Erik Cheng
Graduate Research Assistant

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University of Texas at Austin

Education

- **University of Texas at Austin** — Austin, TX
  PhD, Materials Science and Engineering — *Aug. 2018 – Present*
  - Advisor: Dr. Gyeong S. Hwang
  - GPA: 3.93

- **University of California, Berkeley** — Berkeley, CA
  BS, Chemistry — *Aug. 2014 – May 2018*
  - GPA: 3.44

Research Experience

- **University of Texas at Austin** — Austin, TX
  Graduate Research Assistant, Hwang Research Group — *August 2018 - Present*
  - Developing of atomistic descriptions of atomic layer etching mechanisms of silicon nitride with fluorocarbon precursors.
  - Utilize ab initio techniques for study of solid state materials and solid-gas interfacial chemistry.

- **Nano Precision Medical** — Emeryville, CA
  Nanomaterials Intern — *Jun 2017- Aug 2017*
  - Improved permeance model of porous films for use in analysis of permperometry data by accounting for pore constriction from adsorb layer formation. Incorporated model into Python script for automated parametric fitting.
  - Introduced improvements to, and validated, theoretical model of current generation in titanium anodization.
  - Designed and conducted experiments to determine effect of two step anodization on resulting titania characteristics. Characterized films with Wyko profilometry and various imaging tools, including skimage and ImageJ.

- **Sandia National Labs** — Albuquerque, NM
  R&D Student Intern — *June 2016 - August 2016*
  - Studied effects of anodization conditions on results of aluminum anodization. Maintained anodizing solutions and equipment and quantified experimental results using weight, digital optical microscopy, and profilometry.
  - Studied effects of parameters in electroplating and patterning pipeline on quality of patterned electroplated gold.
  - Created electrodeposited patterns of gold on nickel substrates, studying the effect of varying factors in template creation, strikes, and electrodeposition bath. Worked in Class 100 clean room and with strong acids/bases.

- **Saykally Group** — Berkeley, CA
  Undergraduate Research Assistant — *May 2015- May 2017*
  - Studied the evaporation behavior of aqueous solutions of acids and bases using Raman thermometry techniques.
  - Maintained and operated experimental apparatus, including laser/optics, liquid pumps, and vacuum chamber.
  - Determined quality of data by observation of Raman spectrum features and analysis of data through processing in MATLAB and Igor, assessing results using theoretical cooling models.

Teaching Experience

- **University of California at Berkeley** — Berkeley, CA
  Undergraduate Student Instructor, CS/STAT/INFO C8 — *Aug 2017-May 2018*
  - Delivered weekly lectures on Python programming and inferential statistics to sections of about 30 students.
  - Supervised programming and statistics lab exercises, addressed student questions and managed technical issues.
  - Created instructional documents, practice and exam problems, and assisted in general course responsibilities.

- **University of California at Berkeley** — Berkeley, CA
  Course Tutor, CS/STAT/INFO C8 — *Jan 2017-May 2017*
  - Led weekly tutoring sections of 5 students, reviewing and reinforcing concepts of Python programming and inferential statistics.
  - Held office hours, graded homework, and assisted in preparation of course materials and software.

Projects and Publications

- **Adsorbate-induced Enhancement of Atomic Layer Etching of Silicon Nitride with Methyl Fluoride**: Cheng, E.S. Hwang, G. S. *Presented at Graduate and Industry Networking conference at University of Texas at Austin.* Austin, TX, February 2017
- **Surprising Effects of Hydrochloric Acid on the Water Evaporation Coefficient Observed by Raman Thermometry**: Rizzuto, A. M., Cheng, E. S., Lam, R. K., Saykally, R. J. *J. Phys. Chem. C* (2017)
- **Understanding Bias in Sampling Users with Twitter's Streaming API** : Independent group study supervised by Prof. Deborah Nolan assessing sampling biases in Twitter's Streaming API. Performed using R. *Poster presented at UC Berkeley College of Chemistry Undergraduate Research Fair.* Berkeley, CA May 2017
- **2016 Presidential Election Case Study**: An investigation of the predictive power of features from Census and historical election data, merging multiple large and dirty datasets in several file formats and applying multiple classification techniques including KNN and decision trees. (Nov 2017- Dec 2017)
- **Anodization as a Low Cost, Scalable, and Tunable Nanoscale Manufacturing Technique**: Cheng, E. S., Perez, C. *Presented at Rio Grande Symposium for Advanced Materials.* Albuquerque, NM, October 2016

Awards and Honors

- **Phi Kappa Phi** — University of Texas at Austin
  Invited for being in top 10% of undergraduate seniors and graduate students. — *April 2019-Present*
- **Second Place, Texas Materials Institute Materials Science and Engineering Program 2019 Research Poster Contest** — University of Texas at Austin
  Awarded for the poster "Adsorbate-induced Enhancement of Atomic Layer Etching of Silicon Nitride with Methyl Fluoride" — *February 2019*
- **Temple Foundation Graduate Fellowship** — University of Texas at Austin
  Awarded for outstanding academic performance to first year graduate students. — *Fall 2018-Spring 2019*
- **Dean's List** — University of California at Berkeley
  Term GPA in top 10 percent of undergraduate students in College of Chemistry. — *Fall 2017*