

Kaydren Orcutt

Email: kaydren.orcutt@berkeley.edu

Mobile: 843-364-0394

EDUCATION

University of California, Berkeley **expected 2022**
Berkeley, CA
Ph.D. in Chemistry
Professor Graham R. Fleming, Advisor

Mercer University **2017**
Macon, GA
B.S. in Chemistry (minors: Physics, Spanish), Great Books Program, Phi Beta Kappa, *summa cum laude*

AWARDS AND SCHOLARSHIPS

- Berkeley SciComm Fellow, inaugural cohort **2021**
- The Sophie Oxley Clark Williams Outstanding Essay Award, Mercer University **2017**
- Royal Society of Chemistry Certificate of Excellence, Mercer University **2017**
- Mercer University Physical Chemistry Student Award **2017**
- Amgen Scholar at University of California, Berkeley **2016**
- Phi Beta Kappa, Zeta of Georgia Chapter, inaugural class **2016**
- Mercer University Analytical Chemistry Student Award **2016**
- Barry M. Goldwater Scholar **2015**
- First Place Analytical Chemistry Poster Presentation at the Southeastern Regional Meeting of the American Chemical Society **2014**
- Mercer University General Chemistry Student Award **2014**
- Mercer University General Physics Student Award **2014**
- Stamps Scholar
 - one of 170 selected from more than 543,000 applicants across the country **2013**
- Mercer University Presidential Scholar **2013**

RESEARCH EXPERIENCE

Doctoral Researcher **2017-present**
Department of Chemistry, University of California, Berkeley

- Research in the group of Graham R. Fleming
- Conducted research into single photon absorption by photosynthetic complexes
- Built single photon source via generation of entangled photons from spontaneous parametric down conversion nonlinear crystals
- Studying energy transfer in photosynthetic complexes and synthetic materials (as part of the NSF Center for Synthesizing Quantum Coherence) via 2-Dimensional Electronic Spectroscopy (2DES) and 2-Dimensional Electronic Vibrational spectroscopy (2DEV)

Undergraduate Researcher**2014-2017***Department of Chemistry, Mercer University, Macon, GA*

- Research under the mentorship of Dr. Kathryn Kloepper
- Completed a project in Spring 2014 that investigated the composition of the locally mined mineral kaolin with X-ray fluorescence and scanning electron microscopy
- Investigated biosurfactant potential of different bacterial strains already well characterized for other purposes using spectroscopic and chemical assays
- Initiated experiments to extract biosurfactant characterization and identification
- Gained over 400 hours of summer research experience from May – August 2014

Amgen Scholar**2016***Department of Chemistry, University of California, Berkeley, Berkeley, CA*

- Research under the mentorship of Dr. Kristie Boering
- 10-week experience investigating nitrous oxide isotopic composition for aircraft samples and corona discharge experiments
- Proficient with Isotope Ratio Mass Spectrometry (IRMS) and vacuum line procedures
- Cryogenically trained and introduced to cryogenic separation techniques
- Amgen program culminated in poster session and oral presentation

Intern at Hollings Marine Laboratory**2015***National Institute of Standards and Technology, Charleston, SC*

- Research under the mentorship of Dr. Stacy Vander Pol, Kevin Huncik, and Dr. Jessica Reiner in the organic group
- 5-week experience certifying Standard Reference Materials (SRM)
- Introduced to Gas Chromatography - Mass Spectrometry (GC-MS), pressurized fluid extraction (PFE), solid phase extraction (SPE)
- Participated in troubleshooting process to determine best method for extraction of analytes and best peak resolution on the GC-MS spectra

TEACHING EXPERIENCE**Physical Chemistry Laboratory Head Graduate Student Instructor****Fall 2019***Department of Chemistry, University of California, Berkeley*

- Designed and gave laboratory-specific pre-lab lectures for each unit which detailed important theory and correct in-lab practices
- Supervised students during laboratory
- Responsible for running multiple labs, including but not limited to: Raman spectroscopy, FTIR spectroscopy, single molecule fluorescence, LabVIEW, UV-Vis and Fluorescence spectroscopy, and appropriate vacuum line technique
- As head GSI:
 - In charge of scheduling for pre-lab sessions, lab times, and oral exams
 - Maintained the class website (Berkeley bCourses)
 - Updated all materials for the course
 - Planned and gave additional in-class and outside-of-class lectures

Physical Chemistry Laboratory Graduate Student Instructor**Fall 2018**

Department of Chemistry, University of California, Berkeley

- Designed and gave laboratory-specific pre-lab lectures for each unit which detailed important theory and correct in-lab practices
- Supervised students during laboratory
- Responsible for running multiple labs, including but not limited to: Raman spectroscopy, FTIR spectroscopy, single molecule fluorescence, LabVIEW, UV-Vis and Fluorescence spectroscopy, and appropriate vacuum line technique

General Chemistry Graduate Student Instructor**Fall 2017**

Department of Chemistry, University of California, Berkeley

- Taught “flipped classroom” version of general chemistry wherein class time was devoted to activities and demonstrations rather than lecture
- Aided professor in classroom activities, including explaining and demonstrating concepts
- Organized review sessions for each unit

Quantitative Analysis Laboratory Assistant**Spring 2017**Department of Chemistry, *Mercer University, Macon, GA*

- Supervised students during laboratory
- Aided professor in teaching laboratory skills and how to keep a laboratory notebook

Organic Chemistry Laboratory Assistant**Fall 2015, Spring 2016**Department of Chemistry, *Mercer University, Macon, GA*

- Aided professor in pre-laboratory activities and lectures
- Taught laboratory procedures and ensured students were proficient with techniques
- Supervised students during laboratory to ensure safety standards and correct laboratory technique were followed

General Physics II Supplemental Instructor**Fall 2015**Academic Resource Center, *Mercer University, Macon, GA*

- Supplemental Instruction (SI) designed to lower drop/fail rate in high risk classes – Introductory Physics, General Chemistry, General Physics, Organic Chemistry, etc.
- Aided professor in classroom activities, including explaining and demonstrating concepts
- Planned and implemented three 70-minute sessions per week to tutor students in difficult concepts. These sessions included additional lectures, practice problems, and group activities

General Chemistry Laboratory Assistant**Fall 2014, Spring 2015**Department of Chemistry, *Mercer University, Macon, GA*

- Aided professor in pre-laboratory activities
- Supervised students during laboratory to ensure safety standards and correct laboratory technique were followed

PUBLICATIONS

Science Communication

Orcutt, K. B. (2021). "Cross-campus collaboration: Meet CTAF/HTSF core facility director Mary West." *QB3 Berkeley*, 10 March 2021, <https://qb3.berkeley.edu/news/cross-campus-collaboration-an-interview-with-ctaf-htsf-core-facility-director-mary-west/> (Accessed 25 April 2021)

Orcutt, K. B. (2020). "It's not easy being green: The role of green light in light harvesting complexes in plants." *QB3 Berkeley*, 1 December 2020, <https://qb3.berkeley.edu/news/its-not-easy-being-green/> (Accessed 21 January 2021).

Orcutt, K. B. (2020) "It's not easy being green: Investigation of states involved with green light absorption in green plants and algae." *Device & Materials Engineering, a community from Nature Research*, 29 November 2020, https://devicematerialscommunity.nature.com/posts/it-s-not-easy-being-green-investigation-of-states-involved-with-green-light-absorption-in-green-plants-and-algae?badge_id=298-nature-communications (Accessed 21 January 2021).

Orcutt, K. B. (2020). "Why you should stay single: the scientific benefits of using a single photon." *QB3 Berkeley*, 8 October 2020, <https://qb3.berkeley.edu/why-you-should-stay-single-the-scientific-benefits-of-using-a-single-photon/> and <https://chemistry.berkeley.edu/news/why-you-should-stay-single-scientific-benefits-using-single-photon> (Accessed 19 October 2020).

NATIONAL AND LOCAL MEETING CONTRIBUTIONS

Presenting author(s) underlined.

Oral Presentations

Orcutt, K. B.; Ward, J. E.; Kloepper, J. W.; Crawford, G. L.; Kloepper, K. D. Investigation of a Biosurfactant-Producer: Part 1. *Talk presented at Mercer University BEAR Day Poster Symposium*, April 2017.

Poster Presentations

Orcutt, K. B.; Ward, J. E.; Kloepper, J. W.; Crawford, G. L.; Kloepper, K. D. Characterization of Biosurfactants Produced by a Strain of *Bacillus*. *National Conferences on Undergraduate Research*, Asheville, NC, April 2016.

Orcutt, K. B.; Kloepper, K. D. Characterization and Identification of Biosurfactants for Oil Remediation. *Pittcon*, Atlanta, GA, March 2016.

Orcutt, K. B.; Kloepper, K. D. Production, Isolation, and Analytical Investigation of a Novel Biosurfactant for Oil Remediation. *Stamps Scholars National Convention*, Atlanta, GA, April 2015.

Orcutt, K. B.; King, A. P.; Ward, J.E.; Kloepper, J. W.; Crawford, G. L.; Kloepper, K. D. Analytical investigation of a new biosurfactant. *Southeastern Regional Meeting of the American Chemical Society*, Nashville, TN, October 2014. **1st place best poster.**

King, A. P.; Orcutt, K. B.; Ward, J. E.; Kloepper, J. W.; Crawford, G. L.; Kloepper, K. D. Determining the efficacy of a new biosurfactant for oil remediation. *Herty Medalist Undergraduate Research Symposium*, Morehouse College, Atlanta, GA, September 2014.

Oliver, E. L.; Funderburke, J. R.; Orcutt, K. B.; Quattlebaum, C. L.; Cicerchi, B.; Ma, D.; Carter, R.D.; Kloepper, K. D., An analytical analysis of metal desorption from Georgia industrial clay. *Mercer University BEAR Day Poster Symposium*, April 2014.

SERVICE AND OUTREACH

Volunteer at Expanding Your Horizons (EYH) **2021**

Organized Diversity & Inclusion Discussion for Fleming Group **2020**

Led Discussion

Wrote Diversity statement found on group website

<https://sites.google.com/a/lbl.gov/fleming-group/home/diversity-statement>

TRIO Outreach Event **2018**

Taught half-day of lessons with demos about lasers, photosynthesis, and acids and bases to middle school students in the Pre-College TRIO program for low income, first generation-to-college. Day culminated in panel hosted by the Fleming Lab members.

STEMtastic Saturday for Girls **2015-2017**

Event hosted by Real IMPACT in Macon, GA to promote interest in STEM fields for middle school girls. With the Women in Math and Science club at Mercer University, I designed and implemented courses on non-Newtonian fluids and chromatography as workshops at STEMtastic Saturdays.

STEM workshops hosted by Mercer University Dept. of Chemistry **2013-2014**

Volunteered as part of the Women in Math and Science (WIMS) club at Mercer University to host local middle school girls to show science demos to increase interest in STEM fields, particularly for minorities.

ORGANIZATIONS

UC Berkeley Non-Ionizing Radiation Safety Committee (NIRSC)

Graduate student representative, 2020 – present

Women in Chemistry Initiative (WICI)

President 2020 – present

Member 2017 – present

Women in Math & Science (WIMS)

President 2015 – 2017

Member 2013 – 2017