

EDUCATION

Cornell University Ithaca, New York

(in progress) PhD in Chemical Engineering, August 2022 – Present

The Ohio State University Columbus, Ohio

BS in Chemical Engineering, Summa Cum Laude, with Honors in Engineering, with Honors Research Distinction in Chemical Engineering. GPA 4.00, August 2017 – May 2022

Eminence Fellowship Recipient

RESEARCH EXPERIENCE

Cornell University PhD Student

Ithaca, NY, August 2022 – Present

Graduate advisors: Professor Jeffrey Varner and Professor Jefferson Tester

- Applying machine learning to investigate market dynamics related to emissions-trading regulation schemes

Fulbright Canada and MITACS Globalink Research Intern

University of Alberta, Edmonton, Alberta, May 2021 – August 2021

- Working with Prof. Vladimir Michaelis, conducted a study using DFT on the ADF software platform to validate experimental NMR chemical shift assignments for a study on use of zeolite Sn-beta and sodium borate as co-catalysts in selective glucose conversion for biofuel production (research conducted virtually due to the COVID-19 pandemic)

National Aeronautics and Space Administration Solar Energy Researcher

NASA Glenn Research Center, Cleveland, OH, January 2020 – August 2020, January 2021 – April 2021

- As part of the Photovoltaic and Electrochemical Systems Branch, worked on the improvement and application of a large area LED-based solar simulator, assisted with an investigation into perovskite-based solar cells for space use, and conducted a literature review of current electrodynamic dust screening technologies
- In a second and virtual rotation, completed a literature review of space-tested solar concentration technologies, aided design for high-altitude balloon testing of solar cells, and used SPICE circuit simulation to investigate performance improvements in perovskite-based solar cells

Computational Material Discovery Group Undergraduate Researcher

The Ohio State University, Columbus, OH, August 2019 – May 2022

- Working with Dr. Li-Chiang Lin, developed molecular dynamics simulations in LAMMPS to evaluate nanoporous membranes on the basis of pore geometry for their potential use in reverse osmosis water desalination, culminating in the completion of an Honors Research Thesis in May 2022

Procter & Gamble Research and Development Intern

Cincinnati, OH, May 2019-August 2019

- Developed methods for use of chemical foaming additives to achieve structural color in PET as a sustainable alternative to traditional colorant, and with potential for UV protection applications
- Developed a procedure for evaluating crystallinity of foamed PET using differential scanning calorimetry
- Automated the photography and addition to digital database of experimental retains using Python and C++

The Ohio State University Department of Chemistry X-Ray Diffraction and UV-Visible Spectroscopy Technician

The Ohio State University, Columbus, OH, January 2019 – April 2019

- Performed XRD and UV-Vis and analyzed resulting data to characterize synthesized perovskite compounds
- Worked closely with chemistry students to teach and encourage interest in solar energy research

Procter & Gamble Research and Development Intern

Cincinnati, OH, May 2018-August 2018

- Collected data using both experimentation and simulation, and analyzed this data using Excel and JMP
- Led design of new packaging, including ideation, concept drawing, 3D modeling, and prototyping
- Worked across disciplines to bring an understanding of materials chemistry into the packaging design process

Battelle Memorial Institute Lab Analyst

Columbus, OH, June 2017 – May 2018

- Developed and revised experimental procedures based on lab work and extensive review of literature
- Independently designed and performed modifications of living cells using CRISPR gene-editing

WORK EXPERIENCE

The Ohio State University Department of Chemical Engineering Teaching Assistant

Aug. 2019 – Dec. 2019, Aug. 2020 – Dec. 2020, Jan. 2021 – Apr. 2021, Aug. 2021 – May 2022

- *Separation Process*: Mathematical and practical analysis of chemical and physical separation processes
- *Transport Phenomena I*: Momentum transport, derivation and application of fluid mechanics equations
- *Thermodynamics*: Mass, energy, and entropy balances, heat engines, and multicomponent systems
- *Kinetics and Reactor Design*: Generalized kinetics principles and focused study of CSTR and PFR reactors

HONORS & AWARDS

Outstanding Student Award (2022)

- Presented by the Department of Chemical and Biomolecular Engineering at The Ohio State University

Fulbright Canada – Mitacs Globalink Program (2020)

- Summer 2020 awardee; cancelled due to COVID-19 pandemic

Eminence Scholarship at The Ohio State University (2017-2022)

- Full cost of attendance fellowship awarded to 20-25 students each year, with an emphasis on research, leadership, and service

Churchill Scholarship Nominee – Ohio State University Nominee (2021)

- One of two nominees selected by The Ohio State University to be put forward for the Churchill Scholarship

PRESENTATIONS

Conference Presentations:

Molecular Dynamics Evaluation of Pore Geometry in Nanoporous Membranes..., November 2021, AIChE ASC 2021
DFT Computations of Active Site Complexes in the ... Epimerization of Glucose; August 2021, IUPAC CCCE 2021

Informal Presentations:

Review of Literature on Electrodynamic Dust Screening Technologies; August 2020, NASA
Computational Study of Heat Transfer in an Incandescent Bulb; November 2019, The Ohio State University
Characterization and Prevention of Crystallinity in Foamed PET (Final Presentation); August 2019, Procter & Gamble
Sustainable Color through Chemical Foaming (R&D Intern Poster Session); July 2019, Procter & Gamble
Innovation of a Large Bottle Suitable for eCommerce (Final Presentation); August 2018, Procter & Gamble
A Landscape Assessment of Large HDPE Packaging (R&D Intern Poster Session); July 2018, Procter & Gamble
Celiac Detection Using a Nanotechnology-based Lab-on-a-chip Device; April 2018, The Ohio State University

SERVICE

The Adaptive Adventure Sports Coalition

- As part of an Eagle Scout Project, designed, planned, and led the construction of a 100-foot-long accessible pathway at TAASC, a Columbus-based organization that empowers people with disabilities to enjoy adventure sports such as kayaking and skiing

Franklin County Medical Reserve Corps

- Aided in distribution of COVID-19 vaccines and test kits to community members with disabilities and of old age