

- Education**
- Ph.D., Physical Chemistry**, Princeton University **Jun 2015**  
“A Diode Laser Study of the Catalytic Oxidation Dynamics of Acetaldehyde on Polycrystalline Platinum”  
Advisers: Steven Bernasek and Annabella Selloni
- B.Sc., Chemistry**, University of Virginia **May 2009**  
“A Photochemically Activated, Oxygen Consuming TiO<sub>x</sub> Sol-Gel Film”  
Adviser: John T. Yates, Jr.
- I. E. S. Paris and l’Université de Paris IV - Sorbonne** **Sep - Dec 2006**  
Courses (in French) at the I.E.S. Paris Center and l’Université de Paris IV - Sorbonne.
- Research Experience**
- Postdoctoral Research**, University of Texas at Austin **Nov 2015 - Present**  
Adviser: Carlos Baiz  
Investigation of ethyl acetate solvation dynamics and the conformational dynamics of calcium-sensing protein calmodulin using ultrafast 2DIR spectroscopy, molecular dynamics simulations, and FTIR. Notable experience includes:
- Building a new ultrafast 2DIR spectrometer and writing original data acquisition and control software.
  - Mentoring several undergraduate and graduate students.
  - Interpreting FTIR and 2DIR spectra using molecular dynamics simulations to develop detailed models of solvation and conformational dynamics.
- Ph.D. Research**, Princeton University **Sep 2009 - Sep 2015**  
Study of oxidation dynamics on Pt surfaces using state-resolved infrared laser absorption spectroscopy and mass spectrometry. Notable experience includes:
- Investigating reaction dynamics through concerted study of product CO<sub>2</sub>’s rotational-vibrational state population and mass spectrometry of the product stream.
  - Rebuilding the research group’s flow reactor system and building a thermal desorption spectroscopy (TDS) system using parts available in our lab.
  - Writing original software in Python and LabView for the efficient processing and analysis of experimental data, most notably for state-resolved infrared spectra.
- Undergraduate Research**, University of Virginia **Sep 2007 - May 2009**  
Research in the lab of Professor John T. Yates, Jr. on multiple surface science research projects involving:
- Infrared and UV/VIS spectroscopy of titanium sub-oxide films
  - TDS studies of organic molecules on single-walled carbon nanotubes
- Teaching Experience**
- NSC 088L/NSC 088T Mentored Teaching Experience** **Sep 2016 - May 2017**  
College of Natural Science, University of Texas at Austin
- Senior Graduate Fellow** **May 2013 - Jun 2015**  
McGraw Center for Teaching and Learning, Princeton University

**Graduate Fellow** May 2012 - May 2013  
McGraw Center for Teaching and Learning, Princeton University

**Resident Graduate Student** Sep 2010 - May 2014  
Butler Residential College, Princeton University

**Teaching Assistant** Sep 2010 - May 2012  
Departments of Chemistry and Near Eastern Studies, Princeton University

**Teaching Assistant** Jan 2008 - May 2008  
Department of Chemistry, University of Virginia

**Awards and Honors** National Society of Collegiate Scholars      Phi Eta Sigma National Honor Society  
Golden Key National Honors Society

**Technical Skills** **Experimental design:** Optics and ultrafast lasers; design, construction, and maintenance of UHV apparatus and instrumentation; basic machining  
**Experimental techniques:** Ultrafast spectroscopy, FTIR, laser absorption spectroscopy, mass spectrometry, XPS, STM, SEM, TDS  
**Computer languages:** C, Python, MATLAB, Java, OpenMP, PHP, SQL, LabView, HTML, CSS

**Publications** “Elucidating the reaction dynamics of catalytic acetaldehyde oxidation on polycrystalline platinum” **Edington, SC** and Bernasek, SL. In preparation.

“An asynchronous data collection scheme yielding signal enhancement for scanned IR laser spectroscopy” **Edington, SC** and Bernasek, SL. In preparation.

“An Empirical IR Frequency Map For Ester C=O Stretching Vibrations” **Edington, SC**; Flanagan, JC; Baiz, CR. J. Phys. Chem. A, 2016, 120 (22), pp 3888-3896.

“A study of stabilization of P3HT/PCBM organic solar cells by photochemical active TiO<sub>x</sub> layer” Li, JG; Kim, S; **Edington, S**; Nedy, J; Cho, S; Lee, K; Heeger, AJ; Gupta, MC; Yates, JT. Sol. Ener. Mat. Sol. Cells, 2011, 95 (4), pp 1123-1130.

“Enhancement of Adsorption Inside Single Walled Carbon Nanotubes - Li Doping Effect on n-Heptane van der Waals Bonding” Buttner, M; Xiao, L; Mandetort, L; **Edington, S**; Johnson, JK; Yates, JT. J. Phys. Chem. C, 2009, 113 (12), pp 4829-4838.

“Temperature-Programmed Desorption of n-Heptane from Single-Walled Carbon Nanotubes” **Edington, S**. The Virginia Journal of Undergraduate Research, Spring 2008.

**Presentations** “Active, exploratory learning in physics, chemistry, and biology through cutting-edge biophysics research” **Edington, S**. Presentation at Austin Area STEM Conference, Aug 2-5, 2016, Austin, TX.

“Elucidating the mechanism of heterogeneous acetaldehyde oxidation on polycrystalline platinum through flow cell studies” **Edington, S** and Bernasek, SL. Presentation at 76<sup>th</sup> Physical Electronics Conference, Jun 20-23, 2016, Fayetteville, AR.

“An Empirical IR Frequency Map For Ester C=O Stretching Vibrations” **Edington, SC**; Flanagan, JC; Baiz, CR. Poster at Southwest Ultrafast Conference, Jun 16-17,

2016, Austin, TX.

“Probing catalytic oxidation dynamics on platinum with state-resolved diode laser spectroscopy” **Edington, S.** Talk given at U.T. - Austin Department of Chemistry, Sep 18, 2015, Austin, TX.

“Probing catalytic oxidation dynamics on platinum with state-resolved diode laser spectroscopy” **Edington, S.** Talk given at Harvard Department of Chemistry, Aug 11, 2015, Cambridge, MA.

“Internal energy of CO<sub>2</sub>(g) formed by the catalytic oxidation of acetaldehyde on a polycrystalline platinum surface” **Edington, S** and Bernasek, SL. Presentation at 74<sup>th</sup> Physical Electronics Conference, Jun 25-27, 2014, LaCrosse, WI.

“Eddy Covariance Measurements of CO<sub>2</sub> and Water Vapor Fluxes in a Heterogeneous Landscape on the Princeton University Campus” **Edington, S** and Smith, J. Poster at Mid-Infrared Technologies for Health and the Environment Workshop, Aug 5-10, 2007, Princeton, NJ.

**Professional /  
Community  
Activities**

American Chemical Society (Mar 2009 - Present)

American Association for the Advancement of Science (Mar 2009 - Present)

American Physical Society (Aug 2015 - Present)

Princeton University Graduate Student Government (Nov 2011 - Jun 2015)

*President Mar 2014 - Mar 2015*

Chemistry Graduate Student Organization (Jan 2010 - Jun 2015)

*President Jun 2011 - Jun 2012*