

Edward L. Lin

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EDUCATION

Ph.D. Candidate, Chemical Engineering *December 2017 (expected)*
The University of Texas at Austin, Austin, TX

Bachelor of Science *Summa cum Laude*, Chemical Engineering *May 2013*
Rensselaer Polytechnic Institute (RPI), Troy, NY

SKILLS

Thin film deposition and characterization

- Atomic layer deposition (ALD), molecular beam epitaxy (MBE), x-ray photoelectron spectroscopy (XPS), x-ray diffraction (XRD), atomic force microscopy (AFM), photolithography, vacuum equipment maintenance

Software and programming

- Python, MATLAB, Mathematica, Java, FORTRAN, Visual Basic for Applications (Microsoft Office Macro), Igor, ASPEN plus

Foreign Language

- Mandarin Chinese (native)

RELEVANT EXPERIENCE

Graduate Research Assistant, Chemical Engineering, UT Austin *Fall 2013–Present*

- Research interfacial properties between various epitaxial perovskite thin films and semiconductor materials for next-generation microelectronics and nanophotonics applications
- Investigated deposition of metallic tin film using MBE, ALD, and characterization techniques including XPS and AFM, resulted in a provisional patent
- Investigated properties of polymer-functionalized superparamagnetic iron oxide nanoparticles as contrasting agent for oil exploration and production application

Teaching Assistant, Chemical Engineering, UT Austin *Fall 2016*

- Ran review and discussion sessions for students learning MATLAB programming
- Rated 4.0/5.0 over all by student. Rated over 4.5/5.0 on categories of "knowledgeable about subject material", "explained material clearly", and "gave helpful feedback on assignments"

Visiting Researcher, IBM Zurich Research Laboratory, Zurich, Switzerland *April 2016*

- Investigated the electro-optical effect of BaTiO₃ grown by atomic layer deposition on Si, which can be integrated into current semiconductor technologies, resulting in a conference presentation

Surface Phenomena, Chemical Engineering, UT Austin *Fall 2015*

- Used MATLAB to implement a cellular automata framework modeling Ru chemical vapor deposition process, and reached qualitative agreement with experimental results
- Researched on nucleation densities on different typed of surfaces, titled "The Use of Reversibility-Adsorbent Gas as a Mean to Control Nucleation Density," for the course project

Texas Venture Lab Practicum, UT Austin *Fall 2014*

- Enabled a partnership between our client selling organic food and one major grocery store chain in central Texas
- Worked in a cross-functional team to conduct market research, resulting in actionable insights on customer demands and sales strategies by interviewing potential customers (e.g., restaurants and grocery stores)
- Interviewed members of academia and biopharmaceutical industry to identify growth strategies (e.g., build credibility by collaborating with academia) for our client developing software to aid therapeutic antibodies design

Undergraduate Research Assistant, RPI

Spring 2011–Spring 2013

- Investigated the possibilities on using peptides to enhance the efficiency of drug delivery into the brain
- Automated data analysis process by using Microsoft Excel Macro and reduced the process time over 60-fold

Intern, AMRI, Albany, NY

Summer 2012

- Assisted in scale-up studies of newly developed active pharmaceutical ingredient under clinical trials.
- Connected the previously separated reaction calorimeter and *in-situ* infrared spectrometer, allowing them to work in tandem and monitor the same experiment
- Developed a biannually-used system suitability test protocol for the now-connected reaction calorimeter and *in-situ* infrared spectrometer

MENTORING & LEADERSHIP EXPERIENCE

Alice in Wonderland Summer Physics Program, UT Austin

2015–2017

- Mentored eight high school students conducting physics research and experiments in a hands-on environment

Recruitment Chair, Graduate Chemical Engineering Leadership Council, UT Austin

2015

- Led the activity and logistics planning of prospective graduate student recruitment events
- Coordinated with the graduate students of the department to handle the logistics and execution of each recruitment activities

President, Taiwanese Student Association, UT Austin

Summer 2015–Spring 2016

- Led the programming effort to assist the transition to life in Austin and UT for international graduate students from Taiwan, many of them first-time visitors

Welch Summer Scholars Program, UT Austin

Summer 2014

- Mentored one high school student. Project title: Synthesis and characterization of High Mobility Magnetic Nanoparticles for Subsurface Oil Reservoir Imaging

HONORS & AWARDS

Graduate Continuing Bruton Fellowship

2017

National Science Foundation Graduate Research Fellowship Program Honorable Mention

2015

Shell Outstanding Student Researcher Award

2014

Thrust 2000 - ConocoPhillips Endowed Graduate Fellowship in Engineering

2013

RPI Entrepreneurship Exemplar

2013

SELECTED PUBLICATIONS & PRESENTATIONS

- Ureña-Benavides, E. E., Lin, E. L., *et al.* Low Adsorption of Magnetite Nanoparticles with Uniform Polyelectrolyte Coatings in Concentrated Brine on Model Silica and Sandstone. *Ind. Eng. Chem. Res.*, 55(6), 1522–1532 (2016)
- Lin, E. L., Edmondson, B. I., *et al.* Epitaxial Growth of Perovskite Strontium Titanate on Germanium via Atomic Layer Deposition. *J. Vis. Exp.*, (113), e54268 (2016)
- Hu, S., Lin, E. L., *et al.* Zintl layer formation during perovskite atomic layer deposition on Ge (001). *J. Chem. Phys.*, 146(5), 052817 (2017)
- Lin, E. L., Posadas, A. B., *et al.* Epitaxial Growth of Barium Titanate Thin Films on Germanium via Atomic Layer Deposition (accepted)
- Lin, E. L., Hu, S., *et al.* Monolithic integration of metal-ferroelectric-semiconductor heterostructure using atomic layer deposition, *SPIE Oxide-based Materials and Devices VIII Conference* (2017)
- Lin, E. L., Ortmann, J. E. *et al.* Atomic Layer Deposition of Electro-optically Active Ferroelectric Barium Titanate Films, *17th International Conference on Atomic Layer Deposition* (2017)