

Education

- **California Institute of Technology**—Pasadena, CA expected Dec. 2016
Ph.D. Chemistry (GPA: 4.10/4.00)
- **University of California, Berkeley**—Berkeley, CA May 2008
B.S. Chemistry, *magna cum laude* (GPA: 3.83/4.00)

Research Experience

- **Graduate Student Research Assistant** 01/2009 - current
Caltech/Jet Propulsion Laboratory (JPL), Pasadena, CA
Advisors: Mitchio Okumura and Stanley Sander (Atmospheric Chemistry and Chemical Physics)
Research objectives: Understand the fundamental chemistry that occurs in the earth's atmosphere to develop pollution control and combat global climate change.
 - Designed and conducted laboratory experiments to measure previously undetermined rate constants of atmospherically relevant reactions using Infrared Kinetic Spectroscopy (IRKS).
 - Re-engineered frequency-modulation detection electronics to improve instrument sensitivity and collect data 1000× faster.
 - Designed and constructed vacuum systems for the study of gas-phase chemical reactions.
 - Collaborated with JPL's Microdevices Laboratory (MDL) to fabricate and implement a new mid-infrared laser for direct detection of OH radicals.
 - Trained and mentored four undergraduate students.
 - Wrote scripts in Python and macros in Igor Pro for data processing, fitting, and analysis.
 - Wrote in-depth experimental protocols, procedures, and templates.
- **Undergraduate Student Research Assistant** 03/2006 - 06/2008
Lawrence Berkeley National Laboratory, Berkeley, CA
Advisor: Heino Nitsche (Heavy Elements and Nuclear Chemistry)
Research objectives: Understand the interactions of toxic waste with bacteria in the environment and development of techniques to treat nuclear waste.
 - Studied the complexation of europium to a trivalent ligand (phosphonopropionic acid) using time-resolved laser fluorescence spectroscopy and potentiometric titrations.
 - Analyzed spectral data using nonlinear curve fitting and peak deconvolution to calculate the formation constants and lifetimes of various complexes in solution.
 - Determined pK_a values from potentiometric titration data to identify different complexes in solution.

Awards and Honors

- 2015 International Journal of Chemical Kinetics Editor's Fellowship 08/2015
- NASA Graduate Student Researchers Project Fellowship 2009 - 2011, 2013 - 2014
- Edward Frank Kraft Scholarship Prize 04/2005

Conference Presentations

- **33rd International Symposium on Free Radicals**—Olympic Valley, CA 08/2015
Laboratory measurements of temperature-dependent rate constants of acetonylperoxy radical reactions (poster & invited talk)

- **32nd Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere**—Northridge, CA 04/2015
Temperature-dependent kinetic studies of acetonylperoxy radical reactions (poster)
- **Atmospheric Chemical Mechanisms**—Davis, CA 12/2014
Temperature-dependent kinetic studies of acetonylperoxy radical reactions (poster)
- **American Chemical Society**—San Francisco, CA 08/2014
Laboratory experiments of HO₂ reactions with peroxy radicals using Infrared Kinetic Spectroscopy (IRKS) (talk)
- **Pacific Conference on Spectroscopy and Dynamics**—Pacific Grove, CA 01/2014
Kinetic Studies of peroxy radicals using Infrared Kinetic Spectroscopy (IRKS) (poster)

Teaching Experience

- **Head Teaching Assistant Ch 21c**—Caltech, Pasadena, CA 03/2009 - 06/2009
 - Course: Physical chemistry – thermodynamics, statistical mechanics, & chemical kinetics
 - Wrote and graded weekly problem sets, exams, and solution keys
 - Held weekly office hours and review sessions before exams
- **Head Teaching Assistant Ch 6**—Caltech, Pasadena, CA 01/2009 - 03/2009
 - Course: Physical chemistry laboratory
 - Demonstrated and supervised four different physical chemistry laboratory experiments
 - Graded lab reports & held weekly office hours
- **Physics tutor**—UC Berkeley Student Learning Center, Berkeley, CA 2006 - 2008