2022

Graduate Research Symposium

Division of Organic Chemistry

American Chemical Society

July 9 - 12, 2022

DOC Graduate Research Symposium

University of California, Santa Barbara, CA, July 9-12, 2022

SATURDAY, JULY 9

2:00 pm - 4:30 pm Arrival and **Check-in**

2:30 pm - 4:30 pm Industrial Poster Session – **Corwin Ballroom**

4:30 pm - 5:45 pm Registration and Pizza – **Corwin Lobby and Lagoon Plaza**

SATURDAY EVENING ***Presiding: Gary Molander, University of Pennsylvania***

5:45 pm - 6:00 pm **Welcome – Corwin Ballroom**

6:00 pm - 6:50 pm **Omar Yaghi, UC Berkeley**
The chemistry of covalent organic frameworks

6:50 pm - 7:10 pm **Andre Sanchez**
University of California, Berkeley
Taming Shapeshifting Anions: Total Synthesis of Ocellatusone C

7:10 pm - 7:30 pm **Andrew Kelleghan**
University of California, Los Angeles
Intercepting Strained Cyclic Allenes with Transition Metal Catalyst

7:30 pm - 7:50 pm **Rebecca Joy Ulrich**
University of Illinois at Urbana Champaign
Exploring the Physiochemical Properties Governing Compaund Efflux In Gram-Negative Bacteria

7:50 pm - 8:10 pm **Madeleine Deem**
University of British Columbia
Ring Walking As A Regioselectivity Control Element In Pd-Catalyzed C-N Cross Couplings

8:10 pm - 8:30 pm **Cecilia Hendy**
Emory University
CO_2 Radical Anion: A Potent Single Electron Reductant

8:45 pm - 11:30 pm Reception and **Poster Session 1 – Corwin Ballroom**

SUNDAY, JULY 10 ***Presiding: P. Andrew Evans, Queen's University***

9:00 am - 9:40 am **Chuck Frazier – Apeel Sciences**
From Idea to Product: Leveraging Chemistry and Materials to Reduce Food Waste

9:40 am - 10:00 am **Dylan E. Holst**
The University of Wisconsin-Madison
The Dictation Pool Strategy for Diverse Alkene Functionalization

10:00 am - 10:20 am **Quinn Edmondson**

University of California, San Francisco

A Synthetic Platform For Minimal Macrolide Antibiotic Pharmacophores

10:20 am - 10:40 am Coffee Break – **Corwin Ballroom**

10:40 am - 11:30 am **Hosea Nelson, CalTech**

Twists and Turns Along the Path of Reactivity-Driven Methods Development

11:30 am - 11:50 am **Victoria Marando**

Massachusetts Institute of Technology

Biosynthetic Gylcan Labeling: Developing Chemical Tools To Study Cell Surface Carbohydrates

11:50 am - 12:10 pm **Feng Yang**

Boston University

Unified, Asymmetric Total Synthesis of the Asnovolins and Related Spiromeroterpenoids: A Fragment Coupling Approach

12:30 pm - 2:30 pm Lunch and **Poster Session 1 – Lagoon Plaza and Corwin Ballroom**

WORKSHOPS – Gary Molander

WORKSHOP 1: Academic Support – Corwin Ballroom

2:30 pm – 3:00 pm **Paul Blakemore-NSF**

Chemistry at the National Science Foundation: Our Mission, Priorities, Programs, and Modus Operandi

3:00 pm – 3:30 pm **Stephen Ritter – ACS Publications**

The Art of Scientific Publishing

3:45 pm - 5:15 pm **WORKSHOP 2 Academic Life – Corwin Ballroom**

Andy Evans (Queen's) and Gary Molander (UPenn)

Paul Blakemore (Oregon State University), Hosea Nelson (CalTech), Omar Yaghi (UC Berkeley), Andy Mitchell (Illinois Stat), Todd Hyster (Cornell)

5:15 pm - 6:30 pm Dinner – **Betty Ellings Wells West Terrace at the Club**

SUNDAY EVENING ***Presiding**: **Angie Angeles, Gilead Sciences***

6:30 pm – 7:10 pm **Sarah J. Ryan, Eli Lilly– Corwin Ballroom**

Process Development for a Small Molecule Oncolytic

7:10 pm – 7:30 pm **Evan Romero**

University of Michigan

Chemoenzymatic Total Synthesis Enabled by Non-Heme Iron Enzymes

7:45 – 9:30 pm **WORKSHOP 3: Industrial Life**

Please see the assignments in the tables at the end of the document.

9:30 pm - 11:45 pm **Reception and Poster Session 2 – Corwin Ballroom**

MONDAY, JULY 11 ***Presiding: Tom Pettus, UCSB***

9:00 am - 9:50 am **Todd Hyster, Cornell University – Corwin Ballroom**
Photoenzymatic Catalysis - Using Light to Reveal New Enzyme Functions

9:50 am - 10:10 am **Laura Alonso**
University of Illinois at Chicago
Solvent, Substituent, and Catalyst Effects on Strained Electrocyclizations

10:10 am - 10:30 am **Vincent Ash Pistritto**
University of North Carolina
Cation Radical Accelerated Nucleophilic Aromatic Substitution of Unactivated Fluoroarenes: Methodology and Mechanism

10:30 am - 10:50 am Coffee Break – **Corwin Ballroom**

10:50 am - 11:30 am **Michelle Rogers, Cargill BioIndustrial**
The Unexpected Path: Where saying YES to development opportunities has lead

11:30 am - 11:50 am **Md Mubarak Hossain**
University of Arizona
Photocatalytic α-arylation of Carbonyl Compounds

11:50 am - 12:10 am **Scott Niman**
University of California, Irvine
Efforts Towards the Total Synthesis of Neoamphilectane

12:15pm – 12:30pm **Group Photograph**

12:30 pm - 2:30 pm Lunch and **Poster Session 2 – Lagoon Plaza and Corwin Ballroom**

MONDAY AFTERNOON ***Presiding: P. Andrew Evans, Queen's University***

2:30 pm - 3:10 pm **Tay Rosenthal, Corteva – Corwin Ballroom**
How does a chemist help feed the world? Discovery & development of natural product inspired small molecules

3:10 pm - 3:30 pm **Sara Dibrell**
California Institute of Technology
Progress Toward the Synthesis of Cassiabudanol

3:30 pm - 4:00 pm Coffee Break – **Corwin Ballroom**

4:00 pm - 4:20 pm **Yuting Ma**
Cornell University
Photoswitching Radical and Cationic Polymerizations for Tuning Thermoset Properties

4:20 pm - 4:40 pm **Xin Gu**

Massachusetts Institute of Technology

Synthesis of Trans-diequatorial Diols Through Stereochemical Editing Strategy

4:40 pm - 5:00 pm **Brian Spinello**

University of Texas at Austin

Carbonyl Addidtion From The Alcohol Oxidation Level: Carbon-Carbon Bond Construction via Hydrogen Auto-Transfer

5:00 pm - 5:20 pm **Zohaib Siddiqi**

University of Illinois

An Electrochemical Dearomatization of Polystyrene

5:30 pm - 8:30 pm Dinner

8:30 pm Drinks and Games: **TBD**

TUESDAY, JULY 12 ***Presiding: Gary Molander, University of Pennsylvania***

9:00 am - 9:50 am **Andy Mitchell - Illinois State University – Corwin Ballroom**

Oxidopyrylium-Based [5+2] Cycloadditions: Old Roads, New Pathways

9:50 am - 10:10 am **Weizhe Dong**

University of Pennslyvania

Photoredox Catalysis in Installation of Unique Building Blocks

10:10 am - 10:40 am Coffee Break – **Corwin Ballroom**

10:40 am - 11:00 am **Maria Morales Colon – University of Michigan**

Suzuki-Miyaura Cross-Couplings At Low Palladium Loadings

11:00 am - 11:20 am **Thi Tran**

University of California Santa Barbara

Synthesis Of A Well-Defined Network Homopolymer Usign A Single-Component Diels-Alder Monomer

11:20 am - 11:40 am **Ridge Michael P. Ylagan**

Queen's University

Enantioselective Rhodium-Catalyzed Pauson-Khand Reactions of 1,6-Choroenynes with 1,1-Disubstituted Olefins

11:40 am – 12:00 pm **Jackson Hernandez**

University of Rochester

Synthesis of Spirocyclic Isoindolones Using an Alkynyl Prins/Oxidative Halo-Nazarov Sequence

12:00 pm - 1:00 pm Lunch – **Lagoon Plaza**

12:00 pm - 2:00 pm Check out

2:00 pm Depart

SATURDAY, JULY 9: POSTER SESSION 1

1. **Swetha Jos – Virginia Tech**
Transition Metal-Free Regio- and Stereo-Selective Trans Hydroboration of 1,3-Diynes: A Phosphine Catalyzed Access to Borylated 1,3-Enynes

2. **Joseph Kincaid – University of South Carolina Beaufort**
Applications of Micellar Catalysis Toward Organic Transformations in Water

3. **Cheng Peng – University of Chicago**
A Concise Total Synthesis of (+)-Waihoensene Guided by Quarternary Center Analysis

4. **Chloe G. Williams – California Institute of Technology**
Selective C-C Bond Forming Reactions of Vinyl Carbocations

5. **Alexia Kim – California Institute of Technology**
Emantioselective Syntheses of Tetrahydroisoquinolines via Ir-Catalyzed Asymmetric Hydrogenation

6. **Ke Zhao – University of South Carolina Beaufort**
Rational Design on Bifunctional Ligand in Gold Catalysts

7. **Rishablyer – University of California, Davis**
Scalable and Modular Total Synthesis of Ibogaine and Related Alkaloids

8. **Maj Krumberger – University of California, Irvine**
Synthesis And Stereochemical Determination of Novo29, A New Peptide Antibiotic

9. **Elaine Christy Reichert – Massachusetts Institute of Technology**
Development of New Catalysts For Pd-Catalyzed C-N Cross-Coupling

10. **Jessie Gudorf – Indiana University**
More Efficacious Medicine: Antibiotics and Antidotes

11. **Jack Sharland – Emory University**
Developing Practical Rhodium Carbene Chemistry for Industrial Applications

12. **Ashley Nguyen – San Diego State University**
Total Synthesis of Macrocyclic Polypeptide Antibiotics

13. **Grace Trammel – Indiana University**
Arylboration for the Synthesis of Borylated N-Heterocycles

14. **Kerry Jones – University of California, Berkeley**
Efforts Toward the Synthesis of Polycyclic Natural Products: Xishacorene B and Various Monoterpene Indole Alkaloids

15. **Adam Pancoast – University of Utah**
Investigation of the Structure-Solubility Relationships of 2,2'-Bipyrimidines for Redox Flow Batteries

16. **Sarah Dishman – University of California, Davis**
Divergent Stereochemical Outcomes in the C-H Insertion of Donor/Donor Carbenes into Stereogenic Centers and the Asymmetric Synthesis of Dihydrobenzoxanthones

17. **Samantha Ashley Ottavi – University of North Carolina**
PpT Inhibitors of Mycobacterium Tuberculosis

18. **Lucas W. Howell – University of Iowa**
Stereocontrol Tactics for 1,3- and 1,5-Polyols in an Approach to Bastimolide A

19. **Zengrong Wong – University of California, Berkeley**
Revisiting the Bonding Model for Gold(I) Species: The Importance of Pauli Repulsion Revealed in a Gold (I)-Cyclobutadiene Complex

20. **Kevin Walsworth – San Diego State University**
New Generation of Hepatitis C IRES Ligands and the Total Synthesis of the Marine Natural Product Palmyramide A

21. **Olamide Olaoluwa Idowu – University of Delaware**
Iridium Catalyzed Ortho C – H Borylation of Nitro-Arenes

22. **Jacob Norman – Montana State University**
Pd-Catalyzed Site-Selective Cross-Couplings of Dichloroazines Under Ligand Control

SUNDAY, JULY 10: POSTER SESSION 2

23. **Grace A. Lutovsky – The University of Wisconsin-Madison**
Photoactive Base Metal Carboxylates Enable A Versatile Platform for C-N, C-O and C-C Bond Formation

24. **Yuk Fai Wong – University of South Carolina Beaufort**
Conjugate Addition of Imines and Imine-like Nucleophiles to Ortho-Quinone Methides

25. **Thomas Polaske – University of Wisconsin-Madison**
Discovery, Characterization, And Syntheses Of Potent Small Molecule Virulence Inhibitors Against The Notorious Human Pathogen Staphyloccus aureus

26. **Shubhendu Karandikar – Portland State University**
Orbital Analysis of Bonding in Diarylhalonium Salts and Relevance To Periodic Trends in Structure and Reactivity

27. **Adam Jamil Zahara – University of North Carolina**
Dihalomuconononitriles As Powerful Reagents in Complex Molecule Synthesis

28. **Isabelle Leibler – Princeton University**
The Carbocation in Modern Organic Synthesis: Studies in Nucleophilic C(sp^3)-H Functionalization and the General Synthesis of Saturated Heterocycles Guided by Oxidative Radical Polar Crossover

29. **Cory Ludwig – University of Iowa**
Photocatalytic Activation of Alcohols and the Progress Towards the Synthesis of Fraxinellonone

30. **Jason Saway – Seton Hall University**
Photoacid-Catalyzed C-C and C-O Bond Formation and the Synthesis of Triazole-Containing Bis(indyl)methanes

31. **Minhua Nie – North Carolina State University**
Design and Synthesus of Novel Aza-sugar Clindamycin Antibiotics

32. **Soumya Kumar Sinha – Indian Institute of Technology, Bombay**
Ligand Enabled C-H Thioarylation

33. **Avery Kathleen Smith – University of Georgia**
A Dearomative (3+2) Cycloaddition Enabled by Chromium Photocatalysis

34. **Katie Rykaczewski – University of Michigan**
Synthesis and Applications of Strained Heterocycles

35. **Gavin Rustin – University of South Mississippi**

Investigation of N-Sulfonyliminium Ion Cyclization Reactions for Piperidine Ring Synthesis

36. **Tyler Ross McDonald – University of Toronto**

Synthesis of 3-borylated Cyclobutanols From Epihalohydrins or Epo

37. **Jacob Desmond – Indiana University**

Towards the Total Synthesis of Pilosanone C

38. **Paul Russell Carlson – University of California, Irvine**

Efforts Towards A Total Synthesis of Artatrovirenols A and B

39. **Jenna Leigh Miller – University of Pittsburgh**

Oxoammonium Ion-Medicated Oxidative C-H Bond Functionalization in the Synthesis of Nitrogen-Containing Heterocycles

40. **Cameron Twitty – University of Delaware**

Diversifying Amino Acids and Peptides via Deaminative Reductive Cross-Couplings

41. **Haoran Zhu – University of Illinois at Chicago**

Novel N-Heterocycle Synthesis from Nitroarenes by Single Electron Transfer

42. **Jingzhe (Bill) Cao – Princeton University**

Photoenzymatic Asymmetric C-C and C-N Bond Formation and Enzymatic Dynamic Kinetic Resolution of α-Aminoketone

43. **Lilliana Gallegos – Colorado State University**

Reaction optimization combining mechanistic and statistical models to make synthetic chemistry more predictable

44. **Adrian Demerritte – Emory University**

Total Synthesis and Biological Evaluation of Peniciaculin A and Analogs

For interactive campus map: https://admissions.sa.ucsb.edu/sites/default/files/2020-09/Self_Guided_Tour_Map.pdf

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Group A (*Angeles)*	**Group B** (*Evans*)	**Group C** (*Frazier*)	**Group D** (*Molander*)	**Group E** (*Pettus*)
Last Name: *Alonso to Gudorf*	***Last Name:*** *Hendy to Krumberger*	***Last Name:*** *Leiber to Ottavi*	***Last Name:*** *Pancoast to Spinello*	***Last Name:*** *Trammel to Zhu*
Corwin Ballroom	*MCC Theater*	*Harbor Room*	*Lobero Room*	*MCC Lounge*
Yiyun Yu - AbbVie	Benoit Cardinal-David - AbbVie	Ving Lee - Adesis	Kelly Lewis - Adesis	Nirav Kapadia - Adesis
Carolyn Wei - Amgen	Kate Ashton - Amgen	Jake Song - Arcus	David Fisher - Apeel	Jenna Jeffrey - Arcus
Rebecca Green - BMS	Michelle Rogers - Cargill	Ally Boyington - Corteva	Zachary Buchan - Corteva	Tay Rosenthal - Corteva
Wenming Zhang - FMC	Peter Gildner - FMC	John Tellis - Genentech	Samantha Green - Genentech	Michael O'Keefe - Gilead
Greg Barcan - GSK	Richard Thornbury - Gilead	Nicole Goodwin - GSK	Alexander Sokolsky - Incyte	Brandon Smith - Incyte
Brian Laforteza - Janssen	Todd Nelson - J-Star	Thorsten Rosner - J-Star	Craig Ruble - Lilly	Crissi Martinez-Brokaw - Lilly
Sarah Ryan - Lilly	Ashlee Davis - Lilly	Thomas Greshock - Merck	Jamie McCabeDunn - Merck	Donna Hayes - Merck
Niki Patel - Merck	Cheng Chen - Mirati	Casey Mathison - Novartis	Sara Coulup - Pfizer	Scott Sutton - Pfizer
Tom Brandt - Pfizer	Juan Conde (JJ) - PharmaBlock	John Jiang - Sanofi	Patrick Shum - Sanofi	Ashley McCarron - Takeda
Joe Armstrong – TCGGreenChem				Chris Senanayake - TCGGreenChem

Speakers

Chuck Frasier, Apeel Sciences
Todd Hyster, Cornell University
Andy Mitchel, Illinois State University
Hosea Nelson, California Institute of Technology
Michelle Rogers, Cargill
Tay Rosenthal, Corteva
Sarah Ryan, Lilly
Omar Yaghi, University of California, Berkeley

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