PERSONAL INFORMATION

James C. Schwabacher | Chicago, IL | schwabacher@u.northwestern.edu | www.schwabacher.me

EDUCATION

Doctor of Philosophy: Northwestern University, *expected June 2020*, Chemistry
Bachelor of Science: American University, May 2015, Chemistry

PROFESSIONAL TEACHING DEVELOPMENT

Center for the Integration of Research, Teaching, & Learning

CIRTL @ Northwestern University Intern September 2019 — Present

- Create, organize, and oversee a graduate student and post doc advisory board to steer the future of CIRTL at NU
- Develop and lead workshops to prepare participants for advanced CIRTL programming
- Promote programming to assist in recruiting participants and future leaders

Scholar Certification June 2018 — June 2019

- Completed the highest certification awarded through the CIRTL network
- Continued and updated my teaching-as-research project
- Presented research findings and suggestions at the TEACHx education conference

STAR Practitioner Certification January 2017 — June 2018

- Completed Teaching-As-Research workshop series
- Conducted a teaching-as-research project
- Presented research project findings to the campus community

Associate Certification December 2017

- Completed STEM Teaching for Undergraduates course and learning community
- Completed *Writing an Effective Teaching Statement* workshop

COLLEGIATE TEACHING EXPERIENCE

June 2018—December 2018, An Introduction to Evidence-Based Undergraduate STEM Teaching, **Learning Community Leader**, Northwestern University, 2 hours/week

September 2016, 2017 & 2018, New Chemistry Graduate TA Workshop, **Workshop Leader**, Northwestern University

April—June 2017, Advanced Chemistry Laboratory, **Lead Teaching Assistant**, Northwestern University, 15 hours/week

April—June 2016, Advanced Chemistry Laboratory, **Secondary Teaching Assistant**, Northwestern University, 15 hours/week

April—June 2016, General Chemistry 3, **Teaching Assistant**, Northwestern University, 15 hours/week

January—March 2016, General Chemistry 2, **Teaching Assistant**, Northwestern University, 15 hours/week

September—December 2015, General Chemistry 1, **Teaching Assistant**, Northwestern University, 15 hours/week

PUBLICATIONS

5. Polaritonic Excitations of Colloidal Quantum Dots; D. Westmoreland, K. McClelland, K. Perez, **James C. Schwabacher**, Z. Zhang, and E.A. Weiss; *The Journal of Chemical Physics,* Just Accepted Manuscript

4. Origin of the pH-Dependence of Emission of Aqueous Dihydrolipoic Acid-Capped PbS Quantum Dots; **James C. Schwabacher**, M.S. Kodaimati, E.A. Weiss; *The Journal of Physical Chemistry C*, 2019, DOI: 10.1021/acs.jpcc.9b03619

3. On the mechanism of protein-templated gold nanoparticle synthesis: Protein organization, controlled gold sequestration, and unexpected reaction products; Cassidy Hart, Nouf Abuladel, Madeleine Bee, Megan Channell, Alexander CVitan, Moira M Esson, Andrew Farag, Trisha Ibeh, Eleni Kalivas, Daniel-Mario Larco, Andrew Long, Loukas Lymperopoulos, Zachary Mendel, Nancy Miles, Carly Montanero, **James Schwabacher**, Helen Slucher, Javier Vinals, John Heddleston, Wenyue Li, Douglas M. Fox and Matthew R Hartings; *Dalton Transactions*, 2017, DOI: 10.1039/C7DT03275G

2. An introduction to ratchets in chemistry and biology; Bryan Lau, Ofer Kedem, **James Schwabacher**, Daniel Kwasnieski, Emily A. Weiss; *Materials Horizons*, 2017, DOI: 10.1039/C7MH00062F

1. Small Surfactant Concentration Differences Influence Adsorption of Human Serum Albumin on Polystyrene Nanoparticles; Svenja Winzen**, James C. Schwabacher**, Julius Müller, Katharina Landfester, and Kristin Mohr; *Biomacromolecules,* 2016, DOI: 10.1021/acs.biomac.6b01503

CONFERENCE PRESENTATIONS

Engaging future faculty as co-creators when designing teaching assistant training programs; **6th Annual CIRTL Forum** (Philadelphia, PA), Poster, October 14, 2019

The temporal focus of a discussion question may impact students' motivation to learn science; **6th Annual CIRTL Forum** (Philadelphia, PA), Poster, October 14, 2019

The effect of temporal focus on students' motivation to learn science (Update 2019); **TEACHx at Northwestern** (Evanston, IL), Poster, May 23, 2019

Investigating the effects of phase transfer procedures on the photoluminescence of aqueous quantum dots; **American Chemical Society Great Lakes Regional Meeting** (Lisle, IL), Oral, May 3, 2019 & **American Chemical Society National Conference** (Orlando, FL), Oral, April 2, 2019

Collaboratively designing teaching assistant training programs to address institution-specific needs; **American Chemical Society National Conference** (Orlando, FL), Oral, April 1, 2019

The effect of temporal focus on students' motivation to learn science; **Searle Teaching-As-Research Poster Session** (Evanston, IL), Poster, June 13, 2018

Aqueous synthesis of polyvinyl alcohol-alginate-montmorillonite nanocomposite beads for applications in wastewater purification; **American Chemical Society National Conference** (Boston, MA), Poster, August 18, 2015

Nanoparticles Trapped in the Fibers of Unfolded Proteins; **Discover the Sciences @AU** (American University, Washington, DC), Poster, October 17, 2014

Synthesizing novel macromonomers via lactam-ring opening; **NSF EPSCoR Research Infrastructure Improvement Symposium** (Baton Rouge, Louisiana), Poster, July 29, 2013

PROFESSIONAL SERVICE

Treasurer: Graduate Liaison Committee August 2018 — Present
Chemistry Department, Northwestern University

- Successfully negotiated over $65,000 of funding for 6 organizations over 2 years
- Oversee committee budget to ensure proper allocation for planned events and initiatives
- Organize and lead meetings between multiple organizations and department stakeholders
- Design and implement communication protocols between organizations
- Develop an organizational constitution/mission statement
- Collect, analyze, and disseminate department survey data
- Present survey conclusions, and advocate for departmental policy changes, to faculty on behalf of the student body
- Plan and host professional development and community-building events

Co-Founder: Chemistry Graduate Student Teachers January 2018 — Present
Chemistry Department, Northwestern University

- Founded a teaching community within the Northwestern University Chemistry Department
- Organize lunch discussions of STEM education literature
- Build connections between students, faculty, and staff to improve undergraduate education
- Secured seed funding for community building and invited speaker events

Chemistry Teaching Assistant Training Program May 2016 — Present
Chemistry Department, Northwestern University

- Transformed TA training based on quantitative and qualitative data from past participants
- Recruited and supervised 20 volunteers for a multi-week training for 55 new TAs
- Collaborated with faculty and education experts to design effective training workshops
- Led newly designed workshops while coordinating hours of program logistics
- Presented our collaborative and iterative design system at a national conference

RESEARCH EXPERIENCE

National Science Foundation Graduate Research Fellow & Ph.D. Candidate December 2015 – Present
Dr. Emily A. Weiss
Northwestern University, Evanston, IL

- Contributed to publishable scientific research at the nexus of physical/analytical chemistry, inorganic synthesis, and materials science
- Synthesized, functionalized and characterized air-sensitive semiconductor nanocrystals
- Designed and investigated responsive nanoparticle assemblies and their interfaces
- Implemented improvements to laboratory supply ordering processes and standard operating protocols
- Maintained critical research equipment, including a nitrogen-atmosphere glove box
- Mentored younger graduate students through an apprenticeship model

Immunological Research Intern June 2015 – August 2015
Dr. Alexandra Zanin-Zhorov
Kadmon Pharmaceuticals, New York, NY

- Processed and isolated peripheral blood mononuclear cells for storage
- Performed enzyme-linked immunosorbent assays, protein assays and Western blots
- Compiled data and results into easy-to-read reports

Researcher: Protein-Templated Quantum Dots August 2014 – May 2015
Dr. Matthew Hartings
American University, Chemistry Department, Washington, DC

- Investigated the optimal experimental conditions for quantum dot synthesis
- Synthesized BSA-templated HgS quantum dots in an aqueous environment
- Characterized nanoparticles via UV-Vis and fluorescence spectroscopy

Researcher: Experimental Chemistry I & II August 2014 – May 2015
Dr. Matthew Hartings
American University, Biomaterials Design Lab, Washington, DC

- Synthesized sodium montmorillonite-composite poly-vinyl alcohol films for water filtration systems and dye removal from wastewater
- Measured polymer film efficacy using UV-Vis
- Characterized films through FTIR, DSC, and powder XRD

DAAD RISE: German Academic Exchange Service, Research Internship May 2014 – August 2014
Prof. Dr. Katharina Landfester, Dr. Kristin Mohr & Svenja Winzen
Max Plank Institute for Polymer Research, Mainz, Germany

- Quantified protein adsorption on polystyrene and hydroxyethyl starch nanoparticles *via* isothermal titration calorimetry, dynamic light scattering, and potential measurements
- Compared the thermodynamic effects of sodium dodecyl sulfate and lutensol surfactants, which were critical to the resulting publication
- Synthesized, purified and spectroscopically analyzed fluorescently-labeled proteins

Researcher: Experimental Biological Chemistry I & II August 2013 – May 2014
Dr. Matthew Hartings
American University, Biomaterials Design Lab, Washington, DC

- Synthesized gold nanoparticles via protein-directed green chemistry
- Characterized the synthesized colloidal nanoparticles and fibers using UV-Vis and AAS
- Investigated the size and shape control of aqueous protein-directed ZnS:Mn quantum dots

Organic Chemistry Laboratory Assistant October 2012 – May 2014
Dr. Monika Konaklieva
American University, Chemistry Department, Washington, DC

- Synthesized antimicrobial compounds by changing the tails attached to a beta-lactam starting material
- Conducted analysis of compounds via Nuclear Magnetic Resonance Spectroscopy and Mass Spectrometry
- Purified compounds through filtration, chromatography and recrystallization techniques

Researcher: LA-SiGMA Research Experience for Undergraduates May 2013 - August 2013
Dr. Scott M. Grayson
Tulane University, Chemistry Department, New Orleans, LA

- Synthesized novel macromonomers via lactam ring openings
- Gained substantial operational knowledge of Nuclear Magnetic Resonance Spectroscopy
- Researched polymers, dendrimers, and their applications

PROFESSIONAL EXPERIENCE

Budget and Administration Assistant February 2013 – May 2015
Chemistry Department Office Assistant August 2011 – February 2013
Alyssa Röhricht
American University, College of Arts and Sciences, Washington, DC

- Performed office tasks while facilitating interdepartmental communication
- Collected and presented critical data, such as course enrollment and evaluations
- Assisted in budgeting and accounting for the College of Arts and Sciences

Physical Sciences Tutor December 2010 – May 2015
Staten Island, NY & Washington, DC

- Met with high school students for one hour per week to strengthen their chemistry/physics skills
- Helped one student successfully raise her average a total of 9 points
  Provided additional honors chemistry and Advanced Placement chemistry instruction

AWARDS, FELLOWSHIPS & GRANTS

September 2015-August 2020, **National Science Foundation Graduate Research Fellowship (*NSF GRF*)**, Proposed project: Electrostatically-Controlled Self-Assembly and Purification of Microgel-Latex Core-Satellite Colloids with Defined Geometries

September 2019, **GPPD Career Development Grant**, awarded to join and attend the 2019 POD Network conference

August 2019, **CIRTL Forum 2019 Travel Grant**, awarded to attend and present at the 2019 CIRTL Forum

January 2019, **Phi Lambda Upsilon Travel Grant**, awarded to present at a National Conference

June 2017, **Robert L. Burwell, Jr. Summer Scholar,** awarded for excellence in physical chemistry at Northwestern University

August 2015, **ACS Undergraduate Award in Inorganic Chemistry,** awarded for excellence in inorganic chemistry at American University

HONORS & DISTINCTIONS

March 2019; Chemistry Department: Student Spotlight; Northwestern University
March 2013; Early Identification Program: Top 10% of Class; American University
August 2012; National Society of Collegiate Scholars; American University

PROFESSIONAL SOCIETY MEMBERSHIPS

September 2019; Professional & Organizational Development (POD) Network in Higher Education
July 2017; Phi Lambda Upsilon Honorary Chemical Society
May 2015; Phi Beta Kappa
October 2013; American Chemical Society

ADDITIONAL ATTENDED CONFERENCES

POD Network Conference 2019 (Pittsburgh, PA), November 14, 2019

TEACHx at Northwestern (Evanston, IL), May 23, 2019

Knowledge, Trust, and the Future of Democracy: Transatlantic Perspectives on the Role of Scholarship and Science in Society (Atlanta, Georgia), German Academic Exchange Service & Alexander von Humboldt Foundation, October 5, 2018

ComSciCon Chicago (Chicago, IL), August 25, 2018

TEACHx at Northwestern (Evanston, IL), May 19, 2017

COMMUNITY ENGAGEMENT/VOLUNTEER SERVICE

Teacher February 2018 — April 2019
Northwestern SPLASH

- Developed and facilitated a 50-minute discussion-based lecture on the impacts of scientific research on society for thirty visiting high school students from diverse backgrounds

Speaker April 2019
American Chemical Society Story Jam with C&En: Adventures in Outreach

- Performed live storytelling (Title: *The Long Pause*) to recounts lessons learned in science engagement

Presenter October 2018
National Science Foundation Graduate Fellowship Networking Reception

- Presented a lightning talk on experimenting with science communication as a researcher

Comedian March — June 2018
Chicago Council for Science and Technology: Science Riot
- Performed a science-based stand-up comedy routine for adult audiences

Mentor September 2016 — June 2017
Science in Society: Junior Science Club
- Taught engineering and scientific concepts to elementary school students through Evanston's Youth and Opportunity United (Y.O.U) afterschool programming
- Mentored groups of 4-5 students conducting hands-on experiments for conceptual reinforcement

Educator October — December 2015 & 2016
Lincolnwood Elementary Science Partnership
- Facilitated the partnership between Lincolnwood Elementary and Northwestern University
- Demonstrated science-fair experiments to a classroom of twenty students in preparation for their personal science projects

Demonstrator November 2015
Science in the Classroom: ETOPIA Production
The Engineering Transdisciplinary Outreach Project in the Arts (ETOPiA)
- Conducted exciting chemistry experiments for over 70 middle school students
- Reinforced classroom concepts through practical applications
- Discussed my role as a scientist and my personal career decisions

Demonstrator, National Chemistry Week October 2014
Westbrook Elementary
- Performed coffee filter-marker chromatography for kindergarten through 4th grade students

Demonstrator October 2014
American University Physics Department's Haunted House
- Repeatedly demonstrated an orange-to-black clock reaction for over 200 students in 3 hours
- Assisted with chemiluminescent peroxide-luminol and edible sodium-alginate reactions

Fundraiser and Cross-country Cyclist May 2012 -- August 2012
Ulman Cancer Fund for Young Adults: 4K for Cancer
- Cycled over 4,000 miles from Baltimore, MD to Seattle, WA in 70 days to raise cancer awareness
- Successfully raised $5,500 independently while the program raised nearly $500,000
- Effectively coordinated cooperation among a team under challenging circumstances