and Catalysis

10:50 AM Dennis Lee *Chemical Protective Textiles Driven by 2D Metal-Organic Frameworks and Atomic Layer Deposition to Polymer Fibers*

11:10 AM Seif Yusuf *Effect of Na-W Promoter on Mg₂MnO₈ Based Redox Catalysts for the Chemical Looping – Oxidative Dehydrogenation of Ethane*

11:30 AM Charles McGill *Catalysis of Ketene Production: Mechanism Development and Validation*

11:50 AM Yunfei Gao *Alkali Promoted Perovskite Core-Shell Redox Catalysts for Oxidative Dehydrogenation of Ethane Under a Cyclic Mode*

12:10 PM Vasudev Pralhad Haribal *Experimental and Modeling Studies of Natural Gas Valorization and Water/CO₂-Splitting*

12:30 – 2:20 PM Lunch

1:10 PM *Announcement of Vivian T. Stannett Fellow Award*

1:20 PM *Announcement of Praxair Exceptional Teaching Assistant Award*

1:35 PM Keynote Address: Dr. David Sehgal, FujiFilm Diosynth Biotechnologies

Experience is What You Get the Day After You Needed It – My Time in Industry

2:20 – 4:20 PM Oral Session III: Computation and Biotechnology

2:20 PM Amulya Pervaje *Computational Modeling of Polymer Glass Transition, Thermosets, and Fibers*

2:40 PM Ryan Maloney *Phase Diagrams of Mixtures of Dipolar Rods and Discs*

3:00 PM Jennifer Clark *Extended Mie Potential Combining Rules: Predicting Binary Interaction Parameters*

3:20 – 3:40 PM Coffee Break

3:40 PM R. Ashton Lavoie *Mixed-Mode Peptide Ligands for Capture of CHO Host Cell Proteins*

4:00 PM Christopher Straub *Direct Conversion of Transgenic Poplar to Biofuels via Simultaneous Distillation and Fermentation*

4:30 – 6:00 PM Poster/Mixer Session

Posters: Biotechnology

Kaitlyn Bacon (B1) *Screening Yeast Display Libraries Against Magnetized Yeast Cell Targets Enables Efficient Isolation of Membrane Protein Binders.*

Scott Baldwin (B2) *Exploring the Mesenchymal Chemotaxis Landscape Using a Novel High-throughput Assay*

John Bowen (B3) *Synthetic Peptides from a Biological System – Harnessing Yeast Surface Display to Create a Cyclic Peptide Library via Intracellular Enzymatic Processing*

Cathryn Conner (B4) *Development of Novel Stability Assays for Protein Biopharmaceuticals Using Time Dependent Light Scattering Analysis*

James Crosby (B5) *Metabolic Engineering of *Caldicellulosiruptor Bescii* for the Production of Butanol from Lignocellulose*

Javier Huayta (B6) *In Vivo Longitudinal Tracking of the DAF-16 Transcription Factor in *C. elegans**

Victoria Karakis (B7) *Quantitative Analysis of Extravillous Cytotrophoblast Differentiation*

Jenna Meanor (B8) *Generating Engineered Binding Proteins to Visualize Histone Modifications*

Jamie Nosbisch (B9) *Feedback Loops at the Level of Lipid Metabolism Enhance Sensitivity and Robustness in Models of Chemotactic Gradient Sensing*

John Schneible (B10) *Integrated Approach for Efficient Tailoring of Chitosan Hydrogels Enabling Kinetically Tuned Release of Synergistic Combinations of Chemotherapeutics*

Dilara Sen (B11) *Spatiotemporal Tracking of Human Neurodevelopmental Imprinting with Cerebral Organoids*

Posters: Catalysis, Computation, and Kinetics

Arnab Bose (C1) *Understanding the Pyrolysis Kinetics of Xylan*

Ankit Chandra (C2) *Integrative Model of Actin, Adhesion and Signaling Dynamics at the Leading Edge of Migrating Cells*

Ryan Dudek (C3) *Perovskite Oxides for Redox Oxidative Cracking of n-Hexane under a Cyclic Redox Scheme*

Petr Novotny (C4) *Oxidative Dehydrogenation of Ethane using MoO₃/Al₂O₃ Catalysts in a Cyclic Redox Mode*

Amrutha Raghu (C5) *Reaction Paths for Hemicellulose Pyrolysis using Reactive Molecular Dynamics*

Matthew Mansell (C6) *Computer Simulations of Carbon Nanotube Inclusion Complexes*