

# Leah Simakas

Lsimakas@umich.edu • (248) 804-2588 • 1224 Washtenaw Ct, Ann Arbor, MI

## EDUCATION

### University of Michigan

Ann Arbor, MI

*Bachelor of Science in Engineering in Chemical Engineering*

April 2026

*Concentration: Energy Systems Engineering*

*GPA: 3.93/4.00*

*Coursework: Introduction to Materials and Manufacturing, Introduction to Computers and Programming, Material and Energy Balances, Introduction to Engineering, Organic Chemistry*

## RESEARCH EXPERIENCE

### Materials Science and Engineering Department

University of Michigan, Ann Arbor, MI

*Li+ Research Group, Research Assistant*

January 2023 - Present

- Investigate oxygen vacancy transport in electrochemical RAM (ECRAM) devices to advance an energy-efficient source of analog memory, and report findings to group in weekly presentations with figures made using MATLAB
- Devise hypotheses on the chemical activity occurring within ECRAM devices, resulting in the sputtering and testing of two new device designs with optimized activation processes
- Analyze boundary working conditions of devices to determine constraints to the application of this novel technology
- Utilize plasma-enhanced chemical vapor deposition (PECVD) and reactive ion etching in the Lurie Nanofabrication Facility to enable device use at high temperatures and in an ECRAM array

## PROJECT EXPERIENCE

### Global CO<sub>2</sub> Initiative Student Association

University of Michigan, Ann Arbor, MI

*Design and Research Lead*

October 2022 - Present

- Research and compare different metal-organic frameworks to determine ideal sorbent for direct air CO<sub>2</sub> capture device
- Diagnose issues in the temperature-vacuum swing process flow diagram to maximize CO<sub>2</sub> absorption and regeneration within device, leading to the construction and implementation of new designs with sensors to ensure productivity
- Create plans to utilize collected CO<sub>2</sub> in campus farm and install devices around campus to increase awareness
- Collaborate with faculty and a similar student group at UTexas to share fabrication discoveries about sorbent and sensor usage, as well as CO<sub>2</sub> life cycle analysis techniques

### Introduction to Engineering

University of Michigan, Ann Arbor, MI

*Team member*

August 2022 – December 2022

- Compared experimental results of temperature's effect on magnetism to a Monte Carlo simulation of the Ising Model to understand the causes of inaccuracy in simulations
- Investigated the impact of crystal structure on the magnetism of iron to assess the extent of the Ising Model's usability
- Examined the functioning of superconductors at low temperatures to understand their application in MRI technology

### FIRST Robotics Team 469

International Academy, Bloomfield Hills, MI

*Team President and System Lead*

September 2018 - April 2022

- Designed and fabricated conveyor belt, arm, and elevator systems in six weeks using SolidWorks and machine tools
- Coached 15 students through machine training and design process, and acted as liaison between students and mentors, resulting in receiving the FIRST Robotics Dean's List Finalist award for outstanding leadership and STEM expertise
- Attained over \$16,000 in sponsorships for the team from three sources through formal meetings and essays

## SKILLS

*Computer: SolidWorks, KLayout, EC-Lab, MATLAB, C++, Microsoft Office Suite, Google Workspace*

*Fabrication: Sputter, PECVD, Photolithography, Probe Stations, Machine and Hand Tools, Soldering*

## ACTIVITIES

American Institute of Chemical Engineers, *Member*

August 2022 – Present

Women in Science and Engineering Residential Program, *Resident*

August 2022 – April 2023