William Wang

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Education

Northwestern University Evanston, IL
Bachelor's of Science, Materials Science & Engineering *Sep 2024 — Jun 2028*
- Cumulative GPA: 3.82/4.0

Research Experience

Undergraduate Research Assistant Dec 2024 — Present
Haile Group (Energy Materials), Northwestern University *Evanston, IL*
- **NSF-funded project** on barium phosphate **solid acid proton conductors** for fuel cell electrolytes
  - Conducted **electrochemical impedance spectroscopy** (EIS) and **thermogravimetric analyzer (TGA)** measurements; resolved decade-long mystery between bulk & grain boundary response while understanding hydration behavior
  - Developing **solvent-free ball mill synthesis** technique characterized w/**powder diffraction** and **proton nuclear magnetic resonance spectroscopy**
- Implemented hybrid **EIS** technique reducing measurement time by up to **10x**; confirmed accuracy on **strontium–titanium–manganese thin films**; wrote Python code to extract data from **chronopotentiometry** measurements
  - Wrote GitHub documentation and sample notebook fits outlining program installation and measurement setup

Visiting Research Student Jul 2023 — Sep 2024
Topper Group (Computational Chemistry), Cooper Union *New York City, NY*
- Resolved HF_6 minimum energy structure; generated candidate geometries via **Monte Carlo** methods in TransRot; performed **density functional theory** optimizations including **vibrational frequency analysis** in **GAMESS**
  - **Co-author** on an **Fall 2024 American Chemical Society talk** by Prof. Robert Topper
- Developed **OPLS-AA Lennard-Jones parameters** of noble gases; optimized 1-6 atom **noble gas clusters**; visualized structures in **Avogadro**—achieving energy deviations of **<0.045 %** against the Cambridge Energy Landscape Database
  - Authored GitHub documentation detailing noble-gas parameter deviation/integration, simulation workflows, and performance benchmarks– significantly reducing user onboarding time
  - Poster at the **2024 Virtual Winter School on Computational Chemistry**

Research Member Sep 2023 — Mar 2024
Stan-X Program (Molecular Biology), The Lawrenceville School *Lawrenceville, NJ*
- Produced transgenic fruit flies with **SX4 P-element** containing **LexA drivers** in a novel gene stored at **Indiana University Bloomington's Drosophila Stock Center**
- Mapped and validated the insertion site using **inverse PCR, Sanger sequencing, and gel electrophoresis**, enabling the study of gene function and tissue interaction through **binary expression systems**
  - Authored a report, documenting molecular protocols, sequencing results, and *tapas*'s role in silencing retrotransposons

Activities

Northwestern University Space Technology & Rocketry Society *Evanston, IL*
Education Lead May 2025 — Present
- Creating onboarding resources for new members; teaching **CAD** and **OpenRocket (model rocket simulator)**; outlining competition guidelines & basic rocketry terms for the 2025-2026 International Rocket Engineering Competition

Wind Tunnel Engineer Sep 2024 — May 2025
- Developed testing matrices for rockets at **Embry-Riddle Wind Tunnel Facility** as part of NASA's Student Launch Challenge; used **CAD** to design wind tunnel mounting hardware and analyzed testing data using **NumPy** and **Pandas**

Skills and Honors

- **Software**: OnShape, Origin, VESTA, Avogadro, GSAS-II, ZView, OpenRocket
- **Programming & Markup Languages**: MATLAB, LaTeX, Python, Java, Swift, Typst
- **Laboratory Techniques**: EIS, powder diffraction, confocal microscopy, dynamic light scattering, TGA
- **Honors**: United States National Chemistry Olympiad Qualification, National Science Foundation Research Experience for Undergraduates Grant, National Association of Rocketry L1 Certification