**Michael Christopher Young, Ph.D.**
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**PROFESSIONAL EXPERIENCE**

**Assistant Professor – University of Toledo** Toledo, Ohio

Department of Chemistry & Biochemistry, School of Green Chemistry & Engineering July 2016-Present

**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)

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

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

**PROFESSIONAL ACTIVITY**
**REFEREED PUBLICATIONS**

26. Garreau, A. L.; Zhou, H.; **Young, M. C.**\* “A Protocol for the *ortho*-Deuteration of Acidic Aromatic Compounds in D2O Catalyzed by Cationic RhIII.” **2019**, *Org. Lett*., **2019**, *21*, 7044. Submitted as a preprint (*ChemRxiv*, 8292296).

25. Kapoor, M.;† Chand-Thakuri, P.;† **Young, M. C.**\* “Carbon Dioxide-Mediated C(*sp*2)–H Arylation of Primary and Secondary Benzylamines.” **2019**, *J. Am. Chem. Soc.*, **2019**, *141*, 7980. Submitted as a preprint (*ChemRxiv*, 7138088).

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 Intereactions 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(*sp*3)–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(*sp*3)−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 App. 16/223,467.

**Oral Presentations**

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**

8. **Young, M. C.** (Aug 2019-July 2022) “Late Stage Derivitization 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.

**Submitted/Pending Grants**

3. **Young, M. C.** (Sept 2020-Aug 2025) “CAREER: Sustainable Routes to Carboxylic Acids via C–H Carboxylation Using Carbon Dioxide.” National Science Foundation. Total requested $690,864.

2. **Young, M. C.** (June 2020-May 2025) “Rapid and Economic Synthesis of Amine and Alcohol Derivatives Using C–H Activation Mediated by Carbon Dioxide.” National Institutes of Health – R01A1. Total requested $ 2,254,500. Priority Score: 45. Percentile Score: 35

1. **Young, M. C.** (Sept 2020-Aug 2023) “Roll for Initiative: Exploring Self-Assembly of Unconventional-Shaped Nanocapsules and Supramolecular Catalysis.” Cottrell Scholar Award. Total requested $100,000.

**Unfunded Grants**

16. **Young, M. C.** (July 2019-June 2021) “Accessing Anticancer Agents via Late Stage Derivatization of Natural Products.” Ohio Cancer Research. Total requested $60,000.

15. **Young, M. C.** (Sept 2019-Aug 2021) “Postsynthetic Modification of Metal-Organic Frameworks for Stabilization of Reactive Intermediates and Catalysts.” American Chemical Society, Petroleum Research Fund. Total requested $110,000.

14. **Young, M. C.** (May 2019-Aug. 2019) “Late Stage Derivatization of Complex Molecules via Hydrogen Bond-Directed C–H Functionalization.” deArce-Koch Memorial Endowment Fund in Support of Medical Research and Development. Total requested: $25,000.

13. **Young, M. C.** (Sept 2019-August 2024) “CAREER: Development of Sustainable Routes to Polymer Precursors by Remote C–H Carboxylation Using Carbon Dioxide.” National Science Foundation – CAREER Award. Total requested $690,213. No priority score assigned.

12. **Young, M. C.** (Sept 2019-August 2024) “Rapid and Economic Synthesis of Next Generation Opioid Receptor Agonists to Mitigate the Opioid Crisis Via C–H Activation of Amine and Alcohol Substrates.” National Institutes of Health – R01. Total requested $ 2,251,499. Not discussed.

11. **Young, M. C.** (July 2018-June 2020) “Design and Development of Smart Metal Complexes as H2S Donors.” Ohio Cancer Research. Total requested $60,000.

10. Karunarathne, W. K. A.; **Young, M. C.**; Payton, J. L. (Sept 2018-Aug 2021) “Understanding the Mechanism of Retinal and Blue Light Mediated PIP2 Hydrolysis and Computationally-Guided Synthesis of PIP2 Hydrolysis Inhibitors.” National Institutes of Health – R15. Total requested $448,500.

9. Karunarathne, W. K. A.; **Young, M. C.**; Payton, J. L. (July 2018-Dec 2019) “Study of Mechanisms and Mitigation of Retinal Mediated Cellular Photodamage.” Department of Defense – Defense Medical Research and Development Program – Accelerating Innovation in Military Medicine. Total requested $523,169.

8. **Young, M. C.**; Payton, J. L. (July 2018-Dec 2019) “Rapid Development of Novel Antibiotic Derivatives via Hydrogen Bond-Directed Late Stage C-H Functionalization.” Department of Defense – Defense Medical Research and Development Program – Accelerating Innovation in Military Medicine. Total requested $523,250.

7. **Young, M. C.** (Sept 2018-Aug 2020) “Postsynthetic Modification of Metal-Organic Frameworks for Stabilization of Reactive Intermediates and Catalysts Without the Use of Sterically Encumbering Groups.” American Chemical Society, Petroleum Research Fund. Total requested $110,000.

6. **Young, M. C.** (July 2018-June 2021) “A Route to Sustainable Synthesis of Carboxylic Acids by C-H Carboxylation Using Carbon Dioxide.” National Science Foundation, Division of Chemistry, Chemical Catalysis. Total requested $481,799.

5. **Young, M. C.** (July 2018-June 2020) “Sustainable Access to Carboxylic Acids by Mild C-H Carboxylation Using Carbon Dioxide.” Camille & Henry Dreyfus Foundation, Postdoctoral Fellowship in Environmental Chemistry. Total requested $120,000.

4. **Young, M. C.** (Sept 2018-Aug 2019) “Hydrogen Bond-Directed C−H Amination and Alkylation for Rapid Access to Previously Inaccessible Functionalized Steroids.” National Multiple Sclerosis Society, Pilot Grant. Total requested $20,000.

3. **Young, M. C.** (Sept 2018-Aug 2020) “Postsynthetic Modification of Metal-Organic Frameworks for Stabilization of Reactive Intermediates and Catalysts Without the Use of Sterically Encumbering Groups.” American Chemical Society, Petroleum Research Fund. Total requested $110,000.

2. **Young, M. C.** (June 2017-Dec 2017) “Rapid and Economic Synthesis of Complex Molecules via Carbon Dioxide-Directed Transition Metal Catalysis.” University of Toledo, Summer Research Awards and Fellowships Program. Total requested $20,000.

1. **Young, M. C.** (Feb 2017-Jul 2017) “Hydrogen Bond-Directed C−H Amination of Sustainably-Sourced Complex Molecules for Rapid Access to New Therapeutics.” American Chemical Society, Green Chemistry Institute – Pharmaceutical Round Table Ignition Grant. Total requested $25,000.

**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 students])

Terms Taught (Semester System): Spring 2017

Development: Created a new undergraduate course, and experimented with different styles for active learning and assessment. Relied heavily on a lecture format with

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 five brand new experiments, one of which is based on published work by the lab of Professor Wei Li.

Organic Separations and Elementary Organic Synthesis (Chem 2490) [15 - 17 students])

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

Development: Developed a new lab manual for Sophomore-level Organic lab for Chemistry Majors, adapting experiments from one *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 has been submitted to *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) [4 - 5 students])

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

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 will spend eight-to-ten lab sessions working towards a two-step reaction currently undisclosed in the literature, culminating in a presentation of their results.

**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.

**Students Mentored**

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

Dr. Vinod Landge, Postdoc, July 2019-Present

Allison M. Rabon, PhD Student, November 2016-Present

Haley Stevens, PhD Student, November 2016-April 2017, Transferred to UT LAMP

Justin Maxwell, MS Student, May 2017-Present

Pratibha Chand-Thakuri, PhD Student, June 2017-Present

Hanyang Zhou, PhD Student, November 2017-December 2018, Switched Focus to Statistics

Erica Liew, BS Student, March 2012-June 2014

Mi La, BS Student, January 2014-June 2014

David M. Magness, BS Student, August 2015-December 2015

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

Meddie Demmings IV, BS Student, December 2016-May 2019

Evan Diemler, BS Student, January 2017-October 2018, USRCAP Recipient 2017, 2018

Kern Baxter, BS Student, September 2017-August 2019, USRCAP Recipient 2018 & 2019

Jonathan F. Kennedy, BS Student, October 2017-May 2019, USRCAP Recipient 2018

Alyssa L. Garreau, BS Student, May 2018-Present, USRCAP Recipient 2019

Jared G. Doremus, BS Student, May 2018-Present, USRCAP Recipient 2019

Marieh N. Hollenback, BS Student, May 2018-August 2018

Joseph R. Chamberlain, BS Student, January 2019-April 2019

Kenneth Jenkins, BS Student, January 2019-Present

Sara Thomas, BS Student, January 2019-Present

Hunter Fields, BS Student, May 2019-Present

Yu Fu, BS Student, August 2019-Present

Aaron Grau, BS Student, August 2019-Present

Audrey Bonds, BS Student, September 2019-Present

Kivan Noshirvanisharifabad, Visiting Scholar, April 2017-May 2017

Tyler Llewellyn, Visiting Scholar, May 2018-August 2018

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

**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

**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

**Thesis Defense Committees**

2019: Justin Maxwell

**Dissertation Defense Committees**

2018: Nasim Esmati

2019: Fan Wu

**SERVICE**

**University Service**

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

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

Advisory Committee for Undergraduate Research (2018-2021 Appointment)

**Department Committees**

Awards Committee (2018-2019)

Colloquium Committee (2016-2018, Chair in 2017-2018).

Graduate Recruitment Committee (2016-2019).

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

Instrumentation Specialist Hiring Committee (2018).

Chair’s Advisory Committee (2018-2019).

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

**Professional Service**

Organizer for 2019 Ohio Inorganic Weekend, Toledo, OH, United States, November 1 – 2, 2019.

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).

Angewandte Chemie (2019 – 1).

Chemical Science (2018 – 2, 2019 – 2).

Crystal Growth & Design (2019 – 1).

Crystals (2019 – 1).

Journal of Organic Chemistry (2019 – 3).

Journal of Visualized Experiments (2019 – 1).

Molecules (2019 – 4).

Nature Chemistry (2016 – 1, 2017 – 2, 2019 – 2).

Organic Letters (2017 – 1, 2019 – 3).

Processes (2019 – 1).

Symmetry (2019 – 2).

Synthesis (2019 – 1).

Tetrahedron Letters (2018 – 1).

**Proposal Peer Review**

Petroleum Research Fund (2014 – 1, 2017 – 1, 2018 – 2).

**Graduate Recruiting Trips**

**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**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**

Attendance to Cottrell Scholars Workshop, Washington DC (2017).

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