Morgan E. Reik

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EDUCATION

Ph.D., Chemistry	**Dartmouth College**, Dept. of Chemistry	2025
B.Sc., Biochemistry	**The University of Chicago**, Dept. of Chemistry	2019
B.Sc., Chemistry	**The University of Chicago**, Dept. of Chemistry	2019

PUBLICATIONS

Reik, M. E., Rickett, T. C., Hoke, K. R., Pletneva, E. V. Disabling the entatic control of methionine ligation through additive destabilization of ferric cytochrome *c*. *Inorg. Chem.* **2025**, 64(24), 11966–11980.

Zhong, F., **Reik, M. E.,** Ragusa, M. J., Pletneva, E. V. The structure of the diheme cytochrome c_4 from *Neisseria gonorrhoeae* reveals multiple contributors to tuning reduction potentials. *J. Inorg. Biochem.* **2024**, 253, 112496.

Sun, P., Nowack, L.M., Bu, W., Bera, M. K., Griesemer, S., **Reik, M. E.**, Porter, J., Rice, S. A., Schlossman, M.L., and Lin, B. Free Thiols Regulate the Interactions and Self-Assembly of Thiol-Passivated Metal Nanoparticles. *Nano Lett.* **2021**, 21(4), 1613–1619.

Reik, M. E., Calabro, M., Griesemer, S., Barry, E., Bu, W., Lin, B., & Rice, S. A. The Influence of Fractional Surface Coverage on the Core–Core Separation in Ordered Monolayers of Thiol-Ligated Au Nanoparticles. *Soft Matter* **2019**, 15, 8800–8807.

HONORS AND AWARDS

Dartmouth College

John H. Wolfenden Teaching Prize	2023
Dartmouth Molecular Pathogenesis Training Grant	2021-2022
ACS Division of Biological Chemistry Travel Award (ACS Fall Meeting)	2021

University of Chicago

Odyssey Scholar	Annual
Dean's List	2018-2019
UCISTEM Summer Research Grant	2018

CONFERENCE ABSTRACTS

Reik, M. E., Zhong, F., Zhang, P. Albert, T., Cheruzel, L., Beratan, D., Moënne-Loccoz, P., Pletneva, E. V. P. Increased Conformational Dynamics Slow Down Electron Transfer in Lys-Ligated Cytochrome *c*. *Bioinorganic Chemistry Gordon Research Seminar* (Ventura, CA) **2025**

Reik, M. E., Zhong, F., Ragusa, M. J., Pletneva, E. V. P. Electron flow to and from cbb_3 oxidase to support oxygen respiration and denitrification in *Neisseria gonorrhoeae*. *The 8th International Conference on Bioinorganic Chemistry* (Parry Sound, ON) **2023**

Reik, M. E., Zhong, F., Ragusa, M. J., Pletneva, E. V. P. Electron flow to and from cbb_3 oxidase to support oxygen respiration and denitrification in *Neisseria gonorrhoeae*. *Dartmouth Microbiology and Molecular Pathogenesis Retreat* (Fairlee, VT) **2023**

Reik, M. E., Zhong, F., Pletneva, E. V. P. A triheme CcoP in cbb_3 oxidase directs electron flow to support O_2 or nitrite reduction in *Neisseria gonorrhoeae*. *The Protein Society 36th Annual Symposium* (San Francisco, CA) **2022**

Reik, M. E., Deng, Y., Pletneva, E. V. P. Axial ligation and redox properties of cytochrome *c* are modulated through hydrogen-bonding interactions of heme propionates. *American Physical Chemical Society Fall Meeting* (Atlanta, GA) **2021**, 3595339.

Reik, M. E., Liepold, C., Griesemer, S. D., Bu, W., Smith, A., Rice, S. A., de Pablo, J. J., Lin, B. Ordering and Interactions of Gold Nanoparticles (AuNPs) with Fractional Surface Coverage of Ligands. *American Physical Society March Meeting* (Denver, CO) **2020**, M31.011.

Reik, M. E., Rice, S. A., Lin, B., Calabro, M., Griesemer, S., Macfarland, S. The influence of fractional surface coverage on the core–core separation in ordered monolayers of thiol-ligated Au nanoparticles. *American Physical Society March Meeting* (Boston, MA) **2019**, A45.006.

Macfarland, S., **Reik, M. E.**, Calabro, M., Lin, B., Rice, S. A., The Effects of Ligand Concentration on the Mechanical Properties of Nanoparticle Films. *American Physical Society March Meeting* (Boston, MA) **2019**, B58.015.

POSTER PRESENTATIONS

Axial ligation and redox properties of cytochrome *c* are modulated through hydrogen-bonding interactions of heme propionates
Guarini Graduate School Poster Session (Hanover, NH) **2023**

A triheme CcoP in *cbb*$_3$ oxidase directs electron flow to support O_2 or nitrite reduction in *Neisseria gonorrhoeae*
Dartmouth Microbiology and Molecular Pathogenesis Retreat (Fairlee, VT) **2022**

The Influence of Fractional Surface Coverage on the Core-Core Separation in Ordered Monolayers of Thiol-Ligated Au Nanoparticles
Chicago Area Undergraduate Research Symposium (Chicago, IL) **2019**
Midstates Consortium for Math and Science (Chicago, IL) **2018**

The Effects of Thiol Concentration on the Young's Modulus of Self-Assembled Nanoparticle Films
Chicago Area Undergraduate Research Symposium (Chicago, IL) **2018**
Midstates Consortium for Math and Science (Chicago, IL) **2017**
The University of Chicago Undergraduate Research Symposium (Chicago, IL) **2017**

RESEARCH EXPERIENCE

University of Vermont – Postdoctoral associate 2025-present
Advisor: Dr. Clorice Reinhardt Burlington, VT
Mechanistic studies of Lanthanide-containing enzymes

Dartmouth College – Graduate Researcher 2019-2025
Advisor: Dr. Ekaterina Pletneva Hanover, NH
Redox Properties and Dynamics of c-type Cytochromes

- Characterized the role of protein dynamics in modulating redox properties of monoheme proteins and native multiheme assemblies using biophysical methods
- Employed flash photolysis to examine the electron transfer kinetics of redox proteins
- Utilized spectroscopic methods such as CD, NMR, and electronic absorption spectroscopy to gain insights into the protein dynamics and electronic environment of the heme
- Ran molecular dynamics simulations in NAMD to supplement experimental data and make assessments about the observed trends
- Performed spectral analysis and fitting using Matlab

The University of Chicago – Undergraduate Researcher 2016-2019
Advisors: Dr. Stuart Rice, Dr. Binhua Lin Chicago, IL
Ordering and Interactions of Gold Nanoparticles with Fractional Surface Coverage of Ligands

- Performed grazing incidence x-ray diffraction studies at the Advanced Photon Source at Argonne National Laboratory to examine the order of ligand-coated nanoparticle films on an air-water interface as the type and concentration of ligand was varied
- Qualitatively studied the structure and order of ligand-coated nanoparticle films under the variation of several parameters using electron microscopy
- Analyzed data using Python and ImageJ

TEACHING EXPERIENCE

Dartmouth College Department of Chemistry 2024
Laboratory Instructor-CHEM 6 Hanover, NH

- Directed the laboratory course for CHEM 6, the second term of general chemistry
- Set the lab schedule and lectured twice a week on topics related to kinetics, spectroscopy, and molecular bonding
- Managed both teaching assistants for the course

Dartmouth College Department of Chemistry 2020 and 2022
Teaching Assistant-CHEM 42 Hanover, NH

- Responsible for the laboratory component as the sole teaching assistant of CHEM 42, an upper-level biochemistry course focusing on the foundations of biophysical and bioinorganic chemistry
- Presented five lectures per term on biophysical and bioinorganic methods and concepts such as electronic absorption spectroscopy, protein unfolding and denaturation, fluorescence, and NMR, as well as the foundations of spectral interpretation
- Graded and provided feedback on weekly lab reports

Dartmouth College Department of Chemistry 2020
Teaching Assistant-CHEM 41 Hanover, NH

- Laboratory teaching assistant for CHEM 41, the introductory to biochemistry course
- Co-developed remote online curricula involving SnapGene to help the students understand the principles of restriction enzyme digests, site-directed mutagenesis, cloning, and expression of lactate dehydrogenase, the chosen protein of study
- Provided students with instruction for Chimera software and kinetics data collected by the lab director to assist in their comprehension of the mechanism of the enzyme
- Held weekly office hours and graded lab assignments and final project of all fifteen students in section

Dartmouth College Department of Chemistry 2020
Teaching Assistant-CHEM 5 Hanover, NH

- Laboratory TA for CHEM 5, the first term of general chemistry
- In charge of introducing each experiment, explaining the relevant chemistry, and enforcing the safety protocols for two lab sessions per week with sections of 15 students each
- Graded weekly lab assignments and all course exams
- Held office hours twice per week

LEADERSHIP EXPERIENCE

New England Graduate Women in Science and Engineering (NE GWISE) 2020-2023
President (2021-2023) Boston, MA

- Led the 501(c)3 nonprofit organization NE GWISE (https://negwise.org/) for two years as president, involving tasks such as applying for funding, maintaining contacts with advisory board, interviewing candidates for the executive committee, and overseeing all events and activities
- Coordinated and set the agenda for the monthly executive committee meetings and two annual open meetings
- Developed theme for annual Spring Summit conference

New Schools Chair (2020-2021) Boston, MA

- Recruited new schools and advised on new organization structure, funding, and programming
- Co-organized a monthly series of lectures by women in science on the theme of building inclusive communities
- Created the New Schools Information Packet, a handbook to guide graduate students in developing and maintaining a local GWISE chapter

Dartmouth Graduate Women in Science and Engineering (Dartmouth GWISE) 2020-2023
Co-Chair Hanover, NH

- Coordinated with NE GWISE to help establish a more impactful local organization
- Helped recruit new board members to the organization growing the executive board from three to twelve members

OUTREACH AND VOLUNTEER EXPERIENCE

Hanover Kids After School Time (KAST) 2021
Mentor Hanover, NH

- Developed and executed science outreach project for KAST spring 2021 camp involving food chemistry experiments targeting K-5 students
- Led thirty students in a different food-related experiment each day for one week with assistance from KAST counselors and directed students through discussion questions

Dartmouth ManyMentors 2020-2021
Mentor Hanover, NH

- Peer reviewed abstracts and proposals submitted to the New Hampshire Academy of Science's research symposium in 2020 and 2021
- Edited proposals to help students understand the tone and style of professional scientific writing

Hoffmann Estates High School Exemplary Students Research Program 2019
Mentor Lemont, IL

- Mentored a group of six students participating in their high school's Exemplary Students Research Program through Educational Programs and Outreach at Argonne National Laboratory
- Trained all students on nanoparticle film preparation and grazing incidence X-ray diffraction data collection and analysis
- Assisted the students as they developed their project's hypothesis and poster which they presented at the 2019 APS/CNM Users Meeting (https://www.anl.gov/education/hoffman-estates-high-school-esrp-2019)

Strive Tutoring 2018-2019

Tutor Chicago, IL

- Provided one-on-one math and science tutoring to two middle school students twice a week
- Led weekly science lab experiments with groups of fifteen middle school and high school students to help teach the basics of science application with common household materials
- Member of the executive board starting in fall 2018 assisting with recruiting new tutors and distributing informational materials about the organization