James Winters

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Education

Ph.D. in Inorganic Chemistry **Aug 2022**
Department of Chemistry and Biochemistry
University of Delaware - Newark, DE
Advisor: Dr. Lars Gundlach
Dissertation title: *The Photo-reactivity of Titanium Dioxide*

Bachelor's in Chemistry, minor in Mathematics **Aug 2017**
Department of Chemistry and Biochemistry
University of Minnesota Duluth - Duluth, MN

Experience

Teaching Experience

Academic Coordinator, TRIO McNair - University of Wisconsin Superior - Superior, WI

Spring 2025 TRIO McNair Introduction to Research lecture
- One-on-one student mentoring
- Oversee the students' start of their research projects

Postdoctoral Associate - University of Minnesota Duluth - Duluth, MN

Spring 2025 General Chemistry II laboratory for Chemistry and Biochemistry majors
- Course-based Undergraduate Research Experience

Facilitate Teaching Assistant Training Program based on research mentoring

Summer 2024 Assisted in the development of a gamified General Chemistry II lecture for STEM non-majors
Created five exam review games for the gamified course

Spring 2024 General Chemistry II laboratory for Chemistry and Biochemistry majors
- Course-based Undergraduate Research Experience

Guest lecturer for two General Chemistry II lectures

Spring 2023 General Chemistry II laboratory for Chemistry and Biochemistry majors
- Course-based Undergraduate Research Experience

Guest lecturer for two General Chemistry II lectures

Fall 2022 Designed a Course-based Undergraduate Research Experience curriculum for General Chemistry II laboratory
Developed and optimized a methylene blue adsorption experiment for General Chemistry II laboratory, integrating kinetics and thermodynamic concepts into the experiment
Created student-facing materials: assignments, guide sheets, activities, and data analysis help videos

Graduate Student Teaching Assistant - University of Delaware - Newark, DE

Spring 2020	General Chemistry II laboratory for integrated biology and chemistry
Fall 2019	Night teaching assistant manager ● Oversaw the operation and proper safety of 8 laboratory rooms of a mix of organic and general chemistry
Spring 2019	Honors General Chemistry II laboratory for STEM non-majors ● Assisted in course development
Fall 2018	General Chemistry II laboratory for STEM non-majors
Spring 2018	General Chemistry I laboratory for STEM non-majors
Fall 2017	General Chemistry I laboratory for STEM non-majors

Undergraduate Student Teaching Assistant - University of Minnesota Duluth - Duluth, MN

Summer 2017	Created a standard operating procedure for magnetic circular dichroism experiments to be used for a physical chemistry lab
Spring 2017	Biochemistry lecture - assisted in group work and ran weekly discussion sections
Fall 2016	General Chemistry II laboratory

Research Experience

Postdoctoral Associate Aug 2022 - Present

University of Minnesota Duluth Duluth, MN

Advisor: Dr. Jacob Wainman

- Conducting IRB approved research on a gamified General Chemistry II lecture and its associated review games to assess its effect of student learning outcomes
- Conducting IRB approved research on General Chemistry laboratory and Quantitative Analysis laboratory students to assess experimental design skills and laboratory technique gains
- Assess the effectiveness of my designed teaching assistant training in developing their mentoring skills
- Created digital badging instructions, rubrics, and image designs for General Chemistry laboratory techniques
- Managing 7 - 10 undergraduate researchers assisting on several projects
- Collaborate with 5 faculty members simultaneously to conduct research in their courses

Graduate Research Assistant Nov 2017 - July 2022

University of Delaware Newark, DE

Advisor: Prof. Lars Gundlach

- Adapted synthesis method for 10 nm anatase titanium dioxide nanoparticle colloids
- Utilized ultrafast spectroscopy to investigate the inhibition and enhancement of the photo-degradation of titanium dioxide
- Characterized varying titanium dioxide surfaces through a change in fluorescence lifetime of a bound dye
- Created and followed standard operating procedures for sample preparation and instrumentation
- Mentored and trained 3 new graduate student group members and 1 undergraduate student

Undergraduate Research Assistant Aug 2015 - July 2017
University of Minnesota Duluth Duluth, MN
Advisor: Prof. Paul Kiprof July 2016 - July 2017

- Synthesized boranil based dye molecules organic light emitting devices applications

Advisor: Prof. Viktor Nemykin Aug 2015 - July 2016

- Utilized magnetic circular dichroism to determine degeneracy in porphyrin molecular orbital energy levels
- Performed redox reaction titrations to show a spectral shift based on oxidation number
- Mentored and trained 1 summer undergraduate student researcher

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Awards

CURE TAPESTRy Fellowship May 2024
The University of Texas at El Paso El Paso, TX
Nomination for 2023 UMN Postdoc Awards - Teaching and Mentoring Aug 2023
University of Minnesota Duluth Duluth, MN
Elizabeth Dyer Awards for Excellence in Teaching Mar 2020
University of Delaware Newark, DE
Summer Undergraduate Research Program May 2016
University of Minnesota Duluth Duluth, M

Professional Development

Certificates

Inclusive STEM Teaching Project Nov 2024
Designing and Delivering Online Learning Program Oct 2024
UX Design Fundamentals Nov 2023
Create Video, Audio and Infographics for Online Learning Nov 2023
Online Education: The Foundations of Online Learning Oct 2023
Programming Foundations with JavaScripts, HTML, and CSS Oct 2023
Visual Elements of User Interface Design Sep 2023

Professional Development

5th annual UMN Academic Technology SHAREcase (archived version) Aug 2023
Fostering a Culture of Inclusive and Equitable Mentoring in CUREs Workshop Jul 2023
Active Learning Small Group Mar-May 2023
Center for Educational Innovation (CEI) Active Learning 101 Workshop Jan 2023
University of Minnesota Duluth hosted CUREs Workshops (4) Sep-Nov 2022

Publications

10. **Doble, J.**; Grabau, E.; Henry, K.; Rosenberg, R.; Tomasko, C.; Karshbaum, M.; Gute, B.; Wainman, J. W. Visualizing Le Châtelier's Principle through Lead-EDTA Complexometric Titrations. *J. Chem. Educ.* **2024**. https://doi.org/10.1021/acs.jchemed.4c00469.

9. **Doble, J.**; Karshbaum, M.; Wolf, E.; Singsaas, E.; Wainman, J. W. Visible Local Stakeholders in a Natural Resources Course-Based Undergraduate Research Experience in General Chemistry II Laboratory. *J. Chem. Educ.* **2024**. https://doi.org/10.1021/acs.jchemed.4c00519.

8. Bunnell, B.; LeBourgeois, L.; **Doble, J.**; Gute, B.; Wainman, J. W. Specifications-Based Grading Facilitates Student–Instructor Interactions in a Flipped-Format General Chemistry II Course. *J. Chem. Educ.* **2023**, *100* (11), 4318–4326. https://doi.org/10.1021/acs.jchemed.3c00473.

7. **Doble, J.**; Wilson, G.; Wainman, J. W. Kinetic and Thermodynamic Analysis of the Adsorption of Methylene Blue onto Biochar. *J. Chem. Educ.* **2023**, *100* (10), 4040–4046. https://doi.org/10.1021/acs.jchemed.3c00518.

6. Yan, H.; Avenoso, J. P.; **Doble, S.**; Harmer, R.; Rego, L. G.; Galoppini, E.; Gundlach, L. Conformational and Binding Effects on Interfacial Electron Transfer from Dual-linker Sensitizers. *The Journal of Physical Chemistry C*. **2021**, *125*(16), 8667–8676. https://doi.org/10.1021/acs.jpcc.0c11299

5. Jia, M.; Zhang, Y.; Li, Z.; Crouch, E.; **Doble, S.**; Avenoso, J.; Yan, H.; Ni, C.; Gundlach, L. A versatile strategy for controlled assembly of plasmonic metal/semiconductor hemispherical nano-heterostructure arrays. *Nanoscale*. **2020**, *12*(33), 17530–17537. https://doi.org/10.1039/d0nr03551c

4. Harmer, R.; Fan, H.; Lloyd, K.; **Doble, S.**; Avenoso, J.; Yan, H.; Rego, L. G.; Gundlach, L.; Galoppini, E. Synthesis and properties of perylene-bridge-anchor chromophoric compounds. *The Journal of Physical Chemistry A*. **2020**, *124*(31), 6330–6343. https://doi.org/10.1021/acs.jpca.0c04609

3. Li, Z.; Jia, M.; **Doble, S.;** Hockey, E.; Yan, H.; Avenoso, J. P.; Bodine, D.; Zhang, Y.; Ni, C.; Newberg, J. T.; Gundlach, L. Energy band architecture of a hierarchical ZnO/Au/CuxO Nanoforest by mimicking Natural superhydrophobic surfaces. *ACS Applied Materials & Interfaces*. **2019**, *11*(43), 40490–40502. https://doi.org/10.1021/acsami.9b13610

2. **Doble, S.**; Osinski, A. J.; Holland, S. M.; Fisher, J. M.; Geier, G. R.; Belosludov, R. V.; Ziegler, C. J.; Nemykin, V. N. Magnetic Circular Dichroism of Transition-Metal complexes of Perfluorophenyl-N-Confused Porphyrins: Inverting electronic structure through a proton. *The Journal of Physical Chemistry A*. **2017**, *121*(19), 3689–3698. https://doi.org/10.1021/acs.jpca.7b02908

1. Shaw, J. L.; **Doble, S. J.**; Stewart, J.; Nemykin, V. N. Charged and confused: Meso-tetrakis(p-methoxycarbonyl-phenyl) n-confused porphyrin as a precursor to water soluble variants. *Journal of Porphyrins and Phthalocyanines*. **2017**, *21*(04-06), 287–294. https://doi.org/10.1142/s1088424617500152

Presentations

Biennial Conference on Chemical Education Aug 2024
Lexington, KY
Presentation Title: Incorporating Local Natural Resource Research Into A General Chemistry II Laboratory Curriculum

SABER National Meeting Jul 2024
Minneapolis, MN
Poster Title: Assessing Gains in Students' Laboratory Skills in a CURE-based General Chemistry Laboratory Through Digital Badging Videos

CLEAR Symposia May 2024
Virtual
Poster Title: Visualizing Le Châtelier's Principle Through a Complexation Titration

SABER National Meeting Jul 2023
Minneapolis, MN
Poster Title: Building Experimental Design Skills and Laboratory Techniques Using a Course-Based Undergraduate Research Experience in General Chemistry II Laboratory

CLEAR Symposia May 2023
Virtual
Poster Title: CURE-ing General Chemistry II Laboratory with Biochar Adsorption

X-DBER Apr 2023
Virtual
Poster Title: Using Biochar To Remove the Water Pollutant Methylene Blue In A Two Week General Chemistry Lab

ACS Lake Superior Local Section Meeting Feb 2023
Duluth, MN
Poster Title: Introducing A Course-Based Undergraduate Research Experience Into the General Chemistry II Laboratory Curriculum

The Chemours Company Visit to University of Delaware Mar 2022
Newark, DE
Presentation Title: Project Progress Report

The Chemours Company Facility Visit Sep 2021
Newark, DE
Presentation Title: Project Progress Report

ACS Spring National Meeting Mar 2020
Philadelphia, PA
Poster Title: Dynamics of para-methyl red on surfaces
Canceled due to COVID-19

ACS Fall National Meeting Aug 2018
Boston, MA
Poster Title: Utilizing ultrafast spectroscopy to investigate the dynamics of singlet fission