Dept. of Chemistry and Biochemistry
University of Colorado at Colorado Springs
Centennial Hall, Room 241
1420 Austin Bluffs Pkwy
Colorado Springs, CO 80918
Phone: (719) 255-3279

Elise M. Naughton, Ph.D

Email: enaughto@uccs.edu

Summary of Qualifications

Over 10 years of chemistry teaching experience at the undergraduate level. Academic experience in research and development with a focus on photocatalytic hydrogen production with inorganic complexes in polymer membranes. Highly proficient in presenting complex, technical data to a wide range of audiences. Experienced in inorganic synthesis, characterization of small molecules and polymer morphology. Experienced and skilled in leadership and interpersonal relationships, can work well independently and in a team environment.

Education

Ph.D. - Inorganic Chemistry – Virginia Tech, Blacksburg, VA (May 2016)
Studied the ion-exchange of inorganic photocatalytic complexes into an ionomer membrane and the effect the ionomer had on photocatalytic and electrophotocatalytic hydrogen production

B.S. - Chemistry – Fort Lewis College, Durango, CO (May 2009)
Undergraduate research in synthesis of high molecular weight primary alcohols and characterization of a variety of high molecular weight materials.

Teaching Experience

Teaching Professor, University of Colorado at Colorado Springs 40 hrs/week (Aug. 2016-present)

- General Chemistry Lab Curriculum Coordinator
- General Chemistry Lecture (Semesters 1 and 2)
- General Chemistry Labs (Semesters 1 and 2)
- Introduction to Chemistry Labs (Semesters 1 and 2)
- Advanced Inorganic Chemistry Lab
- Remote/online Course Development
- Curriculum redesign for General Chemistry Courses (included supervising undergraduate students)
- Inorganic Chemistry I Lecture (course developed and canceled for low enrollment)

GCMS expert for General Chemistry Laboratories, Virginia Tech 20 hrs/week (2012-2013)

- Trained by Prof. Harold McNair on GCMS instrumentation
- Ensured the smooth operation of GCMS, AA and UV-Vis instruments during general chemistry laboratories

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- Trained fellow TAs in the operation of instruments
- Developed GCMS methods for use in the General Chemistry for majors laboratories

Inorganic Chemistry Lab Teaching Assistant, Virginia Tech 20 hrs/week (2010-2011)
- Supervised and assisted in the operation of inorganic chemistry labs
- Assisted students in choosing, developing and performing individual inorganic chemistry research projects

General Chemistry Lab Teaching Assistant, Virginia Tech 20 hrs/week (2009-2015)
- Performed prelab lectures in order to prepare students for upcoming experiments
- Held office hours to assist students in both lab and lecture classes
- Supervised and streamlined the safe and smooth operation of laboratory experiments

Analytical Lab Teaching Assistant, Fort Lewis College 10 hrs/week (2008-2009)
- Ensured the smooth and safe operation of analytical laboratories
- Assisted in troubleshooting instrument and experimental difficulties

General Chemistry Tutor, Fort Lewis College 5 hrs/week (2008-2009)
- Assisted students learning in general chemistry curriculum
- Held tutoring sessions in both an individual and group environment

Academic Research Experience

Inorganic Photochemistry and Polymer Morphology Graduate Research, Virginia Tech, Blacksburg, VA, 2009-2016

Under Advisement of Prof. Karen J. Brewer and Prof. Robert B. Moore

Synthesis and Characterization of Mixed-metal inorganic complexes
- Synthesized Ru,Rh,Ru mixed metal polypyridyl complexes
- Characterized complexes with electrochemistry, electronic absorbance, emission spectroscopy and mass spectrometry

Ion-exchange of mixed-metal complexes into Nafion® membranes
- Developed methods for monitoring the absorption of inorganic complexes into ionomer membranes with electronic absorbance spectroscopy
- Designed novel methods for the determination of competitive uptake of different complexes into ionomer membranes

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- Determined different modes of uptake based on the size of different molecules

Characterization and catalysis studies of metal complexes in ionomer membranes

- Constructed modified electrodes with Nafion® membranes for the characterization and performance of bulk electrolysis experiments
- Utilized thermal and spectroscopic techniques in order to characterize metal complex/ionomer membrane composites

Laboratory Assistant, S&S Chemical, Fort Lewis College, Durango CO, 2006-2009
Under direction of Prof. Robert Milofsky

- Synthesis and characterization of high molecular weight primary alcohols
- Characterization of a number of high molecular weight commercial materials through titrations, GC-FID, GCMS, viscometry, NMR

Instrumentation Proficiencies: electrochemistry, electronic absorbance spectroscopy, emission spectroscopy, GCMS, GC-FID, thermogravimetric analysis, differential scanning calorimetry, NMR, benchtop SEM, atomic absorption

Honors

- *Recipient of Virginia Tech Chemistry Department's Graduate Teaching Award for excellence as a Graduate Teaching Assistant (2012)*
- *Graduated Cum Laude with an ACS certified B.S. in Chemistry from Fort Lewis College (2009)*

Invited Oral Presentations

Pacifichem 2015 Honolulu, Hawaii. Brewer, Karen J.; Naughton, Elise M.; Beach, Jeremy A; Felice, Kristen M.; Moore, Robert B. 2015 "A perspective of Karen Brewer's approach to solar fuel chemistry using supramolecular complexes"

2016 American Chemical Society Annual Meeting (ACS), San Diego, CA. Elise M. Naughton, Karen J. Brewer and Robert B. Moore "Ru,Rh,Ru Supramolecular Photocatalysts in Nafion® Membranes"

Other Oral Presentations

American Chemical Society Annual Meeting (ACS), Denver, CO. Roberto Padilla, José Rodriguez Corrales, Jie Zhu, Jerry Newman, Reece Prussian, Karen J. Brewer Elise M. Naughton. 2015 Multifunctional Supramolecules for Interactions with DNA and Cancer Cells Exploiting Photochemical Activation

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American Chemical Society Annual Meeting (ACS), New Orleans, LA. Naughton, Elise M.; Brewer, Karen J.; Moore, Robert B. 2013 Water Reduction in Nafion® Membranes with Ru-Rh-Ru Mixed-Metal Complexes

Poster Presentations

International Union of Pure and Applied Chemistry – World Polymer Congress, Blacksburg, VA. Naughton, Elise M.; Troya, Diego; Brewer, Karen J.; Moore, Robert B. 2012 Uptake Measurements as a Means to Distinguish Nafion® Morphology

Publications

Milofsky, R.; Hurley, J.; Heston, S.; Hasling, N.; Naughton, E.; Stevens, B. A Simple, Cost-effective Synthesis of Industrially Important Long Chain Primary Alcohols. Open Chemistry Journal **2017**, 4, 1-5.

Naughton, E. M.; Zhang, M.; Troya, D.; Brewer, K. J.; Moore, R. B. Size dependent ion-exchange of large mixed-metal complexes into Nafion®membranes. *Polym. Chem.* **2015,** *6* (38), 6870-6879.

Naughton, E. M.; Moore, R. B.; Brewer, K. J. In *Water reduction in Nafion membranes with Ru-Rh-Ru mixed-metal complexes*, American Chemical Society: **2013**; pp ENFL-670.

Patent

Hasling, N.; Naughton, E.; Hurley, J. F.; Milofsky, R.; Stevens, B. Synthesis of high molecular weight primary alcohols. US20110160495A1, **2011**.

Awards

- Graduate Teaching Award, Department of Chemistry, Virginia Tech, 2012
- Cum Laude Honors, Fort Lewis College, 2009

Professional Organizations

- Macromolecules and Interfaces Institute, Participant (*Spring 2010 – May 2016*)
- Graduate Student Ambassador for Recruitment, Virginia Tech Chemistry Dept. (*March 2014*)
- American Chemical Society, Member (*January 2009 – present*)

Community Outreach and Volunteer Activities

- STEM "lab-day" outreach for underprivileged high school students (2022-2023)
- Cool Science Magic Show (2021-2023)
- Science Fair Judge for Colorado Springs Charter School (2017)

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- Participated in extensive community outreach activities in the Southwest Virginia area for student K-12 (2009-2016)
- Assisted in running a booth for the Virginia Science Festival (2014-2016)
- Community Outreach at several Colorado Springs Elementary Schools (2016-2020)