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Education

- May 2021 **Doctor of Philosophy, Chemistry**
Iowa State University, Ames, IA
- *Dissertation:* Computational and Experimental Insights on the Photoheterolysis Reaction Mechanism
 - *Major Field:* Organic Chemistry
 - *Major Professor:* Dr. Arthur H. Winter
 - *Research Interests:* photoheterolysis reactions, (anti)aromaticity, photoswitches.
- May 2014 **Bachelor of Science, Chemical Sciences, Summa Cum Laude, High Honors in Major**
Wayne State College, Wayne, NE.
- *Research Advisor:* Dr. David J. Peitz
 - *Research Interests:* laboratory sequences for first- and second-semester organic chemistry.

Teaching Experience - Middlebury College

Laboratory Professor

- Present – 2021 **Organic Chemistry I & II**
- *Develop and implement lecture-relevant experiments.*
 - *Lead pre-lab discussion of techniques and reaction theory.*
 - *Provide in-person laboratory guidance during experiments.*
 - *Train and supervise laboratory teaching assistants.*
 - *Evaluate laboratory notebooks and assignments.*

Teaching Experience - Iowa State University

Lecture Instructor

- Summer 2019 **General Chemistry I - Team-Based Learning**
- *Sole instructor for 16 students*
 - *8-week accelerated course*

- Summer 2018 **General Chemistry I - Traditional Lecture**
- *Sole instructor for 29 students*
- *8-week accelerated course*
- Undergraduate Research Mentor**
- 2020 – 2019 **Junior/Senior Research**
(De)Stabilization of Photogenerated Singlet Excited State
Carbocations: Structure-Reactivity Relationship of the
Photosolvolysis of 9-Aryl-9-Fluorenol.
- *Organic synthesis and purification*
- *NMR & GC-MS use and interpretation*
- *Determination of photophysical properties and reactivity*
- 2018 – 2017 **Freshman Research Initiative**
Expanding Chemistry Student Skill Sets Through Collaboration
With Microbiologists
- *Introduce Freshman students to chemistry research*
- *Multi-component Mannich reactions*
- *Antibacterial testing of purified compounds*
- Teaching Assistant – Iowa State University**
- 2021 – 2018 **Organic Chemistry I & II - Major’s Section, Laboratory TA**
Laboratory TA
- *Conduct two unique experiments per week.*
- *Edit experiment readings to enhance student learning.*
- *Lead pre-lab discussion of techniques and reaction theory.*
- *Evaluate laboratory notebooks and assignments.*
- 2018 – 2016 **Organic Chemistry I & II, Lecture Head TA & Laboratory TA**
Lecture Head TA
- *Assisted in exam and course material creation.*
- *Supervised and assisted TAs during exam grading.*
- *Managed online homework system.*
- *Led exam review sessions.*
Laboratory TA
- *Conducted one unique experiment per week.*
- *Led pre-lab discussions of reaction theory and techniques.*
- *Evaluated laboratory notebooks and assignments.*
- Spring 2016 **General Chemistry II, Recitation TA & Laboratory TA**
Recitation TA
- *Led weekly discussions of course material.*
- *Modeled best practices for reading, setting up, and
answering problem sets.*
Laboratory TA
- *Conducted one unique experiment per week*
- *Led pre-lab discussions of reaction theory and techniques*
- *Evaluated laboratory notebooks and assignments*

- Fall 2015 **College Chemistry, Recitation TA & Laboratory TA**
Recitation TA
- *Led weekly discussions of course material*
- *Modeled best practices for reading, setting up, and answering problem sets*
- Laboratory TA
- *Conducted one unique experiment per week*
- *Led pre-lab discussions of reaction theory and techniques*
- *Evaluated laboratory notebooks and assignments*

Substitute Lecturer

- 2019 - 2018 **General Chemistry I**
Fall 2016 **Organic Chemistry II**

Industrial Laboratory Experience

- May 2015 – **Process Laboratory Technician**
June 2014 Michael Foods, Wakefield, NE
- *Performed regulatory, quality control, and quality assurance chemical analyses on in-process and finished egg-based food products.*

Professional Development & Service

- 2021 – 2017 **Iowa State University Chemistry Faculty Learning Community**
Member
- *A community for the Chemistry Faculty to discuss topics involving teaching, including new teaching methods, effective assessment strategies, course design, etc..*
- 2020, 2017 – 2016 **Iowa State University Chemistry Teaching Assistant Training**
Trainer
- *Facilitated discussions with and modeled effective teaching strategies to new Chemistry Teaching Assistants to help them create conducive learning environments for undergraduate Chemistry recitations and laboratories.*
- Spring 2020 **End of Semester Project - Organic Chemistry II Lab, Major's Section**
Co-designer and co-editor
- *Students consult the literature to independently design and perform the transformation, isolation, and characterization for each step of various 3-step syntheses.*
- *Students were only provided the structures of the starting material and the desired final product, as well as some reagent constraints, for their planning.*

- Spring 2020 **Preparing Future Faculty Special Topics (Gr St 588)**
Student
- *In-depth study of topic providing academic professional development.*
 - *Developed a 3-step synthesis for the Organic Chemistry II Laboratory that repurposed reactions already performed in the curriculum to introduce students to multi-step synthesis in the laboratory setting.*
- Spring 2020 **Preparing Future Faculty Teaching Practicum (Gr St 587)**
Student
- *Completion of a stand-alone teaching assignment at Iowa State University or another higher education institution.*
 - *Written components include pedagogical documents and teaching materials.*
 - *Instruction of General Chemistry I during Summer 2019.*
- May 2019 **Wakonse Conference on College Teaching**
Attendee
- *Conference dedicated to promoting and sharing with colleagues the excitement and satisfaction of teaching in higher education through highly interactive large and small group presentations, discussion groups, and hands-on experiential sessions.*
- Spring 2019 **Preparing Future Faculty Intermediate Seminar (Gr St 586)**
Student
- *Course that introduces the complexities of, and navigation strategies for, being a faculty member at institutions ranging from community colleges to large land-grant universities.*
 - *Panels of experts and faculty members from diverse institutions were heavily featured in addition to coursework.*
 - *Discussions included teaching and learning styles, assessment strategies, grant and proposal writing, and diversity, ethical, and legal issues.*
- Fall 2018 **End of Semester Project - Organic Chemistry I Lab, Major's Section**
Co-designer and co-editor
- *Students consult the literature to independently design and perform the transformation, isolation, and characterization of 1-butanol to 1-bromobutane.*

- Fall 2018 **Preparing Future Faculty Introductory Seminar (Gr St 585)**
 Student
 - *Course that introduces the intricacies of becoming a faculty member at institutions ranging from community colleges to large land-grant universities.*
 - *Panels of experts and faculty members from diverse institutions were heavily featured in addition to coursework.*
 - *Discussions included the hiring process, work-life balance, and the promotion and tenure process.*
- 2018 – 2016 **Iowa State University Chemistry Graduate Learning Community**
 Leader
 - *Organization to build community among first-year Chemistry Graduate Students.*
 - *Lead discussions about the transition to graduate school, time management, work-life balance, teaching, and choosing a research group.*
- Spring 2018 **Chemical Pedagogy (Chem 555)**
 Student
 - *Introduction to how learning occurs, methods of instruction, and strategies and techniques for effective teaching and learning through the use of active learning styles.*
- April 2018 **Green Dot Bystander Intervention Training**
 Attendee
 - *An initiative aimed at decreasing power-based personal violence through education, outreach, and development of mechanisms for awareness and competency of bystander intervention skills.*
- 2018 – 2016 **Iowa State University Chemistry Graduate Student Liaison Committee**
 Co-Chair (2017 – 2016) & Member
 - *A group comprised of Chemistry Graduate Students aimed at bringing together the faculty and graduate students of the Chemistry Department through social events.*
 - *Made necessary arrangements for a departmental research seminar each year by an expert that was nominated by Chemistry Graduate Students.*

Publications

- 6) Peterson, J. A.; **Fischer, L. J.**; Gehrman, E. J.; Shrestha, P.; Yuan, D.; Wijesooriya, C. S.; Smith, E. A.; Winter, A. H.. Direct Photorelease of Alcohols from Boron-Alkylated BODIPY Photocages. *Journal of Organic Chemistry*, 2020, 85(8), 5712-5717.
 DOI: [10.1021/acs.joc.0c00044](https://doi.org/10.1021/acs.joc.0c00044)

- 5) Kand, D.; Liu, P.; Navarro, M. X.; **Fischer, L. J.**; Rousso-Noori, L.; Friedmann-Morvinski, D.; Winter, A. H.; Miller, E. W.; Weinstain, R.. Water-Soluble BODIPY Photocages with Tunable Cellular Localization. *Journal of the American Chemical Society*, 2020, 142(11), 4970-4974. DOI: [10.1021/jacs.9b13219](https://doi.org/10.1021/jacs.9b13219)
- 4) Toupin, N.; Arora, K.; Shrestha, P.; **Fischer, L. J.**; Peterson, J.; Rajagu-rubandara, E.; Winter, A.; Podgorski, I.; Kodanko, J.. BODIPY-Caged Photoactivated Inhibitors of Cathepsin B: Flipping the Light Switch on Cancer Cell Apoptosis. *ACS Chemical Biology*, 2019, 14(12), 2833-2840. DOI: [10.1021/acscchembio.9b00711](https://doi.org/10.1021/acscchembio.9b00711)
- 3) Zhang, R., Peterson, J. P., **Fischer, L. J.**, Ellern, A., Winter, A. H.. Effect of Structure on the Spin-Spin Interactions of Tethered Dicyanomethyl Diradicals. *Journal of the American Chemical Society*, 2018, 140(43), 14308-14313. DOI: [10.1021/jacs.8b08628](https://doi.org/10.1021/jacs.8b08628)
- 2) Qiu, Y., **Fischer, L. J.**, Dutton, A. S., Winter, A. H.. Aryl Nitrenium and Oxenium Ions with Unusual High-Spin π, π^* Ground States: Exploiting (Anti)Aromaticity. *Journal of Organic Chemistry*, 2017, 82(24), 13550-13556. DOI: [10.1021/acs.joc.7b02698](https://doi.org/10.1021/acs.joc.7b02698)
- 1) **Fischer, L. J.**, Dutton, A. S., Winter, A. H.. Anomalous effect of non-alternant hydrocarbons on carbocation and carbanion electronic configurations. *Chemical Science*, 2017, 8(6), 4231-4241. DOI: [10.1039/C7SC01047H](https://doi.org/10.1039/C7SC01047H)

Presentations & Posters

- 4) Computational modeling of carbocation intermediates for the discovery of new photocleavable protecting groups. **Fischer, L. J.**, Dutton, A. S., Winter, A. H.. *Abstracts, 53rd Midwest Regional Meeting of the American Chemical Society, Ames, IA, October 21-23, 2018.*
- 3) Anomalous Effect of Non-Alternant Hydrocarbons on Carbocation and Carbanion Electronic Configurations. **Fischer, L. J.**, Dutton, A. S., Winter, A. H. *Presentation for the Iowa State University Department of Chemistry Cotton-Uphaus Competition, Ames, IA. March 29, 2017*
- 2) Anomalous Effect of Non-Alternant Hydrocarbons on Carbocation and Carbanion Electronic Configurations. **Fischer, L. J.**, Dutton, A. S., Winter, A. H. *Poster for the Iowa State University Department of Chemistry Cotton-Uphaus Competition, Ames, IA. March 2, 2017*
- 1) Effect of Azulene on Reactive Intermediate Electron Configurations. **Fischer, L. J.**, Dutton, A. S., Winter, A. H.. *Poster Presentation for the 36th Reaction Mechanisms Conference, Saint Louis, MO. June 26-29, 2016*

Awards

May 2020

Preparing Future Faculty Scholar

- Conferred after the completion of all four Preparing Future Faculty courses, culminating to the completion of an independent study to further academic professional development.

- Dec. 2019 **Preparing Future Faculty Fellow**
 - *Conferred after the completion of the two foundation Preparing Future Faculty courses and a stand-alone teaching experience equivalent to a 1-credit university course or greater.*
- May 2019 **Preparing Future Faculty Associate**
 - *Conferred after the completion of the two foundation Preparing Future Faculty courses overviewing issues of faculty career expectations, diversity issues, pedagogical strategies, and course material design.*
- April 2019 **Wakonse Graduate and Professional Student Senate Scholarship**
 - *Awarded to four Graduate Students from across Iowa State University to cover all expenses associated with attending the Wakonse Conference on College Teaching.*
- April 2019 **Edward V. Sayre Chemistry Scholarship**
 - *Nomination by major professor.*
- March 2019 **CIRTL Associate Certificate**
 - *Center for the Integration of Research, Teaching, and Learning*
 - *Attendance of at least five professional development events relating to evidence-based teaching, learning through community, or learning through diversity.*
- April 2018 **Frank J. Moore and Thoreen Beth Moore Fellowship**
 - *Nomination by major professor.*
- May 2017 **Iowa State University Teaching Excellence Award**
 - *Awarded to the top 10% of teaching graduate students from across Iowa State University to recognize and encourage outstanding achievement in teaching.*
- May 2016 **Cotton-Uphaus Award for Early Excellence in Research, Finalist**
 - *Four finialists are chosen from a poster session consisting of first-, second-, and third-year Chemistry graduate students by a judging committee.*
 - *Finialist subsequently give a seminar to confer a winner.*