Allison K. Pymer

Department of Chemistry
University of California, Berkeley

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Education

Ph.D. **Chemistry, University of California, Berkeley** May 2014 (expected)
Research Advisor: Professor Stephen Leone
Thesis: "Ultrafast Molecular Dynamics Studied Via Attosecond Transient Absorption"

B.S. **Chemistry, Temple University** May 2008
Magna cum laude
Phi Beta Kappa

Professional Experience

Instrumentation Design and Troubleshooting: Experienced in the design, fabrication, maintenance, and troubleshooting of experimental systems including solid state lasers, frequency comb interferometers, optical fibers, and chirped mirror compressors. Proficient in GC, MS, NMR, and AFM.

Surface science: Experienced in surface preparation techniques, monolayer growth, and characterizing colloidal suspensions.

Ultrafast Spectroscopy: Designed and conducted pump/probe experiments to study ultrafast processes in xenon and methyl bromide; maintained and improved a cutting-edge commercial Ti:Sapphire amplifier system to ensure consistent operation day-to-day.

X-ray Spectroscopy: Utilized the Advanced Light Source at Lawrence Berkeley National Laboratory to collect ground-state, high-resolution, extreme ultraviolet spectra of molecules.

Electron Time of Flight Spectroscopy: Designed and built a novel high-resolution electron time of flight spectrometer capable of obtaining sub-1 eV resolution over a kinetic energy range of more than 60 eV. Designed and implemented a novel electrostatic lens design as part of the spectrometer, which allowed for its fine resolution.

Vacuum System Design: Worked as part of a team in building, designing, and installing a vacuum system used for producing and manipulating EUV light. Interfaced with departmental machine shop in fabricating vacuum systems with the assistance of third-angle projection mechanical drawings.

Extreme Ultraviolet Instrumentation: Experienced in the design, fabrication, and maintenance of EUV systems, including frequency comb interferometers, hollow-core fibers, and chirped mirror compressors.

Data Analysis and Programming: Programmed an algorithm that filtered small-amplitude signals from a fluctuating noise profile from large data sets to determine the time evolution of chemical processes. Proficient in Python, LabView, Adobe Illustrator, Igor Pro, SIMION, and Origin.

Safety and Administration: Coordinated safety protocols, purchasing, design specifications, installation and domestic/international shipment of equipment, laser systems, and materials.

Technical Writing, Grant Writing: Led preparation of yearly grant reports; participated in writing grant renewals and new grant applications.

Employment

Graduate Student Researcher, Stephen Leone Research Group 2008-present
Ultrafast Molecular Dynamics Studied Via Attosecond Transient Absorption Spectroscopy

Chemistry 1B Graduate Student Instructor, University of California, Berkeley Spring 2011
Instructed and mentored two sections of students in a combined laboratory and recitation section. Taught quantum mechanics, molecular structure, chemical kinetics, reaction mechanisms, thermodynamics, and nuclear chemistry.

Chemistry 1A Head Graduate Student Instructor, University of California, Berkeley Fall 2009
Mentored teams of graduate student instructors charged with implementing lesson plans. Developed new laboratory experiments for incorporation into the laboratory curriculum.

Chemistry 1A Graduate Student Instructor, University of California, Berkeley Fall 2008
Instructed and mentored students in a combined laboratory and recitation section. Taught chemical equilibrium, kinetics, structure, thermodynamics, and acid/base chemistry.

Undergraduate Researcher, Eric Borguet Research Group 2005-2008
Surface Speciation of Silica Nanoparticles under Environmental Conditions

Undergraduate Researcher, Lawrence Berkeley National Laboratory 2007
Preparation of Protein – Transition Metal Complexes for In Vivo X-Ray Spectroscopy

Selected Publications and Presentations

Pymer, A.K.; Leone, S.R. Ultrafast Few-Femtosecond Dissociation in Methyl Bromide. *In preparation.*

Campen, R.K.; Pymer, A.K.; Nihonyanagi, S.; Borguet, E. Linking Surface Potential and Deprotonation In Nanoporous Silica: Second Harmonic Generation and Acid/Base Titration. *J. Phys. Chem. C* **2010**, *114* 18465–18473.

Campen, R.K.; Pymer, A.K.; Nihonyanagi, S.; Borguet, E. Reconciling Potentiometric Titration and Second Harmonic Generation Measured Diffuse Layer Potential of an Aqueous Silica Suspension. *Geochimica et Cosmochimica Acta* **2007**, *71* Supplement 142.

Pymer, A.K. et al. "Optical Studies of Adsorption on Functionalized Colloidal Polystyrene Spheres." Division of Laser Science of A.P.S. 2005, Tucson, Arizona.

Professional Service

Chair, Chemistry Graduate Life Committee 2009-Present
Initiated a career development series for graduate students. Led teams that planned new graduate student orientations, graduate student recruiting, and social events.

President, Temple University Chemical Society 2007-2008
Initiated and coordinated K-12 science education outreach programs in the Philadelphia area; led teams that planned an undergraduate speaker series.

Student Advisor/Ombudsperson, Temple University 2007-2008
Member, American Physical Society 2009-Present
Member, American Chemical Society 2009-Present