

Carla CompSci

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EDUCATION

The University of Chicago, Chicago, IL

Bachelor of Science in Molecular Engineering (Chemical Track) with Honors, Summa Cum Laude, June 2026

GPA: 4.00/4

Relevant Coursework: Organic Chemistry; Thermodynamics; Chemical Kinetics; Transport Phenomena; Reaction Engineering; Numerical Methods; Linear Algebra; Differential Equations; Molecular Modeling; Statistics

EXPERIENCE

Faculty Lab Group, Pritzker School of Molecular Engineering

Chicago, IL

Undergraduate Research Assistant

March 2023 – June 2026

- Synthesized, mixed, and prepared molten salt electrolyte (MSE) mixtures to strategically lower their melting points and improve physicochemical properties for potential use in lithium metal batteries (LMBs).
- Assembled and characterized lab-scale electrochemical cells in inert atmospheres to advance electrolyte research.
- Performed galvanostatic cycling, conductivity tests, and thermal analysis (DSC) to evaluate electrolyte performance.
- Predicted the viability of various MSEs using melting point, conductivity, and viscosity data via Python analysis.
- Presented my conclusions quarterly in lab group meetings and at the National Electrochemical Society Conference.

FUCHS Lubricants / Pritzker School of Molecular Engineering

Harvey / Chicago, IL

Senior Engineering Design Project

September 2025 – March 2026

- Led an industry-sponsored process engineering project to improve asphalt viscosity stability for wire rope products.
- Investigated root causes of viscosity drift by analyzing storage conditions, thermal gradients, aging, and phase separation in industrial asphalt systems.
- Designed controlled experiments comparing heated, mixed, and unmixed asphalt storage conditions.
- Conducted high-temperature rheology and DSC analyses to characterize flow behavior and thermal stability.

American Energy Technologies Company

Wheeling, IL

Materials Science Intern

June 2025 – August 2025

Fabricated and evaluated carbonaceous anode materials for lithium-ion battery applications.

- Assembled and tested electrochemical energy storage cells to assess capacity retention and material viability.
- Designed and executed R&D and pilot-scale processes, transforming graphite from raw coke to final material.
- Analyzed particle size, surface area, and structure to assess graphite quality and predict anode performance.
- Collaborated with process engineers, chemists, and international vendors to optimize materials synthesis workflows and troubleshoot issues in graphite quality control and battery performance.

LEADERSHIP & MENTORSHIP

Pritzker School of Molecular Engineering

Chicago, IL

Teaching Assistant and CLIME Team Leader (Weekend Tutor)

March 2025 – June 2026

- Assisted in teaching an introductory process engineering class for 80 students and advanced fluid transport and chemical kinetics classes for 25 students, encouraging group learning and community building.
- Ran weekly discussion sections and office hours, as well as writing and grading problem sets and exams.
- Facilitated two weekly problem-solving sessions for 30 students enrolled in Thermodynamics in the spring quarter.
- Guided students through Legendre transforms, phase equilibria, stability analysis, mass/energy balances, shell momentum balances, Navier-Stokes solutions, boundary layers, chemical kinetics, and reactor design.

Lakeside STEM Camp

Lakeside, MI

STEM Specialist (2024), Cabin Specialist (2022-23)

Summer 2022-23, June 2024 – August 2024

- Supervised approximately 40 ten-year-old boys, engaging in sports, arts, and science activities for three summers.
- Piloted the camp's STEM program by expanding the scope of the previously existing robotics area.
- Led science activities where campers actively explore chemical reactions, liquid viscosity, and static electricity.
- Taught foundational mathematics skills to all ages in private tutoring sessions that continued year-round.

SKILLS

Experimental: Scanning Electron Microscope, Microtrac Particle Size Analyzer, BET Surface Area Analyzer, Particle Mills, DSC, EMS-1000S Viscometer, VSP-300 Potentiostat, Glove Box, Rotary Vacuum Evaporator.

Computational: Python, LaTeX, R, CAD, Arduino, Microsoft Office, Bash, Quantum Espresso, LAMMPS, GROMACS.

INTERESTS

Pick up basketball, football, running, chess, and *Minecraft*.