

Degrees:

2011 **Ph.D. in Chemistry**, University of Wisconsin-Madison

Advisor: Dr. M.D. Ediger

2009 **M.S. in Chemistry**, University of Wisconsin-Madison

Advisor: Dr. M.D. Ediger

2005 **ACS approved B.S. in Chemistry**, University of Wisconsin-River Falls

Teaching Experience:

Instructor- UW-Stout, Fall 2016-present

- Teaching both Physics and Chemistry courses (freshman level)
 - Lead sections of lecture in addition to the lab and discussion sections, covering classical Newtonian motion (physics) and introductory chemistry
 - Create quizzes, exams, and homework sets
 - Give pre-lab lectures and supervise students during lab
 - Assign problems and assist students during discussion
- Teaching physical chemistry
 - Lead a section of lecture and lab
 - Create quizzes, exams, and homework sets
 - Give pre-lab lectures and supervise students during lab
- Other duties
 - Updated the physical chemistry course including revising pre-requisites and content
 - Advise students on course enrollments
 - Attend department meetings
 - Designed new physical chemistry labs
 - Carry out demonstrations as needed

Adjunct Faculty- UW-River Falls, Fall 2016

- Taught two sections of general chemistry lab
 - Gave pre-lab lecture on material relevant to the lab
 - Supervised students during the lab periods
 - Coordinated with other instructors on material covered and assigning lab grades

Adjunct Faculty- The College of St. Scholastica, Spring 2016

- Taught one section of Introductory Chemistry and associated labs
 - Led a lecture of 25 students and 4 laboratory sections of 20 students each
 - Led weekly TA meetings
 - Gave pre-lab lecture on material relevant to the lab
 - Supervised students during the lab periods
 - Graded quizzes, exams, lab notebooks, and papers

Adjunct Faculty- LSU-Alexandria, Fall 2015

- Taught two online sections of chemistry for non-science majors
 - Developed and administered online course material for students
 - Created online lectures, homework sets, quizzes, exams, and projects
 - Monitored online message boards for appropriate course discussions

Adjunct Assistant Professor- The College of St. Scholastica, Fall 2012

- Taught two sections of Introductory Chemistry for science majors
 - Led lectures of roughly 35 students
 - Developed daily lesson plans to cover subjects from an atoms first approach to chemistry teaching
 - Created homework assignments using the Connect software
 - Wrote, proctored, and graded exams and quizzes
- Taught two sections of analytical chemistry lab
 - Oversaw students as they carried out experiments using equipment such as burets, pH meters, and spectrometers
 - Answered student questions, assisted with student experiments and calculations.

Freshman Chemistry Teaching Assistant- University of Wisconsin-Madison, Fall 2006-Fall 2007 (3 semesters)

- Taught both Introduction to Chemistry and Advanced Introduction to Chemistry
- Led discussion sections of roughly 20 undergraduate students
- Developed lesson plans for reviewing concepts related to lecture material and problem sets
- Wrote and graded quizzes
- Proctored and graded exams
- Supervised lab sections of roughly 20 students
- Gave pre-lab lecture on material relevant to the lab
- Assisted students with lab procedures during the lab
- Graded lab reports

Polymer Lab Teaching Assistant- University of Wisconsin-Madison, Fall 2007

- Taught a module of CB&E 541: High Polymer Lab (upper undergraduate to graduate level)
 - Developed and gave an hour-long lecture on the theory behind differential scanning calorimetry (DSC) and how DSC applies to polymers
 - Created a lab for students to gain hands on experience using DSC for analysis of polymer samples

PEOPLE (Pre-College Enrichment Opportunity Program for Learning Excellence) program, University of Wisconsin-Madison, 2007-2010

- Organized a 3-week program (Titled: Smaller than the eye can see: how your computer is made) for 15 high school students from demographics that are under-represented in college, 2008-2010
 - Gave daily quizzes along with leading lecture and lab describing logic gates
 - Students were taught about molecular structure of polymers, temperature/property relationships, binary, electronics, and photolithography

Freshman Chemistry Teaching Assistant-University of Wisconsin-River Falls, Fall 2004

- Answered students' questions of general chemistry concepts
- Assisted the professor in supervising the students

Research Experience:

Postdoctoral Fellow-Bloomsburg University, 2013-2014

Advisor: Professor Mark Tapsak

- Product development in conjunction with a biomedical device company to develop better polyurethane coatings for injectable devices
- Extensive experience characterizing polymers using NMR, DSC, GPC, viscometry, and IR techniques
- Additional experience using AFM and HPLC
- Carrying out polymerization reactions and post-coating reactions to create more resilient films

Research Assistant- University of Wisconsin-Madison, 2006-2011

Advisor: Professor Mark D. Ediger

- Measured the effect of molecular structure on the overall stability of stable glasses using isomers of the tris-naphthylbenzene family
- Measured the total uptake and dynamics of water sorption for stable glasses
- Measured the Boson peak of stable glasses for comparison to measured heat capacity
- Used equipment such as wide-angle x-ray scattering (1D and 2D), x-ray reflectivity, differential scanning calorimetry, and water sorption measurements

Technical Aide-3M Company, 2002-2006

- Carried out polymerization reactions (thermal and UV imitated) to create adhesive coatings
- Coated granules for roofing and catalytic purposes
- Used UV/vis, particle counters, and instruments to test the strength of adhesives

Publications:

1. Dawson KJ, Kopff LA, Zhu L, McMahon RJ, Yu L, Richert R, & Ediger MD Molecular packing in highly stable glasses of vapor-deposited tris-naphthylbenzene isomers. *J. Chem. Phys.* 136(09):094505 (2012)
2. Dawson KJ, Zhu L, Kopff LA, McMahon RJ, Yu L, Ediger MD Highly stable vapor-deposited glasses of four tris-naphthylbenzene isomers. *J. Phys. Chem. Lett.* 2(21):2683-2687 (2011)
3. Dawson KJ, Zhu L, Yu L, Ediger MD Anisotropic Structures and transformation kinetics of vapor-deposited indomethacin glasses. *J. Phys. Chem. B* 115(3):455-463 (2011)
4. Dawson KJ, Kearns KL, Yu L, Steffen W, & Ediger MD Physical vapor deposition as a route to hidden amorphous states. *Proc. Natl. Acad. Sci. U. S. A.* 106(36):15165-15170 (2009).
5. Dawson KJ, Kearns KL, Ediger MD, Sacchetti MJ, & Zografis G Highly stable indomethacin glasses resist uptake of water vapor. *J. Phys. Chem. B* 113(8):2422-2427 (2009).
6. 4 internal publications at 3M Corporation

Presentations/Posters:

1. Dawson KJ, Zhu L, Kopff L, McMahon R, Yu L, Ediger MD, "Highly stable glasses as a general phenomenon: Physical vapor depositions of four different trisnaphthylbenzene isomers." American Physical Society National Meeting, Dallas, TX March 21-25 (2011)

2. **Dawson KJ**, Swallen S, Kearns KL, Ediger MD, Yu L, Wu T, Zhu L, "Anisotropic packing in stable glass films produced by vapor deposition." Kavli Institute for Theoretical Physics; Emerging Concepts in Glass Physics (2010)
3. **Dawson KJ**, Kearns KL, Yu L, Steffen W, and Ediger MD "Evidence for a new molecular packing at low temperatures in vapor-deposited indomethacin." American Physical Society National Meeting, Pittsburgh, PA March 16-20 (2009)
4. **Dawson KJ** and McLaughlin K "Limitations in the modeling of physical properties using the Hosoya Index." American Chemical Society National Meeting, Atlanta, GA March 26-30 (2006)
5. **Dawson KJ** and McLaughlin K "The Hosoya Index, Lucas numbers, and QSPR." National Conference for Undergraduate Research National Meeting, Lexington, VA April 21-23 (2005)
6. Conrad H, Neumann TS, **Dawson KJ**, and McLaughlin K "Searching for the physical meaning of a topological index." American Chemical Society National Meeting, Anaheim, CA March 28-April 1 (2004)

Leadership:

- ACS local section chair, Northern Minnesota section, 2015
- Physical Chemistry Student Seminar Organizer/Leader, University of Wisconsin-Madison, 2009-2010
- Supervised 2 undergraduate students in independent research as they worked on an offshoot of my project. Answered questions, helped set up, and train them on proper usage of equipment.

Professional Affiliations:

1. American Chemical Society (ACS) 2008-present
2. American Physical Society (APS) 2008-present
3. Sigma Pi Sigma (SPS) 2005-present

Collaborations:

Dr. Lian Yu, UW-Madison, Department of Pharmacy
 Dr. Mark Saccetii, UW-Madison, Pharmacuetical Science Station
 Dr. George Zografii, UW-Madison, Department of Pharmacy, emeritus
 Dr. Christiane Alba-Simonesco, Leon Brillion Lab of Saclay, France

References:

Professor Mark Ediger
 1101 University Ave.
 Madison, WI 53706
 (608) 262-7273

Professor Zahra Fakhraai
 231 S. 34 St.
 Philadelphia, PA 19104
 (215) 746-8436

Professor Mark Tapsak
 400 E. Second St.
 Bloomsburg, PA 17815
 (570) 389-4893

Professor Lian Yu
 777 Highland Ave.
 Madison, WI 53705
 (608) 263-2263