KRISTINE LOH

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EDUCATION

University of Minnesota – Twin Cities Minneapolis, MN
Doctor of Philosophy, Chemical Engineering Anticipated Graduation: June 2025
National Science Foundation Graduate Research Fellow
College of Science and Engineering Fellow

Drexel University, Pennoni Honors Program, Summa Cum Laude Philadelphia, PA
Accelerated Master of Science in Materials Science and Engineering June 2020
Thesis Title: Optimization of Photodetection Analysis of MXene Thin Films
Bachelor of Science in Chemical Engineering Cumulative GPA: 3.96
Certificate in Technical Communication and Publishing

Ruhr-Universität Bochum Bochum, Germany
Exchange Undergraduate Student in Mechanical Engineering April to June 2018

RESEARCH EXPERIENCE

Ferry and Kortshagen Groups Minneapolis, MN
Graduate Research Fellow *January 2021 to Present*
Advisors: Drs. Vivian Ferry and Uwe Kortshagen
- Utilize nonthermal plasma to synthesize silicon nanocrystals (Si NCs) for solar concentrator applications
- Characterize Si NCs using steady-state and time-resolved PL spectroscopy, FTIR, XRD, and EPR
- Deposited homogenous silicon nitride thin films using rotating stage motor
- Simulated optical performance of luminescent solar concentrators with Monte Carlo ray-tracing MATLAB code

Nanomaterials for Energy Applications and Technology (NEAT) Lab Philadelphia, PA
Undergraduate Research Assistant *April 2017 to June 2020*
Students Tackling Advanced Research (STAR) Scholar *June to August 2016*
Advisor: Dr. Jason B. Baxter
- Investigated mechanisms of $Ti_3C_2T_x$ and $Mo_2TiC_2T_x$ film optoelectronic behavior in response to various stimuli through photoconductivity measurements
- Led research efforts on using Ti-doped hematite thin films synthesized using Successive Ionic Layer Adsorption and Reaction (SILAR) as an enhanced photoelectrochemical water splitter
- Analyzed SbSI microrods as novel pathways for electron transport using UV-Vis, SEM, EDS, and XRD
- Synthesized $CuSbS_2$ thin films using chemical bath deposition

Emmy Noether Research Group Bochum, Germany
Independent Research Project *April 2018 to June 2018*
Advisor: Dr.-Ing. Markus Richter
- Collaborated in two-member team to study ability of potassium phosphate to absorb carbon dioxide gas and hydrogen gas under various temperatures and pressures
- Used two-sinker magnetic suspension densimeter to collect experimental data and MATLAB to compile results

Johnson & Johnson Consumer, Inc. Fort Washington, PA
R&D Analytical Chemistry Co-op *September 2017 to March 2018*
Advisor: Dr. Michael Breslav
- Developed and executed active pharmaceutical ingredient (API) extraction tests for HPLC analysis
- Designed and conducted heat and humidity stress experiment to determine long-term stress effects on API degradation products
- Supported 5 analytical scientists through diluent, mobile phase, and sample preparation

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MANUFACTURING EXPERIENCE

Crazy Aaron's Enterprises Norristown, PA
Materials & Process Engineer Co-op *April 2019 to September 2019*
- Tripled production of new product line and served as subject matter expert on business merger
- Authored company-wide lean documentation to reduce defects and to highlight safety precautions
- Developed 4 new inventory items to increase process efficiency, saving over $30,000 annually
- Researched and developed customizable room-temperature vulcanizing silicone for mass production
- Trained and supervised 6 operators on new techniques, products, and process improvements

Noramco, Inc. Wilmington, DE
Process Engineering Co-op *September 2016 to August 2017*
- Created 5 startup and preconditioning procedures to improve process efficiency and prevent salt formation
- Contributed to 2 new API product introductions by interfacing with operators and developing technical documentation
- Updated and refined batch records for process improvement savings of up to $200,000 per campaign
- Analyzed lab testing data, equipment trends and charts, batch yield efficiency, and SAP reports for both narcotic yield investigations and process validation reports

MENTORSHIP EXPERIENCE

Research Mentorship
Adriana Chapez, MRSEC REU Student June 2022 to August 2022
Currently undergraduate Mechanical Engineering student at the University of Texas Rio Grande Valley
Dr. Zuhair Khan, Visiting Research Professor March 2022 to May 2022
Noura Rayes, ME3 REU Student June 2021 to August 2021
Currently PhD Student in Materials Science and Engineering at the Penn State University

Current Professional Mentorship Program Participation
Formal mentees in Drexel SWE Professional Mentorship, UMN Women in Science and Engineering Initiative Undergrad-Grad Mentorship, Friend in STEM Research Mentorship, virtual Professional Advancement through Career Education (PACE), and GradSWE Mentorship Programs

TEACHING EXPERIENCE

University of Minnesota
Preparing Future Faculty Program September 2022 to Present
- Prepared syllabus, teaching philosophy, and diversity statement documents while learning about inclusive pedagogy, universal course design, and classroom assessment techniques through GRAD 8101 class

CHEN 3102: Reaction Kinetics January 2021 to May 2021
- Proctored exams for students with accommodations from the Disability Resource Center (DRC)
- Graded weekly homework assignments for 99 undergraduate students
- Held weekly office hours and supported two recitation sections a week

PUBLICATIONS

K.Q. Loh, U.R. Kortshagen, V.E. Ferry, *Tunable, high intensity photoluminescence from Si/SiO_2 core/shell nanocrystals* via *high-pressure water vapor annealing*. Submitted.

POSTER PRESENTATIONS

Loh, K., Kortshagen, U.R., Ferry, V.E. (June 2022). *Tunable, high intensity photoluminescence from Si/SiO_2 core/shell nanocrystals for LSCs*. Poster Presentation. Industrial Partnership for Research in Interfacial & Materials Engineering, Minneapolis, MN.

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Loh, K., Hantanasirisakul, K., Maleski, K., Gogotsi, Y., Baxter, J.B. (October 2019). *Understanding Time-Dependent Light-Matter Interactions of Mo_2TiC_2 MXene Films.* Poster Presentation. Future Leaders in Chemical Engineering Award Symposium, North Carolina State University, Raleigh, NC. (September 2019). Distinguished Undergraduate Research Workshop, Wayne State University, Detroit, MI.

Loh, K., Edley, M.E., Baxter, J.B. (February 2018). *SbSI Microrods as a Ferroelectric Solar Cell Absorber Material.* Poster Presentation. SASE Northeast Regional Conference, Stevens Institute of Technology, Jersey City, NJ. **Received 1st Place Prize in Life Sciences Category.** (May 2017). Week of Undergraduate Excellence, Drexel University, Philadelphia, PA. (April 2017) Stanford Research Conference, Stanford University, Stanford, CA. (February 2017). SWE Region E Conference, Syracuse University, Syracuse, NY. **Received 4th Place Prize Overall.** (August 2016). STAR Scholars Summer Showcase, Drexel University, Philadelphia, PA.

SKILLS

Laboratory: Nonthermal plasma nanocrystal synthesis, FTIR, XRD, PLQY, TRPL, EPR, HPLC, SILAR, PEC Testing, UV-Vis, Glove Box
Software: Origin 8, AutoCAD, Fusion 360, MATLAB, Blender, SAP, Trackwise, Empower, Microsoft Office
Foreign language: Conversational Mandarin Chinese, Limited Working Proficiency Spanish, Basic German

SELECTED HONORS AND AWARDS

While at University of Minnesota

Outstanding Teaching Assistant Award	October 2021
Society of Women Engineers Outstanding Collegiate Member	September 2021
National Science Foundation Graduate Research Fellowship ($138,000)	March 2021
College of Science and Engineering Fellowship at UMN ($50,000)	February 2020

While at Drexel University

2020 Drexel University Undergraduate Commencement Speaker	June 2020
Dean's List (All Terms), Drexel University	September 2015 to June 2020
2020 Drexel University CoE Outstanding Undergraduate Student Award	January 2020
2019 CBE Undergraduate Student Achievement Award	November 2019
2019 CBE Undergraduate Student Service Award	November 2019
Society of Women Engineers Guiding Star Award (1 of 7 nationally)	February 2019
Supernova Undergraduate Research Fellow, Drexel University	September 2017
Society of Women Engineers Future Leader (SWEFL) (1 of 31 internationally)	June 2017
Kappa Theta Epsilon, Co-op Honor Society, Drexel University	June 2017
Frances Velay Fellow (1 of 8 students), Drexel University ($3,500)	June 2016
National Achievement Full Tuition Scholarship	September 2015 to June 2020

PROFESSIONAL AND VOLUNTEER SERVICE

CEMS Women+ Group at UMN

Undergraduate Coordinator	July 2022 to Present
General Coordinator	September 2020 to June 2021

Science for All at UMN

Webmaster	July 2022 to Present
General Volunteer	July 2021 to July 2022

Graduate Student Committee (GSC)

FY-2020 Cohort Representative	September 2022 to Present

CEMS Students Organizing Against Racism (SOAR)

Outreach Team Volunteer and Video Contributor	February 2022 to Present

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Council of Graduate Students (COGS)
Grant Reviewer (Fall, Spring, and Summer Cycles) — September 2020 to Present

Pink Space Theory
STEM Panel Organizer and Fundraiser, Webinar Moderator, and Grant Writer — June 2020 to July 2022

CovEducation
AP Calculus, AP English, and Middle School Reading Tutor — March 2020 to June 2022

American Institute of Chemical Engineers
Minority Affairs Committee Communications Team Member — April 2020 to July 2021

College of Engineering, Drexel University
Chair of Joint One-Time Undergraduate Faculty Evaluation Committee — September 2019 to January 2020
Recruitment and Outreach Assistant — June 2018 to June 2020

PROFESSIONAL AFFILIATIONS AND LEADERSHIP POSITIONS

Society of Women Engineers (SWE)
University of Minnesota
GradSWE Committee Chair — March 2021 to July 2022

Societal
Culture & Heritage Lead for Asian Connections Affinity Group — July 2022 to Present
Community Lead for Asian Connections Affinity Group — February 2020 to July 2022
SWENext High School "Day in the Life" Reporter — February 2020 to July 2022

Drexel University
Membership Director — January 2019 to December 2019
President — January 2018 to December 2018
Outreach Director — December 2015 to December 2017

Society of Asian Scientists and Engineers (SASE)
Drexel Chapter Events Coordinator — June 2018 to June 2019
PR Committee Researcher — July 2016 to June 2018

PROFESSIONAL DEVELOPMENT AND CERTIFICATE PROGRAMS

The Inclusive STEM Teaching Project Completion — November 2022
Teaching Assistant Professional Development (TAPD) Program Completion — August 2022
Institute on Teaching and Mentoring Participant — April 2021
GradSWE Mentorship Program Mentee — October 2020 to Present