



Michael Christopher Young, Ph.D.

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PROFESSIONAL EXPERIENCE

Associate Professor – University of Toledo Toledo, Ohio
Department of Chemistry & Biochemistry, School of Green Chem. & Engineering July 2021-Present

Assistant Professor – University of Toledo Toledo, Ohio
Department of Chemistry & Biochemistry, School of Green Chem. & Engineering July 2016-June 2021

EDUCATION

Postdoctoral Scholar – University of Texas - Austin Austin, Texas
Project: Dynamic Covalent Directing Group Strategies for Ketone and Amine Functionalization
Advisor: Prof. Guangbin Dong July 2014-June 2016

Ph.D. Organic Chemistry – University of California - Riverside Riverside, California
Dissertation Title: Self-Assembly of Functionalized Supramolecular Structures
Advisor: Prof. Richard J. Hooley August 2014

M.S. Chemistry - Western Carolina University Cullowhee, North Carolina
Thesis Title: 1,4-Topochemical Polymerization of 1,3-Butadiene Derivatives in a Host-Guest Matrix
Advisor: Prof. Brian D. Dinkelmeyer December 2008

B.S. Chemistry, B.S. Biology - Western Carolina University August 2006

AWARDS

Excellence in Peer Review - American Chemical Society – Petroleum Research Fund (2019).

Thieme Chemistry Journals Award (2019).

Outstanding Teaching Assistant Award - University of California – Riverside (2012).

University Teaching Certificate - University of California - Riverside – TADP (2011).

PROFESSIONAL ACTIVITY

REFEREED PUBLICATIONS

34. Landge, V. G.;* Mncwango, T. A.; Bonds, A. L.; Mather, C. B.; Saleh, Y.;[†] Fields, H. L.;[†] Lee, F.;[†] **Young, M. C.*** “Palladium Catalyzed Selective Monoarylation of Free Allylamines.” *In Review*.

33. Chand-Thakuri, P.; Alahakoon, I.; Liu, D.; Kapoor, M.; Kennedy, J. F.; Jenkins, K. W., III.; Rabon, A. M.; **Young, M. C.*** “Native Amine-Directed *ortho*-C–H Halogenation and Acetoxylation/Condensation of Benzylamines.” *Synthesis*, **2021**, *Accepted*. DOI: 10.1055/a-1625-9095.

32. Landge, V. G.; Grant, A. J.; Fu, Y.; Rabon, A. M.; Payton, J. L.; **Young, M. C.*** “Palladium-Catalyzed γ,γ' -Diarylation of Free Alkenyl Amines.” *J. Am. Chem. Soc.*, **2021**, *143*, 10352.

31. Rabon, A. M.; Doremus, J. G.; **Young, M. C.*** “MOF-808 as a Recyclable Catalyst for the Photothermal Acetalization of Aromatic Aldehydes.” *Tetrahedron*, **2021**, *85*, 132036.
30. Landge, V. G.; Maxwell, J. M.; Chand-Thakuri, P.; Kapoor, M.; Diemler, E.; **Young, M. C.*** “Palladium-Catalyzed Regioselective Arylation of Unprotected Allylamines.” *JACS Au*, **2021**, *1*, 13.
29. Landge, V. G.;* Shrestha, K. S.; Grant, A. J.; **Young, M. C.*** “Regioselective α -Deuteration of Michael Acceptors Mediated by Isopropylamine in D₂O/AcOD.” *Org. Lett.*, **2020**, *22*, 9745.
28. Chand-Thakuri, P.; Landge, V. G.; Kapoor, M.; **Young, M. C.*** “One Pot C–H Arylation/Lactamization Cascade Reaction of Free Benzylamines.” *J. Org. Chem.*, **2020**, *85*, 6626.
27. Landge, V. G.; **Young, M. C.*** “Teaching an Old Ligand New Tricks.” *Nature Chem.*, **2020**, *12*, 12.
26. Garreau, A. L.; Zhou, H.; **Young, M. C.*** “A Protocol for the *ortho*-Deuteration of Acidic Aromatic Compounds in D₂O Catalyzed by Cationic Rh^{III}.” *Org. Lett.*, **2019**, *21*, 7044.
25. Kapoor, M.;† Chand-Thakuri, P.;† **Young, M. C.*** “Carbon Dioxide-Mediated C(sp²)–H Arylation of Primary and Secondary Benzylamines.” **2019**, *J. Am. Chem. Soc.*, **2019**, *141*, 7980.
24. Rabon, A. M.; Doremus, J. G.; **Young, M. C.*** “An Overview of Recent Applications in Catalysis Supported by Metal–Organic Frameworks.” *ACS Symposium Series*, **2019**, *1317*, 167.
23. **Young, M. C.***; Djernes, K. E.; Payton, J. L.; Liu, D.; Hooley, R. J.* “Resorcin[4]arenes: A Simple Scaffold to Study Supramolecular Self-Assembly and Host:Guest Interactions for the Undergraduate Curriculum.” *J. Chem. Educ.*, **2019**, *96*, 781.
22. Kapoor, M.; Chand-Thakuri, P.; Maxwell, J. M.; Liu, D.; Zhou, H.; **Young, M. C.*** “Carbon Dioxide-Driven Palladium-Catalyzed C–H Activation of Amines: A Unified Approach for the Arylation of Aliphatic and Aromatic Primary and Secondary Amines.” *Synlett*, **2019**, *30*, 519.
21. Rabon, A. M.; Goolsby, K. L.; **Young, M. C.*** “One-Dimensional Networks Formed *via* the Self-Assembly of Anthracenedibenzoic Acid with Zinc(II)” *Acta Cryst.*, **2018**, *C74*, 1774.
20. Kapoor, M.; Chand-Thakuri, P.;† Maxwell, J. M.;† **Young, M. C.*** “Achieving Moderate Pressures in Sealed Vessels Using Dry Ice as a Solid CO₂ Source.” *J. Vis. Exp.*, **2018**, 58281.
19. Kapoor, M.; Liu, D.; **Young, M. C.*** “Carbon Dioxide Mediated C(sp³)–H Arylation of Amine Substrates.” *J. Am. Chem. Soc.*, **2018**, *140*, 6818 (Top 20 viewed article during the 30 day period after appearing online).
18. Xu, Y.; **Young, M. C.**, Dong, G.* “Catalytic Coupling Between Unactivated Aliphatic C–H Bonds and Alkynes via a Metal-Hydride Pathway.” *J. Am. Chem. Soc.*, **2017**, *139*, 5716.
17. Xu, Y.;† **Young, M. C.**;† Wang, C.; Magness, D. M.; Dong, G.* “Catalytic C(sp³)–H Arylation of Free Primary Amines via an *exo* Directing Group Generated In Situ.” *Angew. Chem., Int. Ed.*, **2016**, *55*, 9084 (Listed as a Hot Paper).
16. Holloway, L. R.; McGarraugh, H. H.; **Young, M. C.**; Hooley, R. J.* “Structural Switching in Self-Assembled Metal-Ligand Helicate Complexes via Ligand-Centered Reactions.” *Chem. Sci.*, **2016**, *7*, 4423.

15. Zhang, C.; Brown, M. Q.; van de Van, W.; Zhang, Z.-M.; Wu, B.; **Young, M. C.**; Synek, L.; Borchardt, D.; Harrison, R.; Pan, S.; Luo, N.; Huang, Y.-M. M; Ghang, Y.-J.; Ung, N.; Li, R.; Isley, J. W.; Morikis, D.; Song, J.; Guo, W.; Hooley, R. J.; Chang, C.-E. A.; Yang, Z.; Zarsky, V.; Muday, G. K.; Hicks, G. R.; Raikhel, N. V.* "A Small Molecule Endosidin2 Targets Evolutionary Conserved EXO70 Proteins to Inhibit Exocytosis." *Proc. Nat. Acad. Sci. USA*, **2016**, *113*, 14.
14. Huang, Z.; Mo, F.; Lim, H. N.; **Young, M. C.**; Dong, G.* "Transition Metal-Catalyzed Ketone-Directed or Mediated C–H Functionalization." *Chem. Soc. Rev.*, **2015**, *44*, 7764.
13. Holloway, L. R.; **Young, M. C.**; Beran, G.; Hooley, R. J.* "High Fidelity Sorting of Remarkably Similar Components via Metal-Mediated Assembly." *Chem. Sci.*, **2015**, *6*, 4801.
12. Johnson, A. M.; Wiley, C. W.; **Young, M. C.**; Zhang, X.; Lyon, Y.; Julian, R. R.)* Hooley, R. J.* "Narcissistic Self-Sorting in Self-Assembled Rare Earth Metal-Ligand Cages." *Angew. Chem., Int. Ed.*, **2015**, *54*, 5641.
11. **Young, M. C.**; Holloway, L. R.; Johnson, A. M.; Hooley, R. J.* "A Supramolecular Sorting Hat: Stereocontrol in Metal-Ligand Self-Assembly by Complementary Hydrogen Bonding." *Angew. Chem., Int. Ed.*, **2014**, *53*, 9832.
10. **Young, M. C.**; Hooley, R. J. "Chirality and the Origins of Life." *NSF National Center for Case Study Teaching in Science*, **2014**, Accessible at: http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=749&id=749.
9. **Young, M. C.**; Liew, E. Hooley, R. J.* "Colorimetric Barbiturate Sensing with Hybrid Spin Crossover Assemblies." *Chem. Commun.*, **2014**, *50*, 5043.
8. **Young, M. C.**; Johnson, A. M.; Hooley, R. J.* "Self-Promoted Post-Synthetic Modification of Metal-Ligand M₂L₃ Mesocates." *Chem. Commun.*, **2014**, *50*, 1378.
7. Johnson, A. M.; **Young, M. C.**; Zhang, X.; Julian, R. R.)* Hooley, R. J.* "Cooperative Thermodynamic Control of Selectivity in the Self-Assembly of Rare Earth Metal-Ligand Helices." *J. Am. Chem. Soc.*, **2013**, *135*, 17723.
6. **Young, M. C.**; Liew, E.; Ashby, J.; McCoy, K. M.; Hooley, R. J.* "Spin State Modulation of Iron Spin Crossover Complexes Via Hydrogen-Bonding Self-Assembly." *Chem. Commun.*, **2013**, *49*, 6331.
5. Johnson, A. M.; **Young, M. C.**; Hooley, R. J.* "Reversible Multicomponent Self-Assembly Mediated By Bismuth Ions." *Dalton Trans.*, **2013**, *42*, 8394.
4. **Young, M. C.**; Johnson, A. M.; Gamboa, A. S.; Hooley, R. J.* "Achiral Endohedral Functionality Provides Stereochemical Control in Fe(II)-Based Self-Assemblies." *Chem. Commun.*, **2013**, *49*, 1627.
3. Djernes, K. E.; Padilla, M.; Mettry, M.; **Young, M. C.**; Hooley, R. J.* "Hydrocarbon Oxidation Catalyzed by Self-folded Metal-coordinated Cavitands." *Chem. Commun.*, **2012**, *48*, 11576.
2. Liu, Y.; **Young, M. C.**; Moshe, O.; Cheng, Q.)* Hooley, R. J.* "A Membrane-Bound Synthetic Receptor Promotes Growth of a Polymeric Coating at the Bilayer-Water Interface." *Angew. Chem. Int. Ed.*, **2012**, *51*, 7748 (Listed as a Very Important Publication).

1. Liu, Y.; Taira, T.; **Young, M. C.**; Ajami, D.; Rebek Jr., J.; Cheng, Q.;* Hooley, R. J.* “Protein Recognition by a Self-Assembled Deep Cavitand Monolayer on a Gold Substrate.” *Langmuir*, **2012**, 28, 1391.

Patents

1. **Young, M. C.**, Kapoor, M. “Carbon Dioxide as a Directing Group for C-H Functionalization Reactions Involving Lewis Basic Amines, Alcohols, Thiols, and Phosphines for the Synthesis of Compounds” US Patent 10,865,163.

Oral Presentations

34. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” Department of Chemistry, Kenyon College, Gambier, OH, United States, Planned for Nov. 16, 2021.

33. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” Department of Chemistry and Biochemistry, Hillsdale College, Hillsdale, MI, United States, Planned for Nov. 2, 2021.

32. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” Department of Chemistry and Biochemistry, Bowling Green State University, Bowling Green, OH, United States, Oct. 27, 2021.

31. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” Department of Chemistry and Biochemistry, University of California at Riverside, Riverside, CA, United States, Oct. 15, 2021.

30. **Young, M. C.** “Improving the Synthetic Organometallic Toolbox for Nitrogen-Containing Compounds.” Department of Chemistry, University of Houston, Houston, TX, United States, Sept. 14, 2021.

29. **Young, M. C.** “Improving the Synthetic Organometallic Toolbox for Nitrogen-Containing Compounds.” Department of Chemistry, Rice University, Houston, TX, United States, Sept. 13, 2021.

28. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” 262nd. ACS National Meeting & Exposition, Atlanta, GA, United States, April 22, 2021.

27. **Young, M. C.** “Exploring the Chemical Space and Biological Activity of Nitrogen-Containing Compounds.” Department of Chemistry, University of Chicago, Chicago, IL, United States, July 17, 2021.

26. **Young, M. C.** “Improving the Synthetic Organometallic Toolbox for Nitrogen-Containing Compounds.” Department of Chemistry and Biochemistry, San Diego State University, San Diego, CA, United States, Apr. 16, 2021.

25. **Young, M. C.** “Increasing Sustainability in the Synthetic Organometallic Toolbox.” Department of Chemistry, Wright State University, Dayton, OH, United States, Sept. 25, 2020.

24. **Young, M. C.** “Increasing Sustainability in the Synthetic Organometallic Toolbox.” Department of Chemistry, Wayne State University, Detroit, MI, United States, Feb. 26, 2020.

23. **Young, M. C.** “Adventures in C–H Activation with Carbon Dioxide.” 257th ACS National Meeting & Exposition, Orlando, FL, United States, March 31- April 4, 2019.

22. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry and Biochemistry, Northern Kentucky University, Newport, KY, United States, Feb. 13, 2019.
21. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry and Chemical Biology, Indiana University – Purdue University Indianapolis, Indianapolis, IN, United States, Jan. 23, 2019.
20. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry, Oakland University, Rochester, MI, United States, Nov. 7, 2018.
19. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry, Université de Haute-Alsace, France, Oct. 15, 2018.
18. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry, Université de Lille, France, Oct. 12, 2018.
17. **Young, M. C.** “Harnessing Organometallic Chemistry for More Sustainable Synthesis of Biologically-Relevant Molecules and Bulk Chemicals.” Department of Chemistry, Youngstown State University, OH, United States, Oct. 5, 2018.
16. **Young, M. C.** “CO₂ as a Hybrid Directing Group for the C-H Activation of Aliphatic and Aromatic Amine Substrates.” 255th ACS National Meeting & Exposition, New Orleans, LA, United States, March 18-22, 2018.
15. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry and Biochemistry, Ohio Northern University, OH, United States, March 15, 2018.
14. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry and Physics, Western Carolina University, NC, United States, Dec. 1, 2017.
13. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry, Clemson University, SC, United States, Nov. 30, 2017.
12. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry, Appalachian State University, NC, United States, Nov. 29, 2017.
11. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry, Murray State University, KY, United States, Nov. 20, 2017.
10. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry and Biochemistry, Hillsdale College, MI, United States, Sept. 12, 2017.
9. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” 48th ACS Central Regional Meeting, Dearborn, MI, United States, June 6-10, 2017.

8. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemistry, St. Bonaventure University, Allegany, NY, United States, April 7, 2017.
7. **Young, M. C.** “Supramolecular-Inspired Strategies for Synthetic Methodology and Chemical Sensing.” Department of Chemical Engineering, University of Toledo, Toledo, OH, United States, February 9, 2017.
6. **Young, M. C.** “Supramolecular Inspired Strategies for Accessing New Therapeutic Space and Other Synthetic Challenges.” Department of Medicinal Chemistry, University of Toledo, Toledo, OH, United States, August 25, 2016.
5. **Young, M. C.** “Supramolecular-Inspired Strategies for Greener Transition Metal Catalysis.” Department of Chemistry and Biochemistry, University of Toledo, Toledo, OH, United States, March 3, 2016.
4. **Young, M. C.** “Supramolecular Approaches for Designing New Catalyst Scaffolds.” Department of Chemistry, North Carolina State University, Raleigh, NC, United States, November 3, 2015.
3. **Young, M. C.;** Dong, G. “Directing Group Strategies for the Beta-Functionalization of Ketones via C-H Activation.” 250th ACS National Meeting & Exposition, Boston, MA, United States, August 15-20, 2015.
2. **Young, M. C.;** Holloway, L. R.; Hooley, R. J. “Self-Assembled Hosts Containing Hydrogen Bonding Groups: Realization of Functional Group-Promoted Supramolecular Catalysis in Metal-Organic Self-Assemblies.” 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 15-20, 2014.
1. **Young, M. C.;** Johnson, A. M.; Gamboa, A. S.; Hooley, R. J. “Control of Self-Assembly in Fe(II)-Iminopyridine Cages Through Achiral Endohedral Functionalization.” 245th ACS National Meeting & Exposition, New Orleans, LA, United States, April 7-11, 2013.

Poster Presentations

8. **Young, M. C.;** Kapoor, M.; Chand-Thakuri, P.; Liu, D.; Maxwell, J. M. “Adventures in C–H Activation Using Carbon Dioxide.” Organometallics Gordon Research Conference, Newport, RI, United States, July 7-12, 2019.
7. **Young, M. C.;** Kapoor, M.; Chand-Thakuri, P.; Liu, D.; Maxwell, J. M. “Carbon Dioxide-Mediated C–H Activation of Amines.” Green Chemistry Gordon Research Conference, Castelldefels, Spain, July 29-August 3, 2018.
6. **Young, M. C.;** Kapoor, M.; Chand-Thakuri, P.; Liu, D.; Maxwell, J. M. “Carbon Dioxide-Directed C–H Functionalization of Amines.” Organometallics Gordon Research Conference, Newport, RI, United States, July 8-13, 2018.
5. **Young, M. C.** “Supramolecular Approaches for Improving Reactivity and Selectivity in Transition Metal Catalyzed Transformations.” 250th ACS National Meeting & Exposition, Boston, MA, United States, August 15-20, 2015.
4. **Young, M. C.;** Liew, E.; Hooley, R. J. “Effects of Hydrogen Bonding Self-Assembly on the Spin Crossover Behavior of Mononuclear Complexes of 6-(3,5-Diamino-2,4,6-triazinyl)2,2'-bipyridine” 44th ACS Western Regional Meeting, Santa Clara, CA, United States, October 3-6, 2013.
3. **Young, M. C.;** Liew, E.; Johnson, A. M.; Hooley, R. J. “Self-Assembly of Linear Ligands Containing Three-Coordinate Binding Sites Driven by Select Lanthanide, Actinide, and Main Group Metals” 245th ACS National Meeting & Exposition, New Orleans, LA, United States, April 7-11, 2013.

2. **Young, M. C.**; Hooley, R.J. “Rotational Dynamics in Self-Assembled Nanostructures” 243rd ACS National Meeting & Exposition, San Diego, CA, United States, March 25-29, 2012.

1. **Young, M.**; Liao, P.; Hooley, R.J. “Molecular Switches Based on Self-Assembled Rotor Complexes” 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011.

Funded Grants/Proposals

10. **Young, M. C.** (Aug 2021-July 2026) “CAREER: Expanding the Toolbox for Olefin Functionalization and Difunctionalization Reactions.” National Science Foundation, CAREER Award. Total award \$648,552. (CHE-2047725)

9. **Young, M. C.** (Jun 2021-Dec 2021) “Activation and Fixation of Carbon Dioxide Using Infrared Irradiation.” University of Toledo Office of Research and Sponsored Projects – URFO Mechanism. Total award \$18,000.

8. **Young, M. C.** (Aug 2019-July 2022) “Late Stage Derivatization of Complex Molecules via Hydrogen Bond-Directed C–H Functionalization.” National Institutes of Health – R15. Total award \$450,594. (1R15GM131362-01)

7. **Young, M. C.** (April 2018) Foy & Phyllis Penn Kohler Fund for International Studies, University of Toledo. Total award \$1,300.

6. **Young, M. C.** (July 2017-June 2022) “Rapid and Economic Synthesis of Next Generation Herbicides via Carbon Dioxide-Directed C–H Bond Functionalization.” American Chemical Society, Herman Frasch Foundation. Total award \$250,000. (830-HF17)

5. **Young, M. C.** (Jan 2014-Mar 2014) University of California – Riverside - Dissertation Year Fellowship. Total award \$11,883.

4. **Young, M. C.** (Mar 2013) American Chemical Society - Division of Inorganic Chemistry Student Travel Award. Total award \$800.

3. **Young, M. C.** (Dec 2012) Hamilton Chemistry Education Grant. Total award \$1,000.

2. **Young, M. C.** (May 2012-April 2013) “Molecular Motion and Switching in Self-Assembled Nanostructures.” University of California – Riverside - Graduate Dean’s Dissertation Research Grant. Total award \$932.

1. **Young, M. C.** (Sept 2009-May 2011) University of California – Riverside - Graduate Student Fellowship Award. Total award \$15,000.

TEACHING ACTIVITY

Courses Taught

University of Toledo

Inorganic and Organometallic Chemistry of Transition and Post-Transition Elements (Chem 4610/6610/8610) [9 - 15 students]

Terms Taught (Semester System): Fall 2016, Fall 2018

Development: Incorporated a system of reviewing papers in class that were relevant to the topic at hand. This set the stage for students to learn how to identify how to analyze papers, and to understand how to

write papers. As a final project for the course, students were given a set of data and based on their understanding of inorganic and organometallic chemistry, wrote manuscripts in the Inorganic Chemistry journal format.

Organic Chemistry II (Chem 2420) [63 – 137 students]

Terms Taught (Semester System): Spring 2017, Summer 2020

Development: Created a new undergraduate course, and experimented with different styles for active learning and assessment. Relied heavily on a lecture format with in-class feedback from Clicker questions. Taught online format in Summer 2020.

Green Chemistry (Chem 4200/6200/8200) [51 – 66 students]

Terms Taught (Semester System): Fall 2017, Fall 2020

Development: Taught both a distance learning as well as remote course on green and sustainable chemistry and engineering for predominately an undergraduate audience, as well as continuing education Master of Arts in Education students. In addition to recorded lectures, students were engaged in problem sets, online discussion board activities, and for graduate-level students evaluation of presentations on a topic of their choosing.

Organic Separations and Elementary Organic Synthesis (Chem 2480) [15 - 31 students]

Terms Taught (Semester System): Fall 2017, Fall 2018, Fall 2019

Development: Developed a new lab manual for Sophomore-level Organic lab for Chemistry Majors, adapting experiments from two *J. Chem. Ed.* articles, several experiments from an *in-house* text from the University of California – Riverside, and six new experiments, two of which are based on published work by the lab of Professor Wei Li at UToledo.

Organic Separations and Elementary Organic Synthesis (Chem 2490) [15 - 27 students]

Terms Taught (Semester System): Spring 2018, Spring 2019, Spring 2020

Development: Developed a new lab manual for Sophomore-level Organic lab for Chemistry Majors, adapting experiments from three *J. Chem. Ed.* articles, a few experiments from an *in-house* text from the University of California – Riverside, and seven brand new experiments, one of which was subsequently published in *J. Chem. Educ.*, and one which was a multistep synthesis experiment where the students were supposed to target a new material by developing their own procedures. Revised and added seven new experiments to complement the new lecture text for 2410/2420. Developed a Course-based Undergraduate Research Experience (CURE) based on supramolecular chemistry and catalysis.

Organic Separations and Elementary Organic Synthesis (Chem 2500) [2 - 5 students]

Terms Taught (Semester System): Fall 2017, Fall 2019, Spring 2020

Development: Developed a new lab manual for Bridge Organic lab for Chemistry Majors, adapting experiments from the text by Pavia, as well as three *J. Chem. Ed.* articles, several experiments from an *in-house* text from the University of California – Riverside, and three brand new experiments, one of which is based on published work by the lab of Professor Wei Li. In addition, a Course-based Undergraduate Research Experience (CURE) has been designed, in which the students spend eight-to-ten lab sessions working towards a two-step reaction currently undisclosed in the literature, culminating in a presentation of their results.

Spectroscopic Methods (Chem 4330/6330/8330) [19 students]

Terms Taught (Semester System): Spring 2021

Development: Developed several in-class problems for teaching students to interpret mass spectrometric and nuclear magnetic resonance spectra, and several banks of practice problems. Future efforts will entail flipping the class to spend more time in-class on problem solving.

University of California – Riverside

Sophomore Organic Chemistry Lab (CHEM 112A, 112B, and 112C) [Approximately 40 students/term]
Terms Taught (Quarter System): Fall 2009, Winter 2010, Spring 2010, Fall 2010, Fall 2011, Fall 2012, Spring 2013, Fall 2013, Spring 2014

Development: Adapted experiments and assisted in writing laboratory procedures for a new institutional laboratory manual. Co-developed and published case studies for the laboratory, as well as developing a training session for teaching assistants to facilitate their teaching of the case studies.

Advanced Structural and Synthetic Methods (CHEM 166) [16 Students]

Terms Taught (Quarter System): Spring 2011

Development: Adapted an experiment from *J. Chem. Ed.* to be implemented during the advanced lab course.

Western Carolina University

Organic Chemistry Lab (CHEM 272) [Approximately 12 students/term]

Terms Taught (Semester System): Summer 2007, Summer 2008, Summer 2009

Development: Designed and implemented two separate lab practicums. One involved design of a short retrosynthesis, implementation in the lab, and a presentation on the results. The second involved separating a mixture of unknowns, identifying them, and finally writing a report about the procedures and methods.

STUDENT MENTORING

Postdoctorals Mentored

Dr. Mohit Kapoor, April 2017-December 2018, Currently Assistant Professor at Chitkara University

Dr. Vinod Landge, July 2019-Present

Dr. Satheesh Vanaparathi, *Arriving December 2021.*

PhD Students Mentored

Allison M. Rabon, PhD Student, November 2016-2021 (Graduated, Employed by US National Reconnaissance Office in Washington D.C.)

Haley Stevens, PhD Student, November 2016-April 2017 (Left Program, Switched Major to Education)

Pratibha Chand-Thakuri, PhD Student, June 2017-August 2021, 2020 WCC Travel Award Winner (Graduated, Employed by Olon Ricerca in Cleveland, OH).

Hanyang Zhou, PhD Student, November 2017-December 2018 (Left Program, Switched Major to Mathematics)

Kendra Shrestha, PhD Student, November 2019-Present (Anticipated Graduation May 2024)

Indunil Alahakoon, PhD Student, November 2019-Present (Anticipated Graduation May 2024)

Abigail Gohmann, PhD Student, December 2020-Present (Anticipated Graduation May 2025)

MS Students Mentored

Justin Maxwell, MS Student, May 2017-December 2019 (Graduated, Employed by Lumigen in MI)

Thandazile Mncwango, MS Student, November 2019-August 2021 (Withdrew from Fulbright Program)

Undergraduate Students Mentored (*Denotes Honors Thesis/^Denotes Publications)

Erica Liew,*^ March 2012-June 2014

Mi La, January 2014-June 2014

David M. Magness,^ August 2015-December 2015

Jonathan Grayzyck, July 2016-February 2018, USRCAP Recipient 2017

Meddie Demmings IV,* December 2016-May 2019

Evan Diemler,^ January 2017-October 2018, USRCAP Recipient 2017, 2018

Kern Baxter, September 2017-August 2019, USRCAP Recipient 2018, 2019

John F. Kennedy,^ October 2017-May 2019, USRCAP Recipient 2018
Alyssa L. Garreau,*^ May 2018-December 2019, USRCAP Recipient 2019
Jared G. Doremus,*^ May 2018-May 2020, USRCAP Recipient 2019
Marieh N. Hollenback, May 2018-August 2018
Joseph R. Chamberlain, January 2019-April 2019
Kenneth Jenkins,^ January 2019-May 2020
Sara Thomas, January 2019-December 2019
Hunter Fields,^ May 2019-December 2020
Yu Fu,^ August 2019-May 2021, USRCAP Recipient 2020, AYRP Recipient Fall 2020
Aaron Grau, August 2019-December 2019
Audrey Bonds,^ September 2019-Present, AYRP Recipient Fall 2020
Aaron Grant,^ January 2020-Present, AYRP Recipient Spring 2021
Carolina D. Barbosa Mather,^ July 2020-December 2020
Allison Boyer, July 2020-August 2020
Eve Sroczyński, July 2020-August 2020
Michael Hilyard, August 2020-Present, AYRP Recipient Fall 2020, USRCAP Recipient Summer 2021
Lily Fojtik, May 2021-Present
Fatima Asem, October 2021-Present

Visiting Scientists

Kivan Noshirvanisharifabad, April 2017-May 2017
Tyler Llewellyn, May 2018-August 2018
Dr. Yasaman Saleh, July 2021-October 2021

High School Students Mentored (^Denotes Publications)

Kayla Goolsby,^ Project SEED Student, May 2017-August 2017, May 2018-August 2018
Stuart Wells III, Project SEED Student, June 2019-August 2019
Daniel Liu,^ Ohio College Credit Plus Student, February 2017-August 2019
Reece Tatchell, Visiting High School Student, June 2019-August 2019
Frank Lee,^ Visiting High School Student, June 2020-May 2021
Kendal Rivera, Visiting High School Student, June 2021-August 2021

Plan of Study Committees

2017: Allison Rabon, Fan Wu, Justin Maxwell
2018: Ishani Hettiarachchi, Pratibha Chand-Thakuri, Christine Jette, Hanyang Zhou, Mithila Tennakoon
2019: Mollie Enright
2020: Kendra Shrestha, Indunil Alahakoon, Thandazile Mncwango, Prem Gurung, Hasaruwani Kiridena, Ramesh Sapkota
2021: Abigail Gohmann, Eston Macharia, Ashlee Barrett, Chloe Sebilliau

Candidacy Exam Committees

2017: Alom Nur-E, La'nese Lovings, Fan Wu
2018: Alexander Landgraf, Allison Rabon
2019: Ishani Hettiarachchi, Pratibha Chand-Thakuri, Mithila Tennakoon, Yesmin Rina
2020: Mollie Enright
2021: Kendra Shrestha, Indunil Alahakoon, Prem Gurung, Hasaruwani Kiridena, Ramesh Sapkota, Sanduni Gedara

Thesis Defense Committees

2019: Justin Maxwell

2021: Christine Jette

Dissertation Defense Committees

2018: Nasim Esmati

2019: Fan Wu

2020: Kristopher Kleski

2021: Allison Rabon, Alexander Landgraf, Pratibha Chand-Thakuri

SERVICE

University Service

Office of Undergraduate Research – USRCAP Application Review Committee (Spring 2018)

Office of Undergraduate Research – USRCAP Planning Committee (Spring/Summer 2018)

Advisory Council for Undergraduate Research (2018-2021; 2021-2024 Appointment)

Panel Organizer and Workshop Participant for Sustainable Energy Economy Workshop

Research & Development of Light Water Reactor and Hydrogen Hybrids (2020)

Search Committee – Director of Office of Undergraduate Research (Spring 2021)

Department Service

Awards Committee (2018-2019)

Colloquium Committee (2016-2018; Chair in 2017-2018)

Curriculum Committee (2019-2021)

Graduate Recruitment Committee (2016-2019; 2020-2022; Chair in 2021-2022)

Awards Sub-Committee: Paper-of-the-Year Review (2017)

Instrumentation Specialist Hiring Committee (2018)

Chair's Advisory Committee (2018-2020)

Tenure Track Faculty Search Committee in Inorganic Chemistry (2019-2020)

UT StACS Faculty Advisor (2019-2022)

Postdoc Search Committee for Prof. Mark Mason (2020)

Chair of Visiting Assistant Professor Search Committee (2021)

Postdoc Search Committee for Prof. Wei Li (2021)

Professional Service

Organizer for 2019 Ohio Inorganic Weekend, Toledo, OH, United States, November 1 – 2, 2019. ~250 participants, raised \$2,000 for the event.

ACS Green Chemistry Institute, January 2021 – Present, Green Chemistry Module Development.
Developed and field-tested systems thinking-based lecture materials on cycloaddition chemistry.

ACS Student Chapter Reviewer, June and July 2021. Reviewed ACS Student Chapter reports.

University of Michigan, Preparing Future Faculty Participating Mentor, May 25, 2021.

257th ACS National Meeting & Exposition (Presided over “New Reactions” Session), Orlando, FL, United States, March 31- April 4, 2019.

Glass City Chemistry Conference (Organized “Synthetic Methodology” Session), Toledo, OH, United States, June 14-16, 2018.

Journal Peer Review

ACS Catalysis (2018 – 1; 2020 – 1; 2021 – 3).
ACS Sus Chem Eng (2020 – 1).
Angewandte Chemie (2019 – 1; 2021 – 3).
Applied Science (2019 – 1).
Art of Synthesis (2020 – 1).
Catalysts (2020 – 5; 2021 - 3).
Chem (2020 – 1).
Chemistry a European Journal (2020 – 1).
Chemical Science (2018 – 2, 2019 – 2, 2020 – 1).
Crystal Growth & Design (2019 – 1; 2021 – 1).
Crystals (2019 – 1).
Int J Mol Sci (2019 – 1; 2020 – 1).
Journal of the American Chemical Society (2021 – 4).
Journal of Nanostructure Chemistry (2020 – 1).
Journal of Organic Chemistry (2019 – 4; 2021 – 2).
Journal of Visualized Experiments (2019 – 1).
Molecules (2019 – 5, 2020 – 6; 2021 – 3).
National Center for Case Study Teaching (2020 – 1).
Nature Chemistry (2016 – 1, 2017 – 2, 2019 – 2).
Organic and Biomolecular Chemistry (2021 – 2).
Organic Letters (2017 – 1, 2019 – 4, 2020 – 6; 2021 – 3).
Oriental Journal of Chemistry (2019 – 1).
Processes (2019 – 1; 2021 – 1).
Research Chemical Intermediates (2019 – 1).
Scientific Advances (2021 – 1).
Symmetry (2019 – 2; 2020 – 1).
Synlett (Crowd Sourcing Initiative, 2020 – 6; 2021 – 4).
Synthesis (2019 – 1).
Tetrahedron Letters (2018 – 1).

Proposal Review

National Science Foundation (2021 – 17).
Petroleum Research Fund (2014 – 1, 2017 – 1, 2018 – 2; 2021 – 1).

Graduate Recruiting Trips

2021

Department of Chemistry, Kenyon College, OH, United States, Planned for Nov. 16.
Department of Chemistry and Biochemistry, Hillsdale College, MI, United States, Planned for Nov. 2.

2020

Department of Chemistry, Wright State University, OH, United States, Sep. 25.

2019

Department of Chemistry and Biochemistry, Northern Kentucky University, KY, United States, Feb. 13.

2018

Department of Chemistry, Oakland University, MI, United States, Nov. 7.
Department of Chemistry, Université de Haute-Alsace, France, Oct. 15.
Department of Chemistry, Université de Lille, France, Oct. 12.
Department of Chemistry, Youngstown State University, OH, United States, Oct. 5.

Department of Chemistry and Biochemistry, Ohio Northern University, OH, United States, Mar. 15.

2017

Department of Chemistry and Physics, Western Carolina University, NC, United States, Dec. 1.

Department of Chemistry, Clemson University, SC, United States, Nov. 30.

Department of Chemistry, Appalachian State University, NC, United States, Nov. 29.

Department of Chemistry, Murray State University, KY, United States, Nov. 20.

Department of Chemistry and Biochemistry, Hillsdale College, MI, United States, Sept. 12.

Department of Chemistry, St. Bonaventure University, St. Bonaventure, NY, United States, April 7.

Professional Memberships

American Chemical Society (2010-Present).

Other Service

Organized the 3rd Annual Molecule of the Summer Event, University of Toledo, June 26, 2021.

Organized the 2nd Annual Molecule of the Summer Event, University of Toledo, June 13, 2020.

Poster Judge, Midwest Graduate Research Symposium, University of Toledo, April 7, 2018.

Assisted with Undergraduate Recruitment Weekend, University of Toledo, February 10, 2018.

Organized the 1st Annual Molecule of the Summer Event, University of Toledo, July 15, 2017.

Chemistry Demonstrations, Anthony Wayne High School, April 21, 2017.

PROFESSIONAL TRAINING

Cottrell Scholars Workshop, Washington DC (2017).

ACS Summer School for Green Chemistry and Sustainable Energy, Golden CO (2012).