# Shane Devlin

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## EDUCATION

**University of California, Berkeley** | Berkeley, CA — May 2023
College of Chemistry
PhD in Chemistry

**Boston University** | Boston, MA — May 2018
College of Arts and Sciences
Bachelor of Arts in Chemistry with Honors, Cum Laude

## RESEARCH / WORK EXPERIENCE

**Experimental Physical Chemistry** | Advanced Light Source Postdoctoral Fellow — May 2023 - Present
Lawrence Berkeley National Laboratory, Advisors: Moni Blum & Walter Drisdell
Department of Physics at University of Nevada Las Vegas, Advisor: Craig Schwartz

- Ambient Pressure X-ray Photoelectron Spectroscopy of atmospheric systems using novel planar jet sample delivery methods.
- Soft X-ray Second Harmonic Generation studies of planar liquid sheets, focusing on water structure and ion adsorption at the air-water and liquid-liquid interface
- Soft X-ray Second Harmonic Generation studies of photoelectrochemical devices, focusing on electronic structure, transport, and charge carrier dynamics at the solid-solid interface

**Experimental Physical Chemistry** | Department of Chemistry at UC Berkeley — Oct 2018 – May 2023
Advisor: Richard J. Saykally

- Nonlinear spectroscopy studies of ion adsorption to aqueous interfaces (broadband deep UV sum frequency generation and UV second harmonic generation)
- Implemented planar liquid sheet technology into nonlinear optics experiment, in collaboration with SLAC National Accelerator Laboratory
- Conducted research at synchrotron sources and X-ray Free Electron Laser facilities, including X-ray Reflectivity studies of laser melted carbon (FERMI, Trieste), Mega-Electron Volt Ultrafast Electron Diffraction (MeV-UED, LCLS) of laser melted diamond, and Soft X-ray Second Harmonic Generation on thin water sheets (ChemRIX, LCLS)
- Performed frequent data analysis with programs such as Python, Jupyter Notebook, and Igor

**Experimental Physical Chemistry** | Dept. of Chemistry at Boston University — Nov 2015 – May 2018
Advisors: Shamsunder Erramilli and Lawrence Ziegler

- Trained in nonlinear optics experiments, including vibrational sum-frequency generation spectroscopy and two-dimensional IR spectroscopy

## PUBLICATIONS

- Devlin, S. W.; Bernal, F.; Riffe, E. J.; Wilson, K. W.; Saykally, R. J.; "Spiers Memorial Lecture: Water at Interfaces" *Faraday Discussions,* **2023**. DOI: 10.1039/d3fd00147d
- Devlin, S.W.; Jamnuch, S.; Chen, A.; Qiang, X.; Qian, J.; Pascal, T.; Saykally, R.J. "Agglomeration Drives The Reversed Fractionation of Aqueous Carbonate and Bicarbonate at the Air-water Interface" *J. Am. Chem. Soc.* **2023,** 145, 41, 22384-22393. DOI: 10.1021/jacs.3c05093
- Devlin, S. W.; Benjamin, I.; Saykally, R. J. "On The Mechanism of Ion Adsorption To Aqueous Interfaces: Air-water vs. Oil-Water" *Proc. Natl. Acad. Sci.* **2022***,* 119 (42)**,** e2210857119. DOI:10.1073/pnas.2210857119
- Devlin, S. W.; McCaffrey, D.; Saykally, R. J. "Characterizing Anion Adsorption to Aqueous Interfaces: Air-water vs Toluene-water" *J. Phys. Chem. Lett.* ***2022,*** *13,* 222-228. DOI: 10.1021/acs.jpclett.1c03816
- Du, C.; Andino, R. S.; Rotondaro, M. C.; Devlin, S. W.; Erramilli, S.; Ziegler, L. D.; Thuo, M. M. "Substrate Roughness and Tilt Angle Dependence of Sum-Frequency Generation Odd--Even Effects in

Self-Assembled Monolayers." *J. Phys. Chem. C* **2022**, *126* (16), 7294–7306. DOI: 10.1021/acs.jpcc.2c01109

- Raj, S. L.; Devlin, S. W.; et al. "Free Electron Laser Measurements of Liquid Carbon Reflectivity in the Extreme Ultraviolet" *Photonics,* **2020,** 7(2), 35. DOI: 10.3390/photonics7020035
- Andino RS, Liu J, Miller CM, Chen X, Devlin S.W, Hong MK, Rajagopal R, Erramilli S, Ziegler LD. "Anomalous pH-Dependent Enhancement of *p*-Methyl Benzoic Acid Sum-Frequency Intensities: Cooperative Surface Adsorption Effects." *J. Phys. Chem. A*. **2020,** 124(16), 3064-3076. DOI:10.1021/acs.jpca.9b10809

## CONFERENCES AND PRESENTATIONS

**Faraday Discussion – Royal Society of Chemistry, London England** — September 2023
- Presented a poster at this conference focused on "Water at Interfaces"

**Ultrafast Xray Summer School, LCLS, Stanford, CA** — June 2022
- Workshop on Xray Free Electron Laser technology + LCLS endstations

**American Chemical Society Conference, San Diego CA** — March 2022
- Poster presentation

**Graduate Research Conference, Berkeley CA** — October 2019
- Presentation to the Department of Chemistry faculty and graduate students

## AWARDS

**Advanced Light Source Postdoctoral Fellowship, Lawrence Berkeley National Lab** — September 2023
- Fellowship for postdoctoral scholars to conduct research at the advanced light source for one year

**Pimentel Graduate Research Fellowship, UC Berkeley** — May 2023
- Awarded to a graduating PhD student who excels in the field of physical chemistry

**Department of Chemistry Instructional Achievement Award, UC Berkeley** — April 2022
- Awarded to graduate student instructors who have had significant impact on student learning, over the course of their entire teaching career

**Outstanding Graduate Student Instructor Award, UC Berkeley** — April 2022
- Awarded to graduate student instructors who excel in teaching

**Undergraduate ACS Physical Chemistry Award, Boston University** — May 2018
- Awarded to a senior who excelled in physical chemistry research and coursework

## TEACHING EXPERIENCE

**Head Graduate Student Instructor,** Intensive Gen. Chem. (majors) at UC Berkeley — Spring 2020, 2021
- Worked closely with Professors John Arnold and Rich Saykally to develop assignments, exams, and lead review sessions. Gave multiple lectures to class of over 200 students

**Graduate Student Instructor,** General chemistry (non majors) at UC Berkeley — Fall 2018
- Led weekly laboratory sessions and discussion sections
- Developed worksheets and laboratory reports for students

**Teaching Assistant,** General Chemistry (non-majors) at Boston University — Spring 2017

- Led a weekly laboratory session and graded reports + exams