

Contact Information

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SETH CROSLAW

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EDUCATION

Bachelor of Science in Chemistry (ACS-Certified) and Physics

Expected May 2021

Monmouth College | *Monmouth, Illinois*

- GPA: 3.93/4.00 | GRE: 163Q, 156V, 5.0W

RESEARCH EXPERIENCE

Research Assistant, Monmouth College | *Monmouth, IL*

Jan. 2018 - Present

Advisor: Dr. Audra Goach Sostarecz

- Studying the effects of conformation/cation on insulin aggregation using the Langmuir monolayer technique
- Determining the effects of pH on insulin hexamer aggregation and monomer formation
- Building a Brewster angle microscope to view monolayers and quantify surface topology
- Creating quantitative Brewster angle microscopy processing programs for analyzing monolayer films

Research Assistant, Monmouth College | *Monmouth, IL*

Apr. 2020 - Aug. 2020

Advisor: Dr. Bradley Sturgeon

- Used Python to create a desktop application for simulating isotropic EPR spectra
- Started creating an automatic EPR deconvolution program to extract EPR hyperfine coupling constants

Research Experience for Undergraduates, Boston College | *Boston, MA*

Jun. - Aug. 2019

Advisor: Dr. Dunwei Wang

- Validated a potential-dependent mechanism switch of a heterogeneous cobalt catalyst
- Analyzed two intermediates in the water oxidation of the cobalt catalyst cycle *in operando* using ATR FTIR
- Used electrochemical quartz crystal microbalance to study the effects of water adhesion on the catalyst

Summer Opportunities for Intellectual Activities, Monmouth College | *Monmouth, IL*

Aug. 2018

Advisors: Dr. Bradley Sturgeon and Dr. Janis Wunderlich

- Built, tested, and calibrated a new ceramic 3D printer
- Began learning Autodesk Fusion 360 design software to design unique pottery and sculptures

Richard "Doc" Kieft Summer Research Program, Monmouth College | *Monmouth, IL*

Jun. - Aug. 2018

Advisor: Dr. Audra Goach Sostarecz

- Used Langmuir monolayer technique to study the effects of divalent metal cations on insulin aggregation
- Studied insulin's interactions with lipids commonly found in the cell membrane
- Coded a graphical user interface for data processing programs and lipid storage database using Python

Monmouth College Coffee Project, Monmouth College | *Monmouth, IL*

Aug. 2017 - May 2019

Advisor: Dr. Bradly Sturgeon

- Identified volatile compounds formed during the coffee roasting process using GC-MS
- Analyzed liquid extractions at various points during coffee roasting using thin-layer chromatography

Summer Opportunities for Intellectual Activities, Monmouth College | *Monmouth, IL*

Aug. 2017

Advisors: Dr. Laura Moore and Dr. Michael Prinsell

- Made dough and bread samples using various strains of yeast
- Analyzed aromatic compounds produced in dough and bread samples using GC-MS

PUBLICATIONS

- Lang C., Li J., Yang K., He D., Thorne J., Croslow S., Dong Q., Wang Y., Zhao Y., Prostko G., Brudvig G., Batista V., Waegele M., Wang D. "Observation of a Potential-Dependent Switch of Water Oxidation Mechanism on a Co Phosphate Catalyst". Cell Chemistry **2021**.
- Croslow S.; McLaughlin K., Distin S., VanCleave C, Crans D, Goach A. "The Effects of pH, Conformation, and Metal Cations on Insulin Aggregation". The Journal of Inorganic Biochemistry. (Manuscript In Preparation).
- Goach A., Croslow S., McLaughlin K., Distin S. "Teaching the Use of Micropipettes through Direct Visualization of Data: A Lab Focusing on Technique, Skill, and Accuracy". The Journal of Chemical Education. (Submitted Manuscript).

PROFESSIONAL EXPERIENCE

Organic Chemistry Supplemental Instructor, Monmouth College | Monmouth, IL **Aug. 2019 - Present**

- Holds class sessions 3 times a week for about 15 students to review class material and answer questions
- Hosts office hours 3 times a week to answer students questions and review class material

General Chemistry Lab Assistant, Monmouth College | Monmouth, IL **Jan. - Dec. 2018, Jan. - May 2021**

- Helped the professor and lab manager set up/clean up experiments every week
- Recorded attendance during each lab and collected lab course material from about 20 students

Inorganic Chemistry Lab Assistant, Monmouth College | Monmouth, IL **Jan. - May 2019**

- Assisted the professor during lab to ensure the safety of the students
- Graded lab course materials every week for about 20 students

PRESENTATIONS

- Croslow S., McLaughlin K, Goach, A. "Design and Construction of a Brewster Angle Microscope", Rocky Mountain Regional American Chemical Society Research Conference, Online. (Oral). **Nov. 2020**.
- Croslow S., McLaughlin K, Goach, A. "Design and Construction of a Brewster Angle Microscope", Science Seminar, Monmouth College. (Oral). **Aug. 2020**.
- Croslow S., Allen B., Saulcy K., Crans D., Goach, A. "Investigating Insulin Monomer and Hexamer Formation with Langmuir Monolayers and Brewster Angle Microscopy", Illinois-Iowa Local Section American Chemical Society Research Conference, St. Ambrose College. (Poster). **Sep. 2019**.
- Croslow S., Lang C, Wang D. "Mechanistic Study of Intermediates in the Water Oxidation Pathway", Science Seminar, Monmouth College. (Oral). **Sep. 2019**.
- Croslow S., Lang C, Wang D. "Mechanistic Study of Intermediates in the Water Oxidation Pathway", REU Research Day, Boston College. (Oral). **Aug. 2019**.
- Saulcy K., Croslow S., Allen B., Goach A., Crans D. "Investigating Insulin Monomer and Hexamer Formation with Langmuir Monolayers and Brewster Angle Microscopy", Scholars Day, Monmouth College. (Poster). **May 2019**.
- Saulcy K., Croslow S., Allen B., Goach A., Crans D. "Investigating Insulin Monomer and Hexamer Formation with Langmuir Monolayers and Brewster Angle Microscopy", Division of Inorganic Chemistry, American Chemical Society 257th National Meeting. (Poster). **Apr. 2019**.
- Allen B., Croslow S., Quick R., Perez O., Phelps M., Woolard K., Wunderlich J. "Visualization Using a Ceramic 3D Printer", Summer Opportunities for Intellectual Activities, Monmouth College. (Oral and Poster). **Aug. 2018**.

- Croslow S., Goach A. “*Insulin Aggregation at the Air-Water Interface*”, Richard “Doc” Kieft Summer Research Program, Monmouth College. (Oral). **Jul. 2018.**
- Taylor Z., Yoder B., Burgo V., Croslow S., Currens E., McLaughlin K., Sterr J., Trettin A., Moore L., Prinsell M. “*Analyzing Volatile Compounds in Bread Using GC-MS*”, Summer Opportunities for Intellectual Activities, Monmouth College. (Oral and Poster). **Aug. 2017.**

HONORS AND AWARDS

- NSF REU Merit Award, University of Utah **Jun. 2020**
- Dean’s List, Monmouth College **All Semesters**
- 2020 Seeler Industries Scholarship, Chemical Industry Council of Illinois **Jun. 2020**
- 2020 ACS Undergraduate Award in Physical Chemistry, Monmouth College **Apr. 2020**
- COLL PUI Award, American Chemical Society 259th National Meeting (Invited talk/Canceled) **Oct. 2019**
- Robert Minter ‘66 Prize for Maximizing Scientific Potential, Monmouth College **Apr. 2019**
- Most Outstanding Freshman Chemistry Student, Monmouth College **Apr. 2018**
- Richard “Doc” Kieft Chemistry Scholarship, Monmouth College **Aug. 2017**
- Dean’s Scholarship, Monmouth College **Aug. 2017**

PROGRAMMING LANGUAGES

- **Python:** Proficient in using Python for creating data processing programs, graphical user interfaces, and desktop applications. Programs have been made to process, graph, and output data for cell growth absorbance data from a plate reader, surface pressure-area compression isotherms and compression moduli, and for data created from cyclic voltammogram other electrochemical processes.
- **IGOR Pro:** Capable in IGOR for processing data and producing complex layouts for figures. Used during the course of two undergraduate courses to process all laboratory data and create figures for manuscripts.
- **LaTeX:** Adept at LaTeX for scientific writing. Used in several undergraduate chemistry and physics courses to write lab reports as well as in writing a manuscript for publication and a final undergraduate thesis.
- **Mathematica:** Worked with Mathematica in an undergraduate physical chemistry and mathematics course to manipulate data, calculate quantum mechanical properties, and simulate various differential equations.

PROFESSIONAL AFFILIATIONS

- Mortar Board, Member **Apr. 2020 - Present**
- Alpha Lambda Delta, Member **Aug. 2018 - Present**
- American Chemical Society, Member **Aug. 2017 - Present**
 - President, Monmouth College Student Chapter ACS