SYNTHETIC CONNECTIONS 2026 Program

Bridging Molecules and Minds:
Annual Multidisciplinary Conference of Organic Chemistry

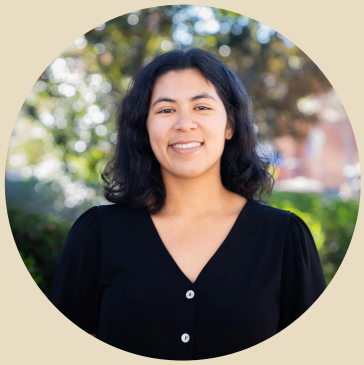
January 31st, 2026

"There is a beauty in discovery. There is mathematics in music, a kinship of science and poetry in the description of nature, and exquisite form in a molecule." - Glenn T. Seaborg

About ORCA

Organic Researchers & Chemists Association (ORCA) is a graduate student organization seeking to promote academic and professional development in the field of organic chemistry by providing an intellectual climate for leadership, service, and exchange of ideas. Started in Fall 2024, ORCA has become a robust host of service-oriented activities and career-development workshops focused on improving UF Chemistry's graduate students.

ORCA 2025-2026 Officers



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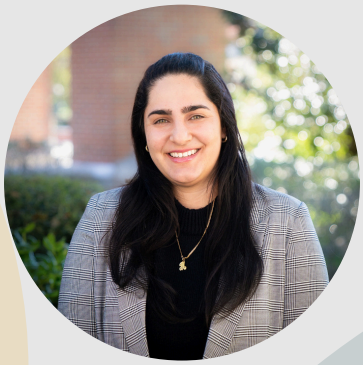

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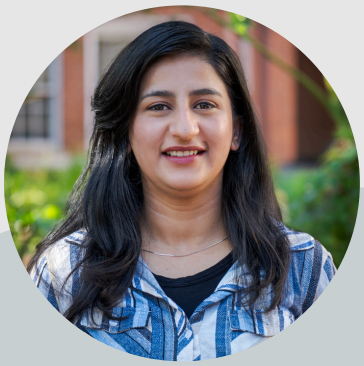

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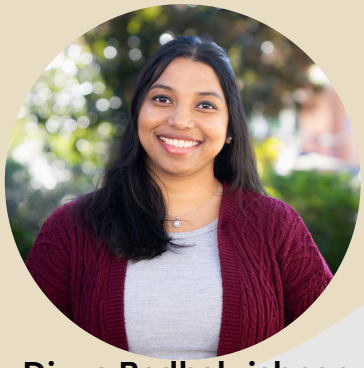

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About SYNCON

Synthetic Connections 2026 is the Inaugural Organic Chemistry Symposium hosted by Organic Researchers and Chemists Association (ORCA) at University of Florida. The symposium will feature lectures from renowned scientists in the field of organic chemistry. Graduate, undergraduate, and postdoctoral scholars from all areas of organic chemistry research are encouraged to present their work at poster and oral sessions. The SYNCON conference aims to create an inclusive and collaborative platform where students can share their work and connect with leaders in the field.

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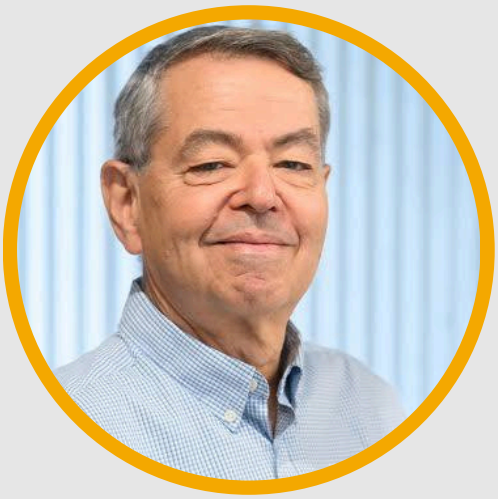
Plenary Speaker

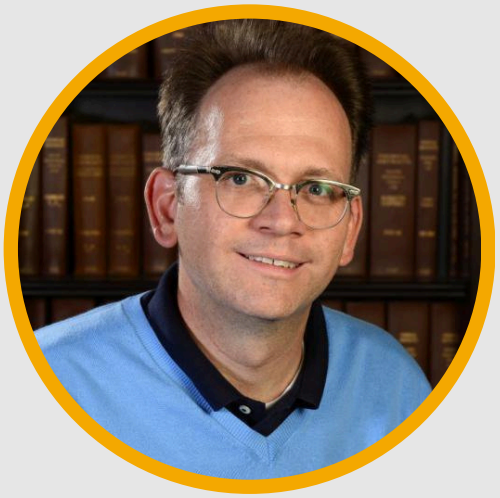


Dr. Stephen L. Buchwald
Massechusetts Institute of Technology

Dr. Stephen L. Buchwald earned his Sc.B. degree from Brown University in 1977 where he conducted research with Professors Kathlyn A. Parker and David E. Cane as well as with Professor Gilbert Stork at Columbia University. In 1977, he entered Harvard University as an NSF Predoctoral Fellow where he worked with Professor Jeremy R. Knowles and received his Ph.D. in 1982. He then became a postdoctoral researcher at Caltech working with Robert H. Grubbs. Dr. Buchwald is now the Camille Dreyfus Professor of Chemistry at MIT, where he has served on the faculty since 1984. Buchwald's research group focuses on developing new catalytic methods in organic synthesis, blending organic, physical organic, and organometallic chemistry to create broadly useful bond-forming reactions—most notably the Buchwald–Hartwig amination and related ligand-enabled cross-coupling methodologies that have transformed pharmaceutical synthesis and academic practice. His work has garnered numerous major honors, including the Wolf Prize in Chemistry (2019), the Linus Pauling Medal (2014), the Arthur C. Cope Award (2013), and many ACS prizes, and he was elected a Fellow of the American Academy of Arts and Sciences (2000) and a member of the National Academy of Science (2008).

Keynote Speaker

Dr. Brian Stoltz earned a dual B.S. in Chemistry and B.A. in German from Indiana University of Pennsylvania in 1993. He received his Ph.D. degree in organic chemistry from Yale University in 1997, under the supervision of Professor John L. Wood. He then became an NIH postdoctoral fellow at Harvard University, where he worked with Professor E.J. Corey. Dr. Stoltz is now the Victor and Elizabeth Atkins Professor of Chemistry and a Heritage Medical Research Institute Investigator at Caltech. His research group focuses on developing innovative strategies in complex molecule synthesis, using natural product targets to inspire new methods in asymmetric catalysis, transition-metal-catalyzed reactions, and enantioselective synthesis with broad applications in organic and medicinal chemistry. His work has been widely honored, including the ACS Ernest Guenther Award in the Chemistry of Natural Products (2026), ACS Herbert C. Brown Award for Creative Research in Synthetic Methods (2025), ACS Award for Creative Work in Synthetic Organic Chemistry (2018), the Richard P. Feynman Prize for Excellence in Teaching (2017), the Tetrahedron Young Investigator Award in Organic Chemistry (2010), the Elias J. Corey Award (2009), and the Arthur C. Cope Scholar Award from the American Chemical Society (2005), among many other accolades.



Dr. Brian Stoltz
California Institute of Technology

Schedule & Speaker List

8:00-8:45	**Registration/Poster Setup**	**SFH Atrium**
8:45-9:00	**Welcoming Remarks**	SFH 221
9:00-10:00	**Plenary Lecture: Dr. Stephen Buchwald**	SFH 221
10:00-10:15	**Coffee Break**	
10:15-12:15	**Session 1 (20 mins + 5 mins for questions)**	
10:15-10:45	*(Materials)* Broadband Emitting Dithienophenazine Chromophores **Summer Brown, University of Florida**	SFH 221
10:45-11:15	*(Organic)* Electrocatalytic Phosphine Promoted Hydride Transfer from Cobaltocene **Alec Adam, Boston University**	SFH 221
11:15-11:45	*(Organic) Metal-free [2+4] annulative aromatic π-extension* **Shubham Patil, University of Florida**	SFH 221
11:45-12:15	*(Organic)* One-pot enantioselective formal α-arylation of carbonyls with indoles and the total syntheses of ent-acremoauxin A and oxazinin-3 **Brandon Jones, University of Central Florida**	SFH 221
10:15-12:15	**Session 2 (20 mins + 5 mins for questions)**	
10:15-10:45	*(Computational)* Transition Metal Catalyzed C-H Activation for Late-Stage Functionalization in Rapid Peptide Modification **Abrahan Martinez, University of Central Florida**	SFH 202
10:45-11:15	*(Organic)* Stereoselective Synthesis and Antiproliferative Activity of Nemamide Analogs **Melisa Gonzalez, University of Florida**	SFH 202

11:15-11:45	*(Medicinal)* Psychedelic-Adjacent Synthesis and Drug Discovery **Jeanine Yacoub, University of South Florida**	SFH 202
11:45-12:15	*(Organic)* The Catalytic Asymmetric Aza-Prins Reaction: An Efficient Route to Octahydroisoquinolines and Related Azacycles **Aniket Sole, University of Florida**	SFH 202
10:15-11:45	**Session 3 (20 mins + 5 mins for questions)**	
10:15-10:45	*(Medicinal)* Synthesis of Xanthurenic Acid Analogs to Interrogate Their Use in the Investigation of Plasmodium **Angeline Deda, University of South Florida**	Flint 50
10:45-11:15	*(Materials)* Engineering pH-Responsive Dendrimer–STAT3 Inhibitor Conjugates for Intracellular Delivery **Chenikkayala Siva Sankara, University of Florida**	Flint 50
11:15-11:45	*(Organic)* Green extraction of bioactive compounds from Thuja orientalis leaves using microwave- and ultrasound-assisted extraction and optimization by response surface methodology **Rana Haris Abdullah, University of Florida**	Flint 50
10:15-11:45	**Session 4 (20 mins + 5 mins for questions)**	
10:15-10:45	*(Materials)* Progress Towards Porous Organometallic Polymers via iClick **Nicholas Campbell, University of Florida**	CLB 130
10:45-11:15	*(Organic)* Photodecarboxylative Alkylation of Cyclic Imine-BF3 Complexes **Kamal Bhatt, University of Florida**	CLB 130
11:15-11:45	*(Medicinal)* Enzymatic Synthesis of 1,2-Amino Alcohols **Zak Pasternak, University of Florida**	CLB 130
12:20-12:50	**Lunch**	

12:50-1:30	Effective Course Design in Organic Chemistry: Keys to Student Success **Presented by Macmillan Learning**	CLB 130
1:30-3:00	**Poster Session**	**SFH Atrium**
3:00-4:00	**Keynote Presentation: Dr. Brian Stoltz**	SFH 221
4:00-4:30	**Awards & Closing Remarks**	

Effective Course Design in Organic Chemistry: Keys to Student Success, a Workshop Presented by **Macmillan Learning:**

Organic chemistry is often viewed as one of the most challenging courses in the undergraduate science curriculum, yet thoughtful course design can dramatically improve student learning, confidence, and retention. This session explores the essential elements of effective course structure in Organic Chemistry, including backward design, clearly aligned learning outcomes, purposeful pre-class preparation, and active in-class problem solving. We will examine evidence-based strategies–such as scaffolded mechanism practice, cognitive-load–aware sequencing, and targeted formative assessments–that help students build mastery over time. Drawing on insights from student performance data across diverse institutions, we will highlight common barriers students face and demonstrate how intentional course organization can support readiness, equity, and deeper conceptual understanding. Attendees will leave with practical frameworks and actionable design principles they can apply immediately to strengthen their own Organic Chemistry courses.

Macmillan Learning

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Oral Presentations

Psychedelic-Adjacent Synthesis and Drug Discovery, Presented by **Jeanine Yacoub**

Classic psychedelics, including tryptamines like DMT, psilocybin, and LSD, act as 5-HT2A receptor agonists and have shown promise in treating mental health disorders with low abuse potential. Traditional synthetic efforts have focused on modifying tryptamine side chains, creating prodrugs or ethers, and exploring iso-DMT analogs. However, these approaches only begin to explore the chemical space available for CNS drug discovery. At Psilera, we are developing novel compounds based on the tryptamine scaffold to identify serotonergic agents with therapeutic potential. This presentation will highlight the synthesis of these new molecules and share preliminary biological data.

Synthesis of Xanthurenic Acid Analogs to Interrogate Their Use in the Investigation of Plasmodium, Presented by **Angeline Deda**

Malaria is a mosquito-borne infectious disease affecting humans and animals. It is transmitted to human being by Plasmodium parasite via a bite of an infected female Anopheles mosquito. Plasmodium parasites have a complicated cycle and have develop a multi-drug resistance to currently available medications, which not only target the asexual symptom-causing parasitic forms, but the presence of transmissible gametocyte reservoirs “the sexual stage”, in various asymptomatic individuals could potentially re-introduce malaria cases in areas where malaria has been fully eliminated. Therefore, to fully eradicate malaria across the globe, it is imperative to develop either a viable drug or vaccine that could potentially block human-vector transmission by targeting different stages of plasmodium life cycle to discontinue sexual developmental process. We envisioned blocking this transmission by synthesizing various new Xanthurenic Acid “a Gametogenesis-Activating Factor” analogs as our target towards new drug development.

Photodecarboxylative Alkylation of Cyclic Imine-BF3 Complexes

Presented by **Kamal Bhatt**

The consistent appearance of nitrogen heterocycles in agrochemicals and medicines has stimulated chemists to invent new tools to access these prized compounds. To harness the benefits of increased three-dimensionality in improving the pharmacokinetic properties of a drug candidate, considerable efforts are being made to functionalize the saturated nitrogen heterocycles like piperidine, pyrrolidine, etc. Decarboxylative functionalization of imines offers a mild and economical route to access functionalized amines. However, its application was limited to linear imines with no examples of unstable cyclic imines. Considering the practicality of decarboxylative transformations and the medicinal relevance of azacycles, decarboxylative functionalization of alicyclic imines is highly desirable. We addressed this problem using the cyclic imine-BF3 complexes, the stable surrogates of unstable alicyclic imines. BF3 coordination plays a dual role by activating the cyclic imines toward radical addition and preventing undesirable oxidation of the secondary amine products. A three-component variant incorporating [1.1.1]propellane gave streamlined access to BCP-substituted azacycles. Ambient reaction conditions allow for late-stage modifications offering enhanced functional group compatibility.

Engineering pH-Responsive Dendrimer–STAT3 Inhibitor Conjugates for Intracellular Delivery, Presented by **Chenikkayala Siva Sankara**

Electrocatalytic Phosphine Promoted Hydride Transfer from Cobaltocene

Presented by **Alec Adam**

Electrocatalytic hydrogenation of olefins has been an attractive platform for avoiding the use of hydrogen and unlocking new reactivity in early-transition metal complexes. Since the discovery of ferrocene and its redox couple, metallocenes and their permethylated analogues have been used as useful oxidants or reductants in electrochemistry. Cobaltocenium hexafluorophosphate can be used as a redox mediator in reductive electrocatalysis to mitigate competing hydrogen evolution. Recent reports have demonstrated that under acidic conditions, ring protonation of decamethylcobaltocene and cobaltocene are thermodynamically favorable events. Operating at the electrochemical reduction potential of cobaltocenium hexafluorophosphate (Eapp = -1.45 V vs Fc0/+), ring protonated cobaltocene (CpCoICpH) was generated in situ as a hydride transfer agent to form an iridium hydride for acetone reduction. In this work, we take advantage of the hydride transfer ability of CpCoICpH to access functionalized alkanes by using phosphine ligands such as Xantphos and triphenylphosphine to increase the hydricity of CpCoICpH.

Progress Towards Porous Organometallic Polymers via iClick

Presented by **Nicholas Campbell**

This work introduces a new class of porous organometallic polymers (POMPs) designed to merge the modularity and stability of covalent organic frameworks (COFs) with the functional tunability of metal-organic frameworks (MOFs). Our approach leverages orthogonal click strategies, strain-promoted azide-alkyne cycloaddition (SPAAC) in tandem with inorganic metal-ligand bond formation via inorganic click (iClick) chemistry to construct a permanently porous network with catalytically relevant metals covalently embedded within the polymer backbone. This design enables direct integration of metal centers during synthesis, offering a route to uniform and robust catalytic sites without the need for post-synthetic metalation. Preliminary efforts have successfully demonstrated the formation of the targeted polymer network. Ongoing characterization includes Brunauer–Emmett–Teller (BET) analysis to determine surface area and porosity, and gas adsorption isotherms with hydrogen, carbon dioxide, and nitrogen to probe gas uptake properties and assess framework accessibility. This platform presents a modular path toward designing catalytically active, chemically stable porous materials for heterogeneous catalysis and gas adsorption applications.

Enzymatic Synthesis of 1,2-Amino Alcohols, Presented by **Zak Pasternak**

1,2-Amino alcohols are key structural motifs in many pharmacologically active compounds. Our work investigates ketoreductase (KRED) enzymes to enable the dynamic kinetic resolution of amino-ketone substrates, selectively forming one of four possible diastereomers. In parallel, we aim to develop a one-pot biocatalytic method for synthesizing amino alcohols directly from two simple precursors: carboxylic acids and amino acids.

Metal-free [2+4] annulative aromatic π-extension, Presented by **Shubham Patil**

Fused aromatic systems play a crucial role across pharmaceuticals, fluorescent probe design, and materials science. Extending aromatic frameworks by four carbons is particularly advantageous, as larger π-conjugated structures can enhance mechanical robustness, strengthen π–π stacking interactions, and modulate biological activity. However, existing methods to expand π-systems typically rely on transition-metal catalysis for large π-systems or labor-intensive, multistep sequences for simple arenes. We report a direct and efficient strategy that leverages in situ generated diaryliodonium salts as benzyne precursors, coupled with the easily accessible 2-pyrone as a diene partner. Our methodology harnesses the hypervalent iodine group as a highly chemoselective leaving group, facilitating aryne formation in the presence of common leaving groups such as halides. The transformation proceeds through a Diels–Alder cycloaddition followed by a CO_2-extruding retro-Diels–Alder step. We demonstrate the versatility of this approach in three substrates featuring diverse electronic properties. Overall, this concise synthetic platform enables efficient four-carbon ring expansion of aromatic cores and offers new opportunities for constructing functional molecules relevant to drug discovery and organic materials. Continued reaction optimization and substrate scope expansion are currently underway.

Transition Metal Catalyzed C-H Activation for Late-Stage Functionalization in Rapid Peptide Modification, Presented by **Abrahan Martinez**

The goal of this study is to propose a novel 3d transition metal catalyst for the activation of a C(sp3)-H bond through a hydrogen atom transfer mechanism. Amino acids (AAs)are a wide class of molecules that are ubiquitous in chemistry due to their nature as the building blocks of peptides and proteins. In larger complex structures such as peptides and proteins, AAs provide unique functionality to the larger molecule, and can be modified through various approaches. Of these approaches, late-stage functionalization (LSF) is a highly desired method. LSF is desired because it would allow for efficient and green modification of peptides late into their synthesis, which is useful for bulky or reactive functional groups. However, LSF relies on costly late transition metals such as Pd, Ru, & Rh so it's desirable to develop a new method which uses cheaper and earth abundant metals such as Ni. The proposed study will use computational methods such as density functional theory (DFT) to show the thermodynamic and kinetic favorability of a new Ni-based catalyst.

Green extraction of bioactive compounds from Thuja orientalis leaves and cones using microwave- and ultrasound-assisted extraction and optimization by response surface methodology, Presented by **Rana Haris Abdullah**

Thuja orientalis is a medicinal plant with significant therapeutic potential, requiring efficient and environmentally friendly methods for large-scale extraction of its bioactive compounds. This study optimized microwave-assisted extraction (MAE) and ultrasound-assisted extraction (UAE) using 70% hydro-ethanol and response surface methodology. Extracts were evaluated for total phenolic content, total flavonoid content, antioxidant activity using DPPH and ABTS radical scavenging assays, and metal chelating activity. Optimized MAE conditions with a solvent-to-feed ratio of 35 milliliters per gram, power of 640 watts, and extraction time of 90 seconds yielded total phenolic content of 540.4 milligrams gallic acid equivalent per gram dry weight, total flavonoid content of 63.03 milligrams rutin equivalent per gram dry weight, DPPH radical scavenging activity of 69.17 percent, ABTS radical scavenging activity of 77.69 percent, and metal chelating activity of 53.46 percent. UAE optimization with amplitude of 90 percent, time of 2 minutes, and solvent-to-feed ratio of 35 milliliters per gram produced total phenolic content of 190.5 milligrams per gram, total flavonoid content of 48.59 milligrams per gram, DPPH radical scavenging activity of 81.73 percent, ABTS radical scavenging activity of 73.63 percent, and metal chelating activity of 63.81 percent. Scanning electron microscopy confirmed effective cell matrix disruption by both methods. MAE performed best for phenolic content, flavonoid content, and ABTS activity, while UAE excelled in DPPH activity and metal chelation. MAE of T. orientalis cones also transforms plant waste into valuable bioactive compounds, offering a time- and solvent-efficient green method suitable for sustainable industrial applications.

Stereoselective Synthesis and Antiproliferative Activity of Nemamide Analogs, Presented by **Melisa Gonzalez**

The nemamides are hybrid polyketide–nonriboso- mal peptides that are produced in two neurons of the nematode Caenorhabditis elegans and promote recovery from starvation-induced early larval stage arrest. Because the worm produces the nemamides in minute quantities and no total synthesis of these molecules has been reported, it has been difficult to study their mechanism of action. Here, by using a miniaturized assay, we demonstrate that nemamides purified from the worm exhibit antiproliferative activity against mammalian cancer cells. Moreover, we present the stereoselective synthesis of two nemamide analogs and evaluate their biological activity in the proliferation assay. Comparison of the NMR data of the synthetic analogs with those of the nemamides provides further confirmation of the absolute configuration of the nemamides, which was proposed previously based on NMR analysis, Marfey's method, model cyclic peptide synthesis, and CD spectroscopy. While the nemamides exhibit significant biological activity, the analogs have reduced potency, indicating that the lipid tail, polyene group, and methoxy group all play crucial roles in the antiproliferative properties of the nemamides. These findings offer valuable insights into the structure–activity relationships of the nemamides and lay the groundwork for future synthetic and mechanistic investigations of this unique class of natural products.

The Catalytic Asymmetric Aza-Prins Reaction: An Efficient Route to Octahydroisoquinolines and Related Azacycles, Presented by **Aniket Sole**

The Aza-Prins reaction rapidly constructs azacycles, including Octahydroisoquinolines (OHIQs), core structures in thousands of bioactive natural products and morphinan drugs. Catalytic asymmetric variants have been hindered by non-selective deprotonation of carbocation intermediate, yielding regioisomers. Current asymmetric OHIQ syntheses require multi-step deracemization or suffer imine over-hydrogenation. We developed a direct catalytic asymmetric Aza-Prins reaction using novel bis-sulfonyl-methylphosphonate (BSMP) Brønsted acid catalysts delivering OHIQs in high yields and enantioselectivities (up to 95:5 er) without isomeric byproducts.

One-pot enantioselective formal α-arylation of carbonyls with indoles and the total syntheses of ent-acremoauxin A and oxazinin 3, Presented by **Brandon Jones**

This presentation will disclose a novel methodology for the enantioselective formal α-indolylation of carbonyl compounds. This methodology constructs the indole ring by an interrupted Nef reaction approach. This approach allows for the use of the organocatalytic enantioselective Michael addition using a chiral diarylprolinol silyl ether catalyst prior to construction of the indole ring. This four step, one-pot methodology produced substrates with yields up to 99% and enantioselectivities up to 96% ee. This strategy was also employed in the total syntheses of ent-acremoauxin A and oxazinin 3.

Chiral Broadband-Emitting Dithienophenazine Chromophores

Presented by **Summer Brown**

Tunable emission from chiral molecules would enable new approaches to chemical sensing, computation, or encryption. Accordingly, systematic structure-property relationships in necessary to developing this space. Here, we developed and studied the ground-state absorption, excited-state emission, and chiral absorption properties of four dithienophenazine chromophores. Based on a central weakly accepting dithienophenazine scaffold, the addition of electron donating substituents to the periphery of the molecule red-shifts the absorption and emission properties of the system. Substituents that are highly electron-rich modulate the HOMO-LUMO gap such that the molecule is no longer emissive, but mild electron-donating substituents maintain high quantum yields (>50%) and photoluminescence intensity. The optical properties were further investigated through a solvatochromism and temperature-dependent PL study, which is indicative of charge-transfer characteristics in this system. This optical study property provides a platform for constructing structure-property relationships in chiral organic materials.

Poster Presentations

	Name	Title
1	Amrit Kaur	Enzyme-/metal-free quinoxaline assemblies: direct light-up detection of cholesterol in human serum
2	Brayden Bernard	Copper-catalyzed oxidative cyclization of glycals to dioxa-bicyclo[3.2.1]octanes
3	Soumili Pal	Terephthalamide-Based Foldamers as Self-Assembling Cyclophane Isosteres
4	Bella Davey	Synthesis of an Alternating Copolymer via Acyclic Diene Metathesis
5	Ani Davis	Covalent Organic Framework Electrodes for High Ionic Mobility Lithium-ion Batteries
6	Meet saholiya	Exploring the Potential of the Piancatelli Rearrangement via Novel Modifications toward Cyclopentenone Synthesis
7	Hariharan Mahendran	Photoredox-Neutral Decarboxylative cyclopropanation reaction via Acridine-Iron dual catalysis
8	Alexandra Diaz	Sephadex LH-20 Purification and Antioxidant Assessment of Hydroalcoholic Extract from Bursera simaruba leaves
9	Rylie (Tran) Nguyen	Synthesis of Modular Glucosides for Biochemical Profiling of CEST Enzymes in C. elegans

11	He Sun	High Dielectric Constant Polyolefins by ADMET Polymerization
12	Austin Reed	Photocontrolled Design Enables Simplified Vitrimer Formation
13	Diptendu Maity	Chiral Brønsted Acid Catalyzed Enantioselective Amidation of Benzylic Alcohol
14	Shradha V. Thazha Kuniyil	Targeted delivery of synthetic macromolecules into biomolecular condensates
15	Sumeet Kumar Das	Enzyme-Assisted Photoiniferter Polymerization for the Design of Ultrahigh Molecular Weight Polymers with Tunable Adhesion and Friction
16	Bonnie Foust	Reductive Trapping of Selected Acylated Emodin Derivatives
17	Payson Keown	Implementing Phenol-yne 'Click' for Advanced Polymer Materials
18	Maegan Daigle	Discovery and Development of a New First in Class Antimalaria Drug Candidate
19	Lucy Jenkins	Photoconversion of 1-aryltriazoles to indoles
20	Andrew Huynh	Synthesis of Xanthurenic Acid Analogs to Interrogate Their Use in the Investigation of Plasmodium

21	Alyssa Riker	Stereochemistry in Disulfide-Bond Disrupting Agents: Synthesis of Novel cis-Substituted Derivatives
22	Gideon Ofosu Addai	Chelation-assisted Copper-Catalyzed Oxidative Cross-Coupling
23	Michael	Exploring Polyaromatic Diradicaloids: Synthesis, Characterization, and Tunable Electronic Properties
24	Itamar Blau	Chemoselective Difluorination of Tetramic Acids in Water
25	Margo Mandell	Stereoselective Total Synthesis of Kompasinol A
26	Melissa Ojeda	Base-Free Cross–Electrophile C–N Coupling
27	Felipe Medero Granados	ChatGPT vs DeepSeek, Which Takes the Crown?

Map of Buildings