

DOC Graduate Research Symposium

St. Edward's University, Austin, July 23-26, 2015

THURSDAY, JULY 23

3:00 pm - 6:00 pm Arrival and Dormitory Check-in at Housing Office Johnson Hall

5:00 pm - 6:00 pm Registration and Dinner Kresge Dining Room (Ragsdale 220)

THURSDAY EVENING *Presiding: P. Andrew Evans, Queen's University*

6:00 - 6:15 pm **Welcome** Jones Auditorium (Ragsdale 101)

6:15 pm - 7:00 pm **Matthew S. Sigman, University of Utah** RG 101

Enantioselective Formation of Remote Chiral Centers

7:00 pm - 7:10 pm Questions

7:10 pm - 7:30 pm **Yang Yang** RG 101

Massachusetts Institute of Technology

Copper-Catalyzed Asymmetric Hydroamination of Unactivated Internal Olefins

7:30 pm - 7:50 pm **Valerie W. Shurtleff** RG 101

Princeton University

Accessing Elusive Organometallic Reactivity: C–O Cross-Coupling Mediated by Nickel and Photoredox Catalysis

7:50 pm - 8:10 pm **Andrea Ambrosi** RG 101

University of Illinois at Urbana-Champaign

Mechanistic Significance of the Si–O–Pd Bond in the Cross-Coupling of Organosilanolates

8:10 pm - 8:30 pm **Kenneth E. Schwietzer** RG 101

Vanderbilt University

Catalytic Enantioselective Synthesis of Aliphatic α -Amino Amides using Umpolung Amide Synthesis (UmAS)

8:30 pm - 8:50 pm **Seojung Han** RG 101

California Institute of Technology

A Unified, Stereodivergent Approach to the Synthesis of Communesin F and Perophoramidine

9:00 pm - 11:30 pm Reception
Kresge Dining Room (Ragsdale 220)

FRIDAY, JULY 24 *Presiding: Gary A. Molander, University of Pennsylvania*

8:15 am - 9:00 am Continental Breakfast RG 101 Lobby

9:00 am - 9:45 am **Karin Briner, Novartis** RG 101

Creating New Medicines – Chemistry at the Interfaces with Multiple Scientific Disciplines

9:45 am - 9:55 am Questions

9:55 am - 10:15 am **Michelle F. Richter** RG 101

University of Illinois at Urbana-Champaign

Strategic Analysis of the Physicochemical Properties that Dictate Small-Molecule Accumulation in Gram-Negative bacteria

10:15 am – 10:40 am Coffee Break RG 101 Lobby
10:40 am - 11:00 am **Youliang Wang** RG 101
University of California, Santa Barbara

Gold Carbenes from Alkynes: Direct Functionalization of C(sp³)-H Bonds via Carbene Insertion

11:00 am - 11:20 am **Kyle Ruhl** RG 101
Colorado State University

Development of Photo-driven Cobalt Catalysis

11:20 am – 11:40 am **James E. Melnyk** RG 101
University of Delaware

Innate Immune Sensing of Bacterial Wall Fragments

11:40 am – 12:00 pm **Group Photograph**

12:00 pm - 2:30 pm Lunch and **Poster Session 1** Mabee Ballroom C

2:30 pm - 5:00 pm **WORKSHOP 1: Academic Life** RG 101
Robert G. Lees, NIGMS
Johanna P. Schwartz, Klarquist
Kal Banger, ACS Publications
Mary Boyd, St. Edwards

Laura Kiessling (Wisconsin), Jeffrey Moore (Illinois), Matt Sigman (Utah), Adam Urbach (Trinity)

FRIDAY EVENING *Presiding: Mary Boyd, St. Edward's University*

5:00 pm - 6:30 pm Dinner Maloney Room (MB 320)

6:30 pm - 7:15 pm **Laura L. Kiessling, UW-Madison** RG 101

Us Versus Them: Exploiting the Chemistry of Microbial Cell Wall Assembly

7:15 pm - 7:25 pm Questions

7:30 - 9:30 pm **WORKSHOP 2: Industrial Life**

Group A (*P. A. Evans*)

Phieng Siliphaivanh, Merck

Ian Davies, Merck

Sylvie Asselin, Gilead

Steven Wittenberger, Abbvie

Kate Ashton, Amgen

Thiwanka Samarakoon, H3 Biomedicine

Robert Todd, Sigma-Aldrich

Hasnain Malik, Novartis

Group B (*G. A. Molander*)

Karin Briner, Novartis

David St. Jean, Amgen

John Flygare, Genentech

Kimberly Steward, Dow

Kenneth Matthews, Gilead

Chris Sarko, Boehringer-Ingelheim

Ben Sherry, Merck

Sasha Stankovich, Milliken

9:30 pm – 11:30 pm Reception
Kresge Dining Room (Ragsdale 220)

SATURDAY, JULY 25 *Presiding: P. Andrew Evans, Queen's University*

- 8:30 am - 9:00 am Continental Breakfast RG 101 Lobby
- 9:00 am - 9:45 am **Jeffrey S. Moore, UI at Urbana-Champaign** RG 101
Lifetime of Materials Programmed by Molecular Design
- 9:45 am - 9:55 am Questions
- 9:55 am - 10:15 am **Dongyue Xin** RG 101
Texas A&M University
Piperidine-Piperidinone Chemotype for Interface Mimicry
- 10:15 am – 10:40 am Coffee Break RG 101 Lobby
- 10:40 am - 11:00 am **Liela A. Bayeh** RG 101
University of Texas Southwestern
The Development of Allylic Functionalization Strategies of Olefins and Dienes
- 11:00 am - 11:20 am **Monica McCallum** RG 101
Baylor University
Total Synthesis of (±)-Hippolachnin A
- 11:20 pm – 11:40 am **Christian A. Malapit** RG 101
University of Connecticut
Transition Metal Catalyzed Transformations of Strained Heterocycles
- 11:40 pm - 12:00 pm **Rebecca A. Green** RG 101
University of California, Berkeley
Nickel-Catalyzed Coupling of Aryl Chlorides with Ammonia
- 12:00 pm – 2:30 pm Lunch and **Poster Session 2** Mabee Ballroom C
- SATURDAY, AFTERNOON** *Presiding: Gary. A. Molander, University of Pennsylvania*
- 2:30 pm - 3:15 pm **Benjamin D. Sherry, Merck** RG 101
Manufacturing Route Development for Doravirine: A Next Generation NNRTI
- 3:15 pm – 3:25 pm Questions
- 3:25 pm – 3:45 pm **Chao Qi** RG 101
Boston University
Asymmetric Syntheses of Flavonoid Diels-Alder Natural Products Sanggenons C and O
- 3:45 pm – 4:10 pm Coffee Break RG 101 Lobby
- 4:10 pm – 4:30 pm **Kolby L. White** RG 101
Massachusetts Institute of Technology
Mechanistic Study of the Interrupted Bischler–Napieralski Reaction and its Application to Complex Synthesis
- 4:30 pm – 4:50 pm **Wenhan Zhang** RG 101
University of Texas Southwestern Medical Center at Dallas
Synthesis of Ynol Ethers - A Useful Species to Complexed Molecules

4:50 pm – 5:10 pm **Caitlan E. Ayala** RG 101
Louisiana State University
Direct Nucleophilic Capture of Unsymmetrical Oxyallyl Cations with Indoles Under Mild Brønsted Acid Catalysis

5:10 pm – 5:30pm **Daniela E. Negru** RG 101
Queen's University
Rhodium(I)-Catalyzed [(3+2)+1] and [(3+2)+2] Carbocyclization Reactions

6:00 pm - 10:30 pm Dinner and Drinks: 6th Street

SUNDAY, JULY 26 *Presiding: P. Andrew Evans, Queen's University*

8:15 am - 9:00 am Continental Breakfast RG 101 Lobby

9:00 am - 9:45 am **Adam R. Urbach, Trinity University** RG 101
Sequence-Specific Recognition of Peptides and Proteins with Cucurbit[n]uril Molecular Containers

9:45 am - 9:55 am Questions

9:55 am - 10:15 am **Charles E. Hendrick** RG 101
Duke University
Aminoarene Synthesis with N-Heteroatom Bonds: Electrophilic Amination of Arylzincate Nucleophiles

10:15 am – 10:40 am Coffee Break RG 101 Lobby

10:40 am - 11:00 am **Jennifer K. Bailey**
Brandeis University
Directed Evolution of Glycopeptides Targeting HIV Antibodies

11:00 am - 11:20 am **Hariharaputhiran Subramanian** RG 101
North Dakota State University
Achiral Templates in Catalysis: Enantioselective Transformations with Complex Substrates

11:20 am – 11:40 am **Caitlin M. McMahon** RG 101
University of North Carolina at Chapel Hill
Transition-Metal-Catalyzed Radical Reactions: Utilizing Alkyl Electrophiles

11:40 am - 12:00 pm **Kayla Marie Diemoz** RG 101
University of California - Davis
Design, Synthesis, and Study of Silanol-Containing Ligands and Organocatalysts with Applications in Asymmetric Catalysis

12:00 pm - 1:00 pm Lunch
RG 101 Lobby

1:30 pm Depart

FRIDAY, JULY 24: POSTER SESSION 1

- 1. Simon B. Lang, The University of Kansas**
New Methods For Allylation: Radical Decarboxylative Allylation Via Dual Catalysis
- 2. Marlies V. Hager, University of Wisconsin-Madison**
Characterizing Ligand Bias at G-protein Coupled Receptors with α/β -Peptides
- 3. Eric S. Andreansky, Emory University**
Progress Toward the Synthesis of the Akuammiline Alkaloid Strictamine
- 4. Bérénice C. Lemercier, North Carolina State University**
Novel Methods for Nitrogen Containing Heterocycles.
- 5. Zhe Zhang, University of Southern California**
On the Nucleophilicity of Persistent α -Monofluoromethanide Derivatives
- 6. Jakkrit Suriboot, Texas A&M University**
Polyolefin Oligomers as Solvent and Tools in Ru-catalyzed Metathesis Reactions
- 7. Adrian G. Amador, University of Wisconsin - Madison**
Enantioselective [3+2] Photocycloadditions via Visible Light Mediated Dual Catalysis
- 8. Liangbing Fu, Emory University**
Selective C-H Functionalization by Rhodium Carbene induced C-H insertion
- 9. Jiun-Le Shih, University of Houston**
Organocatalyzed Asymmetric Conjugate Addition of Heteroaryl & Aryl Trifluoroborates: A Synthetic Strategy for Discoipyrrole D
- 10. S. John Thompson, University of Texas at Austin**
Unactivated Primary C-H Bond Annulation forming Cyclic Ethers
- 11. S. Damith Perera, Michigan State University**
Greening-Up' the Suzuki Reaction: Avoid Haloaromatics and Genotoxic Impurities
- 12. Shengzong Liang, University of Louisville**
Making Supported Nanogold a Routine Benchtop Catalyst for Synthetic Lab
- 13. Paulo H. S. Paioti, University of Florida**

14. Erin E. Gray, Princeton University

A Modular, Air-Stable Nickel Precatalyst

15. Ha T. H. Nguyen, University of Florida

Polyethylene Ferulate (PEF) and Congeners: Polystyrene Mimics Derived from Biorenewable Aromatics

16. David S. Huang, University of Minnesota

Analog Synthesis of the α -Tubulin-Binding Natural Product Pironetin as an Ovarian Cancer Chemotherapeutic Agent

17. Minh H. Nguyen, University of Pennsylvania

Development of Recyclable Polymer-Supported Silicon Reagents for the Direct Use of Organolithiums in Transition Metal-Catalyzed Carbon-Carbon and Carbon-Nitrogen Bonds Forming Reactions

18. Wei You, Indiana University

Copper-Catalyzed Enantioselective Diradicalation of Alkenes

SATURDAY, JULY 25: POSTER SESSION 2

19. David E. Stephens, The University of Texas at San Antonio

Regioselective Functionalization of Azine-N-oxides

20. Abhisek Ray, University of Texas at Arlington

Studies Towards the Total Synthesis of Dimeric Spirocyclic Oroidin Alkaloids

21. Charles W. Littlefield, Jr., University of Missouri

Towards the Fluorescence Sensing of Lipids

22. John C. Widen, University of Minnesota

Synthesis of Natural Product Based RelA/p65 Probes for Targeted inhibition of the NF-kappaB Pathway

23. Andrew J. Ferreira, Oregon State University

Total Synthesis and Determination of Chirality of the Arundo donax Alkaloids

24. William L. Montgomery, University of Texas at Austin

25. Sean M. McCarthy, Pennsylvania State University

E-H Bond Activation at Geometrically Constrained Phosphorus (III) Compounds

26. Roshan Gunasekara, Iowa State University

Biomimetic Molecular Recognition and Synthetic Lipid Sensors

27. Gia Hoang, University of Nebraska-Lincoln

Regiocontrol in the Carbonyl-Directed Asymmetric Hydroboration of γ,δ -Unsaturated Alkenes

28. Valerie Winton, University of Wisconsin-Madison

N-Acylsulfonamide Inhibitors of UDP-Galactopyranose Mutase

29. Jill A. Caputo, University of Rochester

Nickel-Catalyzed Allylation of Imines

30. Ramya Raghunathan, North Dakota State University

Atropselective [2+2] Photocycloaddition of Maleimides with UV/Visible light: Role of Axial Chirality, Chain Length and Substituents

31. Nathaniel T. Kadunce, California Institute of Technology

Nickel-Catalyzed Asymmetric Reductive Cross-Coupling between Heteroaryl Iodides and α -Chloronitriles

32. Travis J. Cordes, Pennsylvania State University

Towards Amplification of Trace Amounts of Chemical Signals: Design and Synthesis Strategies for Small Molecules and Polymers

33. Tejas K. Shah, University of California, Los Angeles

Nickel-Catalyzed Conversion of Amides to Esters

34. Ebenezer Jones-Mensah, University of Idaho

Progress toward Tetarimycin A & Luche reduction with $\text{NaBH}_4/\text{Alumina}$

35. Michael J. Di Maso, University of California-Davis

Development and Application of the Anhydride Mannich Reaction