

Oswaldo Gutierrez

Associate Professor in Chemistry

President of the Alliance for Diversity of Science and Engineering (ADSE)

Texas A&M University
Department of Chemistry
3255 TAMU, P.O. Box 30012
College Station, TX 77840

Born August 10, 1983, Salamanca, Guanajuato, Mexico

Citizenship: Mexican and United States

Education and Training:

Postdoctoral Fellow, University of Pennsylvania, Organic/Organometallic Chemistry, 2012-2016

Advisor: Professor Marisa C. Kozlowski

Ph.D., University of California-Davis, Physical Organic Chemistry, 2009-2012

Advisor: Professor Dean J. Tantillo

B.S. and M.S., University of California-Los Angeles, Organic Chemistry, 2006-2009

Advisor: Professor Kendall N. Houk

Sacramento City College, Chemistry, 2001-2006

Professional History:

Associate Professor, Texas A&M University, Department of Chemistry, August 2021-present

Associate Professor, University of Maryland-College Park, Department of Chemistry and Biochemistry,
July 2021-August 2021

Assistant Professor, University of Maryland-College Park, Department of Chemistry and Biochemistry,
June 2016-2021

Teaching:

Texas A&M University. Chem228 Organic Chemistry II (Fall 2022, Spring 2022), Chem120-H General Chemistry Honors (Spring 2022).

University of Maryland-College Park. Chem441/641 Physical Organic Chemistry (Fall 2016, Fall 2017, Fall 2018), Chem237 Organic Chemistry Majors (Spring 2018, Spring 2019, Spring 2020), Chem231 Organic Chemistry (Fall 2019).

University of Pennsylvania. Chem242 Organic Chemistry II (Fall 2014, Spring 2015, Summer 2015), Chem241 Organic Chemistry I (Summer 2015), Chem241 Organic Chemistry II (Fall 2015).

University of California-Davis. Introduction to General Chemistry (Spring 2012)

Sacramento City College. Teaching Assistant for Organic Chemistry II (Spring 2005)

Awards and Honors:

Camille Dreyfus Teacher Scholar Award, 2021

Chemical and Engineering News (C&EN) Talented 12, 2020

ACS Division of Organic Chemistry Academic Young Investigator, 2020

NIGMS Maximizing Investigator's Research Award, 2020

Nathan Drake Faculty Fellow, University of Maryland, 2019

["the faculty fellowship provides support for the recruitment and/or retention of an outstanding junior faculty member in the field of organic chemistry."](#)

CMNS Board of Visitors Junior Faculty Award, University of Maryland, 2019

["This fund provides an annual award in recognition of the outstanding contributions of tenure track assistant professors who have completed their first three-year term in the College of Computer, Mathematical, and Natural Sciences"](#)

NSF CAREER Award, 2018

University of Chicago Rising Stars in Chemistry, 2015

Dow BEST Symposium Travel Award, 2013

UC MEXUS Collaborative Grant, University of California-Davis, 2012

UCD & Humanities Graduate Research Award in Chemistry, University of California-Davis, 2012
R. B. Miller Graduate Fellowship, University of California-Davis, 2012
David and Ruth Volman Graduate Fellowship, University of California-Davis, 2012
Dolores Cannon Southam Award for Excellence in Research, University of California-Los Angeles,
2009
Whitman Summer Research Fellowship, University of California-Los Angeles, 2008
Scrubs Unlimited Summer Research Fellowship, University of California-Los Angeles, 2007

Honorific/Named Lectureships:

Caltech's Diversity in Chemistry Initiative Student Invited Speaker, Caltech, 2023
Organic Chemistry Day Keynote Speaker, University of Missouri, 2022
The Paquette Workshop Keynote Speaker, The Ohio State University, 2022
NUBonD: Faces of Science Student Invited Speaker, Northwestern University, 2022
SACNAS Student Invited Speaker, University of Illinois-Urbana Champagne. 2022 *via Zoom*
ADSE Student Invited Speaker, University of Oregon. 2021
U.S. National Chemistry Olympiad-Study Camp. University of Maryland-College Park. 2021 *via Zoom*
SACNAS Student Invited Speaker, Louisiana State University. 2021 *via Zoom*
ADSE Student Invited Speaker, University of Colorado. 2020 *via Zoom*
Student Invited Speaker, Sacramento City College, 2019
Prince George's Community College STEM WEEK Speaker, Prince Georges Community College, 2018
ADSE Student Invited Speaker, Drexel University, 2017

Professional Activities:

Advisory Board, *Organic Letters*, 2022-current
President, Alliance for Diversity in Science and Engineering (ADSE), 2021-current
Co-organizer, NSF's Chemistry Early Career Investigator Workshop, 2023
Advisory Board, Alliance for Diversity in Science and Engineering (ADSE), 2014-current
Co-organizer, ADSE's "Young Researchers Conference", 2023
Co-organizer, "ICARBON Computational Summer Program" *via zoom*, Summer 2022
Co-organizer, "Breaking Barriers Through Chemistry" *via zoom*, 2021
Co-organizer, ADSE's "Young Researchers Conference," 2022
Co-organizer, ADSE's "Young Researchers Conference" *via zoom* 2021
Organizer, ADSE's "Young Researchers Conference," 2019
Organizer, ADSE's "Young Researchers Conference," 2018
Organizer, ADSE's "Young Researchers Conference," 2017
Advisory Board, McNair Scholars Program at the University of Maryland-College Park, 2016-2021
Scientific Advisory Board, Prince Georges' Community College, 2017-current
Faculty Mentor, ADSE local chapter at the University of Maryland-College Park, 2017-2021.

Reviewing Activities for Agencies and Foundations

Panel member for NIH NIGMS ESI MIRA, 2023.
Reviewer for ACS Petroleum Research Fund, 2023
Panel member for NIH NIGMS Fellowship, 2022
Early Career *ad hoc* member. National Advisory General Medical Sciences Council (NIGMS) winter meeting, 2022
Early Career panel member for NIH NIGMS SBC-A Panel, 2019.
Reviewer for NSF Graduate Research Fellowship Program, 2019
Panel Member for NSF CAREER; Chemistry CSDM-B, 2019
Panel Member for NSF CAREER; Chemistry CSDM-B, 2018
Panel Member for NSF; Chemistry CSDM-B, 2018
Reviewer for NSF Graduate Research Fellowship Program, 2017
Reviewer for NSF: Excellence in Research (EiR) Proposal, 2018
Office of Naval Research: MURI Naval Materials Division, 2017

Professional Committee Activities within Texas A&M University:

Department of Chemistry

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Chair, Division of Organic Chemistry (2023 – 2024)
Member, Executive Committee (2023 – 2024)
Member, Department of Chemistry Proactive Recruitment Operations (PRO_{PS}) Committee (2022-current)
Member, Department of Chemistry Diversity/Climate Committee (2022-current)
Organic Division Representative, Department of Chemistry Academic Operations Council Committee (2023-current)

Professional Committee Activities within University of Maryland:

Department of Chemistry

Member, Chemistry and Biochemistry Graduate Program Merit Pay and Awards (MPAC) Committee (2019 – 2020)
Member, Chemistry and Biochemistry Undergraduate Awards and Honors Program Subcommittee (2019 – 2020)
Member, Chemistry and Biochemistry Marker Chemistry Seminar Committee (2019-2020)
Member, Chemistry and Biochemistry Graduate Program Admissions Committee (2016-2019)
Member, Chemistry and Biochemistry Graduate Program Merit Pay and Awards (MPAC) Committee (2017)
Judge, Milligan Fellowship and Symposium Judge (2017-2018)
Faculty Mentor, Alliance for Diversity in Science and Engineering (2016-2021)

University of Maryland

Member, CMNS Diversity and Inclusion Advisory Committee (2020– 2021)
Member, Racial Diversity and Inclusion Committee (2020– 2021)
Member, McNair Advisory Board Committee (2017– 2022)
Member, McNair Fellowship Selection Committee (2017)
Moderator, University of Maryland National Conference for McNair Scholars and Undergraduate Research (2017)
Member, UMD Graduate School Endowed Awards Selection Committee (2018)

Research Interests: Our group combines computational and experimental approaches to advance our understanding of open-shell organic/organometallic reaction mechanisms with a focus Fe-catalyzed multicomponent radical cross-couplings and (metallo)photoredox-catalyzed carbon-carbon bond formations. In turn, this information is used to guide the design of new sustainable, catalytic, and asymmetric transformations that can be adapted by the organic, organometallic, and bio(in)organic in the synthesis of medicinally active compounds.

Publications (peer-reviewed):

Submitted-

79. Sar, D.; Yin, S.;* Grygus, J.;* Rentería-Gómez, Á.;* Garcia, M.; Gutierrez, O.[#]

Submitted.

“Expanding Chemical Space of Enol Silyl Ethers: Catalytic Dicarbofunctionalization Enabled by Iron Catalysis”

[Link to paper](#)

78. Aguilera, M. C.; Gogoi, A. R.; Lee, W.; Liu, L.; Brennessel, W.; Gutierrez, O.;[#] Neidig, M. L.[#]

Submitted.

“Insight into Radical Initiation, Solvent Effects and Biphenyl Production in Iron-Bisphosphine Cross-Couplings”

77. Wu, D.; Martin, R. T.; Pina, J.; Kwon, J.; Crockett, M. P.; Thomas, A. A.; Gutierrez, O.; Park, N. H.; Hedrick, J. L.; Campos, L. M.[#]

Submitted.

“A generalized approach to activate CO₂ for carbonation polymerizations and functional transformations”

[Link to paper](#)

O. Gutierrez, c.v. April 2023

In press-

76. Crockett, M. P.; Piña, J.; Gogoi, A. R.; Lalisce, R. F.; Nguyen, A. V.; Gutierrez, O.;# Thomas, A. A.#
Accepted.

“Breaking the *tert*-Butyllithium Contact Ion Pair: A Gateway to Alternate Selectivity in Lithiation Reactions”
[Link to paper](#)

75. Peng, Q.; Gogoi, A. R.; Renteria-Gomez, A.; Gutierrez, O.;# Scheidt, K. A. #
Accepted.

“Visible Light-Induced Coupling of Carboxylic Acids with Alcohols/Amines via Phosphorous Strategy”
[Link to paper](#)

74. Day, C. S.; Renteria-Gomez, A.; Ton, S. J.; Gogoi, A.; Gutierrez, O.;# Martin, R. #
Nat. Catal. **2023**, *6*, 244-253.

“Elucidating Electron Transfer Events in Polypyridine Nickel Complexes”
[Link to paper](#)

73. Zhou, M.; Tsien, J.; Dykstra, R.; Hughes, J. M.; Peters, B. K.; Merchant, R. R.; Gutierrez, O.;# Quin, T. #
Nat. Chem. **2023**, *15*, 550-559.

“Alkyl Sulfinates as Cross-Coupling Partners: Programmable and Stereospecific Installation of C(sp³)
Biososteres”
[Link to paper](#)

72. Yang, Y.; Tsien, J.; Dykstra, R.; Chen, S.-J.; Wang, J. B.; Merchant, R. R.; Hughes, J. M. E.; Peters, B. K.
Gutierrez, O.;# Quin, T. #

Accepted.
“Exploring Uncharted Chemical Space: Programmable Late-Stage Functionalization of Bridge-substituted BCP
bis-Boronates”
[Link to paper](#)

71. Matsuo, B.; Majhi, J.; Granados, A.; Sharique, M.; Martin, R. T.; Gutierrez, O.;# Molander, G. A. #
Chem. Sci. **2023**, *14*, 2379-2385.

“Transition Metal-Free Photochemical C-F Activation for the Preparation of Difluorinated-Oxindoles
Derivatives”
[Link to paper](#)

70. Zhu, J. L.; Schull, C. R.; Tam, A. T.; Renteria-Gomez, A.; Gogoi, A. R.; Gutierrez, O.;# Scheidt, K. A. #
J. Am. Chem. Soc. **2023**, *145*, 1535-1541.

“Photoinduced Acylations Via Azolium-Promoted Intermolecular Hydrogen Atom Transfer”
[Link to paper](#)

69. Dherange, B. D.; Yuan, M.; Kelly, C. B.;# Reiher, C. A.; Grosanu, C.; Berger, K. J.; Gutierrez, O.;# Levin,
M. #

J. Am. Chem. Soc. **2023**, *145*, 17-24.
“Direct Deaminative Functionalization”

[Link to paper](#)

- Highlighted in IN THE PIPELINE by Derek Lowe: [LINK](#)

68. Tan.; G.; Paulus, F.;Renteria-Gomez, A.; Lalisce, R.F.; Daniliuc, C. G.; Gutierrez, O.;# Glorius, F. #
J. Am. Chem. Soc. **2022**, *144*, 21664-21673.

Highly Selective Radical Relay 1,4-Oxyimination of Two Electronically Differentiated Olefins”
[Link to paper](#)

67. Li, X.; Yuan, M.; Chen, F.; Quing, F.-L.; Gutierrez, O.;# Chu, L. #
Chem **2023**, *9*, 154-169.

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“Three-component enantioselective alkenylation of organophosphonates via nickel metallaphotoredox catalysis”

[Link to paper](#)

66. Dhungana, R. K.; Granados, A.; Ciccone, V.; Martin, R. T.; Majhi, J.; Sharique, M.; Gutierrez, O.;[#] Molander, G. A.[#]

ACS Catal. **2022**, *12*, 15750-15757.

“Trifunctionalization of Cinnamyl Alcohols Provides Access to Brominated α,α -Difluoro- γ -Lactones via Photoinduced Radical-Polar-Radical Mechanism”

[Link to paper](#)

65. Altundas, B.; Alwedi, E.; Song, Z.; Gogoi, A. R.; Dykstra, R.; Gutierrez, O.;[#] Fleming, F. F.[#]

Nat. Commun. **2022**, *13*, 6444.

“Dearomatization of Aromatic Asmic Isocyanides to Complex Cyclohexadienes”

[Link to paper](#)

64. Renteria-Gomez, A.; Lee, W.; Yin, S.; Davis, M.; Gogoi, A. R.; Gutierrez, O.[#]

ACS Catal. **2022**, *12*, 11547-11556.

“General and Practical Route to Diverse 1-(Difluoro)alkyl-3-aryl Bicyclo[1.1.1]pentanes Enabled by an Fe-Catalyzed Multicomponent Radical Cross-Coupling Reaction”

[Link to paper](#) ([ChemRxiv](#))

63. Majhi, J.; Dhungana, R. K.; Renteria-Gomez, A.; Sharique, M.; Li, Dong, W.; Gutierrez, O.;[#] Molander, G. A.[#]

J. Am. Chem. Soc. **2022**, *144*, 15871-15878.

“Metal-Free Photochemical Imino-Alkylation of Alkenes with Bifunctional Oxime Esters”

[Link to paper](#)

62. Wen, Y.; Renteria-Gomez, A.; Day, G. S.; Smith, M. F.; Yan, T-H.; Osman K., R.; Gutierrez, O.;[#] Sharma, V. K.;[#] Ma, X.;[#] Zhou, H.-C.[#]

J. Am. Chem. Soc. **2022**, *144*, 11840-11850.

“Integrated Photocatalytic Reduction and Oxidation of Perfluorooctanoic Acid by Metal–Organic Frameworks: Key Insights into the Degradation Mechanisms.”

[Link to paper](#)

61. Wang, H.; Liu, C.F.; Martin, R. T.; Gutierrez, O.;[#] Koh, M. J.[#]

Nat. Chem. **2022**, *14*, 188-195.

“Directing-group-free catalytic dicarbofunctionalization of unactivated alkenes.”

[Link to paper](#)

60. Rotella, M. E.; Sar, D.; Liu, L.; Gutierrez, O.[#]

Chem. Commun. **2021**, *57*, 12508-12511.

“Fe-Catalyzed dicarbofunctionalization of electron-rich alkenes with Grignard reagents and (fluoro)alkyl halides.” Part of the 2021 Emerging Investigators Issue.

[Link to paper](#)

59. Liu, L.; Aguilera, M. C.; Lee, W.; Youshaw, C. R.; Neidig, M. L.;[#] Gutierrez, O.[#]

Science **2021**, *374*, 432-439.

“General method for iron-catalyzed multicomponent radical cascades-cross-couplings.”

[Free-Access Link to the Paper](#)

- Highlighted in Science by Guillaume Lefèvre: [LINK](#)
- Highlighted by the National Science Foundation under NSF Research News "Low-Cost Iron Catalyst Produces Less Expensive Pharmaceutical Compounds!" [LINK](#)
- Highlighted by the NSF as The Discovery Files episode [GIVING PRESCRIPTIONS IRON!](#) The Discovery Files radio feature is distributed nationally by the CBS Radio Network and carried by other radio stations across the country, from Los Angeles to Washington, D.C. The radio series is also distributed internationally to 177 countries by the American Forces Network.

O. Gutierrez, c.v. April 2023

- Featured in Texas A&M Science by Shana K. Hutchins "Texas A&M Chemist Helps Pave Way for Cheaper, Faster, Safer Chemical Synthesis Using Iron as Catalyst" [LINK](#)
- This work was highlighted by the University of Rochester "A big leap forward in using iron catalysts for pharmaceuticals" [LINK](#)

58. Berger, K. J.; Driscoll, J. L.; Yuan, M.; Dherange, B. D.; Gutierrez, O.;[#] Levin, M. D.[#]
J. Am. Chem. Soc. **2021**, *143*, 17366-17373.

"Direct Deamination of Primary Amines via Isodiazene Intermediates."

[Link to paper](#)

57. **Review.** Yuan, M.; Gutierrez, O.[#]
WIREs Comput Mol Sci. **2021**;e1573.

"Mechanisms, Challenges, and Opportunities of Dual Ni/Photoredox Catalyzed C(sp²)-C(sp³) Cross-Couplings."

(Invited Article)

[Link to paper](#)

56. Liu, C.F.; Wang, H.; Martin, R. T.; Gutierrez, O.;[#] Koh, M. J.[#]
Nat. Catal. **2021**, *4*, 674-683.

"Olefin functionalization/isomerization enables stereoselective alkene synthesis."

[Link to paper](#)

55. Thompson, R. R.; Rotella, M. E.; Zhou, X.; Fronczek, F. R.; Kumar, R.; Gutierrez, O.[#] Lee, S.[#]
J. Am. Chem. Soc. **2021**, *143*, 9026-9039.

"Impact of Ligands and Metals on the Formation of Metallacyclic Intermediates and a Non-traditional Mechanism for Group VI Alkyne Metathesis Catalysts."

[Link to paper](#)

54. DeMuth, J. C.; Song, Z.; Carpenter, S. H.; Boddie, T. E.; Radovic, A.; Baker, T. M.; Gutierrez, O.;[#] Neidig, M. L.[#]

Chem. Sci. **2021**, *12*, 9398-9407.

"Experimental and Computational Studies of the Mechanism of Iron-Catalysed C-H Activation/Functionalisation with Allyl Electrophiles."

[Link to paper](#)

53. Lipp, A.; Badir, S.; Dykstra, R.; Gutierrez, O.;[#] Molander, G. A.[#]
Adv. Synth. Catal. **2021**, *363*, 3507-3520.

"Catalyst-Free Decarbonylative Trifluoromethylthiolation Enabled by Electron Donor–Acceptor Complex Photoactivation."

[Link to paper](#)

- Highlighted with VIP (Very Important Publication) designation

52. Agrawal, T.; Martin, R.; Collins, S.; Wilhelm, Z.; Edwards, M. D.; Gutierrez, O.;[#] Sieber, J. D.[#]
J. Org. Chem. **2021**, *86*, 5026-5046.

"Access To Chiral Diamine Derivatives through Stereoselective Cu-Catalyzed Reductive Coupling of Imines and Allenamides."

[Link to paper](#)

51. Campbell, M. W.; Yuan, M.; Polites, V. C.; Gutierrez, O.;[#] Molander, G. A.[#]
J. Am. Chem. Soc. **2021**, *143*, 3901-3910.

"Photochemical C–H Activation Enables Nickel-Catalyzed Olefin Dicarbofunctionalization."

[Link to paper](#)

50. Guo, L.; Yuan, M.; Zhang, Y.; Wang, F.; Zhu, S.; Gutierrez, O.;[#] Chu, L.[#]
J. Am. Chem. Soc. **2020**, *142*, 20390-20399.

"General Method for Enantioselective Three-Component Carboarylation of Alkenes Enabled by Visible-Light

Dual Photoredox/Nickel Catalysis.”

[Link to paper](#)

49. Liu, L.; Lee, W.; Youshaw, C. R.; Yuan, M.; Geherty, M. B.;* Zavalij, P. Y.; Gutierrez, O. #
Chem. Sci. **2020**, *11*, 8301-8305.

“Fe-Catalyzed Three-Component Dicarbofunctionalization of Unactivated Alkenes with Grignard Reagents.”

[Link to paper](#)

- Featured in Org. Chem by Douglass F. Taber under Highlights: Reactions of Alkenes [LINK](#)
- Highlighted in Organic Chemistry Portal by Reto Mueller! [LINK](#)
- Highlighted in SYNFACTS by Mark Lautens: [LINK](#)

48. Yuan, M.; Song, Z.; Badir, S. O.; Molander, G. A.;# Gutierrez, O. #

J. Am. Chem. Soc. **2020**, *142*, 7225-7234.

“On The Nature of C(sp³)-C(sp²) Bond Formation In Nickel-Catalyzed Tertiary Radical Cross-Couplings: A Case Study Mechanistic Study of Ni/Photoredox Catalytic Cross-Coupling of Alkyl Radicals and Aryl Halides.”

[Link to paper](#)

47. Liu, L.; Lee, W.; Yuan, M.; Acha, C.; * Geherty, M. B.; * Williams, B. * Gutierrez, O. #

Chem. Sci. **2020**, *11*, 3146-3151.

“Intra- and Intermolecular Carbofunctionalization of Vinyl Cyclopropanes.”

[Link to paper](#)

- Highlighted in SYNFACTS: [LINK](#)

46. Rotella, M. E.; Der, R.; Hilinski, M. K.;# Gutierrez, O. #

ACS Catal. **2020**, *10*, 897-906.

“Mechanism of Iminium Salt-Catalyzed C(sp³)-H Amination: Factors Controlling Hydride Transfer versus H-Atom Abstraction.”

[Link to paper](#)

45. Xiao, S.; Lee, W.; Chen, F.; Zavalij, P. Y.; Gutierrez, O.;# Davis, J. #

Chem. Commun. **2020**, *56*, 6981-6984.

“Oxidation of 8-Thioguanosine Gives Redox-Responsive Hydrogels and Reveals Intermediates in a Desulfurization Pathway.”

[Link to paper](#)

44. Wang, H.; Liu, C.-F.; Song, Z.; Yuan, M.; Ho, Y. A.; Gutierrez, O.;# Koh, M. J. #

ACS Catal. **2020**, *10*, 4451-4459.

“Engaging α -Fluorocarboxylic Acids Directly in Decarboxylative C-C Bond Formation.”

[Link to paper](#)

- Highlighted in Chemistry World:[LINK](#)

43. Xu, B.; Troian-Gautier, L.;# Dykstra, R.; Martin, R.; Gutierrez, O.;# Tambar, U. K. #

J. Am. Chem. Soc. **2020**, *142*, 6206-6215.

“Photocatalyzed Diastereoselective Isomerization of Cinnamyl Chlorides to Cyclopropanes”

[Link to paper](#)

42. Thompson, R. R.; Rotella, M. E.; Du, P.; Zhou, X.; Fronczek, F. R.; Kumar, R.; Gutierrez, O. # Lee, S. #
Organometallics **2019**, *38*, 4054-4059.

“Siloxide Podand Ligand as a Scaffold for Molybdenum Catalyzed Alkyne Metathesis and Isolation of a Dynamic Metallatetrahedrane Intermediate.”

[Link to paper](#)

41. Luo, Y.; Gutierrez-Bonet, A.; Matsui, J. K.; Rotella, M. E.; Dykstra, R.; Gutierrez, O.;# Molander, G. A. #
ACS Catal. **2019**, *9*, 8835-8842.

“Oxa- and Azabenzonorbornadienes as Electrophilic Partners under Photoredox/Nickel Dual Catalysis.”

O. Gutierrez, c.v. April 2023

[Link to paper](#)

40. Sorlin, A. M.; Mixdorf, J. C.; Rotella, M.; Martin, R.;* Gutierrez, O.;# Nguyen, H. M. #
J. Am. Chem. Soc. **2019**, *141*, 14843-14852.

“The Role of Trichloroacetimidate to Enable Iridium-Catalyzed Regio- and Enantioselective Allylic Fluorination: A Combined Experimental and Computational Study.”

[Link to paper](#)

39. Hyun, S.-M.; Yuan, M.; Maity, A.; Gutierrez, O.;# Powers, D. C. #
Chem **2019**, *5*, 2388-2404.

“The Role of Iodanyl Radicals as Critical Chain Carriers in Aerobic Hypervalent Iodine Chemistry.”

[Link to paper](#)

38. Liu, L.; Lee, W.; Zhou, J.; Bandyopadhyay, S.; * Gutierrez, O. #
Tetrahedron **2019**, *75*, 129-136.

“Radical-clock α -halo-esters as mechanistic probes for bisphosphine iron-catalyzed cross-coupling reactions.”

[Link to paper](#)

37. Lee, W.; Yuan, M.; Acha, C.; * Onwu, A.; * Gutierrez, O. #
Org. Biomol. Chem. **2018**, *17*, 1767-1772.

“Mechanism of Nitrones and Allenates Cascade Reactions for the Synthesis of Dihydro[1,2-a]indoles.”

[Link to paper](#)

36. Sutyak, K. B.; Lee, W.; Zavalij, P. V.; Gutierrez, O.;# Davis, J. T. #
Angew. Chem. Int. Ed. **2018**, *57*, 17146-17150.

“Templating and Catalyzing [2 + 2] Photocycloaddition in Solution Using a Dynamic G-Quadruplex.”

[Link to paper](#)

35. **Review.** Liu, L.; Lee, W.; Yuan, M.; Gutierrez, O. #
Comment. Inorg. Chem. **2018**, *38*, 210-237.

“Mechanisms of Bisphosphine Iron-Catalyzed C(sp²)-C(sp³) Cross-Coupling Reactions: Inner-Sphere or Outer-Sphere Arylation?”

[Link to paper](#)

34. Matsui, J. K.; Gutierrez-Bonet, A.; Rotella, M.; Alam, R.; Gutierrez, O.;# Molander, G. A. #
Angew. Chem. Int. Ed. **2018**, *57*, 15847-15851.

“Photoredox/Nickel-Catalyzed Single-Electron Tsuji-Trost Reaction: Development and Mechanistic Insight.”

[Link to paper](#)

- Highlighted in SYNFACTS by Paul Knochel and Juri Skotnitzki! [LINK](#)
- Highlighted as Top 10% most downloaded paper in a year!

33. Phelan, J. P.; Lang, S. B.; Compton, J. S.; Kelly, C. B.; Dykstra, R.; Gutierrez, O.;# Molander, G. A. #
J. Am. Chem. Soc. **2018**, *140*, 8037-8047.

“Redox-Neutral Photocatalytic Cyclopropanation via Radical/Polar Crossover.”

[Link to paper](#)

- Highlighted as the top 10 "Most Read Articles" in July 2018!
- Highlighted in SYNFACTS by Paul Knochel and Moritz Balkenhoh! [LINK](#)
- Highlighted in Organic Chemistry Portal by Reto Mueller! [LINK](#)

32. Cabrera-Afonso, M. J.; Lu, Z.-P.; Kelly, C. B.; Lang, S. B.; Dykstra, R.; Gutierrez, O.;# Molander, G. A. #
Chem. Sci. **2018**, *9*, 3186-3191.

“Engaging Sulfinato Salts via Ni/Photoredox Dual Catalysis Enables Facile Csp²-SO₂R Coupling.”

[Link to paper](#)

31. Lee, W.; Zhou, J.; Gutierrez, O. #
J. Am. Chem. Soc. **2017**, *139*, 16126-16133.

O. Gutierrez, c.v. April 2023

“Mechanism of Nakamura’s Iron-Catalyzed Asymmetric Cross-coupling Reaction: The Role of Spin in Controlling Selectivity.”

[Link to paper](#)

30. Li, X.-N.; Ridge, C. D.;[#] Mazzola, E. P.; Sun, J.; Gutierrez, O.; Moser, A.; DiMartino, J. C.; MacDonald, S. A.; Chen, P.[#] *Magn. Reson. Chem.* **2017**, *55*, 210-213.

“Application of a Computer-assisted Structure Elucidation Program for the Structural Determination of a New Terpenoid Aldehyde with an Unusual Skeleton.”

[Link to paper](#)

29. Mazzola, E. P.;[#] Gutierrez, O.;[#] Fraenkel, G. A.; Chow, A.; Doyle, M. P.; Mandler, M.; Dykstra, R.; Garg, D.; Ridge, C. D.

Concepts in Mag. Res. **2016**, *45A*:e21424.

“Unusually Large Scalar Coupling Between Geminal Protons in a Saturated Pyrimidine.”

[Link to paper](#)

28. Gutierrez, O.; Hendrick, C. E.; Kozlowski, M. C.

Org. Lett. **2018**, *20*, 6539-6543.

Divergent Reactivity in Pd-Catalyzed [3,3]-Sigmatropic Rearrangement of Allyloxy- and Propargyloxyindoles Revealed by Computation and Experiment

27. Kim, B.-S.; Gutierrez, O.; Kozlowski, M.; Walsh, P. J.

Adv. Synth. Catal. **2018**, *360*, 1426-1432.

“A Simple Procedure for the Synthesis of β -Hydroxyallenamides via Homoallenation of Aldehydes.”

26. Li, M.; Gutierrez, O.; Berritt, S.; Pascual-Escudero, A.; Yeşilçimen, A.; Tang, X.; Adrio, J.; Huang, G.; Nakamaru-Ogiso, E.; Kozlowski, M. C.; Walsh, J. P.

Nat. Chem. **2017**, *9*, 997-1004.

“Transition-Metal-Free Chemo- and Regioselective Vinylation of Azaallyls.”

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J. Am. Chem. Soc. **2016**, *138*, 3631-3634.

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22. Harrison, G. J.; Gutierrez, O.; Jana, N.; Driver, T.; Tantillo, D. J.

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J. Am. Chem. Soc. **2015**, *137*, 11491-11497.

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Org. Lett. **2015**, *17*, 1742-1745.

"Development and Origin of Diastereoselectivity of a Practical and Asymmetric Route to Sitagliptin and Derivatives."

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17. Allen, S. E.; Hsieh, S.-Y.; Gutierrez, O.; Bode, J. W.; Kozlowski, M. C.
J. Am. Chem. Soc. **2014**, *136*, 11783-11791.

"Concerted Amidation of Activated Esters: Reaction Path and Origins of Selectivity in the Kinetic Resolution of Cyclic Amines via NHC and Hydroxamic Acid Co-Catalyzed Acyl Transfer."

16. Williams, D. R.; Atwater, B. A.; Ke, P.; Gutierrez, O.; Tantillo, D. J.
Org. Lett. **2014**, *16*, 468-471.

"Stereocontrol in Asymmetric SE' Reactions of γ -Substituted α,β -Unsaturated Aldehydes."

15. Chen, M. Z.; Gutierrez, O.; Smith III, A. B.
Angew. Chem. Int. Ed. **2013**, *53*, 1279-1282.

"Through-Bond/Through-Space Anion Relay Chemistry Exploiting Vinylepoxides as Bifunctional Linchpins."

14. Gutierrez, O.; Strick, B. F.; Thomson, R. J.; Tantillo, D. J.
Chem. Sci. **2013**, *4*, 3997-4003.

"Mechanism of Triflimide-Catalyzed [3,3]-Sigmatropic Rearrangements of N-Allylhydrazones – Predictions and Experimental Validation."

13. Gutierrez, O.; Harrison, J. G.; Felix, R. J.; Guzman, F. C.; Gagné, M. R.; Tantillo, D.
J. Chem. Sci. **2013**, *4*, 3894-3898.

"Carbonium vs. Carbenium Ion-like Transition State Geometries for Carbocation Cyclization – How Strain Associated with Bridging Affects 5-exo vs. 6-endo Selectivity."

12. Felix, R. J.; Gutierrez, O.; Tantillo, D. J.; Gagné, M. R.
J. Org. Chem. **2013**, *78*, 5685-5690.

"Gold(I)-Catalyzed Formation of Bicyclo[4.2.0]oct-1-enes."

11. Dickstein, J. S.; Curto, J. M.; Gutierrez, O.; Mulrooney, C. A.; Kozlowski, M. C.
J. Org. Chem. **2013**, *78*, 4744-4761.

"Mild Aromatic Palladium-Catalyzed Protodecarboxylation: Kinetic Assessment of the Decarboxylative Palladation and the Protodepalladation Steps."

10. Gutierrez, O.; Tantillo, D. J.
J. Org. Chem. **2012**, *77*, 8845-8850.

"Analogies Between Synthetic and Biosynthetic Reactions in which [1,2]-Alkyl Shifts are Combined with Other Events-Dyotropic, Schmidt and Carbocation Rearrangements."

9. Gutierrez, O.; Harrison, J. G.; Pemberton, R. P.; Tantillo, D. J.
Chem. Eur. J. **2012**, *18*, 11029-11035.

"Reexamining the Mechanisms of Competing [3,3] and [3,5] Sigmatropic Shifts of 1,3,7-Octatriene."

8. Liu, R.; Gutierrez, O.; Tantillo, D. J.; Aubé, J.
J. Am. Chem. Soc. **2012**, *134*, 6528-6531.

"Stereocontrol in a Combined Allylic Azide Rearrangement and Intramolecular Schmidt Reaction: Application to Asymmetric Synthesis of Pinnaic Acid."

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7. Laulhe, S.; Bogdanov, B.; Johannes, L. M.; Gutierrez, O.; Harrison, J. G.; Tantillo, D. J.; Zhang, X.; Nantz, M. H.

J. Mass Spectrom. **2012**, *47*, 676-686.

"Fragmentation of Oxime and Silyl-oxime Ether Odd-electron Positive Ions by the McLafferty Rearrangement: New Insights on Structural Factors that Promote α , β -Fragmentation."

6. Felix, R. J.; Weber, D.; Gutierrez, O.; Tantillo, D. J.; Gagné, M. R.

Nat. Chem. **2012**, *4*, 405-409.

"A Au-Catalyzed Enantioselective Cope Rearrangement of Achiral 1,5- Dienes."

5. Gutierrez, O.; Aubé, J.; Tantillo, D. J.

J. Org. Chem. **2012**, *77*, 640-647.

"Mechanism of the Acid Promoted Intramolecular Schmidt Reaction. Theoretical Assessment of the Importance of Lone Pair-Cation, Cation- π and Steric Effects in Controlling Regioselectivity."

4. Gutierrez, O.; Tantillo, D. J.

Organometallics. **2010**, *29*, 3541-3545.

"Transition Metal Intervention for a Classic Reaction - Assessing the Feasibility of Ni(0)- promoted [1,3] Sigmatropic Shifts of Bicyclo[3.2.0]hept-2-enes."

3. Jung, M E.; Zhang, T.-H.; Lui, R. M.; Gutierrez, O.; Houk, K. N.

J. Org. Chem. **2010**, *75*, 6933-6940.

"Synthesis of a trans, syn, trans-Dodecahydrophenanthrene via a Bicyclic Transannular Diels-Alder Reaction: Intermediate for the Synthesis of Fusidic Acid."

2. Um, J. M.; Gutierrez, O.; Schoenebeck, F.; Houk, K. N.; MacMillan, D. W. C.

J. Am. Chem. Soc. **2010**, *132*, 6001-6005.

"Nature of Intermediates in Organo-SOMO Catalysis of α -Arylation of Aldehydes."

1. Gutierrez, O.; Iafe, R.; Houk, K. N.

Org. Lett. **2009**, *11*, 4298-4301.

"Origin of Stereoselectivity in the Imidazolidinone-Catalyzed Reductions of Cyclic α , β - Unsaturated Ketones."

Research Presentations (invited):

70. Discussion leader for the 2024 Welch Conference Frontiers in Molecular Catalysis in the "Asymmetric Catalysis and Modeling" session. Houston, TX, 10/21/2024.

69. Oxford University, Oxford, England. 7/13/2023

68. Chimie ParisTech, Paris, France. 7/11/2023

67. The Institute of Chemical Research of Catalonia (ICIQ), Tarragona, Spain. 7/6/2023

66. GRC Physical Organic Conference. Holderness, NH. 6/28/2023

65. University of Rochester, Rochester, NY. 3/22/2023

64. Caltech University, Pasadena, CA. 3/15/2023-3/16/2023

63. Kansas State University, Manhattan, KS. 2/2/2023

62. Wake Forest University, Salen, NC. 1/18/2023

61. University of Houston, Houston, TX. 12/6/2022

60. Dartmouth College, Hanover, NH. 11/10/2022

59. 2022 SWRM, Cope Scholar Symposium, Baton Rouge, LA. 11/7/2022

58. Cornell University, Ithaca, NY. 10/3/2022

57. Merck Chemistry. 9/26/2022.

56. 28th Congress of the International Society of Heterocyclic Chemistry, Santa Barbara, 8/30/2022

55. IUPAC Physical Organic Chemistry. Hiroshima, Japan. 7/13/2020

54. 38th Reaction Mechanism Conference. Boulder, CO. 6/13/2020

53. Chemistry Europe Virtual Symposium. 3/22/2022

52. ACS National Meeting, From Theory to Therapy Symposium, San Diego California, 3/15/2022. (COVID-19 VIRTUAL)

51. Columbia University, New York, NY. 3/9/2022

50. The Florida Heterocyclic and Synthetic Chemistry Conference (FloHet), Gainesville, FL. 3/6/2022-3/9/2022

49. Colorado State University, Fort Collins, CO. 2/7/2022

48. University of California-Davis, Davis, CA. 11/23/2021

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47. ACS Division of Organic Chemistry Graduate Research Symposium. University of New Mexico in Albuquerque, NM. 11/18/2021
46. Bristol-Myers Squibb- Discovery Chemistry Department. 11/9/2021
45. Cope Scholar Symposium at the 2021 SWRM regional ACS meeting, Austin, Texas. 10/2/2021
44. Boston College, Newton, MA. 10/21/2021 (COVID-19 VIRTUAL)
43. Philipps-Universität Marburg, Marburg, Germany. 10/18/2021 (COVID-19 VIRTUAL)
42. California State University-San Marcos. San Marcos, CA. 9/15/2021 (COVID-19 VIRTUAL)
41. ACS/DOC Virtual Symposia. 9/15/2021
40. Harvard University. Cambridge, MA. 10/14/2021 (COVID-19 VIRTUAL)
39. Merck- Discovery Process Chemistry. West Point, PA. 7/22/2021. (COVID-19 VIRTUAL)
38. 2021 Middle Atlantic Regional Meeting-Frontiers in New Methods for Organic Synthesis. Newark, DE. 6/10/2021. (COVID-19 VIRTUAL)
37. University of Texas-San Antonio. San Antonio, NY. 4/30/2021 (COVID-19 VIRTUAL)
36. New York University. New York, NY. 3/30/2021 (COVID-19 VIRTUAL)
35. CINVESTAV, Mexico City, Mexico. 2/25/2021(COVID-19 VIRTUAL)
34. The College of New Jersey. Ewing, NJ. 2/17/2021 (COVID-19 VIRTUAL)
33. Brown University. Providence, RI. 1/29/2021 (COVID-19 VIRTUAL)
32. Philadelphia Organic Chemistry Club. University of Pennsylvania. Philadelphia. PA. 12/17/2020 (COVID-19 VIRTUAL)
31. University of Manitoba. Winnipeg, Manitoba, Canada. 11/17/2020 (COVID-19 VIRTUAL)
30. Pennsylvania State University. State College, PA. 11/11/2020 (COVID-19 VIRTUAL)
29. UCLA. Los Angeles, CA. 11/5/2020 (COVID-19 VIRTUAL)
28. University of Maryland. College Park, MD. 10/22/2020 (COVID-19 VIRTUAL)
27. Georgetown University. Washington, DC. 10/15/2020 (COVID-19 VIRTUAL)
26. Texas A&M University. College Station, TX. 10/8/2020 (COVID-19 VIRTUAL)
25. Indiana University. Bloomington, IN. 9/28/2020 (COVID-19 VIRTUAL)
24. Rensselaer Polytechnic Institute. Troy, NY. 9/15/2020 (COVID-19 VIRTUAL)
23. Young Academic Investigators. San Francisco, CA. 8/18/2020 (COVID-19 VIRTUAL)
22. Photochemistry Spotlight: Shining Light on the Big Questions of Photochemistry. 6/16/2020. (COVID-19 VIRTUAL)
21. Seton Hall University. South Orange, NJ. 2/25/2019
20. George Washington University. Washington, DC. 2/7/2019
19. Nanyang Technological University. Singapore, SG. 1/8/2019
18. National University of Singapore. Singapore, SG. 1/7/2019
17. Texas A&M University. College Station, TX. 10/21/2019
16. 2019 ACS San Diego. 8/27/2019.
15. 2019 TSRC Workshop on Accelerating Reaction Discovery. 7/21/2019
14. 2019 Middle Atlantic Regional Meeting (MARM) Early Career Organic Symposium. 6/1/2019.
13. Wayne State University, Detroit, MI. 4/17/2019.
12. University of Denver, Denver, CO. 4/12/2019
11. 257TH ACS National Meeting, Orlando, FL. 3/31/2019. Computers in Chemistry (COMP) Division.
10. Duquesne University, Pittsburg, PA. 2/22/2019.
9. Millersville University, Millersville, PA. 11/5/2018.
8. George Mason University, Fairfax, VA. 10/5/2018.
7. University of Guanajuato, Guanajuato, MX. 7/2/2018.
6. 2nd International Symposium on Organic Reaction Mechanisms (honor of Prof. K. N. Houk). (Peking University Shenzhen Graduate School in Shenzhen, China). 5/14/2018
5. Department of Chemical and Biomolecular Engineering, University of Maryland, College Park, MD. 11/28/2017.
4. Rising Stars in Chemistry Symposium, University of Chicago, Chicago, IL. 6/8/2015
3. 34th Reaction and Mechanisms Conference, UC Davis, Davis, CA. 6/23/2014.
2. The Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Mexico City, Mexico. 3/28/2013.
1. National Autonomous University of Mexico (UNAM), Mexico City, Mexico. 3/27/2013.

Research Associates Mentored:

Undergraduates Students:

31. Lukas Morehead, Texas A&M University, Fall 2022-current.
30. Melanie Garcia, Texas A&M University, Summer 2022-current.
29. Mireya Ramirez Lopez, Texas A&M University, Spring 2022-2022.
28. Yem Nguimbous, Prince George's Community College, Summer 2022.
27. Anthony Ramirez Chincilla, Prince George's Community College, Summer 2022.
26. Saul Flores, University of Maryland-College Park, Fall 2020-2021
25. Katya Beltran, University of Maryland-College Park, Spring 2020-2022

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24. Joshua Turman, Prince George's Community College, Summer 2020
23. Dale Allen, Prince George's Community College, Summer 2020
22. Abigail Hunker, Frostburg State University, McNair Scholars Program, Summer 2020
21. Emma Walter, University of Maryland-College Park, Spring 2019-2021
20. Stephanie Vargas, University of Maryland-College Park, Spring 2020- 2020
19. David Polefrone, University of Maryland-College Park, Fall 2019-2021
18. Zachary Wilhelm, University of Maryland-College Park, Spring 2020-2021
17. Onyemachi Azubuko, Prince George's Community College, Summer 2019
16. Oreoluwa Akinyode, Prince George's Community College, Fall 2019
15. Brandon Williams, Prince George's Community College, Summer 2019
14. Yuliang (Aaron) Wu, University of Maryland-College Park, Fall 2017-2018
13. Michael "Ben" Geherty, University of Maryland-College Park, Spring 2019-2020
12. Victor Baumann, University of Maryland-College Park, Summer 2018-2020
11. Donovan Bialose, Prince George's Community College, Summer 2018-2018
10. Surjo Bandyopadhyay, University of Maryland-College Park, Fall 2016-201
9. Linus Nemiroff, University of Maryland-College Park, Spring 2018-Fall 2018
8. Michael Davis, University of Maryland-College Park, Summer 2018-2021
7. Christopher Acha, Prince George's Community College, McNair Scholars Program, Summer 2017-2020.
6. Ashley Henriquez, Prince George's Community College, Summer 2017
5. Simone Williams, University of Maryland-College Park, Spring 2017-Spring 2018
4. Ashley Onwu, Prince George's Community College, Summer 2018
3. Alyssa Manio, Prince George's Community College, Summer 2018
2. Robert Martin, University of Maryland-College Park, Spring 2017-Spring 2018
1. Monica Cardenas, University of Maryland-College Park, Summer 2016

High School Students:

2. Deeya Garg, Montgomery Blair High School, Summer 2017
1. Pratik Lahiri, Richard Montgomery High School, Summer 2016

Graduate Students:

Current

13. Macayla Guerrero, Fall 2022-current
12. Poulami Mukherjee, Fall 2022-current
11. Tapas Maity, Fall 2022-current
10. Jacob Grygus, Spring 2022-current
9. Achyut Gogoi, Fall 2021-current
8. Shuai Yin, Fall 2020-current
7. Cassandra Ruth Youshaw, Fall 2019-current

Past

6. Robert T. Martin, Fall 2018-May 2022. PhD Thesis: *EXPLORING MECHANISMS AND PREDICTING REACTIVITY OF TRANSITION METAL-CATALYZED AND PHOTOCATALYZED RADICAL AND POLAR ORGANIC TRANSFORMATIONS*
5. Dr. Mingbin Yuan, Fall 2017- 2022. Current Position: Postdoctoral Researcher at Los Alamos National Laboratories. Thesis: *MECHANISTIC STUDIES AND RATIONAL CATALYST DESIGN OF NICKEL/PHOTOREDOX DUAL- CATALYZED C-C CROSS-COUPLED REACTIONS*
4. Dr. Zhihui Song, Fall 2017- 2022. Current Position. Research Scientist at Sinopec. China. Thesis: *MECHANISTIC STUDY OF TRANSITIONMETAL-CATALYZED CARBON-CARBON BOND FORMATION*
3. Dr. Ryan Dykstra, 2017-2022. Current Position: Postdoctoral Researcher at Merck. Thesis: *AB INITIO MODELING OF THE SELECTIVITY AND REACTIVITY OF BOTH THERMAL AND LIGHT MEDIATED ORGANIC AND ORGANOMETALLIC TRANSFORMATIONS*
2. Dr. Madeline E. Rotella, 2017-2021. Current Position: Postdoctoral Researcher at UPenn (Prof. Kozlowski). Thesis: *MECHANISMS AND RATIONAL CATALYST DESIGN OF ORGANIC TRANSFORMATIONS FOR THE SYNTHESIS OF NEW C-C AND C-X BONDS*
1. Dr. Wes Lee, Summer 2016-2021. Current Position: Postdoctoral Researcher at NIH. Thesis: *MECHANISTIC STUDY AND THE DESIGN OF IRON-CATALYZED MULTI-COMPONENT CROSS-COUPLED REACTION*

Postdoctoral Associates:

Current:

6. Dr. Remy F. Lalis, 2022-current
5. Dr. Ming-Hsiu Yang, 2022-current

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4. Dr. Dinabandhu Sar, 2020-current
3. Dr. Angel Renteria Gomez, Fulbright Scholar, Fall 2020-current

Past:

2. Dr. Lei Liu, 2017-2022. Current Position: Research Scientist at Incyte.
1. Dr. Jun Zhou, 2016-2018; Current position: Assistant Professor at Changsha University of Science & Technology.

External Support:

Current-

1. National Institutes of Health. 06/1/2020 – 5/31/2025. \$1,911,875. “Merging Computation and Experiment to Understand and Develop Asymmetric Open-Shell Radical Cross- Couplings.”
Role: Sole PI

2. Camille Dreyfus Teacher Scholar: 6/01/2023 – 5/31/2028. Total award \$100,000. “New Paradigms in Sustainable Catalysis.”
Role: Sole PI

3. Welch Foundation: 6/01/2022 – 5/31/2025. Total award \$300,000 direct costs. “Unraveling the Mechanistic Complexity of Multicomponent Nickel-Catalyzed Dicarbofunctionalization of Unactivated Alkenes.”
Role: Sole PI

4. National Science Foundation. 02/1/2023 – 01/31/2024. \$86,944.00. “Conference: Chemistry Early Career Investigator Worksop”
Role: Co-PI (50%) with Corinna Schindler (U. Michigan Ann Arbor)

5. National Science Foundation. 04/1/2023 – 03/31/2026. \$575,000. “CAS: Computational and Experimental Mechanistic Approach to Understand and Develop Asymmetric Fe-Catalyzed Cross-Couplings with C(sp³) Fragments”
Role: Sole PI

Previous-

1. NSF CAREER (1751568): 4/01/2018 – 3/31/2023. Total award \$658,873. “Computational and Experimental Mechanistic Approach to Iron Catalyst and Reaction Design.”
Role: Sole PI