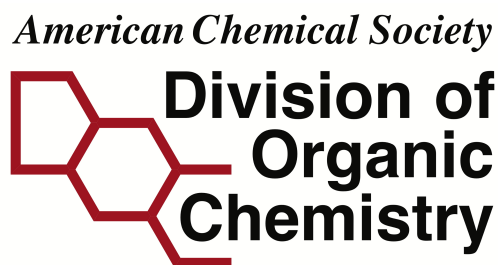


46th **N**ational **O**rganic Chemistry **S**ymposium



Indiana University—Bloomington
June 23-27, 2019



46th National Organic Chemistry Symposium

Indiana University—Bloomington

Bloomington, Indiana, USA

June 23 – 27, 2019

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Welcome

On behalf of the Executive Committee of the Division of Organic Chemistry of the American Chemical Society and the Department of Chemistry at Indiana University—Bloomington, we welcome you to the 46th National Organic Chemistry Symposium (NOS). The goal of this biennial event is to present a roster of distinguished speakers that represent the breadth and creative advances of organic chemistry worldwide.

The first National Organic Chemistry Symposium was held December 1925 in Rochester NY under the auspices of the Rochester Section of the Division of Organic Chemistry. Subsequent meetings were held every two years until WWII. The symposia resumed in 1947 in Boston and have been held biennially since. The National Organic Chemistry Symposium is the premier event sponsored by the Division of Organic Chemistry. In 1959, the Roger Adams Award was established and the Roger Adams Award Address has become a key focus of the symposium. This 46th National Organic Chemistry Symposium consists of 22 invited speakers, including 6 NOS Young Investigators and the 2019 Roger Adams Awardee – Stephen Buchwald of MIT. The lectures will be presented during morning and evening sessions at the Indiana University Auditorium. The poster sessions, featuring over 300 posters, will take place in the evenings from approximately 8:00 pm-11pm in Alumni Hall and the adjacent Solarium in Indiana Memorial Union, Sunday through Wednesday. The Symposium Banquet will be held on Wednesday evening at the Fine Arts Plaza outside of the Indiana University Auditorium and is open to all registered attendees and guests. Over 600 attendees are registered for the meeting!

Indiana University is located at the Crossroads of America in beautiful Bloomington, Indiana. The organizers have arranged tours to experience local attractions that include spirits and wine tasting. Other regional activities include hiking in state parks and enjoying Bloomington's great restaurants and breweries. We are also continuing the recent tradition of an Undergraduate Context Session to define the setting of some of the lectures – all are welcome to attend. We have scheduled Career Panels (Predominantly Undergraduate Institutions & Industry) on Wednesday afternoon for those with questions regarding specific careers or seeking career advice. In addition we will hold workshops focused on grant writing and publishing.

We thank our Sponsors and our Exhibitors for providing financial support for the Symposium. We also thank the Indiana University—Bloomington Conference and Event Services, especially Nora Kline and Drew Norris, and our student volunteers, for assisting with the organization of this event. Finally, thank you for attending and being a part of the 46th National Organic Chemistry Symposium.

*Lisa Marcaurelle
46th NOS Executive Officer
GlaxoSmithKline*

*M. Kevin Brown
46th NOS Local Organizer
Indiana University—Bloomington*

*Angie Angeles
46th NOS Sponsorship Coordinator
Gilead*

*Paul Hanson
46th NOS Co-Executive Officer
University of Kansas*

*Silas Cook
46th NOS Local Organizer
Indiana University—Bloomington*

*Rick Broene
46th NOS Poster Session Chair
Bowdoin College*

*Lamont Terrel
46th NOS Committee Member
GlaxoSmithKline*

*Scott Bagley
46th NOS Committee Member
Pfizer*

*Timothy D. White
46th NOS Committee Member
Eli Lilly & Company*

Sponsors

We acknowledge and appreciate the generous financial support and sponsorship by the following organizations:

American Chemical Society



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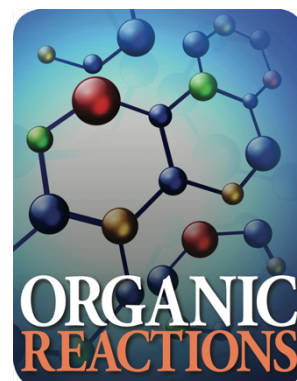
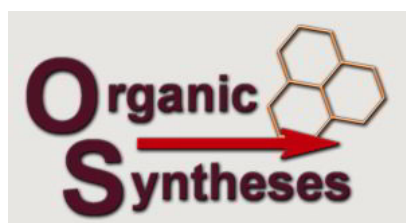


Bristol-Myers Squibb

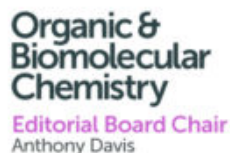
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OUR MISSION is to foster and promote the advancement of the field of organic chemistry.

NURTURING YOUNG CHEMISTS

- Student Travel Awards
- Graduate Research Symposium and Workshops
- Organic Division Undergraduate Awards
- Summer Undergraduate Research Fellowships

FOSTERING PROFESSIONAL DEVELOPMENT

- Sponsored workshops at meetings
- Faculty Travel Awards
- Young Investigator Symposium (non-academic)
- Assistant Professor Symposium

RECOGNIZING EXCELLENCE

- Technical Achievements Award in Organic Chemistry
- Paul G. Gassman Distinguished Service Award
- Edward Leete Award
- ACS Awards Symposia at National Meetings

COMMUNICATING CUTTING EDGE SCIENCE

- ACS National Meeting ORGN programs
- National Organic Chemistry Symposium
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46th National Organic Chemistry Symposium

JUNE 23-27, 2019

INDIANA UNIVERSITY—BLOOMINGTON

SPEAKER AND EVENT SCHEDULE

All NOS Lectures, Panels & Workshops will be held in the IU Auditorium on IU Campus at 1211 E 7th Street. Breakfast & lunch will be provided in the Grand Foyer of the IU Auditorium. Posters, Mixers & Exhibits will be held in Alumni Hall & the adjacent Solarium located in Indiana Memorial Union (IMU).

SUNDAY, JUNE 23rd

3:00 PM – 11:00 PM Registration

East Lounge: IMU

8:00 PM – 11:00 PM Reception, Poster Session & Exhibitors

Alumni Hall & Solarium: IMU

MONDAY, JUNE 24th

7:30 AM – 12:00 PM

Registration

IU Auditorium

7:30 AM – 8:30 AM

Breakfast

IU Auditorium, Foyer

8:30 AM – 9:00 AM

Opening Remarks:

Lisa Marcaurelle, *GlaxoSmithKline* (2019 NOS Chair)

Kevin Brown, *Indiana University* (NOS Local Co-Organizer)

Session Chair: **Negar Garizi**, *Corteva Agriscience*

9:00 AM – 9:50 AM

David Williams, *Indiana University*

“Going Discovery Mode: The Quest for Inspiration, Ingenuity, and Innovation”

9:50 AM – 10:15 AM

Alison Narayan, *University of Michigan* (NOS Young Investigator)

“Biocatalysis and complex molecule synthesis”

10:15 AM – 10:45 AM	Presentation of Poster Awards & Coffee Break	IU Auditorium, Foyer
10:45 AM – 11:35 AM	Chris Vanderwal , <i>University of California, Irvine</i> “Strategy-Driven Natural Product Synthesis”	
11:35 AM – 12:25 PM	Martin Eastgate , <i>Bristol-Myers Squibb</i> “Innovation in the Synthesis of Complex Pharmaceuticals”	
12:30 PM – 1:30 PM	Lunch	IU Auditorium, Foyer
1:00 PM – 5:30 PM	Corteva Agriscience Tours (Bus departs at 1 pm from the IU Auditorium)	
1:00 PM – 5:00 PM	Hard Truth Distillery (Bus departs at 1 pm from the IU Auditorium)	
	Session Chair: Emily McLaughlin , <i>Bard College</i>	
6:30 PM – 6:55 PM	Elizabeth Swift , <i>AbbVie</i> (NOS Young Investigator) “Application of Photoisomerization for the Synthesis of Enantioenriched β -Aryloxyesters”	
6:55 PM – 7:45 PM	L.-C. Campeau , <i>Merck & Co.</i> “Adventures in Nucleoside Analog Total Synthesis and Other Reactions You Didn’t Know Where Difficult”	
7:45 PM – 8:35 PM	Tim Jamison , <i>Massachusetts Institute of Technology</i> “The Why, When, and How of Flow Chemistry”	
8:35 PM – 11:00 PM	Mixer, Poster Session & Exhibitors	Alumni Hall & Solarium: IMU

TUESDAY, JUNE 25th

7:30 AM – 8:30 AM	Breakfast	IU Auditorium, Foyer
	Session Chair: Richard Broene , <i>Bowdoin College</i> (2021 NOS Co-Chair)	
8:30 AM – 9:20 AM	Huw Davies , <i>Emory University</i> “Catalyst-Controlled C–H Functionalization”	
9:20 AM – 10:10 AM	Cristina Nevado , <i>University of Zürich</i> “Solving Mechanistic Puzzles in Metal-catalyzed Reactions”	
10:10 AM – 10:40 AM	Presentation of Poster Awards & Coffee Break	IU Auditorium, Foyer

10:40 AM – 11:05 AM	David Sarlah , <i>University of Illinois-Urbana Champaign</i> (NOS Young Investigator) “Dearomative Functionalization Strategies and Synthesis of Anticancer Natural Products”	
11:05 AM – 11:30 AM	Hosea Nelson , <i>University of California, Los Angeles</i> (NOS Young Investigator) “Twists and turns along the path of reactivity-driven methodology development”	
11:30 AM – 12:20 PM	P. Andrew Evans , <i>Queen’s University</i> “Stereoselective Construction of Challenging C-C Bonds: Total Synthesis of Complex Bioactive Agents”	
12:30 PM – 1:30 PM	Lunch	IU Auditorium, Foyer
1:00 PM – 5:00 PM	Eli Lilly & Co. Tours (Bus departs at 1 pm from the IU Auditorium)	
1:00 PM – 5:00 PM	Oliver Winery (Bus departs at 1 pm from the IU Auditorium)	
	Session Chairs: Jeffrey Aubé , <i>University of North Carolina</i> (Chair, ACS Division of Organic Chemistry) and Tim Jamison , <i>Massachusetts Institute of Technology</i> (Award Presenter)	
6:45 PM – 7:00 PM	Presentation of the Roger Adams Award	IU Auditorium
7:00 PM – 8:00 PM	2019 Roger Adams Award Lecture: Stephen L. Buchwald , <i>Massachusetts Institute of Technology</i> “Palladium-Catalyzed Carbon-Heteroatom Bond-Forming Reactions for the Functionalization of Molecules Big and Small”	
8:00 PM – 11:00 PM	Mixer, Poster Session & Exhibitors	Alumni Hall & Solarium: IMU

WEDNESDAY, JUNE 26th

7:30 AM – 8:30 AM	Breakfast	IU Auditorium, Foyer
	Session Chair: Timothy D. White , <i>Eli Lilly & Co</i>	
8:30 AM – 9:20 AM	MariJean Eggen , <i>Eli Lilly & Co</i> “Designed for Purpose in a Complex Discovery World”	

9:20 AM – 10:10 AM	Jennifer Prescher , <i>University of California, Irvine</i> “Chemical probes to spy on cellular communication”	
10:10 AM – 10:45 AM	Presentation of Poster Awards & Coffee Break	IU Auditorium, Foyer
10:45 AM – 11:10 AM	Katelyn Billings , <i>GlaxoSmithKline</i> (NOS Young Investigator) “Seeing DNA Encoded Library Technology in a New Light: Recent Advances in On-DNA Chemistry”	
11:10 AM – 12:00 PM	Corey Stephenson , <i>University of Michigan</i> “Photochemical Strategies for Complex Molecules”	
12:00 PM – 1:15 PM	Lunch	IU Auditorium, Foyer
12:15 PM – 1:15 PM	Undergraduate Context Session (bring your lunch) Ronald Brisbois , <i>Macalaster</i> Jeff Katz , <i>Colby College</i> Rita Majerle , <i>Hamline University</i>	IU Auditorium
1:15 PM – 2:00 PM	Grant Writing Workshop Nancy Jensen , <i>American Chemical Society</i>	IU Auditorium
2:00 PM – 2:45 PM	Publishing Workshop Nicole Camasso , <i>American Chemical Society</i>	IU Auditorium
2:45 PM – 3:00 PM	Break	
3:00 PM – 3:45 PM	PUI Academic Career Panel Megan Jacobson , <i>College of Southern Idaho</i> Amber Onorato , <i>Northern Kentucky University</i> James Vyvyan , <i>Western Washington University</i> Jeff Cannon , <i>Occidental College</i> Rita Majerle , <i>Hamline University</i> Sarah Dimick Gray , <i>Metropolitan State University</i>	IU Auditorium
3:45 PM – 4:30 PM	Industry Career Panel Sandra King , <i>Agios</i> Katelyn Billings , <i>GlaxoSmithKline</i> MariJean, Eggen , <i>Eli Lilly & Co.</i> L.-C. Campeau , <i>Merck & Co.</i> Elizabeth Swift , <i>AbbVie Inc.</i> Scott Bagley , <i>Pfizer Inc.</i> Chris Regens , <i>Gilead</i> Blane Zavesky , <i>Corteva Agriscience</i> Lydia Rono , <i>Bristol-Myers Squibb</i>	IU Auditorium

5:00 PM – 7:00 PM	NOS Banquet	Fine Arts Plaza: Front of IU Auditorium
	Session Chair: Nikki Pohl , <i>Indiana University</i>	
7:15 PM – 8:15 PM	Carolyn Bertozzi , <i>Stanford University</i> “Therapeutic opportunities in glycoscience”	
8:15 PM – 11:00 PM	Mixer, Poster Session & Exhibitor Booths	Alumni Hall & Solarium: IMU

THURSDAY, JUNE 27th

8:00 AM – 9:00 AM	Breakfast	IU Auditorium, Foyer
	Session Chair: Angie Angeles , <i>Gilead</i> (2021 NOS Co-Chair)	
9:00 AM – 9:50 AM	Kay Brummond , <i>University of Pittsburgh</i> “A Synergistic Strategy for Achieving an Asymmetric Pauson–Khand Reaction of Allenyl Acetates Using Iterative Synthetic Chemistry and Quantum Mechanics”	
9:50 AM – 10:15 AM	Hanna Wisniewska , <i>Pfizer</i> (NOS Young Investigator) “Tissue Specific Delivery of Cas9 Ribonucleoprotein for Liver Selective Gene Editing”	
10:15 AM – 10:40 AM	Presentation of Poster Awards & Coffee Break	IU Auditorium, Foyer
10:40 AM – 11:30 AM	Malika Jeffries-EL , <i>Boston University</i> “Design and synthesis of organic electronic materials”	
11:30 AM – 12:20 PM	Thomas Hoye , <i>University of Minnesota</i> “Newer developments with the hexadehydro-Diels-Alder (HDDA) reaction”	
12:20 PM – 12:30 PM	Closing Remarks	

ACS Division of Organic Chemistry

Executive Committee Members

2019 Chair: Jeffrey Aubé, UNC Chapel Hill
Chair Elect: Lisa A. Marcaurelle, GlaxoSmithKline
Past Chair: Donna Huryn, University of Pittsburgh
Treasurer: Robert E. Maleczka, Jr., Michigan State U.
Secretary: Scott Sieburth, Temple University
Program Chair: Steven Silverman, Merck
Program Chair Elect: Emily C. McLaughlin, Bard College
NOS Executive Officer: Lisa A. Marcaurelle, GlaxoSmithKline
NOS Executive Office: Paul R. Hanson, University of Kansas
NOS Executive Officer Elect: Angie R. Angeles, Gilead
NOS Executive Officer Elect: Richard Broene, Bowdoin College
Councilors: David A. Conlon, Daiichi Sankyo, Inc.
Huw Davies, Emory University
Karl B. Hansen, Boston Pharmaceuticals
Katherine Maloney, Point Loma Nazarene U.
Alternative Councilors: Jeffrey Aubé, UNC Chapel Hill
Neil K. Garg, UCLA
Jennifer M. Schomaker, UW-Madison
Hao Xu, Georgia State University
Members-at-Large: Angie R. Angeles, Gilead
O. Andreea Argintaru, Axalta Coating Systems
Maria Graciela Carranza, Westfield State U.
Gregory B. Dudley, West Virginia University
Annaliese Franz, University of California, Davis
Amy R. Howell, University of Connecticut
Stefan G. Koenig, Genentech
Joshua Pierce, North Carolina State University
Luis Sanchez, Niagara University
Lamont R. Terrel, GlaxoSmithKline
Michelle Tran-Dubé, Pfizer
Kevin Walker, Michigan State University
Regional Meeting Liason: Franklin A. Davis, Temple University
Undergraduate Award Program: Nancy Mills, Trinity University
Graduate Research Symposium: Gary Molander, University of Pennsylvania
Graduate Research Symposium: P. Andrew Evans, Queen's University
Lead Web Master: Joseph S. Ward III, Michigan State University
Web Master: Brian J. Myers, Ohio Northern University

46th National Organic Chemistry Symposium Organizers

Lisa Marcaurelle – GlaxoSmithKline
Symposium Executive Officer

Paul Hanson – University of Kansas
Symposium Co-Executive Officer

M. Kevin Brown – Indiana University—Bloomington
Local Chair

Silas Cook – Indiana University—Bloomington
Local Chair

Angie Angeles – Gilead
Sponsorship Coordinator & 2021 NOS Officer

Richard Broene – Bowdoin College
Poster Session Coordinator & 2021 NOS Officer

Nora Kline – Indiana University—Bloomington
IU Conference Coordinator

The NOS organizers would like to thank the following volunteers from the IU Chemistry Department:

Deyaa AbuSalim	Ria Kidner	Caitlin Roof
Allison Bergmann	Lily Klapper	Daisy Rosas-Vargas
Nabarupa Bhattacharjee	Victoria Kohout	Stephen Sardini
Ashley DeYong	Erin Kuker	Rush Scaggs
Stanna Dorn	Alison Lambright	Toya Scaggs
Rachel Epplin	Alan Lear	Ed Sheetz
Jessie Gurdof	Alketa Lutolli	Zachary Sheldon
Renyu Guo	Paul Marcyk	Trevor Swisher
Naz Haddadpour	Keevan Marion	Annika Tharp
Erin Hancock	Fred Parks	Grace Trammel
Tianchen He	Emily Pinter	Katherine VanDenburgh
Luke Hutching-Goetz	Zoe Punske	Chao Yang
Issac Joyner	Andrew Quest	

The Roger Adams Award in Organic Chemistry

The Roger Adams Award in Organic Chemistry is sponsored jointly by the American Chemical Society, Organic Reactions, Inc., and Organic Syntheses, Inc. The award recognizes the distinguished career of Roger Adams, who played a vital role in each of these three organizations. He was Chairman of the Board of Directors as well as President of the American Chemical Society, and he co-founded Organic Syntheses and Organic Reactions.

The award was established in 1959 and is made biennially to an individual, without regard to nationality, for outstanding contributions to research in organic chemistry. The award consists of a gold medal, a sterling silver replica of the medal, and an honorarium of twenty-five thousand dollars. It is presented at the biennial National Organic Chemistry Symposium of the Division of Organic Chemistry of the American Chemical Society. The awardee is a featured lecturer in the program of the symposium.

The recipient of this year's Roger Adams Award is Professor Stephen L. Buchwald of Massachusetts Institute of Technology in recognition of outstanding contributions to research in organic chemistry. Professor Buchwald's Award Address, titled *Palladium-Catalyzed Carbon-Heteroatom Bond-Forming Reactions for the Functionalization of Molecules Big and Small* will be delivered on Tuesday evening.



Roger Adams Awardee

Professor Stephen L. Buchwald

Department of Chemistry
Massachusetts Institute of
Technology
Room 18-490
77 Massachusetts Avenue
Cambridge, MA 02139
<https://chemistry-buchwald.mit.edu>

The Rogers Adams Award will be presented to Professor Buchwald on Tuesday, June 25th at 6:45 pm in the IU Auditorium with the award lecture to follow at 7:00 pm.

NOS Plenary Lecturers



Professor David Williams
Indiana University—Bloomington
Bloomington, Indiana, USA

Going Discovery Mode: The Quest for Inspiration, Ingenuity, and Innovation

Presenting Monday, June 24, 9:00 am



Professor Chris Vanderwal
University of California, Irvine
Irvine, California, USA

Strategy-Driven Natural Product Synthesis

Presenting Monday, June 24, 10:45 am.



Dr. Martin Eastgate
Bristol-Myers Squibb
New Brunswick, New Jersey, USA

Innovation in the Synthesis of Complex Pharmaceuticals

Presenting Monday, June 24, 11:35 am



Dr. L.-C. Campeau
Merck & Co., Inc.
Rahway, New Jersey, USA

Adventures in Nucleoside Analog Total Synthesis and Other Reactions You Didn't Know Where Difficult

Presenting Monday, June 24, 6:55 pm

NOS Plenary Lecturers (continued)



Professor Tim Jamison
Massachusetts Institute of Technology
Cambridge, Massachusetts, USA

The Why, When, and How of Flow Chemistry

Presenting Monday, June 24, 7:45 pm



Professor Huw Davies
Emory University
Atlanta, Georgia, USA

Catalyst-Controlled C–H Functionalization

Presenting Tuesday, June 25, 8:30 am



Professor Cristina Nevado
University of Zürich
Zürich, Switzerland

Solving Mechanistic Puzzles in Metal-catalyzed Reactions

Presenting Tuesday, June 25, 9:20 am



Professor P. Andrew Evans
Queen's University
Kingston, Ontario, Canada

Stereoselective Construction of Challenging C–C Bonds: Total Synthesis of Complex Bioactive Agents

Presenting Tuesday, June 25, 11:30 am

NOS Plenary Lecturers (continued)



Dr. MariJean Eggen
Eli Lilly & Co.
Indianapolis, Indiana, USA

Designed for Purpose in a Complex Discovery World

Presenting Wednesday, June 26, 8:30 am



Professor Jennifer Prescher
University of California, Irvine
Irvine, California, USA

Chemical probes to spy on cellular communication

Presenting Wednesday, June 26, 9:20 am



Professor Corey Stephenson
University of Michigan
Ann Arbor, Michigan, USA

Photochemical Strategies for Complex Molecules

Presenting Wednesday, June 26, 11:10 am



Professor Carolyn Bertozzi
Stanford University
Palo Alto, California, USA

Therapeutic opportunities in glycoscience

Presenting Wednesday, June 26, 7:15 pm

NOS Plenary Lecturers (continued)



Professor Kay Brummond
University of Pittsburgh
Pittsburgh, Pennsylvania, USA

*A Synergistic Strategy for Achieving an
Asymmetric Pauson–Khand Reaction of Allenyl
Acetates Using Iterative Synthetic Chemistry
and Quantum Mechanics*

Presenting Thursday, June 27, 9:00 am



Professor Malika Jeffries-EL
Boston, University
Boston, Massachusetts, USA

*Design and synthesis of organic electronic
materials*

Presenting Thursday, June 27, 10:40 am



Professor Thomas Hoye
University of Minnesota
Minneapolis, Minnesota, USA

*Newer developments with the
hexadehydro-Diels-Alder (HDDA) reaction*

Presenting Thursday, June 27, 11:30 am

NOS Young Investigators



Professor Alison Narayan
University of Michigan
Ann Arbor, Michigan, USA

Biocatalysis and complex molecule synthesis

Presenting Monday, June 24, 9:50 am



Dr. Elizabeth Swift
AbbVie, Inc.
North Chicago, Illinois, USA

*Application of Photoisomerization for the
Synthesis of Enantioenriched β -Aryloxyesters*

Presenting Monday, June 24, 6:30 pm



Professor David Sarlah
University of Illinois—Urbana Champaign
Urbana Champaign, Illinois, USA

*Dearomative Functionalization Strategies and
Synthesis of Anticancer Natural Products
Immunotherapy*

Presenting Tuesday, June 25, 10:40 am



Professor Hosea Nelson
University of California, Los Angeles
Los Angeles, California, USA

*Twists and turns along the path of reactivity-
driven methodology development*

Presenting Tuesday, June 25, 11:05 am

NOS Young Investigators (continued)



Dr. Katelyn Billings
GlaxoSmithKline
Cambridge, Massachusetts, USA

*Seeing DNA Encoded Library Technology in a
New Light: Recent Advances in On-DNA
Chemistry*

Presenting Wednesday, June 26, 10:45 am



Dr. Hanna Wisniewska
Pfizer, Inc.
Groton, Connecticut, USA

*Tissue Specific Delivery of Cas9
Ribonucleoprotein for Liver Selective Gene
Editing*

Presenting Thursday, June 27, 9:50 am

NOS Speaker Abstracts

“Going Discovery Mode: The Quest for Inspiration, Ingenuity, and Innovation”

Professor David R. Williams

Department of Chemistry, Indiana University—Bloomington

<https://www.indiana.edu/~drwchem/>

Natural product chemistry is viewed as a traditional area for studies of organic synthesis. This presentation will examine the relevance of these investigations in the search to uncover new ideas and significant discoveries. The remarkable diversity among natural product architectures provides inspiration for creative ventures. The lecture will discuss strategy in natural product synthesis as a platform for discovering new reactivity, reagents, and methodologies. Ingenuity is fueled by unanticipated events that foreshadow additional and unplanned discoveries. Innovation is revealed in the successful applications of these findings. The lecture will present studies of natural product chemistry and these components of our program as the framework for stimulating advances in organic chemistry.

“Biocatalysis and complex molecule synthesis”

Professor Alison Narayan

Department of Chemistry and the Life Sciences Institute, University of Michigan

<https://www.lsi.umich.edu/science/our-labs/alison-narayan-lab>

Natural sources, such as plants, fungi and microbes, have historically provided compounds with potent pharmaceutical properties. While it can be challenging to build complex natural products in a lab using existing chemistry methods, Nature has perfected these biosynthetic pathways. The work described leverages the power of Nature's tools for building complex molecules to synthesize novel molecules with therapeutic potential. The reactivity and selectivity of enzymes from natural product pathways are often unparalleled in existing chemical methods. Enzymes with potential synthetic utility are used as a starting point for engineering biocatalysts with (1) broad substrate scope, (2) high catalytic efficiency, and (3) exquisite site- and stereoselectivity. These biocatalytic methods are employed to efficiently synthesize biologically active complex molecules.

“Strategy-Driven Natural Product Synthesis”

Professor Chris Vanderwal

Department of Chemistry, University of California, Irvine

<https://faculty.sites.uci.edu/cdv/>

The useful properties and compelling architectures of complex secondary metabolites inspire our research group to design strategies for the efficient synthesis of these target molecules. Our goal is to arrive at approaches that can support collaborative post-synthesis endeavors with experts in biology, medicinal chemistry, biosynthesis, and more. This lecture will focus on recent successes in alkaloid and terpenoid synthesis, with the goal of demonstrating how our synthesis work has been leveraged to learn important lessons in allied scientific areas. It will also highlight the critical importance of strategy in modern complex molecule synthesis.

“Innovation in the Synthesis of Complex Pharmaceuticals”

Dr. Martin Eastgate

Bristol-Myers Squibb, New Brunswick, New Jersey

<https://www.linkedin.com/in/martin-eastgate-6089929/>

Modern pharmaceuticals are both increasingly complex¹ and increasingly diverse. Today's clinical candidates often contain challenging stereochemistry, unique molecular architectures, and uncommon heterocyclic frameworks; they range from small molecules to peptides, oligonucleotides, antibody-drug conjugates and other modalities. Developing safe, scalable and efficient approaches to these molecules, in the context of increasingly short development timelines, requires an approach focused on maximizing impact through innovative chemical solutions – so called ‘disruptive innovations’.² However, increasing complexity brings challenges in decision making and identifying which strategies will optimize sustainability. These decisions can be aided by predictive decision-making tools, cognizant of potential environmental impact, and recent advances have begun to establish such methodologies.³

This presentation will cover the synthetic strategies and chemical innovations developed to address several clinical candidates from the Bristol-Myers Squibb portfolio. Our approach² has led to the invention of several new synthetic approaches,⁴ new chemical methods,⁵⁻⁸ and new concepts in predictive data analytics.³ Development efforts from several recent programs will be described in detail.

[1] Li, J., Eastgate, M. D.; *Org. Biomol. Chem.*, 2015, **13**, 7164.

[2] Eastgate, M. D., Schmidt, M. A., Fandrick, K. R., *Nature Reviews: Chemistry*, 2017, **1**, 16.

[3] Li, J., Borovika, A., Albrecht, A., Eastgate, M. D., *ACS Green Chem. & Eng.*, 2018, **6**, 1121; Li, J. and Eastgate, M. D., *RSC React. Chem. & Eng.*, DOI: 10.1039/c9re00019d; Borovika, A. *et al.*, *ChemRxiv* DOI 10.26434/chemrxiv.7594646.v1.

[4] Schmidt, M., Simmons, E. M., Wei, C. S., Li, H., Eastgate, M. D., *J. Org. Chem.*, 2018, **83**, 3928.

[5] Knouse, K. W., *et al.*, *Science* 2018, **361**, 1234

[6] Foo, K., Sella, E., Thome, I., Eastgate, M. D., Baran, P. S., *J. Am. Chem. Soc.*, 2014, **136**, 5279.

[8] Kheirabadi, M., Creech, G., Nirschel, D., Qiao, J., Leahy, D., Boy, K., Carter, P., and Eastgate, M. D., *J. Org. Chem.*, 2018, **83**, 4323.

“Application of Photoisomerization for the Synthesis of Enantioenriched β -Aryloxyesters”

Dr. Elizabeth Swift

AbbVie, Inc. North Chicago, Illinois

<https://www.linkedin.com/in/elizabeth-swift-aa04a957/>

Enantioenriched β -aryloxyesters are valuable synthons for medicinally relevant compounds and natural products. High enantioselectivity can be achieved through asymmetric hydrogenation but requires stereoisomerically pure (Z or E) α,β -unsaturated esters. A general approach to access these esters was found by isomerizing a mixture of Z- and E-isomers to the E-isomer in the presence of low loadings of a photocatalyst. Photochemical isomerization reaction development and scale up will be discussed.

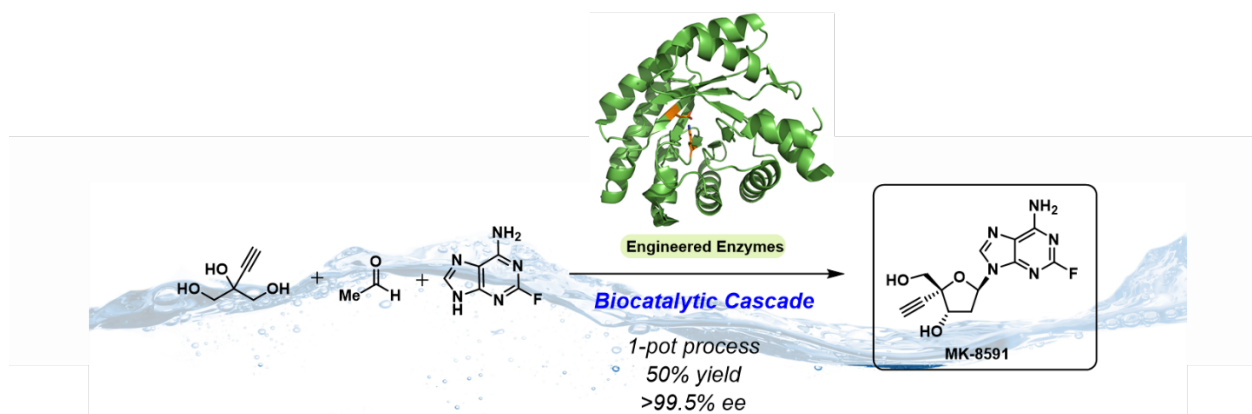
“Adventures in Nucleoside Analog Total Synthesis and Other Reactions You Didn’t Know Where Difficult”

Dr. L.-C. Campeau

Process Research & Development, Merck & Co., Inc., Rahway, New Jersey

<https://www.linkedin.com/in/lccampeau/>

Nucleoside analogs are ubiquitous in nature and are critical component of life-saving therapies used in the treatment of viral disease and cancer. Despite their widespread use and commercial value, the state-of-the-art methods for their preparation in drug discovery, drug development and eventual commercialization are lacking and remain a poorly solved problem in organic synthesis. In addition to posing synthetic challenges, custom nucleoside total synthesis presents several challenges with respect to green and sustainable chemistry, where current methods largely rely on chiral pool feedstocks and protecting group chemistry. We have developed a suite of novel methods for the synthesis and scale-up of nucleosides, as exemplified by the synthesis of MK-8591 for the treatment of HIV infection. These efforts have culminated in an aspirational synthesis from commodity chemicals using a biocatalytic in-vitro cascade for construction of the nucleoside.



“The Why, When, and How of Flow Chemistry”

Professor Tim Jamison

Department of Chemistry, Massachusetts Institute of Technology

<https://web.mit.edu/chemistry/jamison/Group/TFJ/TFJ.html>

Flow chemistry represents an important conceptual advance in the design and execution of chemical syntheses and has the potential to revolutionize the synthesis of organic molecules. Flow systems can reduce reaction times, increase efficiency, and obviate problems often encountered in scaling up comparable batch processes. In addition to these important practical advantages, flow chemistry expands the “toolbox” of organic reactions available to scientists engaged in the synthesis of molecules – from small-scale experiments to large-scale production. These benefits are a direct result of several features of flow synthesis that batch synthesis typically cannot achieve, for example, the ability to control fluid flow precisely, the access to temperature and pressure regimes not usually considered to be practical, and the enhanced safety characteristics of flow chemical systems. In this lecture we will discuss some of our investigations in this area in the form of case studies and will also highlight some of the ongoing challenges and opportunities for this approach to synthesis.

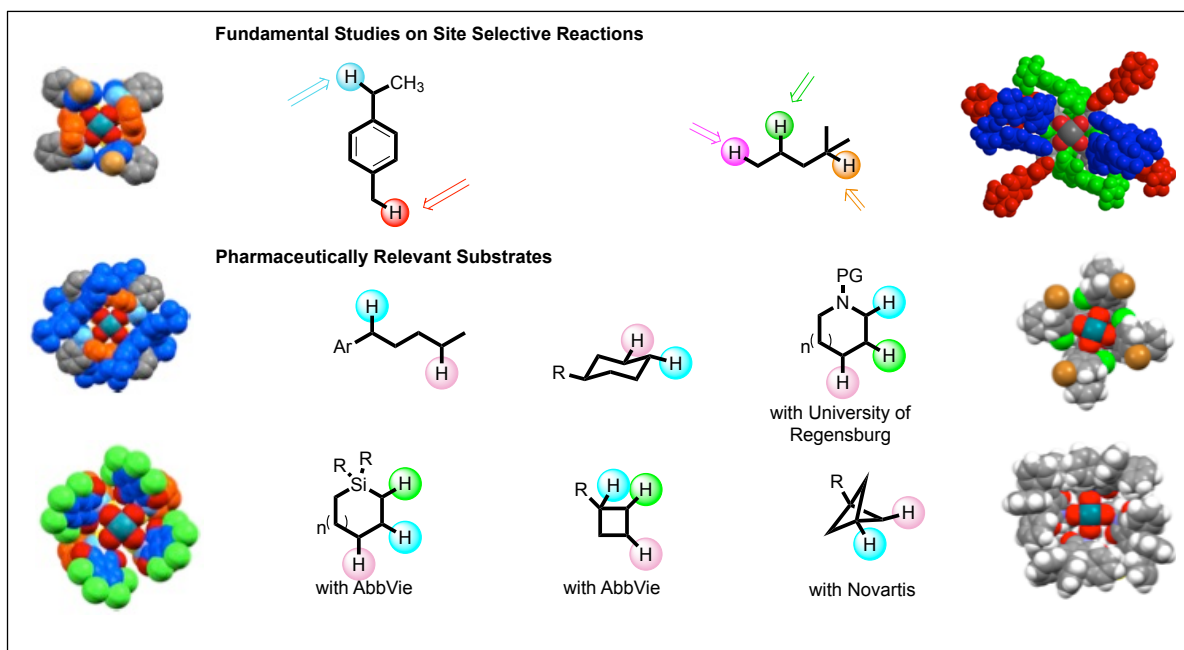
“Catalyst-Controlled C–H Functionalization”

Professor Huw Davies

Department of Chemistry, Emory University

<https://scholarblogs.emory.edu/davieslab/>

A toolbox of catalysts has been generated for site-selective functionalization of unactivated C–H bonds. Catalysts have been developed for selective functionalization of primary, secondary or tertiary C–H bonds^{1–3} and can differentiate between similar secondary C–H bonds.^{4,5} The application of these reactions to the synthesis of chiral scaffolds of pharmaceutical interest will also be established described.



- [1] Site-selective and stereoselective functionalization of unactivated C–H bonds, Liao, K.; Negretti, S.; Musaev, D. G.; Bacsa, J.; Davies, H. M. L. *Nature* **2016**, 533, 7602–7606.
- [2] Catalyst-Controlled Site-Selective and Stereoselective Functionalization of Non-Activated Tertiary C–H Bonds, Liao, K.; Pickle, T.; Boyarskikh, V.; Bacsa, J.; Musaev, D. G.; Davies, H. M. L., *Nature* **2017**, 551, 609–613.
- [3] Design of Catalysts for Site-Selective and Enantioselective Functionalization of Non-Activated Primary C–H Bonds, Liao, K.; Yang, Y.; Li, Y.; Sanders, J.; Houk, K. N.; Musaev, D. G.; Davies, H. M. L. *Nature Chem.* **2018**, 10, 1048–1055.
- [4] Catalyst-Controlled Selective Functionalization of Unactivated C–H Bonds in the Presence of Electronically Activated C–H Bonds, Wenbin Liu, Zhi Ren, Aaron T. Bosse, Kuangbiao Liao, Elizabeth L. Goldstein, John Bacsa, Djamaladdin G. Musaev, Brian M. Stoltz and Huw M. L. Davies *J. Am. Chem. Soc.* **2018**, 140, 12247–12255.
- [5] Desymmetrization of Cyclohexanes by Site-Selective and Stereoselective C–H Functionalization Jiantao Fu, Zhi Ren, John Bacsa, Djamaladdin G. Musaev & Huw M. L. Davies, *Nature* **2018**, 564, 395–399.

"Solving Mechanistic Puzzles in Metal-catalyzed Reactions"

Professor Cristina Nevado

Department of Chemistry, University of Zürich

<http://www.nevadogroup.com/>

The interaction of transition metals with π -systems represents a major focus in our research group. Catalytic transformations aiming at the straightforward functionalization of alkenes and alkynes in a chemo-, regio- and stereoselective manner as well as studies on the mechanistic features underlying these transformations will be presented in this lecture.

"Dearomative Functionalization Strategies and Synthesis of Anticancer Natural Products"

Professor David Sarlah

Department of Chemistry, University of Illinois, Urbana Champaign

<https://www.sarlahgroup.com/>

Small complex molecules are highly desired in all areas of chemistry, but they are also often difficult to access. Selective transformations of aromatic compounds could provide a more direct route to such desirable targets; however, the many challenges associated with dearomative functionalization have left these types of reactions widely underdeveloped. Our group has been developing new strategies that bridge the gap between dearomatization functionalization and alkene chemistry. In pursuit of this goal, we have developed dearomative functionalizations using small molecules – arenophiles – that enable reactions of isolated alkenes in aromatic substrates. Thus, well-established olefin reactions, such as dihydroxylation and reduction, can now be more directly applied to arenes. Additionally, arenophiles in combination with transition metal catalysis provide unique platform and enable the rapid access to a diverse range of products that are both challenging to synthesize via existing methods and complementary to those acquired through biological or chemical dearomative processes. Finally, using this methodology we have recently completed the synthesis of several complex anticancer natural products.

“Twists and turns along the path of reactivity-driven methodology development”

Professor Hosea Nelson

Department of Chemistry, University of California, Los Angeles

<http://www.thenelsonlab.com/>

Carbocations are important reactive intermediates that are invoked in many chemical transformations. These species are usually of the tricoordinated variety. Conversely, dicoordinated carbenium ions are rarely invoked as intermediates in practical chemical processes due to their high energy and energetically challenging formation. In this talk I will discuss our recent efforts to utilize phenyl and vinyl carbocations in C–H functionalization reactions. We will describe how these high-energy dicoordinated carbocations can be generated under mild conditions and utilized in the selective C–C bond forming reactions of simple hydrocarbons. Moreover, we will discuss our efforts to understand the mechanism of these reactions through computational chemistry, kinetics, electron microscopy, and isotopic labeling studies.

“Stereoselective Construction of Challenging C-C Bonds: Total Synthesis of Complex Bioactive Agents”

Professor P. Andrew Evans

Department of Chemistry, Queen's University

<http://faculty.chem.queensu.ca/people/faculty/evans/index.htm>

The seminar will describe the development and application of new stereoselective C-C bond forming reactions to the total synthesis of complex bioactive agents. Specifically, it will outline a new approach to the catalytic asymmetric alkylation of homoenolates,^[1] a novel kinetic and dynamic kinetic resolution of α,β -unsaturated aldehydes^[2] and the development of a concise, efficient and scalable total synthesis of the complex bioactive sesquiterpene natural product, thapsigargin.^[3]

[1] Wright, T. B.; Turnbull, B. W. H.; Evans, P. A. *Angew. Chem. Int. Ed.* **2019**, *58*, Early View.

[2] Majhi, J.; Turnbull, B. W. H.; Ryu, H.; Park, J.; Baik, M.-H.; Evans, P. A. *J. Am. Chem. Soc.* **2019**, *141*, In Press.

[3] Chen, D.; Evans, P. A. *J. Am. Chem. Soc.* **2017**, *139*, 6046.

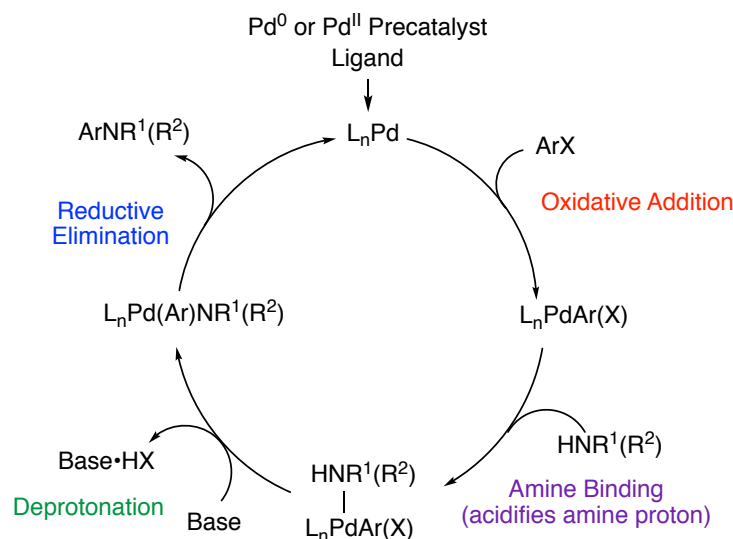
"Palladium-Catalyzed Carbon-Heteroatom Bond-Forming Reactions for the Functionalization of Molecules Big and Small"

Professor Stephen L. Buchwald

Department of Chemistry, Massachusetts Institute of Technology

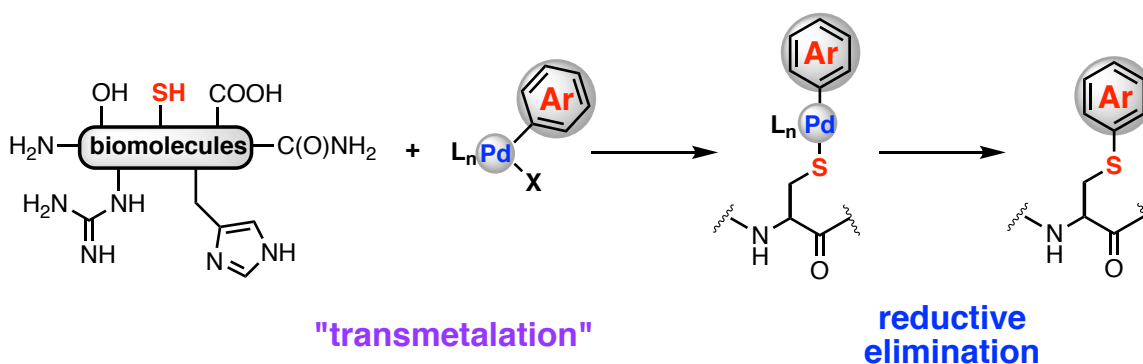
<https://chemistry-buchwald.mit.edu>

Cross-coupling methodology is an indispensable part of the everyday repertoire of synthetic organic chemists. Among the many possibilities, we have focused a great deal of attention on the Pd-catalyzed formation of C-N bonds (*Chem. Rev.*, **2016**, 116, 12564); a mechanistic scheme for this transformation is shown below. This methodology has been widely utilized throughout academia and industry.



Crucial to our success in the development of new and more generally applicable methods has been our discovery and use of biaryl monodentate phosphine ligands. These have been licensed for manufacture on large scale to eight companies and are available, in many cases, on very large scale (100's of Kg produced).

More recently, we have begun to apply related methodology to the functionalization of biomolecules including peptides, proteins and antibodies (*Nature*, **2015**, 526, 687, *J. Am. Chem. Soc.* **2018**, 140, 3128).



This lecture will include: 1) An introduction to palladium-catalyzed carbon-heteroatom bond-forming reactions including a brief historical overview. 2) A description of ligand and precatalyst development employing biarylphosphines. 3) Applications of these catalysts to the preparation of compounds of interest to medicinal chemists. 4) Applications of these catalysts to problems in bioconjugation. This section will describe our work on the functionalization of peptides, proteins and antibodies as well as the ligation of proteins.

“Designed for Purpose in a Complex Discovery World”

Dr. MariJean Eggen

Eli Lilly & Co., Indianapolis, Indiana

<https://www.linkedin.com/in/marijean-eggen-4bb9b83/>

‘Designed for Purpose in a Complex Discovery World’ will outline the evolution and collaboration of disciplines within modern medicinal chemistry. The complexity of potential targets in disease biology coupled with increased diversity and potential modalities within the chemical matter and chemical technologies leveraged by the chemist, is driving the continued evolution and innovation in optimization of lead matter. Ultimately, the chemical matter and modalities must be optimized for purpose as a drug candidate or as a tool to confirm engagement within the target. Many techniques in biophysics, chemoproteomics and imaging may be leveraged along the way to understand the characteristics of the molecule from the atomic to tissue level.

“Chemical probes to spy on cellular communication”

Professor Jennifer Prescher

Department of Chemistry, University of California, Irvine

<https://www.chem.uci.edu/~jpresche/>

Cellular networks drive diverse aspects of organismal biology, ranging from immune function to cognition. Breakdowns in cell-to-cell communication also underlie a broad spectrum of pathologies. While cellular interactions play key roles in health and disease, the mechanisms by which cells transact information in vivo are not completely understood. The number of cell types involved, the location and timing of their interactions, and the long-term fates of the cells remain poorly characterized in many cases. This is due, in part, to a lack of tools for observing collections of cells in their native habitats. My group is developing molecular probes to “spy” on cells and decipher their communications in vivo. Examples of these probes, along with their application in living systems, will be discussed.

“Seeing DNA Encoded Library Technology in a New Light: Recent Advances in On-DNA Chemistry”

Dr. Katelyn Billings

NCE Molecular Discovery, Medicinal Science & Technology, GSK,
Cambridge, Massachusetts

<https://www.linkedin.com/in/katelyn-billings-73826ba7/>

With multiple compounds originating from DNA Encoded Libraries now in the clinic, and practically every major pharmaceutical company utilizing DEL technology for drug discovery either in-house or through strategic partnerships, it is safe to say that the technology is here to stay. Crucial to the success of the technology in driving lead discovery programs is the quality and diversity of libraries in one's collection. To date, many of the workhorse reactions of medicinal chemistry (e.g. Suzuki coupling, amidation, heterocycle ring formation, etc) have been successfully translated to DNA compatible conditions, which require high dilution factors, wide functional group tolerance, and an aqueous and oxygen exposed environment. Such reaction development work has enabled hundreds of libraries across companies and has helped demonstrate the potential of the technology, yet has resulted in compound collections that contain high fractions of C(sp²) rich molecules. In an effort to expand the chemical and structural diversity of our libraries, we have engaged in strategic collaborations with academic labs to enable the coupling of C(sp³) building blocks. In this talk, I highlight our recent collaboration with the Molander lab at UPenn, in which we developed on-DNA Ni/photoredox dual catalytic C(sp²)-C(sp³) cross-coupling and photoredox-catalyzed radical/polar crossover alkylation, allowing for the incorporation of multiple classes of alkyl fragments.

“Photochemical Strategies for Complex Molecules”

Professor Corey Stephenson
Department of Chemistry, University of Michigan
<https://www.thestephensongroup.org/>

Single electron transfer (SET) processes – frequently utilized by Nature to activate its substrates – significantly enhance the reactivity of organic molecules. These SET reactions provide facile access neutral radicals – reactive intermediates that are particularly attractive for use in complex settings as a consequence of their general lack of reactivity with polar functional groups. The use of redox catalysis (e.g. photocatalysis and electrocatalysis) furthers the benefits of SET processes enabling the reduction of stoichiometric waste byproducts and toxic or hazardous reagents compared with classical approaches. The development of methodologies involving organic free radicals underpinned on practicality and mechanistic understanding with demonstrated applications in complex molecule synthesis (pharmaceuticals and natural products) exploiting batch and flow reactor designs will be presented in this talk.

- [1] Staveness, D.; Bosque, I.; Stephenson, C. R. J. *Acc. Chem. Res.* **2016**, *49*, 2295.
- [2] Beatty, J. W. Douglas, J. J.; Miller, R. McAtee, R.; Cole, K. P.; Stephenson, C. R. J. *Chem* **2016**, *1*, 456.
- [3] Beatty, J. W.; Stephenson, C. R. J. *Acc. Chem. Res.* **2015**, *48*, 1474.
- [4] Douglas, J. J.; Albright, H.; Sevrin, M. J.; Cole, K. P.; Stephenson, C. R. J.; *Angew. Chem. Int. Ed.* **2015**, *54*, 14898.

“Therapeutic opportunities in glycoscience”

Professor Carolyn Bertozzi
Department of Chemistry, Stanford University
<https://bertozzigroup.stanford.edu/index.html>

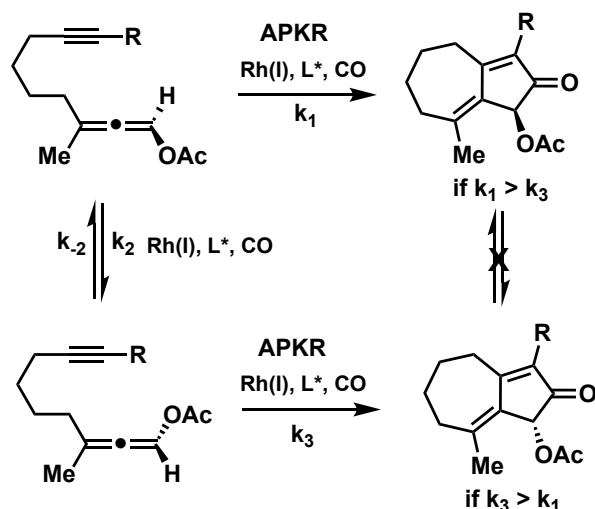
Cell surface glycans constitute a rich biomolecular dataset that drives both normal and pathological processes. Their “readers” are glycan-binding receptors that can engage in cell-cell interactions and cell signaling. Our research focuses on mechanistic studies of glycan/receptor biology and applications of this knowledge to new therapeutic strategies. This talk will focus on our recent work toward targeting pathogenic glycans in the tumor microenvironment for cancer immune therapy, and on new therapeutic modalities that engage glycan-mediated lysosomal targeting mechanisms.

“A Synergistic Strategy for Achieving an Asymmetric Pauson–Khand Reaction of Allenyl Acetates Using Iterative Synthetic Chemistry and Quantum Mechanics”

Professor Kay M. Brummond

Department of Chemistry, University of Pittsburgh
<https://www.chem.pitt.edu/person/kay-m-brummond>

Asymmetric catalysis as a reliable way to prepare enantioenriched organic compounds remains a formidable challenge in modern organic synthesis. To date, controlling the enantioselectivity of a reaction is accomplished primarily by empirical screening methods to identify effective catalysts. We are pursuing an alternative strategy whereby mechanistic insight afforded by the real-time collaboration of experiment and computation guides rational catalyst design for reactions of extraordinary complexity. This presentation offers our latest findings on the feasibility of rational catalyst design as applied to the Rh(I)-catalyzed Pauson–Khand reaction.



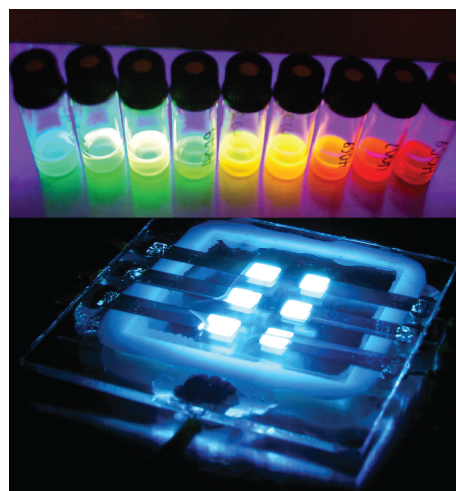
“Design and synthesis of organic electronic materials”

Professor Malika Jeffries-EL

Department of Chemistry and Division of Materials Science, Boston University

<http://sites.bu.edu/el/>

Since their discovery over 40 years ago conjugated polymers have been of tremendous scientific and technological interest. These materials possess many exceptional electronic, optical thermal properties and thus are well suited for organic semiconducting applications, such as solar cells and light emitting diodes. Since the properties of these materials can readily be modified through chemical synthesis, we have turned our attention towards the development of novel building blocks. Two-dimensional cross-conjugated molecules that feature conjugation axes have long been of interest to the pi-conjugated materials community. These so called “cruciform” compounds have spatially segregated frontier molecular orbitals which facilitate the semi-selective modification of either the LUMO or the HOMO by varying the substituents and location on the central molecule. Thus, in principle, materials can be synthesized with HOMOs, LUMOs, and band gaps that are tailored for specific applications such as organic light emitting diodes (OLED)s and organic solar cells (OSC)s. Using a combination of organic synthesis, theoretical calculations and physical measurements we are systematically investigating the structure property relationships within these systems.



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“Tissue Specific Delivery of Cas9 Ribonucleoprotein for Liver Selective Gene Editing”

Dr. Hanna M. Wisniewska

Pfizer, Inc., Groton, Connecticut

<https://www.linkedin.com/in/hanna-wisniewska-5299385a/>

Tissue-selective delivery of therapeutic agents holds great promise for improving safety profiles and lowering dose of therapeutics. The Asialoglycoprotein receptor is preferentially expressed on the surface of hepatocytes and therefore targeting this receptor provides an avenue for selective delivery of molecular cargo to the liver. We found that *S. pyogenes* Cas9 proteins conjugated to asialoglycoprotein receptor ligands (ASGPrL) are effectively internalized into cells expressing this receptor in their surface. Additionally, the corresponding ribonucleoproteins (Cas9-ASGPrL RNP) in combination with endosomolytic peptides afford receptor-facilitated and cell-type specific gene editing in vitro.

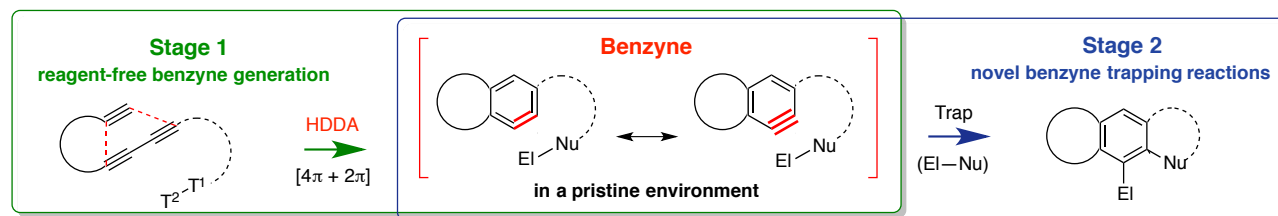
“Newer developments with the hexadehydro-Diels-Alder (HDDA) reaction”

Professor Thomas R. Hoye

Department of Chemistry, University of Minnesota

<http://hoye.chem.umn.edu/content/publications>

Since mid-2011 we have been advancing the generality of a process that we call the hexadehydro-Diels-Alder (HDDA) reaction.¹ This net [4+2] cycloisomerization produces an *o*-benzyne derivative, which is then rapidly captured in a subsequent trapping event. The HDDA reaction is a rare example of a transformation that generates a highly reactive intermediate by way of a highly exergonic (ca. –50 kcal·mol⁻¹) reaction! This two-stage, **benzyne generation-trapping** cascade results in the rapid assembly of structurally complex benzenoid products. This chemistry is both preparatively valuable and mechanistically instructive. It also can serve as a platform for i) entirely new modes of reactivity,^{2,3,4,5} ii) novel construction of natural products,⁶ iii) three-component reactions,^{7,8} and iv) natural product derivatization reactions.⁹

The hexadehydro-Diels-Alder (HDDA) cascade

In this lecture I will emphasize some of the more recent aspects of our studies. These include:

- the domino HDDA reaction¹⁰
- access to light-emitting compounds and materials¹⁴
- erasable S-¹¹ and Si-tethers
- bi- and tri-directional HDDA reactions
- BF₃-promoted carbenic reactivity¹²
- a benzyne-to-benzyne-to-naphthylene strategy
- metal-catalyzed transformations¹³
- the aza-HDDA reaction

¹ The hexadehydro-Diels-Alder reaction. Hoye, T. R.; Baire, B.; Niu, D.; Willoughby, P. H.; Woods, B. P. *Nature* **2012**, *490*, 208–212. (doi:10.1038/nature11518)

² Alkane desaturation by concerted double hydrogen atom transfer to benzyne. Niu, D.; Willoughby, P. H.; Baire, B.; Woods, B. P.; Hoye, T. R. *Nature* **2013**, *501*, 531–534. (doi:10.1038/nature12492)

³ The aromatic ene reaction. Niu, D.; Hoye, T. R. *Nature Chem.* **2014**, *6*, 34–40. (doi:10.1038/nchem.1797)

⁴ Mechanism of the reactions of alcohols with *o*-benzynes. Willoughby, P. H.; Niu, D.; Wang, T.; Haj, M. K.; Cramer, C. J.; Hoye, T. R. *J. Am. Chem. Soc.* **2014**, *136*, 13657–13665. (doi:10.1021/ja502595m)

⁵ The pentadehydro-Diels-Alder reaction. Wang, T.; Naredla, R. R.; Thompson, S. K.; Hoye, T. R. *Nature* **2016**, *532*, 484–488. (doi:10.1038/nature17429)

⁶ Hexadehydro-Diels-Alder (HDDA)-enabled carbazolyne chemistry: Single step, de novo construction of the pyranocarbazole core of alkaloids of the *Murraya koenigii* (curry tree) family. Wang, T.; Hoye, T. R. *J. Am. Chem. Soc.* **2016**, *138*, 13870–13873. (doi:10.1021/jacs.6b09628)

⁷ Reactions of HDDA-derived benzynes with sulfides: Mechanism, modes, and three-component reactions. Chen, J.; Palani, V.; Hoye, T. R. *J. Am. Chem. Soc.* **2016**, *138*, 4318–4321. (doi:10.1021/jacs.6b01025)

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- ⁸ Multiheterocyclic motifs via three-component reactions of benzynes, cyclic amines, and protic nucleophiles. Ross, S. P.; Hoyer, T. R. *Org. Lett.* **2018**, *20*, 100–103. ([doi:10.1021/acs.orglett.7b03458](https://doi.org/10.1021/acs.orglett.7b03458))
- ⁹ Complex and diverse structures from reactions of HDDA-benzynes with natural products. Ross, S. P.; Hoyer, T. R. *Nature Chem.* **2017**, *9*, 523–530. ([doi:10.1038/nchem.2732](https://doi.org/10.1038/nchem.2732))
- ¹⁰ The domino hexadehydro-Diels–Alder reaction transforms polyynes to benzynes to naphthynes to anthracynes to tetracynes (and beyond?). Xiao, X.; Hoyer, T. R. *Nature Chem.* **2018**, *10*, 838–844. ([doi:10.1038/s41557-018-0075-y](https://doi.org/10.1038/s41557-018-0075-y))
- ¹¹ A traceless tether strategy for achieving formal intermolecular hexadehydro-Diels–Alder reactions. Pierson Smela, M.; Hoyer, T. R. *Org. Lett.* **2018**, *20*, 5502–5505. ([doi:10.1021/acs.orglett.8b02473](https://doi.org/10.1021/acs.orglett.8b02473))
- ¹² BF₃-Promoted, carbene-like, C–H insertion reactions of benzynes. Shen, H.; Xiao, X.; Haj, M.; Willoughby, P. H.; Hoyer, T. R. *J. Am. Chem. Soc.* **2018**, *140*, 15616–15620. ([doi:10.1021/jacs.8b10206](https://doi.org/10.1021/jacs.8b10206))
- ¹³ Cu(I)-Mediated bromoalkynylation and hydroalkynylation reactions of unsymmetrical benzynes: Complementary modes of addition. Xiao, X.; Wang, T.; Xu, F. Hoyer, T. R. *Angew. Chem. Int. Ed.* **2018**, *57*, 16564–16568. ([doi:10.1002/anie.201811783](https://doi.org/10.1002/anie.201811783))
- ¹⁴ Blue-emitting arylalkynyl naphthalene derivatives via a hexadehydro-Diels–Alder (HDDA) cascade reaction. Xu, F.; Hershey, K. W.; Holmes, R. J.; Hoyer, T. R. *J. Am. Chem. Soc.* **2016**, *138*, 12739–12742. ([doi:10.1021/jacs.6b07647](https://doi.org/10.1021/jacs.6b07647))
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NOS Travel Awards

The following 41 attendees are recognized for their achievements with a Division of Organic Chemistry Travel Award to the 2019 NOS Meeting.

Undergraduate Travel Award Recipients

Marie X. Bozor	Florida Gulf Coast University
Elizabeth Croll	Macalester College
Julia Ganson	Hamilton College
Yuri Lee	Occidental College
John Lepore	SUNY Geneseo
Susanna Maisto	The College of William and Mary
Kyle Medas	Providence College
Julianna Mouat	Southwestern University
Emily O'Brien	Central College
Kaitlynn Sockett	Hobart and William Smith Colleges
Phong Thai	University of Evansville
Paige Thorpe	Ball State University
Gabrielle Waters	Tennessee Technological University

PUI Faculty Travel Awards

Carolyn Anderson	Calvin College
Douglas Armstrong	Olivet Nazarene University
Ronald Brisbois	Macalester College
Jonathan Collins	Whitman College
Stefan Debbert	Lawrence University (WI)
Michael Gesinski	Southwestern University, Georgetown, TX
Dmitry Kadnikov	University of Wisconsin - Stout
Yu Liu	Northern Michigan University
Erin Pelkey	Hobart and William Smith Colleges
Michael Slade	University of Evansville
Robert Torregrosa	SUNY Geneseo
Jay Wackerly	Central College

NOS Travel Awards (continued)

Graduate Travel Award Recipients

Noah Sims	Baylor University
Nathan Adamson	Duke University
Elena Bray	University of South Florida
Angela Carlson	University of Minnesota—Twin Cities
Jennifer Fulton	University of North Carolina, Chapel Hill
Alexandra Golliher	New Mexico State University
Derek Leas	University of Nebraska Medical Center
Concordia Lo	Brigham Young University
Hanh Nguyen	University of Houston
Marius Pelmus	Seton Hall University
John Russell	Montana State University
Gavin Rustin	University of Southern Mississippi
Sarah Scott	University of Florida
Qile Wang	University of Arkansas
Rebecca Wiles	University of Pennsylvania
Pavel Yamanushkin	University of Kansas

46th National Organic Chemistry Symposium

Poster Sessions

Indiana University
Alumni Hall & Solarium: IMU

For each night's poster sessions, prizes for the two best graduate student/ post doc posters and one for the best undergraduate poster will be awarded. On Thursday we will also present three journal subscription prizes for superior posters from chosen from all poster sessions.

Sunday: Poster Awards will be presented Monday morning by Jeffery Aubé (DOC Chair), *University of North Carolina, Chapel Hill*

Monday: Poster Awards will be presented Tuesday morning by Silas Cook (NOS Local Co-Organizer), *Indiana University—Bloomington*

Tuesday: Poster Awards will be presented Wednesday morning by Cristina Nevado (Senior Editor, ACS Central Science), *University of Zürich*

Wednesday: Poster Awards will be presented Thursday morning by Paul Hanson (NOS Co-Executive Officer), *University of Kansas*

Sunday, June 23, 2019 8-11PM

Poster #	Title	Authors (Presenting*)	Affiliation(s)
S- 1	Aurone : Possible anti-fungal dyeing agent for fabric	Shrijana Bhattarai*, Mary B. Farone, Scott T. Handy	Middle Tennessee State University
S- 2	Tetrazole-Mediated Ring Expansion: A Mild Approach to Strained Cyclooctynes	Panagiotis D. Alexakos*, Mariana C. F. C. B. Damião, Duncan J. Wardrop	University of Illinois at Chicago
S- 3	Site-Selective Copper-Catalyzed Azidation of Benzylic C–H Bonds	Sung-Eun Suh*, Si-Jie Chen, Shannon S. Stahl	University of Wisconsin–Madison
S- 4	Development of Long Wavelength Voltage Sensitive Dyes for Imaging Neuronal Activity	Gloria Ortiz*, Pei Liu, Ashley Nensel, Evan W. Miller	University of California, Berkeley

S- 5	Total Synthesis of Isomalabaricanes and a Blueprint for Stereochemically Diverse Terpenoid Architectures	Yaroslav D. Boyko*, Christopher J. Huck, Alexander S. Shved, David Sarlah	University of Illinois at Urbana-Champaign
S- 6	Tricyclic Imidazolidin-4-ones by Witkop Oxidation of Tetrahydro- β -carboline	Derek A. Leas*, Yuxiang Dong, Jered C. Garrison, Xiaofang Wang, Edward L. Ezell, Douglas E. Stack, and Jonathan L. Vennerstrom	University of Nebraska Medical Center, University of Nebraska at Omaha
S- 7	Oxypyridinium salt derivatives: advancement of allyl and t-butyl electrophilic transfer reagents	Jose G. Rodriguez*, Madeline M. Stephens*, and Philip A. Albiniak	Ball State University
S- 9	Hydrogenation of Borylated Arenes	Marco Wollenburg*, Daniel Moock, Frank Glorius	Organisch-Chemisches Institut, Westfälische Wilhelms-Universität Münster
S- 10	Synthesis of Isocarbostryl Alkaloids from Benzene	Lucas W. Hernandez*, Tanner W. Bingham, Jola Pospech, Ulrich Kloeckner, Lilian Hauss, David Sarlah	University of Illinois at Urbana-Champaign
S- 11	Redox-Neutral Decarboxylative Xanthylation via Amidyl Radical O-H Abstraction	Christina G. Na*, Erik J. Alexanian	University of North Carolina at Chapel Hill
S- 12	Catalyst-controlled Site- and Stereoselective Functionalization of Unactivated C–H Bonds: Catalyst Design and Applications	Wenbin Liu*, Huw M. L. Davies	Emory University
S- 13	Enantioselective α -Arylation of Benzamides using Synergistic Metallaphotoredox Catalysis	Alexander W. Rand* and John Montgomery	University of Michigan

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S- 14	HAT Initiated Polyene Cyclizations	Darius Vrubliauskas*, Christopher D. Vanderwal	University of California, Irvine
S- 15	New Avenues in Ni-Catalysis: Stereoselective Difunctionalization of Alkenes	Stephen R. Sardini*, Ali Lambright, Grace Trammel, M. Kevin Brown	Indiana University
S- 16	Radical Cascade Synthesis of Azoles via Tandem Hydrogen Atom Transfer: Method Development and Computational Validation	Andrew Chen*, David Nagib	The Ohio State University, Department of Chemistry and Biochemistry
S- 17	Palladium Catalyzed Decarboxylative Cross-Coupling of (Hetero)Aryl Chlorides	Ryan A. Daley*, En-Chih Liu, Joseph J. Topczewski	University of Minnesota
S- 18	Optimization of a Negishi Cross- Coupling to Synthesize β,β - Disubstituted α,β -Unsaturated Ketones	Cameron B. Berlin*, Heather R. Rensch, Michael R. Krout	Bucknell University
S- 19	Ortho-Selective Iridium Catalyzed C– H Borylation of Phenols and Anilines: A path from an unusual result to exquisite selectivity	Jonathan E. Dannatt*, Ivonne L. Andujar-De Sanctis, Ranjana Bisht, Buddhadeb Chattopadhyay, Behnaz Ghaffari, Kristen A. Gore, Chabush Halder, Gajanan Pandey, Robert E. Maleczka Jr., Daniel A. Singleton, Milton R. Smith III	Michigan State University, Texas A&M University, Centre of Bio- Medical Research SGPGIMS Campus, Babasaheb Bhimrao Ambedkar University
S- 20	Cu-Catalyzed Three-Component Carboamination of Electron Deficient Alkenes	Grace Trammel*, Dr. Daniel Kohler, and Prof. Kami Hull	University of Illinois at Urbana- Champaign
S- 21	Synthesis of guaipyridine alkaloids cananodine and rupestines G and D	James R. Vyvyan*, Patrick M. M. Shelton, Samantha M. Grosslight, Hope V. Spargo, Briana J. Mulligan	Western Washington University

S- 22	The Development of Copper-Catalyzed Alkene Carbofunctionalization Reactions	Travis L. Buchanan*, Alexander M. Veatch, Samuel N. Gockel, Kami L. Hull	University of Illinois at Urbana-Champaign; University of North Carolina at Chapel Hill ; University of Texas at Austin
S- 23	Stereoselective C-Glycosylation of Glycosyl Sulfonates	Jesse Ling*, Clay S. Bennett	Tufts University
S- 24	Sterically-controlled Arene Acylation by Sequential C–O/C–H Bond Activation	Steven J. Underwood*, Constance B. Anderson, Philipp M. Gemmel, Nicholas A. Serratore, Grant B. Frost, Truong-Giang Hoang, Melissa A. Hardy, Christopher J. Douglas	University of Minnesota–Twin Cities
S- 25	Site-Selective C-H Functionalization of Silyl Ethers	Yannick T. Boni*, Huw M.L. Davies	Emory University
S- 26	alpha-Chloroaldoximine O-Mesylates as Useful Reagents for the Efficient Synthesis of 5-Amino-1,2,4-Thiadiazoles	Ronald J. Hinklin*	Array BioPharma
S- 27	Enantioselective Dearomative Hydroamination of Benzene and Application Toward the Synthesis of Aminoglycosides	Chad N. Ungarean*, Petra Galer, Sungjong Lee, David Sarlah	University of Illinois at Urbana-Champaign
S- 28	The intermediacy of well-defined copper(I) species in the aerobic copper-catalyzed decarboxylative thiolation of benzoic acids	Kerry-Ann Green*, Jessica M. Hoover	West Virginia University
S- 29	Investigation in nickel-catalyzed oxidative cyclization / reductive cross-electrophile couplings	Amie R. Frank*, John Montgomery	University of Michigan - Ann Arbor

S- 30	Discovery and Exploration of Phosphopantetheinyl Transferase Inhibitors	Elaine Ballinger, John Mosior, Travis Hartman, Kristin Burns-Huang, Ben Gold, Roxanne Morris, Laurent Goullieux, Isabelle Blanc, Julien Vaubourgeix, Sophie Lagrange, Laurent Fraisse, Stéphanie Sans, Cedric Couturier, Eric Bacqué, Kyu Rhee, Sarah M. Scarry, Samantha Ottavi, Matthew Bowler, Remya Ramesh, Jeffrey Aubé*, Guangbin Yang, Ouathék Ouerfelli, Dirk Schnappinger, Thomas R. Ioerger, Curtis A. Engelhart, Jennifer A. McConnell, Kathrine McAulay, Allison Fay, Christine Roubert, James Sacchettini, Carl Nathan	Weill Cornell Medicine, Texas A&M University, Sanofi-Aventis, University of North Carolina, Memorial Sloan Kettering Cancer Center
S- 31	Iron-Catalyzed Fluorination of Unactivated C-H Bonds	Emily N. Pinter*, Deyaa I. AbuSalim, and Silas P. Cook	Indiana University
S- 32	Chemical Defenses in the Seeds of Pioneer Species	Elizabeth M. Sanford*, K. Greg Murray, Eleda V. Plouch, Elliott J. Berens, Nicholas T. Weigle,	Hope College
S- 33	Aqueous Benzylic C–H Trifluoromethylation for Late-Stage Functionalization	Shuo Guo*, Deyaa I. AbuSalim, Silas P. Cook	University of Indiana
S- 34	Carbohydrate based spiro-fused PHOX ligands	Michael Imrich*, Thomas Ziegler	University of Tuebingen
S- 35	Mechanistic insight into rhodium-catalyzed asymmetric hydroborations and hydrogenations	Andrew Bochat*, Veronika Shoba, James Takacs	University of Nebraska Lincoln
S- 36	Concise Enantioselective Syntheses of Akuammicine and Strychnine Enabled by a Cooperative Catalysis-based Homoallylic Amine Synthesis.	Luke Hutchings-Goetz*, Thomas N. Snaddon	Indiana University

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S- 37	Purine Scaffolds Toward a New Class of Antibacterial Agents Against Gram-Negative Drug Resistant Bacteria	Tirtha Bhattarai*, Katalina Rodrigues*, Timothy Miller, Phillip Wittel, and Roslyn Lampkins, Ph.D.	University of Evansville
S- 38	Asymmetric Synthesis of Beta- and Gamma-borylated Amines via Rh-Catalyzed Hydroboration of Allylamines	Rukshani Wickrama-Arachchi*, Tanner L. Metz, James M. Takacs	University of Nebraska-Lincoln
S- 39	Dynamic covalent chemistry of thiols in cross-linked polymers	Jacob S. A. Ishibashi*, Julia A. Kalow	Northwestern University
S- 40	Borylation of Aryl Iodides and Bromides Using a Pd/Cu Dual Catalysis	Amara Spencer*, Jack Floreancig, Sebastien Lauhle	Indiana University-Purdue University Indianapolis
S- 41	Synthesis Towards Lissoclimide Natural Product Analogues Featuring Site-Selective Aliphatic C-H Bond Halogenations	Sierra Nguyen*, Sharon E. Michalak, Christopher D. Vanderwal	University of California Irvine
S- 42	New monodentate directing group for copper-mediated sp ² C-H amination	Sehun Kwak*, Olafs Daugulis	University of Houston
S- 43	Development of Photoactivatable Sensors for Detecting Mobile Zinc	Fang Wang*, Jacob M. Goldberg, Chanan D. Sessler, Nathan W. Vogler, Daniel Y. Zhang, William H. Loucks, Thanos Tzounopoulos, Stephen J. Lippard	Massachusetts Institute of Technology

S- 44	Gamma Functionalization of Enones via Nitroso Diels Alder Reaction	Sruthi Mohan*, Dr. Justin Mohr	University of Illinois at Chicago
S- 45	Supramolecular Capsules via Pnictogen Bonding	Brian M. Karl*, Thomas J. Polaske, Shiva Moaven, Miranda C. Andrews, Daniel K. Unruh, Eric Bosch, Anthony F. Cozzolino, Nathan P. Bowling	University of Wisconsin-Stevens Point; Texas Tech University; Missouri State University
S- 46	Rhodium-catalyzed C-C bond activation and cross coupling utilizing amide directing groups	Claire Muckian*, Constance B. Anderson, Hannah I. Barr, Jeffrey B. Johnson	Hope College
S- 47	Peptide-Catalyzed Derivatization of Natural Products	Margaret J. Hilton*, Scott J. Miller	Yale University
S- 48	Rational Design and Facile Synthesis of Fluorescent Small Molecule Probes for Biological Studies in Live Cells	Joomyung V. Jun,* Sung-Eun Suh, Conor M. Haney, Richard J. Karpowicz, Jr., Sam Giannakoulis, Elen Hernandez, Mai N. Tran, J. Nicholas Betley, Virginia M.-Y. Lee, E. James Petersson, David M. Chenoweth	University of Pennsylvania
S- 49	Synthesis of HIV NNRTI Doravirine analogs via visible-light photoredox decarboxylative cross-coupling	David N. Hunter*, Linda M. Suen, Cheng Wang, Helen J. Mitchell, Antonella Converso, Abdellatif ElMarrouni	Department of Discovery Chemistry, MRL, Merck & Co., Inc
S- 50	Utilizing High Throughput Experimentation to Gain Insight into the Reactivity and Mechanism of Salen/salan Catalysts in the Oxidative Homocoupling of Phenols	Adriana L. Jemison*, Cristian Ochoa, Marisa C. Kozlowski	University of Pennsylvania

S- 51	Expanding the eNTRY Rules for Small Molecule Accumulation in Gram-negative Bacteria	Sarah Perlmutter*, Emily Geddes, Paul Hergenrother	University of Illinois at Urbana-Champaign
S- 52	Regio- and Stereoselective Conjugate Addition of Extended Nitroalkanes and Alkyl Thiols to Enone Diesters via Bifunctional Iminophosphorane Organocatalysis	Jennifer L. Fulton*, Matthew A. Horwitz, Ericka L. Bruske, Jeffrey S. Johnson	University of North Carolina at Chapel Hill
S- 53	Chincona Thiourea-Catalyzed Enantioselective Synthesis of Atropisomeric Pyrrolopyrimidines via Nucleophilic Aromatic Substitution	Mirza A. Saputra*, Angela Weng, Jeffrey L. Gustafson	San Diego State University
S- 54	Diastereoselective Synthesis of Functionalized-delta-Valerolactone via Cascade Beckman Acylation and Michael Addition	Joshua Van Houten*, Rendy Kartika, Frank Fronczek	Louisiana State University
S- 55	Brønsted Acid-Catalyzed Synthesis of Highly Functionalized Tetrahydrobenzofurans via Silyloxyallyl Cations.	Fatimat O. Badmus*, Joshua A. Malone and Rendy Kartika.	Louisiana State University
S- 56	Investigation of the inverse Electron Demand Diels-Alder Chemistry with Pyridoxal HCl	Marie X. Bozor*, Gregory R. Boyce	Florida Gulf Coast University
S- 57	Conformationally Constrained Bicyclic Sulfones as Novel Scaffolds for Drug Discovery	Jeremy E. Wulff*, Michael G. Brant, Jordan Fridmann, Andy Un, Allen G. Oliver	University of Victoria
S- 58	Accessing N-Hydroxydiketopiperazine Natural Products	Kyle M. Lambert*, Amy C. Jackson*, John L. Wood	Department of Chemistry and Biochemistry, Baylor University

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S- 59	Total Synthesis of Caesalpinnone A and Caesalpinflavan B	Noah J. Sims*, Jacob C. Timmerman, John L. Wood	Baylor University
S- 60	Amine Dependent Conformational Preference in Anchimeric Assisted Hydrolysis of Norcantharidine Derived Dicarboxamides	Chandrakant S Gholap*, Rekha Singh, Mukesh Kumar, Sunil K. Ghosh	Bhabha Atomic Research Centre
S- 61	Synthesis of novel derivatives of 4-methoxy-6-phenyl-2-pyrone	Grace Obi*, Fanie R. van Heerden	University of KwaZulu-Natal
S- 62	Synthesis of Pyrrolodiketopiperazine and Related Derivatives	Susanna Maisto*, Angela Leersnyder, Jonathan Scheerer	The College of William and Mary
S- 63	Progress Towards the Total Syntheses of Impatien A and Ochotensimine: Utilizing a Novel Cyclization	Katerina M. Korch*, Donald A. Watson	University of Delaware
S- 64	Distortion controlled reactivity of 2-pyridyl-1,2,4,5-tetrazines	Dennis Svatoněk*, Martin Wilkovitsch, Lea Hartmann, Kendall N. Houk, Hannes Mikula	University of California Los Angeles and TU Wien
S- 65	Kinase-catalyzed crosslinking and immunoprecipitation (K-CLIP) is a substrate and interactome identification tool: Application to p53	Satish Garre, Aparni Gamage*, Todd Faner, Pavithra Dedigama-Arachchige, Mary Kay Pflum	Wayne State University
S- 66	Enantioselective Syntheses of Chelidonium Alkaloids by a Cooperative Lewis base/Iridium Catalyzed Homoallylic Amine Synthesis	Chao Yang*, Thomas N. Snaddon	Indiana University, Bloomington
S- 67	Synthesis and Biological Evaluation of Indole-Substituted Furanones and Pyrrolinones	Kaitlynn A. Sockett*, Roslyn R. Patel, Marissa A. McFadden, Megan M. Lafferty, Brianna Hurysz, Andrew Hermann, Patricia Mowery, Erin T. Pelkey	Hobart and William Smith Colleges

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S- 68	The Development of Radical Reactions Mediated by an Organic Photoredox Catalyst	Julia D. Ganson*, A. Edward Allen, Caitlin E. Topi, Ian J. Rosenstein	Hamilton College
S- 69	Oxaquinonacyclophanes binding with Pyridine-N-oxides	Emily O'Brien*, Jay Wackerly	Central College
S- 70	Inter- and Intramolecular Alkylation of 1,3-Dicarbonyl Radicals to Olefins via Photoredox Catalysis	Yuri Lee*, Marc Kawada, Anne Marie Crooke, Katherine Forbes, Jeffrey Cannon	Occidental College
S- 71	Synthesis of Terpenoid Natural Product Frameworks via [3,3] Sigmatropic Rearrangements	Ouidad Lahtigui*, Alexander J. Grenning	University of Florida
S- 72	Advances in Silicon-Tethered Carbon-Carbon Bond Forming Reactions	Gregory W. O'Neil*, Paul Spaltenstein, Christopher R. Myers, Elizabeth J. Cummins, Timothy B. Clark	Western Washington University
S- 73	Alkynamides, Cyanamides, and Triflates, Oh My! Undergraduate Research in Organic Chemistry at Providence College	Seann P. Mulcahy*, Yazan A. Al-Issa, Caroline A. Foley, Kathryn P. Hiller, Kyle M. Medas, Robert W. Lesch, Gersham J. Rainone	Providence College
S- 74	Regiocontrol for Allylic C H Amination and Amidation via Group IX MCp*- π -Allyl Intermediates	Jacob S. Burman*, Robert J. Harris, Caitlin M. B. Farr, John Bacsá, Simon B. Blakey	Emory University
S- 75	Aminoxy-Functionalized Metal Monolayer-Protected Clusters (MPCs) for Sensing and Catalysis Applications	Tirtha R. Sibakoti*, Francis P. Zamborini, Michael H. Nantz	University of Louisville
S- 76	Epoxy isonitriles, a unique class of antibiotics – Synthesis of their metabolites and biological investigations	Wilt, Ingrid K. *, BA; Ernouf, Guillaume, PhD; Zahim, Sara, PhD; Wuest, William M., PhD	Emory University
S- 77	Nickel-Catalyzed Cross Coupling of C–O Electrophiles with Organostannanes	John Russell*, Emily Entz, Ian Joyce, Sharon Neufeldt	Montana State University

S- 78	Oxidative Photo-Catalyzed Sulfenylation of Substituted Indoles and Benzothiamides	Andrew N. Dinh, Ashley D. Nguyen*, Ernesto Millan*, Samuel T. Albright, Jeffrey L. Gustafson	San Diego State University
S- 79	Using a Photoswitch to Change and Quantify the Preorganizational Energy of Anion-Binding Foldamers	Fred C. Parks*, Sydney Stutsman, Yun Liu, Siblai Debnath, Katherning VanDenburgh, Xinfeng Gao, Krishnan Ragavachari, Amar H. Flood	Indiana University - Bloomington; University of Illinois at Urbana-Champaign
S- 80	Catalyst-Controlled Regiodivergent Hydroamination of Homoallylic Amines for the Synthesis of 1,3- and 1,4-Diamines	Evan P. Venable*, Seth C. Ensign, Gregory D. Kortman, Xujia Zhong, Kami L. Hull	University of Illinois at Urbana-Champaign, University of Texas at Austin
S- 81	Enantioselective Total Synthesis of (+)-Fendleridine and (+)-Acetylaspidoalbidine	Joshua R. Born*, Luke A. Kassekert, Arun K. Ghosh	Purdue University
S- 82	A nitroalkane-based approach to one-pot threecomponent synthesis of isocryptolepine and its analogs with potent anti-cancer activities	Georgii Griaznov [^] , Alexander V. Aksenov [~] , Nicolai A. Aksenov [~] , Michael Rubin ^{^~}	[^] University Of Kansas, [~] North Caucasus Federal University
S- 83	Progress Towards the Synthesis of Amorfrutin A	Daria Galaktionova*, Gennadii Grabovyi, Justin Mohr	University of Illinois at Chicago
S- 84	Macrocyclic Stereocontrol in Transannular Re2O7-catalyzed Bis-spiroketalization Reactions	Austin H. Asari* Paul E. Floreancig	University of Pittsburgh
S- 85	Progress towards Synthesis of Serantrypinone	Xiye Wang, Devin Mickles*	College of William & Mary

Monday, June 24, 2019 8:35-11PM

M- 1	Aurone as a Fluorescent Probe for the Selective Detection of H ₂ S in Environmental and Biological Systems	Arjun Kafle*, Shrijana Bhattarai, Justin M. Miller, Scott T. Handy	Middle Tennessee State University
M- 2	Near Infrared fluorescent tags for no wash live cell imaging	Rahele Esmatpour Salmani*, Mehdi Moemeni, Elizabeth Santos, Daniela Odenthal, Alireza Ghanbarpour, Nona Ehyaei, James Geiger, Chrysoula Vasileiou, Babak Borhan.	Michigan State University
M- 3	Organic chemistry educational resources: Community of organic chemistry educators	Matthew Casselman, Justin Houseknecht, Alexey Leontyev, Vincent Maloney*, Jennifer Muzyka, Joshua Ring, Robert Rossi, Cathy Welder, Leyte Winfield	University of California, Riverside, Wittenberg University, North Dakota State University, Purdue University Fort Wayne, Centre College, Lenoir-Rhyne University, Rowan College Gloucester County, Dartmouth College, Spelman College
M- 4	Development of flavin-dependent biocatalytic methods and applications in total synthesis	Summer A. Baker Dockrey*, Alison R. H. Narayan	Univeristy of Michigan
M- 5	Synthesis of 2,4,5-trisubstituted furans with activity against a pro-metastatic cytokine	Joseph Tuccinardi*, Thaaer Muhammed, Kelsey Skluzacek, Thomas Conrad, Matthew King, PhD, Cheryl L. Jorcyk, PhD, Lisa Warner, PhD, Don L. Warner, PhD	Boise State University Department of Chemistry and Biochemistry, Department of Biological Sciences

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M- 6	Novel Catalysts for the Practical and Selective Functionalization of Hydrocarbons	Benjamin Wertz* and Huw M. L. Davies	Emory University
M- 7	Iron-catalyzed benzylic C-H borylation of N-chloroamides	Hanbin Lee*, Tiancheng He, Silas P. Cook	Indiana University
M- 8	Merged cycloaddition/cycloreversion sequences for the synthesis of heterocycles	Jonathan R. Scheerer*, Nicholas H. Angello, Robert E. Wiley, Jill B. Williamson	College of William & Mary
M- 9	Synthesis of ortho-substituted benzamides through nickel mediated cross-coupling	Rebecca L. Johnson*, Ethan M. Heyboer, Jeffrey B. Johnson	Hope College
M- 10	Facile Access to Functionalized Chiral Secondary Benzylic Boronic Esters via Catalytic Asymmetric Hydroboration	Suman Chakrabarty*, Hector Palencia, Martha D. Morton, Ryan O. Carr and James M. Takacs	University of Nebraska-Lincoln, University of Nebraska-Kearney, Nebraska Center for Integrated Biomolecular Communication
M- 11	One step synthesis of chiral C2 symmetric 1,5-cyclooctadienes and their evaluation as chiral ligands	Bowen Zhang*, Michael Robson, Hollerbach, Huw M. L. Davies, Simon Blakey	Emory University
M- 12	Optimizing Cycloadditions & Improving Therapeutics via Stereoelectronic Insights	Brian Gold*, Matthew R. Aronoff, Eileen G. Burke, Trish T. Hoang, Ian W. Windsor, Jennifer M. Schomaker, Ronald T. Raines	Department of Chemistry, Massachusetts Institute of Technology; Departments of Chemistry and Biochemistry, University of Wisconsin–Madison
M- 13	1-Aryl-3-alkyne-2,6-diols: Precursors for Electrophilic Cascade Reactions to Naphthylidonium salts and Benzo[f]isochromenes	Robert J. Hinkle*, Youzhou Chen, Colleen P. Nofi, Sarah E. Bredenkamp, Seong ik Cheon & Shane E. Lewis	College of William & Mary

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M- 14	Synthesis of Idarubicinone via Global Functionalization of Tetracene	David G. Dennis*, Mikiko Okumura, David Sarlah	University of Illinois Urbana Champaign
M- 15	Asymmetric Heterocyclic Synthesis via Electrophile Initiated Cyclizations of Homoallylic Carbamate and Guanidine Derivatives.	Gavin J. Rustin*, Matthew G. Donahue	University of Southern Mississippi
M- 16	Exploiting the Redox Versatility of Flavin Semiquinone in a Biocatalytic Redox-Neutral Radical Cyclization	Michael J. Black*, Andrew J. Meichan, Kyle F. Biegasiewicz, Bryan J. Kudisch, Daniel G. Oblinsky, Gregory D. Scholes, Todd K. Hyster	Princeton University
M- 17	Synthesis of Novel Bile Acids for Micellar Chiral Recognition	Sophie Kong*, Michael R. Krout, Timothy G. Strein, David S. Rovnyak	Bucknell University
M- 18	Continuous-Flow Synthesis of Advanced Glucose Derivatives and Oligosaccharides	Keevan C. Marion*, Nicola Pohl	Indiana University
M- 19	Gamma-Haloalkylation and Haloalkenylation of Enone Substrates	Douglas Yarbrough*, Cole Wagner, Justin Mohr	University of Illinois at Chicago
M- 20	Host-guest templated two-dimensional polymerization	Christopher Eckdahl*, Julia Kalow	Northwestern University
M- 21	Investigation of Polarization Effects on Intramolecular Oxidopyrylium–Alkene [5+2] Cycloadditions	Samantha Rokey*, John Goodell, T. Andrew Mitchell	University of Illinois
M- 22	Copper catalyzed fluoramide directed trifluoromethylthiolation of unactivated SP ³ - C-H bond	Atanu Modak*, Silas Cook	Indiana University
M- 23	Investigations into the biosynthesis of roseophilin	Melody C. Guo*, Marvin M. Vega, Regan J. Thomson	Northwestern University

M- 24	SYNTHESIS AND STRUCTURAL ELUCIDATION OF SUBSTITUTED DIBENZALACETONE COMPOUNDS: THE STUDY OF SUNSCREEN INGREDIENTS	Miles Graham, Olivia Rogers, John Gitua*	Drake University
M- 25	Design and Synthesis of Maltosyltransferase Inhibitors for Tuberculosis Treatment	Wei-Cheng Hung*, Jim-Min Fang*	Department of Chemistry, National Taiwan University, Taipei
M- 26	New simple and convenient approach to the synthesis of dihydropyridine (quinoline) based merocyanine dyes	A. Y. Rudenko, A. A., Zubarev, I. A. Sanin-Sprague*, L. A. Rodinovskaya, A. M. Shestopalov	N. D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences
M- 27	Synthesis of Medium-Sized Bicyclic Systems via RCM	Pavel Yamanushki*, Michael Rubin	University of Kansas, Lawrence, KS
M- 28	Asymmetric Synthesis of Gamma-Lactones from Sulfoxonium Salts and Enediolates or Boron Enolates	Nessan J. Kerrigan*, Nicholas J. Peraino, Chrismae N. Bergado, Sven H. Kaster, Dylan J. Twardy.	Nessan J. Kerrigan* and Chrismae N. Bergado: Dublin City University. Nicholas J. Peraino, Sven H. Kaster, and Dylan J. Twardy: Oakland University.
M- 29	Synthesis and Profiling of Hetero-Aryl Sulfonamides as Isoform-Selective hNav- 1.6 Inhibitors for the Treatment of Epilepsy	Verner Lofstrand*, Mike Grimwood, Kristen Burford, Alla Zenova, Michael Wilson, Shaoyi Sun, Qi Jia, Wei Gao, Kuldip Khakh, Elaine Change, Luis Sojo, Gina de Boer, Rainbow Kwan, Stephanie Lee, Christoph Dehnhardt, Steven Wesolowski, Thilo Focken, JP Johnson Jr, James Empfield	Xenon Pharmaceuticals Inc.
M- 30	Cooperative Catalysis: An Approach to Regioselective Arylboration	Allison M. Bergmann*, Stanna K. Dorn, Stephen R. Sardini, M. Kevin Brown	Indiana University

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M- 31	Synthesis of Oxazoles and Pyrrolidines through Radical and Transition metal Strategies	James Herbort*	The Ohio State University
M- 32	Development of the Enyne Cope Rearrangement for Applications in Hydroazulene Synthesis	Sarah K. Scott*, Katherine E. White, Alexander J. Grenning	University of Florida
M- 33	Efforts Toward the Total Synthesis of Toxicodenane A	Jake Grabowski*, Dr. Andrew Mitchell	Illinois State University
M- 34	Pd-Catalyzed Alkene Difunctionalization Reactions of Enolates for the Synthesis of Substituted Carbocycles	Evan C. Bornowski*, Elsa M. Hinds, Derick R. White, Yusuke Nakamura, John P. Wolfe	University of Michigan - Ann Arbor
M- 35	Organo Catalyst Controlled Diastereoselective Glycosylations	Fei Yu, Jiayi Li, Paul DeMent*, Yi-jung Tu, Bernhard Schlegel, Hien Nguyen	Wayne State University
M- 36	Structure-Activity Study of Strongly Reducing, Visible Light Absorbing Phenothiazine Catalysts.	Cameron Chrisman*, Steven Sartor, Garret Miyake	Colorado State University, Fort Collins. University of Colorado, Boulder.
M- 37	Phosphate-tether mediated synthetic studies towards 13-desmethyl lyngbouillose and leustroducin B	Arghya Ganguly*, Mahipal Bodugam, Salim Javed, Susanthi Jayasinghe, James McParland, Alan Whitehead, Paul R. Hanson	University of Kansas
M- 38	Continuous Flow Enables Photoredox Catalysis in a Medicinal Chemistry Setting through Accelerated Optimization and Execution of Libraries	Casey B. Ritts, Zachary G. Brill*, Hyelee Lee, Umar Faruk Mansoor, Nunzio Sciammetta	Discovery Chemistry – Merck
M- 39	Mechanistic Insights into the Iridium-Catalyzed Allylic Fluorination Reaction: Importance of the Trichloroacetimidate	Jason Mixdorf*, Alexandre Sorlin, Hien Nguyen	University of Iowa, Wayne State University

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M- 40	Expanding Knowledge through Synthesis: Adventures into Naturally Occurring Alkaloids	Marvin M Vega*, Regan J. Thomson	Northwestern University
M- 41	Progress Towards the Development of a "Catch/Release" Strategy for Isolating Salvinorin A, Including Microwave Promotion	Douglas Armstrong*, Logan Smith	Olivet Nazarene University
M- 42	Total Synthesis of Malleilactone	Matthew C. Horton*, Jeffrey Aubé	University of North Carolina at Chapel Hill
M- 43	Absolute Stereochemical Determination of P-Stereogenic Phosphorus Compounds	Debarshi Chakraborty1*, Hadi Gholami1, Leo A. Joyce2, Babak Borhan1	1. Michigan State University, 2. Arrowhead Pharmaceuticals
M- 44	Synthesis of NAMPT-Targeted Small Molecule Therapeutics for Pulmonary Arterial Hypertension	Wrickban Mazumdar*, Xinyu Guan, Naijing Su, Kiira M. Ratia, Jason R. Hickok, Roberto F. Machado and Tom G. Driver	University of Illinois at Chicago, Indiana University
M- 45	Copper-catalyzed approach to indolizines, iminoquinolizines and 1,2-dihydroisoquinolines	Andre K Isaacs*, Christopher Puntasecca, Joshua Nicholson, Jessica Hendsey	College of the Holy Cross
M- 46	Quaternary Center Guided Synthesis	Pengfei Hu*, Hyung Min Chi, Kenneth C. DeBacker, Xu Gong, Jonathan H. Keim, Ian Tingyung Hsu and Scott A. Snyder	University of Chicago and The Scripps Research Institute
M- 47	Chemoenzymatic Approaches to the Total Synthesis of Epoxyquinoid Natural Products	Jonathan A. Collins*, Madeleine S. Duncan, William B. Kline, Christopher J. Gerry	Whitman College Department of Chemistry
M- 48	Reactions of Carbonyl Compounds and Ethyl Diazoacetate: Synthetic Scope and Mechanism	Mizzanoor Rahaman*, Md Shahnawaz Ali, Damon Hinz, Khorshada Jahan, Jawad Bin Belayet, Nicholas Hopper, Ryan Majinski, M. Mahmud Hossain	Department of Chemistry and Biochemistry, University of Wisconsin-Milwaukee
M- 49	Efforts Toward Improving the Synthesis of a Potential Monomer Derived from Biomass	Luke Steffe and Michael C. Slade*	University of Evansville

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M- 50	Regioselective Chlorination of Phenol: Mechanistic Insights and Kinetic Studies of Lewis Base catalysts	Andrew Dinh*, Laleña Janke, Sean Maddox, Bennett Addison, Jeff Gustafson	San Diego State University
M- 51	The design and synthesis of RNA-targeting small molecules	Eric S. Parsons*, Ben J. Haines, Ian S. Armstrong, Jia L. Schopis, Dr. Jennifer V. Hines, Dr. Stephen C. Bergmeier	Ohio University
M- 52	A Novel Transformation using the Reducing System Et ₃ SiH/KOtBu	Andrew J. Smith*, Allan Young, Jude N Arokianathar, Mark Allison, Darren L. Poole, John A. Parkinson, Tell Tuttle, John A. Murphy	University of Strathclyde
M- 53	Difunctionalization of N-alkyl cyclobutyl and cyclopropyl amines via photoredox catalysis	Qile Wang*, Nan Zheng	University of Arkansas
M- 54	Iron-Catalyzed Functionalization of Alcohols and Alkenes	Paul T. Marcyk* and Silas P. Cook	Indiana University
M- 55	Gold(I) Catalyzed Synthesis of 1H-Isochromenes	Julianna M. Mouat*, Zachary A. Grimm, Dakota D. Butler, Caitlin R. Lacker, Michael R. Gesinski	Southwestern University
M- 56	Synthesis and Evaluation of Archazolid Natural Product-Based Enzyme Inhibitors	Holly C. Jones*, Evan T. Long, Cooper A. Vincent, Gregory W. O'Neil	Western Washington University
M- 57	Early stage development on BMS-986095 for hepatitis C virus	Changxia Yuan*, Sarah Steinhardt, Kristy Tran, Ke Chen, Gregory Beutner, Mike Schmidt, Martin Eastgate	Bristol-Myers Squibb
M- 58	Diastereoselective One Pot Synthesis of Oxazolines Using Sulfur Ylides and Acyl Imines	Mehedi*, Md Shafaat Al; Tepe, Jetze J.	Michigan State University
M- 59	Biomimetic Synthesis of Hitorins A and B	Xiaohuan Li, Ping He, Zheng Wei, Zhang Wang*	University at Albany, State University of New York

M- 60	A novel multicomponent entry for the synthesis of highly fluorescent fused-isoquinolines: From Diversity-Oriented Synthesis to Diversity-Oriented Subcellular Localizers.	Yorhy A. Amador-Sánchez*, Andrés Aguilar-Granda, Ricardo Flores-Cruz, Davir González-Calderón, Cynthia Orta-Sotelo, Braulio Rodríguez-Molina, Arturo Jiménez-Sánchez and Luis D. Miranda.	Instituto de Química, Universidad Nacional Autónoma de México, Circuito Exterior, Ciudad Universitaria
M- 61	Photocatalytic xanthate-based radical addition/cyclization to biphenyl isocyanides: synthesis of 6-alkylated phenanthridines	Pedro López-Mendoza*, John E. Diaz, Alix E. Loaiza , Luis D. Miranda	1. and 4. Instituto de Química, Universidad Nacional Autónoma de México, Circuito Exterior S. N., Ciudad Universitaria
M- 62	Stereospecific Synthesis of Alkenes and Allenes by Eliminative Cross-coupling of Stereodefined Carbenoids	Yang Cao, Subhash Tanpure, Zhenhua Wu, and Paul R. Blakemore*	Oregon State University
M- 63	Triphosgene and DMAP as mild reagents for chemoselective dehydration of tertiary alcohols	Moshood O. Ganiu*, Jarrod L. Paul, Alexander H. Cleveland, and Rendy Kartika	Louisiana State University
M- 64	Mechanisms and Origins of Stereoselectivity of NHC-Catalyzed Enantioselective Decarboxylative Annulations – Access and Selective Reaction of the Elusive Aza-O-Quinone Methide Intermediate	Taisiia Feoktistova*, Alexander Brueckner, Ansoo Lee, Joshua Zhu, Karl Scheidt, and Paul Cheong	Oregon State University, Northwestern University
M- 65	The Other SiO ₂ : Investigating Oxidation of Alcohols using (NH ₄) ₂ Cr ₂ O ₇ in Sand	John Lepore*, Emily Toy, Robert Torregrosa	State University of New York at Geneseo
M- 66	Pursuing Challenging Fluorinated Motifs with Photoredox Catalysis	Rebecca J. Wiles*, James P. Phelan, Simon B. Lang, Christopher B. Kelly, Gary A. Molander	University of Pennsylvania

M- 67	Convergent Annulative Synthesis of Ring-Fused Quinolones via pKa-Guided Base Selection	Muhammad M. Khalifa*, Satish Chandra Philkhana, Jennifer E. Golden	1Pharmaceutical Sciences Division, University of Wisconsin-Madison School of Pharmacy
M- 68	Rearrangement of 2-Chloroquinazolin-4(3H)-ones to Afford Cyclic Guanidines	Gang Yan*, Bereket Zekarias, Victor Jaffett, Xiaoyu Li and Jennifer E. Golden	Pharmaceutical Sciences Division, School of Pharmacy, University of Wisconsin-Madison
M- 69	Electrochemical Proton-coupled Oxidation of a (TAML)Fe-aqua Complex and Its Application to Electrocatalytic C–H Oxygenation and Alcohol Dehydrogenation	Jordan E. Nutting*, Amit Das, Shannon S. Stahl	University of Wisconsin-Madison
M- 70	2nd-Generation Oxypyridinium Salts as Powerful Electrophiles: Fine-tuning Reactivity and Solubility	Madelaine P. Thorpe*, Sean E. Dunlap, Philip A. Albiniak	Ball State University
M- 71	Process Chemistry Development of a Small Molecule	Greg Cizio, Kathy Dao, Edward Doerffler, Nolan Griggs, Elizabeth Horstman, Michael Ischay*, Matt Logan, Adam Weinstein, Lawrence Yu	Gilead Sciences
M- 72	Investigation of a Pentafluorobenzyl Isothiocyanate as a Chiral Derivatizing Agent for NMR	Emily B. Crull, Matthew G. Donahue*	University of Southern Mississippi
M- 73	Synthesis and host-guest binding of oxaquinonacyclophane macrocycles	Jay Wm. Wackerly*	Central College

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M- 74	Chemoselectivity for Alkene Cleavage by Palladium-Catalyzed Intramolecular Diazo Group Transfer from Azide to Alkene	Grant B. Frost*, Michaela N. Mittelstaedt, Christopher J. Douglas	University of Minnesota-Twin Cities
M- 75	Synthesis of Highly Functionalized N-Alkylated 2-Pyridones and Indolizines	Carolyn E. Anderson*	Calvin College
M- 76	Synthetic Access to an Unprecedented Azatricyclic Ring System via aza-Michael and Intramolecular Diels-Alder Reactions	Zaki K. Phelan, Zhiyuan Huang, Daniel R. Griffith*	Lafayette College
M- 77	Achieving Selectivity with Triazole Bromodomain Inhibitors	Angela S. Carlson*, Huarui Cui, William C. K. Pomerantz, Joseph J. Topczewski	University of Minnesota

M- 78	Copper-Catalyzed Amination of Aryl Boronic Acids Using N-Chloroimides	Sébastien Laulhé*, Amara Spencer, Timothy B. Fulton	Indiana University-Purdue University Indianapolis
M- 79	Model Complexes for the Pd-catalyzed Transannular C-H Functionalization of Alicyclic Amines	Ellen Y. Aguilera,* Melanie S. Sanford	University of Michigan
M- 80	Biocatalyst-initiated ortho-quinone methide generation and diversification	Jonathan C. Perkins*, Tyler J. Doyon, Evan O. Romero, Summer A. Baker Dockrey, Kevin Skinner, Alison R. H. Narayan	University of Michigan, Chemistry Department, Life Sciences Institute, and Program in Chemical Biology
M- 81	Air Stability Improvement of [FeFe]-Hydrogenase Model Complexes	Mohammad K. Harb*, Lourance Borguli, Hassan Abul-Futouh.	Department of Pharmacy, Al-Zytoonah University of Jordan

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M- 82	Development of Tripodal and Bipodal Ligand Frameworks and First-row Transition Metal Reagents for Selective C–N Bond Construction Methodologies	Anshika Kalra*, Suraj Sahoo*, Saidulu Gorla, Pericles Stavropoulos	Missouri University of Science and Technology
M- 83	Catalytic Hydrofunctionalization of Dienes	Justin Marcum, Tia Cervarich*, Rajith Manan, Courtney Roberts, Simon Meek	University of North Carolina at Chapel Hill
M- 84	Photo-crosslinking Diazirine Derivatives of a Selective Peptoid Probe for Rpn-13 Binding Site Identification	Christine S. Muli*, Darci J. Trader	Purdue University
M- 85	Copper-NHC mediated radiofluorination of aryl halides	Liam S. Sharninghausen*, Katarina J. Makaravage, Allen F. Brooks, Peter J. H. Scott, Melanie S. Sanford	Departments of Chemistry and Radiology, University of Michigan

Tuesday, June 25, 2019 8-11PM

T- 1	Enhanced Pharmaceutical Process Development Using Flow Chemistry Technology	Reem Telmesani*, David Ford, Eric Fang, Matthew Bio	Snapdragon Chemistry
T- 2	Synthetic Applications of Squaraine Dyes	Emily P. Bacher*, Brandon L. Ashfeld	University of Notre Dame
T- 3	Development of Ester and Ketone Syntheses via Hydroxyl-Directed C–C Bond Activation	Constance B. Anderson*, Siri A. Bruhn, Christopher J. Douglas	University of Minnesota
T- 4	Chemical Modification of Silk Protein via Palladium Mediated Suzuki-Miyaura Reactions	Racine Santen* and Dr. Amanda Murphy	Western Washington University
T- 5	Combinatorial Approach to Lead Generation: Discovery of a Novel Agent for Septoria tritici Control	Zoltan Benko*, George Davis, David Young, John Owen, Beth Lorschach	Corteva AgriScience

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T- 6	Synthesis of Small Molecules for Protein Control	Elena Bray*, Jacky Tran, Carmelo Alvarez, Michael W. White, James W. Leahy	University of South Florida
T- 7	Transfer Hydrogenation in the Solid Phase to Nitroalkenes by a Hantzsch Amide	Anthony C. O'Donnell*, Scott A. Van Arman	Franklin and Marshall College
T- 8	New quinoline- and isoquinoline-based multicomponent methods for the synthesis 1,1(3,3)-dicyanotetrahydrobenzoindolizines	I. A. Sanin-Sprague*, A.A. Zubarev, A. Yu. Rudenko, L. A. Rodinovskaya, A.M. Shestopalov	N. D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences
T- 9	Design of core-extended N,N-diaryl dihydrophenazines as strongly reducing organic photocatalysts	Mariel Price*, Justin Cole, Garret Miyake	Colorado State University - Fort Collins
T- 10	New Monodentate Directing Group for sp ³ C-H Bond Functionalization	Hanh Nguyen*, Ky Khac Anh Le, Olafs Daugulis	University of Houston
T- 11	Examination of the reaction mechanism of the rhodium-catalyzed decarbonylation of pyridyl ketones	Erik J. Schoonover*, Cole Wagner*, Julia Loula, Jacob VanderRoest, Jeffrey B. Johnson	Hope College
T- 12	First GMP Synthesis of JNJ-64300808, a GluN2B-Subunit Selective NMDA Antagonist	Daniel J. Pippel*, Xiufeng Sun, Christa Chrovian, Mike Letavic, Akinola Soyode-Johnson, Brice Stenne, Yanfeng Jin, Xiaopu Fu, Xiaoguang Song, Kai Wang, Haijin Yang	Janssen Discovery Process Research, Janssen CMC China, Janssen Discovery Chemistry, and Pharmaron Inc.
T- 13	Engineering Large Stokes shift dyes for transparent luminescent solar concentrators	Mehdi Moemeni*, Jun Zhang, Chenchen Yang, Richard R. Lunt, Babak Borhan.	Michigan State University

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T- 14	Cesium base-promoted alkylations: Mild & efficient synthesis of carbon-heteroatom bonds and synthetic applications	Ralph N. Salvatore*	Southeastern University, Department of Natural Sciences and University of South Florida, Department of Chemistry
T- 15	The Total Synthesis of Yaku'amide A	Yu Cai, Zhiwei Ma, Jintao Jiang, Concordia C. L. Lo*, Shi Luo, Ankur Jalan, Joseph M. Cardon, and Steven L. Castle	Brigham Young University
T- 16	Oxidative approach to the synthesis of N-heterocycles from anilines	Tianning Deng*, Wrickban Mazumdar, Tom Driver	University of Illinois at Chicago
T- 17	Palladium-Catalyzed Decarboxylative Heck-Type Coupling of Aliphatic Carboxylic Acids Enabled by Visible Light	Maximilian Koy*, Frederik Sandfort , Adrian Tlahuext-Aca , Andreas Lerchen , Tobias Knecht , Johannes B. Ernst , Linda Quach , Constantin G. Daniliuc , Klaus Bergander, Frank Glorius	Westfälische Wilhelms-Universität Münster
T- 18	Novel Aryl Trehalose Derivatives as Vaccine Adjuvants for Mycobacterium tuberculosis	Omer K. Rasheed*, Kendal Ryter, George Ettenger, David J. Burkhart, Cassandra Buhl, Rob Child, Shannon Miller, Allyson Smith, Jay T. Evans	University of Montana
T- 19	Mannich-type Reactions of Cyclic Nitrones: Effective Methods for the Enantioselective Synthesis of Piperidine Alkaloids	Vladislav G. Lisnyak, Tessa Lynch-Colameta*, Scott A. Snyder	University of Chicago
T- 20	Halide Effects in Copper-Catalyzed 1,4-Conjugate Additions with Monoorganozinc Reagents	Christina N. Pierson*, Heather R. Rensch, Tyler J. Fulton, Michael R. Krout	Bucknell University
T- 21	Exploring the Morphologies of Substituted EDOT Films on ITO Electrodes	Madelyn R. Orndorff*, Macy J. Maraugh, Sydney M. Gross, Elizabeth M. Sanford, Kenneth L. Brown, Mary E. Anderson	Hope College; Furman University

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T- 22	Enantioselective [4 + 2]-Annulation of Azlactones with Copper-Allenylidenes under Cooperative Catalysis: Synthesis of α -Quaternary α -Acylaminoamides	Amit Kumar Simlandy*, Biki Ghosh, Santanu Mukherjee	Indian Institute of Science
T- 23	Donor-acceptor azetines – new reactants for robust synthesis of chiral peptides	Kostiantyn O. Marichev*, Michael P. Doyle	The University of Texas at San Antonio
T- 24	Formic Acid Mediated Direct Z-Selective Reductive Coupling of Dienes and Aldehydes	Christopher Cooze*, Raphael Dada, Rylan J. Lundgren	University of Alberta
T- 25	Mechanistic Investigation into the Biological Glaser-Hay Reaction	Lauren E. Mazur*, Christopher R. Travis, Emily M. Peairs, Gillian H. Gaunt, Douglas D. Young, Robert J. Hinkle	College of William & Mary
T- 26	Studies toward the synthesis of rupestines B, C, L, and M	Evangeline S. Starchman*, Mari S. Marshall, James R. Vyvyan	Western Washington University
T- 27	Synthesis of Nitrogen heterocycles via Ligand-Promoted Ruthenium-Catalyzed Dehydrogenative and Deaminative Coupling Reaction of 2-Aminophenyl Ketones and 2-Aminobenzamides with Amines	Pandula T. Kirinde Arachchige* and Chae S. Yi	Marquette University
T- 28	Computational Studies of Ring-opening/Ring-closing Metathesis Polymerization Reactions	Christopher S. Elkhall, Michelle A. Rodriguez, Buck L. H. Taylor*	University of Portland
T- 29	Mechanistic Studies of Ni-Catalyzed Arylboration of Alkenes	Alison L. Lambright*, Stephen R. Sardini, Grace L. Trammel, Humair Omer, Peng Liu, M. Kevin Brown	Indiana University, University of Pittsburgh

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T- 30	Catalytic Regioselective Synthesis of N, S-Containing Heterocycles from Chemical Feedstocks	Nur-E Alom,* Navdeep Kaur, Wei Li	The University of Toledo
T- 31	Deoxyamination of Activated Alcohols Using Phosphine Activated N-Haloimides	Charles Irving*, Makafui Gasonoo, Sébastien Laulhé	Indiana University Purdue University of Indianapolis
T- 32	Synthesis of Oxetanes via a Formal Formylation	Olivia N. Mautone, Dzenis Alagic, Sarah Z. Tasker*	Franklin & Marshall College
T- 33	Rapid Access to Benzimidazole Libraries via Oxidative Cyclization from Anilines	Prolay K. Mondal*, Eric P. Arnold, Daniel C. Schmitt	Pfizer, Inc.
T- 34	Teaching organic chemistry without structures!(not really, but hearing so makes organic chemists curious if not incredulous)	Fangyi Shen, Robert E. Maleczka, Jr.*	Michigan State University
T- 35	Design, Synthesis, and Effect of Diarylcyclopropane hydroxamic Acids as Histone Deacetylase (HDAC) Inhibitors: Improving Possible Therapy for Huntington's	Jeremy Thelven*, Liam Goldman, Shanna Stoddard, Roberto de la Salud Bea	Rhodes College
T- 36	Chemoselective BOC-Group Deprotection of Indoles and Other Carbamates Under Mild Conditions.	Zachary Gullede*, Jesse D. Carrick	Tennessee Technological University
T- 37	Stereoselective Synthesis and Evaluation of Bile Acid Metabolites	Michael R. Krout*, Brandon N. Nelson, Samantha P. Kelly, Chris K. Rakowski, Brett J. Huckstep	Bucknell University; Harvard Medical School
T- 38	Studies Toward the Synthesis of Cyclic Phosphoramidates via Intramolecular C-H Amidation	Allison R. Dick*, J. Joseph Caraway, Yoon Cho, Alisa K. Erck, Catie A. Reid, Amy T. Robison, Joshua T. Schnyders	Wheaton College (Illinois)

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T- 39	Design and Synthesis of Peptide Analogs from Eumenes Wasp Venom	Lily North*, Sakura Horiuchi, Roberto de la Salud Bea	Rhodes College
T- 40	Enantioselective Synthesis of (+)-Lycoricidine, (+)-Narciclasine and Analogs from Benzene	Tanner W. Bingham*, Lucas W. Hernandez, Daniel G. Olson, Riley L. Svec, Paul J. Hergenrother and David Sarlah	University of Illinois at Urbana-Champaign
T- 41	Lessons on Strain and Stability: Synthesis of Ladderane Natural Products	Erin Hancock*, Erin Kuker, Nathan Line, Brittany Witherspoon, Kevin Brown	Indiana University
T- 42	Synthesis of Monocyclic, Bicyclic and Benzocyclobutene Amino Endoperoxides and their Derivatives.	Enoch Kudoahor*, Jiang Wang, Nan Zheng	University of Arkansas
T- 43	Diastereoselective Debenzylative Glycosylation	Sara N. Alektiar*, Girish C. Sati, John Montgomery	University of Michigan
T- 44	Trapping of Thermally Generated Benzyne with N-Heterocycles	Sahil Arora*, Juntian Zhang, Vedamayee Pogula, and Thomas R. Hoyer	University of Minnesota, Twin Cities
T- 45	Phenylethynyl Oxacalixarenes	KC Russell*, Bailey Hardy, Kimberly Richards, Jacolby Gardner, Owen Sharp, Anna Vernier, Doug Johnson, Jeff Katz	Northern Kentucky University, Colby College
T- 46	Thiourea-Catalyzed Asymmetric Michael Addition of Carbazolones to 2-Chloroacrylonitrile: Total Syntheses of Kopsia Alkaloids	Dongshun Ni*, Yi Wei, Dawei Ma	Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences
T- 47	Semisynthesis of a potent neuroprotector, serofendic acid, and analogs.	Dimitri Perusse*, Szu-Yi (Suzie) Hsu, Christopher S. Stach, Michael J. Smanski	University of Minnesota
T- 48	De Novo Construction of Multi-substituted Arene Derivatives Utilizing the Hexadehydro-Diels–Alder Reaction	Juntian Zhang*, Annika Page, Dawen Niu, Thomas R. Hoyer	University of Minnesota, Twin Cities

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T- 49	Chiral, Non-Racemic Homoallylic Amines for the Synthesis of Quinolizidine and Isoindolone Alkaloids	Hayley T. Allen*, Matthew G. Donahue	University of Southern Mississippi
T- 50	Ullman-Type Coupling of Functionalized 1,2,4-Bistriazinyl-Bipyridines toward Strategic Complexants for Minor Actinide Separations	Gabrielle D. Waters*, Jesse D. Carrick	Tennessee Technological University
T- 51	Synthesis of Trisubstituted Indolizines from 2-Propargyloxypyridines	Colin T. Hartgerink*, Jaimie E. Van De Burg*, Matthew M. Rossler, Emily E. Zerull, Carolyn E. Anderson	Calvin College
T- 52	Synthesis of Modified Benzo[1,2-b:4,5-b']difuran Donor-Acceptor Polymers for use in Organic Photovoltaics	Carmen Gott-Betts*, Malika Jeffries-EL	Boston University
T- 53	Synthesis of the Hexasaccharide Fragment of Landomycin A Using a Mild, Reagent Controlled Approach	Subbarao Yalamanchili*, Dina Lloyd, Clay S. Bennett	Tufts University
T- 54	Chemoselective, Stereocontrolled Cu-Catalyzed C-N Couplings Towards a Highly Potent mPI3Ka Inhibitor	Chong Han,*, Sean Kelly, Theresa Cravillion, Scott Savage, Francis Gosselin.	Genentech, Inc.
T- 55	An Efficient and Stereocontrolled Synthesis of an Arylomycin Derived Complex Macrocyclic Antibiotic on Kilogram Scale	Filip Petronijevic*, Allen Hong, Nicholas Wong, Theresa Cravillion, Sean Kelly, Haiyun Hou, Chong Han, Xin Linghu, Francis Gosselin	Genentech
T- 56	The Synthesis of Vinylogous Aldol-type Products via Electrochemical Reductions of γ,δ -epoxy α,β -unsaturated Carbonyl Compounds	Mingxiang Zhou*, Rakesh Thorat, Andrew M. Harned	Texas Tech University
T- 57	Binding and Synthesis of Oxaquinonacyclophanes	Kayleigh Rohr*, Jay Wackerly	Central College

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T- 58	Exploration of the Ambident Reactivity of Heterocyclic Enaminones	Maddie Filkorn*, Roslyn Patel*, Kaitlynn Sockett*, Jonathan Thrall, Mike Bruno, Brooke Boyer, Alden Ferrier, Marissa McFadden, Erin T. Pelkey	Hobart and William Smith Colleges
T- 59	Diastereoselective Synthesis of Unnatural Amino Acids	Kayla Steinke*, Hailey Lister, Tre'Shunda James, Sophia Yang, Jeffrey Cannon	Occidental College
T- 60	Synthesis of bis-Triazolylthiophenes	Ronald Brisbois*, Elizabeth Croll*, Claire Schmit, Erik Anderson, Abdullgadir Hayir	Macalester College
T- 61	Enantioselective Phenolic α -Oxidation Using Hydrogen Peroxide via an Unusual Double Dearomatization Mechanism	Michael F. McLaughlin*, Elisabetta Massolo, Thomas Cope, Shubin Liu, Jeffrey S. Johnson	University of North Carolina at Chapel Hill
T- 62	Synthesis and Biological Evaluation of Novel Nitrogen Containing Marine Natural Products	Christina Martinez-Brokaw*, Joshua G. Pierce	NC State University
T- 63	Stereocontrolled Synthesis of Piperidines via Rh-catalyzed Ring Expansion of Aziridines	Josephine Eshon*, Kate Nicastrì, Steve Schmid, Jennifer Schomaker	University of Wisconsin-Madison
T- 64	Ti-Mediated Synthesis of Cyclobutanones and 1,4-Diketones	Sydney F. Seavey, Nathan N. Le, Aimee M. Rodriguez, James R. Alleyn, Michael R. Gesinski*	Southwestern University
T- 65	Modular Chemical Probes for Detection of Amino Acid Citrulline	Dmitry V Kadnikov*, Michael Thomas, Brandon Laufenberg, Ashley Bronder, Mikayla Moore, Nicholas Dacon, Christopher Threvarthen	University of Wisconsin-Stout
T- 66	Photoredox Radical/Polar Crossover Reactions for Cyclopropane and Heterocycle Synthesis	John A. Milligan*, Loïc R.E. Pantaine, Viktor C. Polites, James P. Phelan, Zheng-Jun Wang, Christopher B. Kelly, Jennifer K. Matsui, Gary A. Molander	University of Pennsylvania

T- 67	Vibrational Coupling: An IR analogue to FRET	Edward E. Fenlon,* [^] Scott H. Brewer, [^] Matthew J. Tucker, [~] Xin Sonia Gai, [^] Jessie Tianjiao Shi, [^] Julia M. Weiner, [^] Judith N. Monzy, [^] Jeremy S. Kramer, [^] Maria C. Meriwether, [^] Andrew J. Schmitz, [~] David G. Hogle [~]	[^] Franklin & Marshall College; [~] University of Nevada Reno
T- 68	Synthesis of Ether-linked Glucose Uptake Inhibitor	Liyi Wang*, Emma Kessler, Pratik Shriwas, Jennifer V. Hines, Xiaozhuo Chen, Stephen C. Bergmeier	Ohio University
T- 69	Mechanistic investigation of oxypyridyl- and oxylepidyl-salt electrophilic transfer reactions towards new reagent development	Christopher S. LeMasters and Philip A. Albiniak*	Ball State University
T- 70	Design, syntheses and cytotoxic bioevaluations of some novel dichloroacetyl amides	Mohammad Hossain*, Swagatika Das, Umashankar Das, Jonathan R. Dimmock	Indiana University Kokomo and University of Saskatchewan
T- 71	Synthesis of bioactive quinazolines by auto-tandem Pd(II) catalysis: A platform for Diversity Oriented Synthesis	Arshad J. Ansari*, Devesh M. Sawant	Department of Pharmacy, Central University of Rajasthan
T- 72	Dienamine Catalyzed [4+2] Cycloaddition of Pyrones with alpha,beta-Unsaturated Aldehydes	Charles J. F. Cole*, Lilia Fuentes, Scott A. Snyder	University of Chicago
T- 73	Differential Syntheses of alpha-Carbolines by Rh(I) and Pd(0) Catalysis	Kyle Medas,* Robert Lesch, Friendship Edima, and Seann P. Mulcahy	Providence College
T- 74	Stereospecific Synthesis of Highly Substituted Piperazines via a One-Pot Three Component Ring-Opening Cyclization from N-activated Aziridines, Anilines and Propargyl Carbonates	Navya Chauhan*, Manas Ghorai	Indian Institute of Technology Kanpur

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T- 75	Chiral Bifunctional Phosphine Ligand Enabling Gold-Catalyzed Asymmetric Isomerization of Alkyne to Allene	Xinpeng Cheng*, Zhixun Wang, Carlos D. Quintanilla, Liming Zhang	University of California, Santa Barbara
T- 76	Peptide Stapling by Lewis Base-Bronsted Acid Catalyzed Sulfenylation of Tryptophan	Zachary E. Brown*, Mirza A. Saputra, Hanne C. Henriksen, Isaac W. Bell, Joseph J. Provost, Jeffrey L. Gustafson	San Diego State University
T- 77	Expanding the Electrophile and Nucleophile Scope in π -allyl(Pd)/Lewis Base Cooperative Catalysis	W. Rush Scaggs*, Thomas N. Snaddon	Indiana University—Bloomington
T- 78	Synthesis and Characterization of Bacterial Isonitrile Chalkophores	Yao Xu*, Derek Tan	Memorial Sloan Kettering Cancer Center
T- 79	Efforts Toward the Synthesis of Fischer Carbenes for Intramolecular Decarboxylative Allylation	Phong Thai* Michael C. Slade	University of Evansville
T- 80	Photoredox Catalyzed Radical Additions to Aliphatic and Aromatic N-acylhydrazones	Stephen T. J. Cullen*, Gregory K. Friestad	University of Iowa
T- 81	Chameleon Catalyst	Aliakbar Mohammadlou*, Xiaopeng Yin, Emily Matthews, Babak Borhan, William D. Wulff	Michigan State University
T- 82	Transition- Metal Complexes for C-H Activation Reactions to Construct Valuable C–N Bonds through Nitrene-Transfer Chemistry	Meenakshi Mehta*, Anshika Kalra, Suraj Kumar Sahoo, Himanshu Bhatia, Lillian Adams, Pericles Stavropoulos	Missouri University of Science and Technology
T- 83	Photoinduced Iron-Catalyzed Cycloisomerizations: Discovery and Reaction Mechanism	Dan Lehnher, Yining Ji, Tamas Benkovics, John McIntosh, Carolyn Suh, Ryan D. Cohen, Andrew P. J. Brunskill, Junyu Yang, Mikhail Reibarkh, Andrew J. Neel*	Merck and Co., Inc.

T- 84	Arene Amination using Hydroxylamine	Yi Yang See*, Melanie S. Sanford	University of Michigan
T- 85	Snatching Chloride Using C-H Hydrogen Bonds	Nabarupa Bhattacharjee*, Yun Liu, Wei Zhao, Chun-Hsing Chen, Fred C. Parks, Yi Yi, Takashi Ito, Amar H. Flood	Indiana University Bloomington, University of Illinois at Urbana-Champaign, University of North Carolina At Chapel Hill, Kansas State University
T 86	Synthesis of Quinoline-5,8-Dione Derivatives	Austin Jones*, Gunnar Taylor, Robert E. Sammelson	Ball State University

Wednesday, June 26, 2019 8:15-11PM

W- 1	N-Morpholinomethyl-5-lithiotetrazole: A Reagent for the One-Pot Synthesis of 5-(1-Hydroxyalkyl)tetrazoles	Panagiotis D. Alexakos*, Duncan J. Wardrop	University of Illinois at Chicago
W- 2	Cyanoborylation and Traceless Nitrile-Directed C-H Activation as a Versatile Approach to Late-Stage Functionalization	Annabel Q. Ansel* and John Montgomery	University of Michigan
W- 3	Biocatalytic derivatization of α -amino acids	Stephanie W. Chun*, LeeAnne Wang, Robert T. Kennedy, Alison R. H. Narayan	Department of Chemistry and Life Sciences Institute, University of Michigan, Ann Arbor

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W- 4	A General Diversity Oriented Synthesis of Asymmetric Double-Decker Shaped Silsesquioxanes	Badru-Deen Barry,* Jonathan E. Dannatt, Austin K. King, Andre Lee, Robert E. Maleczka, Jr.	Michigan State University
W- 5	Applying chirality transfer [2+2] reaction into bicyclo[4.2.0] natural product syntheses	Renyu Guo*, Brittany P. Witherspoon, Nathan J. Line, M. Kevin Brown	Indiana University, Bloomington
W- 6	Expedient Synthesis of Chiral Tryptamines via a Regioselective Indole Alkylation	Jie Xu*, Jens Wolfard, Cheol K. Chung, Haiming Zhang	Genentech Inc.
W- 7	The Multi-Directional Hexadehydro-Diels—Alder (HDDA) Reaction towards Synthesis of Polyaromatic Compounds	Daniel Lee*, Thomas R. Hoyer	University of Minnesota - Twin Cities
W- 8	Triflate-Catalysis Enables Selective Access to alpha,alpha-Difluoroalkylthioethers	Jacob P. Sorrentino*, Douglas L. Orsi, Ryan A. Altman	Dept. of Medicinal Chemistry, The University of Kansas
W- 9	Novel Aromatization Domino Sequence to Fused Heterocycles	Brendon B. Carnell,* Robert J. Hinkle, Youzhou Chen, Colleen P. Nofi, Shane E. Lewis, Daniel J. Speer, Bethany L. Kanter	College of William & Mary
W- 10	Novel Reactivity of Coumarins with the Hexadehydro-Diels—Alder (HDDA) Generated Benzyne	Bhavani Shankar Chinta*, Daniel Lee, Thomas R. Hoyer	University of Minnesota - Twin Cities
W- 11	Fe-catalyzed radical cyclization via reductive addition of olefins to N-acylhydrazones	Reid L. Hein*, Gregory K. Friestad	University of Iowa
W- 12	Cobalt-Catalyzed Aerobic Oxidative Cyclization of 2-Aminophenols and 2-Aminoanilines with Isonitriles	Jiaqi Liu*, Jessica Hoover	West Virginia University

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W- 13	Cyanoborylation and Traceless Nitrile-Directed C-H Activation as a Versatile Approach to Late-Stage Functionalization	Annabel Q. Ansel* and John Montgomery	University of Michigan
W- 14	Synthesis and Characterization of Heteroacenes Derived from Mellophanic Diimide	Stella M. Luo*, Kellie A. Stellmach, Stella M. Ikuzwe, Dennis D. Cao	Macalester College
W- 15	Solution-phase Automated Synthesis of a Di- and Trisaccharide Rhamnan Library	Victoria R. Kohout*, Alyssa Pirinelli, Nicola L.B. Pohl	Indiana University
W- 16	Efforts Towards a One-pot Synthesis of an O-linked Fucose Trisaccharide Target	Ashley E. DeYong*, Nicola L. B. Pohl	Indiana University
W- 17	Synthesis of ABBV-168, a 2'-Bromouridine for the Treatment of Hepatitis C	Geoff T. Halvorsen*, Brian S. Brown, Stephen N. Greszler, Eric A. Voight, Gang, Zhao, Albert W. Kruger, John Hartung, Kirill, A. Lukin, Steven R. Martinez, Eric G. Moschetta, Michael T. Tudesco, Nathan D. Ide	Drug Discovery Science and Technology and Process Research and Development, AbbVie Inc.
W- 18	Development Of Greener Synthesis Of N-Heterocycles Via Reductive Cyclization Of Nitroarenes	Xinyu Guan*, Haoran Zhu, Michael Shevlin and Tom G. Driver	1) Department of Chemistry, University of Illinois at Chicago; 2) Department of Process Research & Development, Merck & Co., Inc.
W- 19	Vapor diffusion for crystallization: A quantitative study of volume and solvent strength changes.	Michael J. Wen, Matthew T. Jackson, Charles M. Garner*	University of Memphis, Baylor University

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W- 20	Medicinal Chemistry and Chemical Biology- Inspired Synthesis of Troponoids	Daniel Schiavone*, Ryan Murelli	Brooklyn College and The Graduate Center, The City University of New York
W- 21	Synthesis and Development of a Safe and Green Testing Method for Manganese Concentration in Drinking Water	Anna Holmes*, Anusree Mukherjee, Bernhard Vogler, Emanuel Waddell	The University of Alabama in Huntsville
W- 22	Toward Identifying Inhibitors of a Glycosyltransferase that is Important for Bacterial Cell Wall Biosynthesis	Regan N. Szalay*, Ian D. Mundy, Rada Zurich, Sara E.S. Martin	The College of Wooster
W- 23	Copper-Mediated 1,2-(Bis)trifluoromethylation of Alkynes: A Combined Experimental and Computational Study	Deyaa I. AbuSalim*, Shuo Guo*, and Silas P. Cook	Indiana University - Bloomington
W- 24	Atropisomerism as a strategy towards increased potency and selectivity of Ibrutinib analogs	Sean Toenjes, Ramsey Hazin*, Samuel Albright*, Sagar Vaidya, Jeffrey Gustafson	San Diego State University
W- 25	Molybdenum Catalyzed Deoxydehydration Of Vicinal Diols to Olefins	Alex John, Stephenie Martinez*, Jamie Lam, Christine Navarro, Tim Siu\, Andranik Mihranyan, Celine Parker, Consuelo Martinez, Maiko Lunn, Paula Magat, Skyler Stovall, Tristhan-Trieu Tran	California Polytechnic University, Pomona
W- 26	Synthesis of indole-fused S-containing heterocycles	Mukund Jha*	Department of Biology and Chemistry, Nipissing University
W- 27	Protein Proximity Assay in FFPE Tissue Using Caged Haptens	Nate Polaske*, Yuri Belosludtsev, Brian Kelly, Adrian Murillo	Roche Tissue Diagnostics

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W- 28	Mimicking Extracellular Matrix with Visible-Light Controlled, Biopolymer-Derived Hydrogels	Boyeong Kang*, Joseph V. Accardo, Julia A. Kalow	Northwestern University
W- 29	Ammonium Heptamolybdate Catalyzed Deoxydehydration of Vicinal Diols to Olefins	Christine A. Navarro*, Alex John	California State Polytechnic University, Pomona
W- 30	Direct Amide Synthesis from Carboxylic Acids Using N-Haloimide Reagents	Jack T. Floreancig*, Charles D. Irving, Sebastien Laulhe	Indiana University Purdue University of Indianapolis
W- 31	Tri-Catalytic Cross-Electrophilic Coupling of Epoxides with Aryl Iodides under Visible Light	Marvin Parasram*, Benjamin J. Shields, Abigail G. Doyle	Princeton University
W- 32	Enantioselective Functionalization of Enamides at the beta-position with Indoles	Mirza A. Saputra, Binod Nepal*, Nitin S. Dange, Pu Du, Frank R. Fronczek, Revati Kumar, Rendy Kartika	Louisiana State University
W- 33	Palladium-Catalyzed Dearomative syn-1,4-Diamination	William C. Wertjes*, Mikiko Okumura, David Sarlah	University of Illinois at Urbana-Champaign
W- 34	Application of Acetylene-Activated SNAr Reactions To the Synthesis of Heterohelicenes	Samuel M. Hoenig, Emily A. Dougherty, Lucas S. Gomez, Yusheng Hu, Christopher K. Lee, Sava Petovic, Jeffrey L. Katz*	Colby College
W- 35	A Versatile Bis-Allylboron Reagent for the Stereoselective Synthesis of Chiral Diols	Belinda E. Hetzler*, Giulio Volpin, Dirk Trauner	New York University
W- 36	Maltol Derived Oxidopyrylium Ylides Display Unique Kinetics in Formation of Oxabicyclic Intermediates Towards the Synthesis of 4- or 2-Hydroxytropolones	Lauren P. Bejcek*, Ryan P. Murelli	Brooklyn College and the Graduate Center at CUNY

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W- 37	Synthesis and Redox Transmetalation Reactivity of a Catalytically Relevant Nickel Metallacycle	Aaron P. Honeycutt, Kerry-Ann Green, Jessica M. Hoover*	West Virginia University
W- 38	total synthesis of Napyradiomycin A1	Saeedeh Torabi Kohlbouni*, Arvind Jaganathan, Gonzalo Javier Villegas Rodriguez, Natasha Rose Perry, Babak Borhan	Michigan State University
W- 39	Mild and Efficient Synthesis of Amides from Acid Chlorides and Amines using Cs ₂ CO ₃ -TBAI. Application Toward the Preparation of Sulfanilamide Derivatives and Penicillin Analogs	Abe Rosenthal *, Joseph Shamp, Ethan Carey, David Orlando Ralph N. Salvatore	Southeastern University, Department of Natural Sciences
W- 40	Synthetic Studies Towards the Total Synthesis of Laingolide A	Alexandra Golliher*, William Maio	New Mexico State University
W- 41	Selective Intermolecular Reductive-Heck Reaction via Pd Nanoparticles	Daisy Rosas Vargas*, Silas P. Cook	Indiana University
W- 42	Synthesis and Methodology Enabled by γ -Functionalization of Enones	Gennadii Grabovyi*, Scott Virgil, Brian Stoltz, Justin Mohr	University of Illinois at Chicago, California Institute of Technology
W- 43	Pd-Catalyzed Reductive Amination of Enolizable sp ³ C–H Bonds.	Russell Ford*, Isabel Alt, Navendu Jana, Tom Driver	University of Illinois at Chicago
W- 44	Towards Molecular Complexity: Alkene Carboboration via Cu/Pd Synergistic Catalysis	Stanna K. Dorn*, Allison M. Bergmann, Annika E. Tharp, M. Kevin Brown	Indiana University-Bloomington
W- 45	Strategies and Catalysis for the Synthesis of Epidithiodiketopiperazines	Toya D. Scaggs*, Colin M. Pearson, James W. B. Fyfe, Thomas N. Snaddon	Indiana University Bloomington

W- 46	Total Synthesis of Pactalactam and Its Structure Confirmation by Reisolation from Pactamycin-producing Actinomycetes	Taejung Kim*†,‡, Shohei Matsushita†, So Matsudaira†, Tsuyoshi Doi†, Shinji Hirota†, Young-Tae Park‡, Masayuki Igarashi#, Masaki Hatano#, Noriko Ikeda#, Jungyeob Ham‡, Masaya Nakata†, Yoko Saikawa†	†Keio University, ‡Korea Institute of Science and Technology (KIST), #Institute of Microbial Chemistry (BIKAKEN)
W- 47	Design, synthesis, and structure-activity relationships of novel phenolic series of indenopyridinone as topoisomerase inhibitors	Eung-Seok Lee*, Aarajana Shrestha, Youngjoo Kwon	Yeungnam University
W- 48	Leveraging atropisomerism to obtain a selective inhibitor of RET kinase with secondary activities towards EGFR mutants	Sean Toenjes*, Valeria Garcia, Sean Maddox, Greg Dawson, Maria Ortiz, Javier Piedrafita, Jeff Gustafson	San Diego State University
W- 49	Development of Atroposelective Syntheses of Pharmaceutically Relevant N-Heterocycles	Mariel M. Cardenas*, Mirza A. Saputra, Andrea N. Sanchez, Crystal J. Robinson, Edward Valle, Jeffrey L. Gustafson	San Diego State University
W- 50	Copper Mediated Photochemical Methods for the Synthesis of Small Heterocycles	Daniel M. Flores*, Valerie A. Schmidt	University of California - San Diego
W- 51	Introduction of the Ether Bridge into Loline Alkaloids	Minakshi Bhardwaj, Robert B. Grossman*, Padmaja Nagabhyru, Christopher L. Schardl, Juan Pan, Wei-Chen Chang, Bo Zhang, J. Martin Bollinger, Carsten Krebs	University of Kentucky and Pennsylvania State University

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W- 52	Identification and optimization of novel small molecule inhibitors of mPGES-1	Bryce Dye*, Angela Warning*, Taylor Gerrein, Sarah Kirchhoff, Leah Kovalic, William L. Seibel, Sarah R. Anthony, Michael Tranter, Amber J. Onorato	Northern Kentucky University, University of Cincinnati, Cincinnati Children's Hospital
W- 53	Pd-catalyzed preparation of vinyl sulfonyl fluorides from enol triflates	Terry Lou ¹ , Edward Conn ² , Scott W. Bagley ^{2*} , Michael C. Willis ¹	1 - University of Oxford; 2 - Pfizer Medicine Design
W- 54	Toward an AMPK-12 Selective Activator: A Metabolic Amplification Treatment for Type 2 Diabetes	Michael A. Plotkin*, Hyunjin Kim, James M. Apgar, Robert Wilkening, Hong-Ping Guan, Ku Lu, Xiaodong Yang, Judy Gorski, George Eiermann, Anantha Gollapudi, Marc Kurtz, Maria Trujillo, Robert Myers, Daniel Kemp, Mengwei Hu, Rosemary Mayer-Ezell, Shiyao Xu, James R. Tata, Iyassu Sebat, Jason Cox	Merck & Co., Inc., MRL
W- 55	Pd-Catalyzed Enantioselective Hydrofunctionalizations of 1,3-Dienes and 1,3-Enynes	Nathan J. Adamson*, Haleh Jeddi, Steven J. Malcolmson	Duke University Department of Chemistry
W- 56	Design and Synthesis of Phosphoglycerate Derivatives Incorporating Azacycle as Bacterial Transglycosylase Inhibitors	Tsung-Han Chao*, Jim-Min Fang	Academia Sinica
W- 57	Designing Functional and Degradable Polyphthalaldehyde Derivatives	J. Patrick Lutz*, Anne J. McNeil	Department of Chemistry, University of Michigan

W- 58	Fabrication of N-free trichlorovinyl silane-modified-chitosan film with enhanced solubility and antibacterial activity	Anthony Udukhomo Awode 1*, Akeem Adeyemi Oladipo 2, Mumtaz Guran 3, Osman Yilmaz 1, Mustafa Gazi 1.	1.Polymeric Materials Research Laboratory, Chemistry Department, Faculty of Arts and Science, Eastern Mediterranean University, 2.Cyprus Science University, Faculty of Engineering, 3.Department of Medical Microbiology, Dr. Fazıl Küçük Faculty of Medicine, Eastern Mediterranean University
W- 59	Difunctionalization of N-cyclobutylanilines with Isocyanide and TMSCN under Photoredox Catalysis	Elvis Boateng*, Nan Zheng	University of Arkansas
W- 60	Supramolecular Catalyst Assembly Based on Aromatic Donor-acceptor Interaction for Asymmetric Ring Opening of Epoxides	Jian Liang, Daniel Blechschmidt, Matthew Woodhouse, Luke N. Soucie, Yu Liu*	Northern Michigan University
W- 61	Photoredox/ Transition Metal Dual Catalysis in Decarboxylative Elimination and Cross Coupling Reactions	Kaitie C. Cartwright*, Simon B. Lang, Jon A. Tunge	The University of Kansas
W- 62	Electrochromic and Non-Volatile Memristive Study of Mn(III)-polymer of Schiff's Base Organic Ligand	Ddeepa Oberoi*, Ansauya Bandyopadhyay	Indian Institute of Technology Roorkee

W- 63	Toward a Modular Synthesis of Substituted Naphthothiophenes via the Garratt-Braverman Cyclization	Stefan L. Debbert*, Anthony M. Ortiz, Erin L. Hill, Thang X. Nguyen, Franklie A. Dilone	Lawrence University
W- 64	Synthesis of benzo[c][1,2,5]selenadiazol Based Sulphonamides	Syeda Shaista Gillani 1,2*, Hafiz Adnan Ahmad, Munawar Ali Munawar, Salman Gul, Rabia Babar	Lahore Garrison University
W- 65	Frustrated Complexant Scaffolds of 2-(6-[1,2,4]triazin-3-yl-pyridin-2-yl)-1H-indoles Toward Minor-Actinide Separations	Mariah L. Tedder*, Zachary Z. Gullede, Jesse D. Carrick	Tennessee Technological University
W- 66	DBU-Assisted Intermolecular [3 + 2] Dipolar Cycloaddition of Terminal Alkynes with Tosylhydrazones Towards the Synthesis of Frustrated Pyrazolyl-Pyridine-1,2,4-Triazine Complexant Scaffolds for Minor Actinide Separations	Giri Babu Veerakanellore*, Jesse Carrick	Tennessee Technological University
W- 67	Intramolecular Alkene Hydroalkylation with 1,3-Dicarbonyls via Photoredox Catalysis	Marc Kawada*, Anne-Marie Crooke, Yuri Lee, Joseph Costello, Jeffrey Scott Cannon	Occidental College
W- 68	Atroposelective halogenation of biaryl anilines	Sagar D. Vaidya*, Sean Toenjes, Jeffrey L. Gustafson	San Diego State University
W- 69	Stereoselective applications of proline-catalysed α -amination of Aldehydes	Anas Ansari*, Ramesh Ramapanicker	Indian Institute of Technology, Kanpur
W- 70	Fluorinated Phthalonitriles and Phthalocyanines: Synthesis, X-Ray Structures and Exocyclic Conjugation Effects on Oxygen Activation Reactivity	Marius Pelmus*, Christopher Colomier, Hemant H. Patel, Olivia C. Xiao, Ralph III Foglia, Marta G. Suazo, Sergiu M. Gorun	Department of Chemistry and Biochemistry, Seton Hall University

W- 71	SUBSTITUTION OF AROMATIC METHYL GROUP WITH AMINO: NOVEL FLAVOENZYME CONVERTS VITAMIN INTO ANTIBIOTIC	Isita Jhulki*, Tadhg P. Begley	Texas A & M University
W- 72	Toward a General Route to Nanographenes via a [2+2+2] / Cyclodehydrogenation Sequence	Hannah Nguyen, Gavin Kiel, T. Don Tilley	University of California, San Diego and University of California, Berkeley
W- 73	Synthesis of cyclic amidines via activation of N-heterocycles	Seewon Joung*	Mokpo National University
W- 74	Copper(II)–Dipicolylamine–Coumarin Sensor for Maltosyltransferase Assay	Wei-Li Lee, Tse-Wei Hsu*, Wei-Cheng Hung, Jim-Min Fang	National Taiwan University
W- 75	Structural Complexity from Simple Starting Materials: Novel Alkenylboration Reaction via Synergistic Cu/Pd Catalysis	Annika Tharp*, Stanna Dorn, M. Kevin Brown	Indiana University
W- 76	Enantioselective Copper Catalyzed Alkyne-Azide Cycloaddition by Kinetic and Dynamic Kinetic Resolution	En-Chih Liu*, Amy Ott, Juliana Alexander, Joseph Topczewski	University of Minnesota
W- 77	Chemoenzymatic synthesis of natural products and complex scaffolds	Tyler J. Doyon*, Jonathan C. Perkins, Summer A. Baker Dockrey, Evan O. Romero, Alison R. H. Narayan	Life Sciences Institute, Program in Chemical Biology, University of Michigan, Ann Arbor
W- 78	A Unified Approach to the Akuammiline Alkaloids via Nitrenium Ion-Mediated Alkene Oxamidation	Mihir K. Chavda*, Duncan J. Wardrop	University of Illinois at Chicago

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W- 79	Ipso-Borylation of Silyloxyarenes and Unexpected C-H Activation of Non-Acidic, Undirected C-H Bonds	Wesley Pein*, Eric Wiensch, and John Montgomery	University of Michigan
W- 80	Halogenase Genome Mining for Selective Catalysis	Brian F. Fisher*, Harrison M. Snodgrass, Jared C. Lewis	Indiana University
W- 81	Designing Polyurethane Dendrimers by Click Chemistry	Dhruba P. Poudel* , Dr. Richard T. Taylor	Miami University
W- 82	Gamma Activation of Enones Enabled by Nitrogen Centered Radicals	Sebastian Marquez*, Justin Mohr	University of Illinois at Chicago
W- 83	Towards Photoswitchable Double Helical Foldamers	Alketa Lutolli*, Fred C. Parks, Yun Liu, Yuran Hua, Semin Lee, Amar H. Flood	Indiana University
W- 84	Pyridine as a Photocatalyst and Nucleophile for the Synthesis of Aryl-Pyridiniums	Tolani K. Salvador*, Matthew S. Remy, Melanie S. Sanford	University of Michigan and Dow
W- 85	Nickel-Catalyzed Arylboration of Alkenylarenes: Synthesis of Boron-Substituted Quaternary Carbons and Regiodivergent Reactions	Alan R. Lear*, Liang-An Chen, Pin Gao, M. Kevin Brown	Indiana University

NOS Activities

Organized Activities:

Hard Truth Hills Distillery:

Local distillery located in near Brown County State Park. Offers spirits from the Hard Truth Distillery and beer from the Quaff On brewery. Located on 325 acres of wooded hills near scenic Brown Country state park. Bus will shuttle attendees to and from the event. Includes 1-hour tour or mixology class and tasting session. Pick up at 1pm and drop off at 5pm.



Located 30 min away by bus

Fee: \$40/person

Number of Attendees: 50 (must be 21 or older)

Date: Monday, June 24th

Website: <http://www.hardtruthdistilling.com>

Oliver Winery & Vineyards:

Local Winery located just outside Bloomington. A variety of wines offered with grapes sourced from the local Creekbend vineyard and California. The tasting room is situated on a beautiful hillside picnic area overlooking a lake. Bus will shuttle attendees to and from the event. Includes tasting session and light snacks. Pick up at 1pm and drop off at 5pm.



Located 15 min away by bus

Fee: \$40/person

Number of Attendees: 50 (must be 21 or older)

Date: Tuesday, June 25th

Website: <https://www.oliverwinery.com>

Corteva Agriscience Site Tour:

Site tour of Corteva Agriscience located in Zionsville, IN. Priority will be given to students and post-docs. Bus will shuttle attendees to and from the event. Pick-up is at 1 pm (bring your lunch) and drop off ~5:30 pm.

Located ~90 min away by bus

Number of Attendees: 28

Date: Monday, June 24th



Eli Lilly & Company Site Tour:

Site tour of Eli Lilly & Co located in Indianapolis, IN. Priority will be given to students and post-docs. Bus will shuttle attendees to and from the event. Pick-up is at 1 pm (bring your lunch) and drop off ~5:00 pm.

Located ~60 min away by bus

Number of Attendees: 28

Date: Tuesday, June 25th



Things to do in Bloomington:

Hiking:

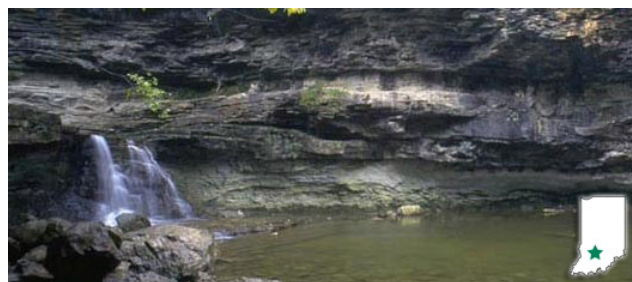
McCormicks Creek State Park (\$7 park entrance fee, 25 min drive) Great hiking! We recommend the Wolf Cave Hike (~3 miles) with a cave. Bring a flashlight!

Website: <https://www.in.gov/dnr/parklake/2978.htm>

Griffy Lake Nature Preserve (free, 10 min drive)

Great hiking around a beautiful lake!

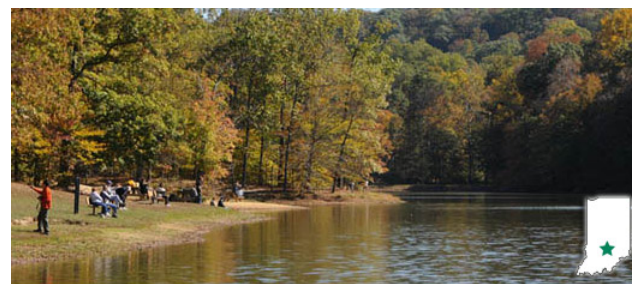
Website: <https://bloomington.in.gov/parks/parks/griffy-lake>



Brown Country (\$7 park entrance fee, 40 min drive)

Great hiking and beautiful vistas!

Website: <https://www.in.gov/dnr/parklake/2988.htm>



Yellowwood State Forest (free, 30 min drive)

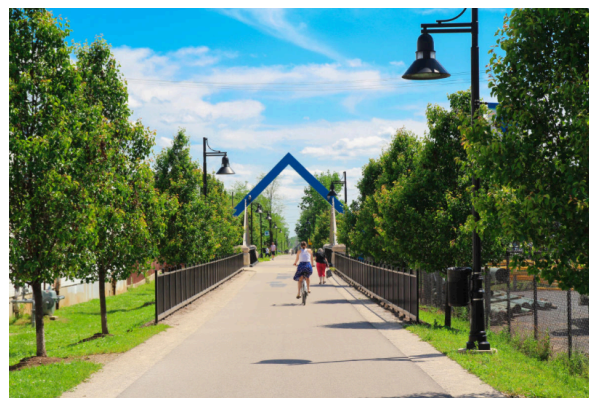
Great hiking around a beautiful lake! (~5 miles, great for trail running).

Website: <https://www.in.gov/dnr/forestry/4817.htm>

Running/Walking:

B-Line Trail (3.1 mile running trail through Bloomington)

Website: <https://bloomington.in.gov/parks/trails/b-line-trail>



Swimming/Boating:

IU Outdoor Pool. Great for lap swimming in an Olympic size pool. (\$5 daily admission fee). Open from 6 am to 6 pm.

Website: <http://www.indiana.edu/~iuop/>

Lake Monroe

Hiking and Swimming in Beautiful lake Monroe!

Boats can be reserved in advance.

(\$7 park entrance fee)

Website: <https://www.in.gov/dnr/parklake/2954.htm>

Lake Griffy. Canoe/Kayak/Rowboat/Stand-up

Paddleboard Rental

10 min drive

3400 N Headley Rd. Bloomington IN 47408

Website: <https://bloomington.in.gov/parks/parks/griffy-lake/boathouse>

Fee \$8/hour



Exercise/Basketball Courts:

\$6/day pass.

Intramural Center

1025 E. 7th Street, Bloomington, IN 47405

SRSC

1601 Law Lane, Bloomington, IN 47408



Golf:

Cascades Golf Course

5 min drive

Website: <https://bloomington.in.gov/parks/facilities/cascades-golf-course>

Salt Creek Golf Course

30 min drive

Website: <https://www.saltcreekgolf.com/>

Libations (All local brewery and distilleries):

Upland brewery
350 W 11th St, Bloomington, IN 47404
Website: <https://www.uplandbeer.com/>

Function Brewing
108 E 6th St, Bloomington, IN 47408
Website: <http://functionbrewing.com/>

Quaff On!
116 N Grant St, Bloomington, IN 47408
Website: <http://www.quaffon.com>

Cardinal Sprits
22 S Morton St, Bloomington, IN 47403
Website: <https://www.cardinalspirits.com/>

The Tap
101 N College Ave, Bloomington, IN 47404
Website: <http://www.thetapbeerbar.com/>



Dining:

Over 50 restaurants in Bloomington to choose from! Ask a volunteer if you need help deciding!
Website: <http://www.magbloom.com/dining-out/>

Coffee:

Soma
322 E Kirkwood Ave, Bloomington, IN 47408

Pourhouse
314 E Kirkwood Ave, Bloomington, IN 47408

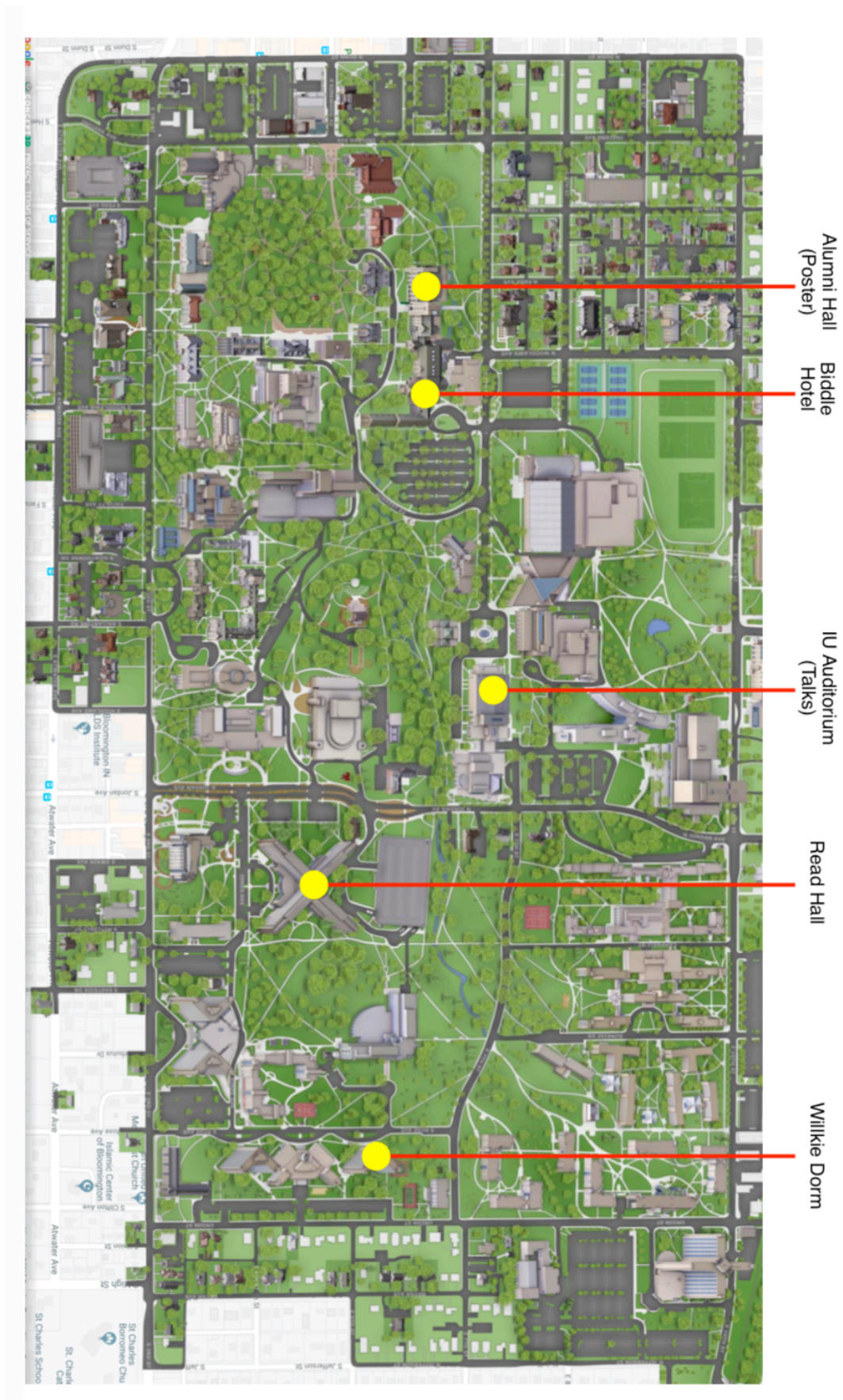
Hopscotch
235 W Dodds St #102, Bloomington, IN 47403

Local Attraction:

Nashville, Indiana
Eclectic town located near Brown County state park. Great for shopping.
30 min drive
Website: <http://www.nashville-indiana.com/>



Campus Map



Notes

