

Sasha C. B. North

6744 Highland Drive
Laingsburg, MI 48848
(517) 614-0415
snorth@adrian.edu

Education

Ph.D., Physical Chemistry, 2016, Michigan State University, East Lansing, Michigan
B.S., Chemistry, 2010, Michigan State University, East Lansing, Michigan

Experience

Assistant Professor of Physical Chemistry, Chemistry and Biochemistry, Adrian College	1/2023-Present
Adjunct Researcher, Department of Chemistry, Michigan State University (with Angela K. Wilson)	6/2023-8/2023
Research Associate, Department of Chemistry, Michigan State University (with Angela K. Wilson)	8/2020-12/2022
Adjunct Research Associate, Department of Chemistry, Michigan State University (with Angela K. Wilson)	1/2020-7/2020
Postdoctoral Research Associate, Department of Chemistry, University of North Texas (with Thomas Cundari)	1/2020-7/2020
Full Time Lecturer and Laboratory Instructor, Department of Chemistry, Grand Valley State University, Allendale, Michigan	8/2016-5/2019

Honors/Recognitions/Awards

Student Summer Research Grant, Adrian College 2024

With Undergraduate student Devon Vernier, to obtain molecular properties that will be useful in continuing efforts to understand the implications of disinfectant byproducts (DBPs) on human health.

Recognized for "exceptional efforts with student success and retention at
Grand Valley State University" by the Dean of Students Office and the
Office of the Provost 2017

Courses/Laboratories Taught

Adrian College:

Undergraduate lecture courses:

The World of Chemistry

General Chemistry I
General Chemistry II
Thermodynamics
Quantum Mechanics

I have greatly enjoyed teaching “The World of Chemistry”. This is similar to the Preparatory Chemistry Course that I taught at GVSU, but provides the student with much more information regarding how chemistry is used in the real world to improve all of our lives. This course gave me an opportunity to learn a few things I was not aware of previously, as well.

The General Chemistry Courses I have taught at Adrian are again similar to those at GVSU, even using the same text book. However, I rewrote all of my class notes, and also moved to using an iPad to fill in those notes for the students on the projector. This has been somewhat of a “game-changer” for me, and the students seem to like it as well.

Finally, as my graduate and postdoctoral work were in physical chemistry, the opportunity to teach what I love most, Thermodynamics and Quantum Mechanics, has been wonderful.

Laboratory courses/segments:

The World of Chemistry
General Chemistry I
General Chemistry II
Physical Chemistry Laboratory

The laboratory for “The World of Chemistry” is a true joy to teach. It is great for the students to be able to see the principles they have learned in the lecture part of the course demonstrated in a hands-on way. I particularly love when the students use different formulations to make their own crayons.

The Physical Chemistry Laboratory has provided me with much growth as a professor. This course is intellectually challenging for the students and requires much knowledge from me, and I am constantly working on improving the clarity of the material. Additionally, it is the first time I have been completely responsible for the reagent preparation and instrumentation for a course. I have plans to continue to modify the course, perhaps adding a computational chemistry sequence.

Grand Valley State University:

Undergraduate lecture courses:

Principles of Chemistry I
Principles of Chemistry II
Preparatory Chemistry

Full time lecturer for these courses. Responsibilities included writing/teaching lectures, writing activity sheets and exams, grading all class materials, assigning and grading web-based homework, meeting with students in groups and individually for help with material, volunteering for additional help hours at the university chemistry help room.

Laboratory courses/segments:

Principles of Chemistry I
Principles of Chemistry II

My responsibilities in a leadership role in the laboratory (under the supervision of Mary Jo Smith, Lab Instructional Coordinator) included instrument calibration, preparation of standards, maintaining the cleanliness of the lab, setting up laboratory practical examinations, effective communication regarding safety procedures in the laboratory, teaching important skills such as preparation of scientific tables and figures, precision and accuracy in measurements, and laboratory techniques such as pipetting, usage of burettes, etc. and grading laboratory reports and examinations.

Curriculum development:

Developer for an aligned curriculum and common syllabus for all the general chemistry courses at the university:

In collaboration with several other faculty, I realigned the general chemistry courses to a common syllabus, with broad goals for these courses, a common order of presenting material (such as atoms first) and common grading rubrics but leaving enough freedom for individual professors to teach to their strengths.

Michigan State University:

General Chemistry 141 Teaching Assistant Fall 2015
Acquired new techniques for helping students learn, using the teaching research done by Dr. Melanie Cooper. These techniques included helping students to understand concepts in a broader conceptual way, that could be applied to other science classes they would take in their college careers. I also held extensive office hours in the students' dormitories, making access to help on homework/practice exams easier for the students.

Chemistry Laboratory II 162 Teaching Assistant Spring 2014

Chemistry Laboratory I 161 Teaching Assistant Fall 2013

General Chemistry 141 Lecturer, Birmingham, Michigan Summer 2013
Developed my own lectures while covering the relevant topics outlined by Michigan State University, holding office hours to meet with students for one-on-one instruction, writing midterm and final exams, and communicating with students via a web-based learning program.

Chemistry Laboratory II 162 Teaching Assistant Spring 2013
During this semester, and all general laboratory courses I taught afterwards, I was responsible for teaching the students about safety in the laboratory, as well as tying the knowledge from the corresponding lecture to practical application in the labs. These were some of my favorite courses to teach, as there were lots of opportunities to connect with the students face to face.

Introductory Physical Chemistry 383 Teaching Assistant Fall 2012

Analytical and Physical Chemistry Laboratory 395 Teaching Assistant Spring 2012

Quantum Chemistry 483 Teaching Assistant

Fall 2011

General Chemistry 141 Teaching Assistant

Summer 2011

Analytical and Physical Chemistry Laboratory 395 Teaching Assistant Spring 2011
Responsible for reminding students of safety practices in the laboratory, as well as practical application of the corresponding advanced chemistry lecture. My particular teaching focus was on the Identification of Crystal Substances Using X-Ray Diffraction (XRD) and X-Ray Fluorescence (XRF) methods.

Quantum Chemistry 483 Teaching Assistant and Lecturer

Fall 2010

Substitute Lecturer in Professors Absence: This was my first opportunity to design my own lectures and teach in a main lecturer setting.

Training

Adrian College:

New employee luncheon and breakfast workshops, spring 2023 and fall 2024.

Meetings with Kristin Clark, Mentor, spring 2023 and fall 2024.

Advising Workshop by colleague Nicholas Kaplan, March 2024

ACCET Workshop with Matt Miller: “*Tech Like a Pirate*”, February 2024. This workshop was very influential, and I have incorporated using Pear Deck technology into my courses since this time. Along with the use of my iPad, this workshop was a true asset in developing my courses!

Conversation with the Dean, *Creating Community in Academic Departments*, April 2023

Michigan State University:

Machine Learning for All Course, University of London, April 2020

Peer Reviewed Teaching Statement Workshop, April 2020, MSU

Grand Valley State University:

Principles of Effective Teaching Course, May 2017

University Service

Adrian College:

1. Collegium IV representative of Academic Planning Committee; Secretary for Academic Planning Committee; Co-chair of Academic Planning Committee, 2023-2024
2. Collegium IV representative of Academic Planning Committee; Secretary for Academic Planning Committee; 2024-2025
3. Collegium IV Coordinator, 2024-2025
4. Chemistry Informational Session, August 21, 2024
5. Majors on the Mall, August 20, 2024
6. Chemistry Department Open House, April 26, 2024
7. Judge at Ribbons of Excellence Day, April 9, 2024
8. Scholarship Day, February 17, 2024

9. Majors on the Mall, August 15, 2023
10. Chemistry Majors/Minors Information Session, August 15, 2023
11. Scholarship Day, April 15, 2023

Michigan State University:

Postdoctoral Representative of the Colloquium Committee, MSU, 2021

Grand Valley State University:

Volunteer in the Chemistry Help Room

Publications

1. Prjay Patel, Timothé R.L. Melin, Sasha C. North, and Angela K. Wilson *Annual Reports in Computational Chemistry* **17**, 113-161 (2021).
 2. Sasha C. North and Angela K. Wilson “*Ab Initio* Composite Approaches for Heavy Element Energetics: Ionization Potentials for the Actinide Series of Elements”. *Journal of Physical Chemistry A* **126** (19), 3027-3042 (2022). (May 19, 2022, cover article)
 3. Kurtis M. Carsch, Sasha C. North, Thomas Khazanov, Andrei Iliescu, Ida M. DiMucci, Petra Vojáčková, Shao Liang-Zheng, Thomas R. Cundari, Kyle M. Lancaster, and Theodore A. Betley “Nitrene Transfer from a Sterically Confined Copper Nitrenoid”, *Chem. Sci.* **14**,10847 (2023)
 4. Nuno M. S. Almeida, Timothé R. L. Melin, Sasha C. North, Bradley K. Welch, and Angela K. Wilson “*Ab initio* composite strategies and multireference approaches for lanthanide sulfides and selenides”, *J. Chem. Phys.* **157**, 024105 (2022)
 5. Sasha C. North, Nuno M.S. Almeida, Timothé R. L. Melin, and Angela K. Wilson “Multireference wavefunction-based investigation of the ground and excited states of LrF and LrO” *J. Phys. Chem. A* **127**,1,107-121 (2023)
 6. Sasha C. North, Kameron R. Jorgensen, Jason Pricetolstoy, and Angela K. Wilson “Population analysis and the effects of Gaussian basis set quality and quantum mechanical approach: main group through heavy element species” *Front. Chem.* Vol. 11 (2023)
 7. Angelar K. Muthike, Mohammad Ahmad Awais, Cong Wang, Meghan E. Orr, Nuno M.S. Almeida, Sasha C. North, Luping Yu, Angela K. Wilson, and Theodore G. Goodson, III “Effect of long-lived ground-state diradicaloids on the photophysics of semiladder thiophene-based polymer aggregates for organic light-emitting transistor applications” *ACS Appl. Energy Mater.* (2024)
 8. Nuno M.S. Almeida, Bradley Welch, Sasha C. North, and Angela K. Wilson “Unraveling the electronic structure of LuH, LuN, and LuNH: building blocks of potential new materials” *Phys. Chem. Chem. Phys.*, **2024**,**26**, 10427-10438
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Conferences

ACS Spring 2023

"The f-element Composite Approach for Heavy Element Chemistry", Indianapolis, Indiana, March 25-29, 2023 (*contributed talk*)

Midwest Theoretical Chemistry Conference, "Ab initio composite strategies and multireference approaches for lanthanide sulfides and selenides", Columbus, Ohio, June 2-4, 2022 (*contributed talk*)

ACS Spring 2022

"Multireference calculations on the ground and excited states and dissociation energies of LrF and LrO, March 20-24, 2022 (*contributed talk*)

ACS Spring 2021

"Ab Initio approaches for heavy element energetics: Ionization potentials of the actinides", April 5-30, 2021 (*contributed talk*)

Midwest Theoretical Chemistry Conference

"Multipole Moments and Static (hyper)Polarizabilities of the O₂ molecule for Atmospheric Applications", Pittsburg, Pennsylvania, June 9-11, 2016 (*poster presenter*)

Midwest Theoretical Chemistry Conference

"Collision Induced Properties of Molecular Oxygen", Ann Arbor, Michigan, June 26-28, 2015 (*poster presenter*)

Midwestern Symposium for Undergraduate Research in Chemistry

"Collision Induced Properties of Molecular Oxygen", East Lansing, Michigan, October 11, 2014 (*poster presenter*)

Midwest Theoretical Chemistry Conference

Urbana, Illinois, June 2013

Midwest Theoretical Chemistry Conference

"Highly Accurate Potential Energy Surface for He-H₂ Interacting System", Madison, Wisconsin, June 7-9, 2012 (*poster presenter*)

Volunteer/Outreach

Member of Younger Chemists Committee (YCC), MSU, 2010-2016: I have helped with numerous outreach events to encourage interest in the sciences in youth, ranging from elementary demonstrations and events to high school visits. During one such high school visit, for example, I designed a forensic chemistry experiment during which students used Infrared Radiation to examine various substances acquired from a "crime scene", including trash bags and over the counter drugs.