

# ELIZABETH A. KNIGHT

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## EDUCATION

BA Chemistry, Reed College | May 2021

- Chemistry Program ACS certified, Completed a semester of biochemistry in addition to regular chemistry courses
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## RESEARCH EXPERIENCE

Post-Baccalaureate Ladd Fellowship, Bowring Lab, Chemistry Dept, Reed College,  
Summer 2021

- Calculating intermediate and transition state structures for the protonolysis of dimethyl(1,5-cyclooctadiene)platinum(II) [codPtMe<sub>2</sub>] by trifluoroacetic acid (TFA)
- Aided in kinetic studies by monitoring the protonolysis of codPtMe<sub>2</sub> by TFA and other acids at different concentrations and temperatures with <sup>1</sup>H NMR and or UV-vis spectroscopy

Undergraduate Thesis Researcher, Chemistry Dept, Reed College, Aug 2020 - June 2021

- Investigating intermolecular interaction of protonolysis products and reactants with excess acid
- Modeling interaction of codPtMe<sub>2</sub> and products with 2 equivalents of TFA computationally and assessing energetic favorability with density functional theory calculations
- Writing a literature review navigating the relationship between computational modeling and experimental observation for the protonolysis reaction in question.

## SKILLS

- Analytical instrumentation and techniques such as <sup>1</sup>H-NMR, <sup>13</sup>C-NMR, UV-vis, IR and GC-MS
- Submission of Density Functional Theory calculations to supercomputer cluster
- Comfortable with basic commands in terminal, bash and python
- Computational modeling software Gaussian 16, Gview 6, Avogadro, Chimera, Spartan 18 and ChemDraw 20.0

## PUBLICATIONS

**Knight, E. A.**; Effects of Hydrogen Bonding on the Protonolysis of Dimethyl(1,5-cyclooctadiene) Platinum (II) by Trifluoroacetic Acid. Undergraduate Thesis. Reed College. 2021

Rettig, I.D.; Xu, J.; **Knight, E. A.**; Truong, P.T.; Bowring M.A. Variable Kinetic Isotope Effect Reveals Multi-step Pathway for Protonolysis of a PtMe Bond  
10.1021/acs.organomet.2c00504

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## TEACHING EXPERIENCE

Science Faculty, Cambridge School of Weston, February 2022-pres

- Took on a midyear role to teach the surplus of students interested in chemistry
- Accepted full time position for 2022-23, 2023-24
- Revised chemistry curriculum and lab projects with colleagues for students to gain hands on experience
- Taught 9th grade community engagement course encouraging the growth of soft skills such as self advocacy and productive discourse
- Met regularly with mentors to discuss pedagogical practice and progressive teaching
- Taught intro physics, chemistry and biochemistry
- Wrote and taught new curriculum for two elective chemistry courses: "Chemical applications in the arts" and "Environmental Chemistry"

Inorganic Chemistry Lab Teaching Assistant, Reed College, Jan 2021 - May 2021

- Teach a lab of 20 undergraduates computational modeling using Gaussian16
- Meet with 3-4 students in lab groups and provide verbal and written feedback
- Guide students in course-based undergraduate research experience that will contribute novel data to my thesis research

STEM K-8 Tutor, Self-employed, Jan 2020 - March 2021

- Develop exercises and at home experiments for students age 5-12 to further engagement and foster deeper learning in math, biology, chemistry
- Spend an average of 2 hours a week throughout the school year with each student
- Work with students individually and with small groups of siblings of different ages

Classes Instructor, Oregon Museum of Science and Industry, May – Aug 2020

- Managed a classroom of 10 children age 4-8 each week while maintaining social distance protocol and leading an engaging science program
- Solely responsible for modifying and implementing science-based lesson plans on a daily basis
- Taught material ranging from scientific magic tricks to astronomy, with class titles such as "Outerspace Adventure", "Kitchen Chemistry", and "Science Magic"

Classes Teaching Assistant, Oregon Museum of Science and Industry, May – Aug 2019

- Aided in developing curriculum and execution of lessons with a class of 20-30 children ages 4-13

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## COACHING EXPERIENCE

Head Girls Varsity Soccer Coach, Cambridge School of Weston, Aug - Nov 2023

- Wrote daily practice schedule focused on skill building, strength training and team strategy

Assistant Competitive Climbing Coach, Central Rock Gym Watertown, Jan 2022- pres

- Implementing practice plans targeting specific skills recreational or competitive climbers are focusing on each week
- Supporting competitive climbers in achieving their goals and advancing in their bouldering and top rope technique
- Engaging non competitive climbers in fun and challenging climbing activities
- USAC level 1 coaching membership (Sept 2022- 2023), experienced in competition setting

Swim Coach and Instructor, West Suburban YMCA, Feb 2015 - pres

- Taught group and 1 on 1 lessons to pre-K through middle school aged swimmers

- Followed set curricula for a variety of skill sets from introductory swimming to coaching competitive athletes
  - Instructed Adult swimmers on how to better improve their technique
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## **PERFORMING ARTS EXPERIENCE**

Stage Manager, Reed College Theater Department, September 2017- March 2021

- Liaison between cast, crew and Director
- Oversaw rehearsals and held production progress to calendar schedule
- Delegated to a team of assistant stage managers who aided supporting the technical needs of the production

Board Member, Reed Independent Performance Project (RIPP) 2019-2020

- Decided where to allocate annual funds from the college to support independent artists
- Produced selected plays, dance and musical pieces in RIPP's Annex performance space
- In addition to advising shows submitted by artists, Board members also held community events such as karaoke and Broadway nights to encourage student body involvement

Scenic and Costume Designer, 2017-2020

- Form the greater conceptual understanding of the script through dramaturgical research and discussion
- Sketched plans for scene or costume design keeping in mind specific elements the director has proposed and collaborating closely with other designers
- Pulled materials from theater storage as well as coordinating funds for any necessary purchases

Master Carpenter, 2018-2020, Scene Shop Assistant 2017 - 2018

- Advised director and technical director in execution of scenic construction
  - Oversaw construction projects while teaching skills to entry level scene shop assistants
  - Operation of instruments for construction, light hanging and welding
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## **OTHER SKILLS**

- Experienced with Adobe photo editing softwares such as Photoshop and Lightroom
  - Familiarity with a range of camera models and operating systems such as Nikon D5100, D7100, and Nikon 35mm film cameras
  - Languages Latin (Introductory reader)
  - Mastery of Microsoft Office and Google Drive applications
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## **COMMUNITY INVOLVEMENT**

- Reed Sunrise Hub activist, founding member and Communications Lead
  - Musician plays bass in a local Portland band, Pepper Jelly
  - Classical musician trained for a decade on upright bass
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## **REFERENCES**

Miriam Bowring | [mbowring@reed.edu](mailto:mbowring@reed.edu)

Associate Professor of Chemistry, Reed College

Phan Truong | [truong@hendrix.edu](mailto:truong@hendrix.edu)

Assistant Professor of Chemistry, Hendrix University

Former Post Doctorate Bowring Lab, Supervisor

Elizabeth Nee | [enee@csu.org](mailto:enee@csu.org)

Science Faculty, Cambridge School of Weston