

## EDUCATION

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Masters of Science, Chemistry, Eugene, OR, *University of Oregon* Expected Jun 2018

Bachelors of Science, Chemistry, Westerville, OH, *Otterbein University* May 2017

## RESEARCH EXPERIENCE

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### Undergraduate Research Assistant

Physical Chemistry, Otterbein University, Dr. Carrigan Hayes Aug 2016 – May 2017  
*Developed procedure for implementation in a three-week module of a physical chemistry lab course.*

- Created an experiment illustrating the importance of standards and standard methods that was used to examine the synthesis of biofuels from various cooking oils, utilizing techniques of base-catalyzed transesterification methods referencing a protocol for biofuel synthesis.
- Synthesized and combusted biofuel samples via adiabatic bomb calorimetry to determine reproducible internal energies and enthalpies of combustion; compared data to standard reference data available for diesel and biodiesel, from NIST and ASTM.
- Characterized biofuel samples via density by determining the mass of the fuel in a volumetric flask, viscosity by measuring the rate of a small sphere's descent through the fuel and, internal energy of combustion using a Parr 1341 Oxygen Bomb Calorimeter via constant-volume calorimetry.
- Wrote an abstract and designed a poster for ACS meeting demonstrating the standardization and characterization of biofuels.

Analytical Chemistry, Otterbein University, Dr. Joan Esson Jan 2015 – May 2015  
*Comparison of Creighton and Lee-Misel silver colloids when paired with an equine antibiotic, Metronidazole.*

- Characterized colloids using UV/Vis absorption spectrophotometry to detect Ag<sup>+</sup> concentration.
- Analyzed a series of surface-enhanced Raman scattering (SERS) spectra of Metronidazole (MNZ) solutions at different concentrations absorbed on silver colloids to observe the degree of signal enhancement.
- Concluded that the Lee-Misel colloid resulted in stronger spectra signals than the Creighton colloid when paired with MNZ in solution.

## WORK EXPERIENCE

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### Undergraduate Laboratory Teaching Assistant

Chemistry in Art, *Integrative Course*, Otterbein University Jan 2017 – May 2017

- Helped non-science majors learn chemistry basics using art-based demonstrations and experiments.
- Prepped labs by setting up equipment and organizing materials.

General Chemistry, *I and II*, Otterbein University Aug 2015 – May 2017

- Trained and helped students use instrumentation, facilitated data analysis, and assessed laboratory notebooks.

Analytical Chemistry, Otterbein University Aug 2016 – Dec 2016

- Aided students with navigation through the instrument lab and performance of analytical techniques. Techniques included Raman spectrometry, UV/Vis spectrophotometry, fluorescence spectrometry, and cyclic voltammetry.

Equine Facility Management Summer 2014 & Summer 2016

- Work covered practices including handling, grooming, preventative health care, appropriate use of restraint, tack fitting, behavioral observation, exercising, and maintenance of the barn.

## VOLUNTEER AND LEADERSHIP EXPERIENCE

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Otterbein University American Chemical Society Chapter Aug 2013 – May 2017

- Assisted with on and off campus community outreach chemistry demonstrations.
- Regularly attended local ACS meetings.

Otterbein University Equestrian Team Aug 2013 – May 2017

- Cared for the horses before and after each group hunt seat lesson.
- Worked with team to host horseshows for visiting riders.
- Provided help to each teammate at intercollegiate competitions.

Otterbein University Student Government (OUSG) Aug 2016 – May 2017  
*Senator of Academic & Professional Organizations*

- Represented the ACS chapter at OUSG meetings as well as any other student organizations.
- Voted on controversial provisions such as changing general education classes from 4 credit hours to 3 credit hours and eligibility of student organizations.
- Presented information to OUSG about the budget committee and gathering/organizing notes reviewed at each meeting.

Tau Epsilon Mu Sorority Feb 2016 – Mar 2017  
*Scholarship Chair*

- Generated schedules based on members' class schedules, to ensure attendance.
- Relayed information about study hours at chapter meetings and through email, and worked with individuals who needed further assistance with scheduling or success in the classroom.

*Member* Nov 2013 – May 2017

- Volunteered each year at Take Back the Night, National Eating Disorder Association (NEDA) Walk and Strides for Hope 5k Walk/Run.

## SKILLS

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- Proficiency with equine anatomy and physiology and horsemastership.
- Experience preparing samples for  $^1\text{H}$  NMR in DMSO and determining percent yield of 1-butyl-3-methylimidazolium (BMIM) triflate and BMIM nitrate by identifying and integrating the methyl hydrogen.
- Tested solid and liquid samples and analyzing data based on symmetry and vibrations using FTIR-ATR.

## PRESENTATIONS

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Poster, 253<sup>rd</sup> ACS National Meeting, San Francisco, CA Apr 2017

*Exploring Standards and Standardization in the Physical Chemistry Laboratory*