Theo Heron

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Education

Columbia University · New York, NY — Expected May 2028

M.S. in Chemical Engineering

UC San Diego · La Jolla, CA — Expected June 2026

B.Sc. in Physics | Minor in Chemistry

Relevant courses: Electromagnetism I, II & III, Circuits Lab, Quantum Chemistry Lab

Research Experience

- **Chemical Engineering REU – UChicago (Prof. Y. Shirley Meng)** Summer 2025
  - Increased **LMFP cathode areal capacity by 33%** through optimized slurry casting thickness.
  - Fabricated and cycled **40 coin cells** in a glove box; correlated how low porosity and material degradation hampered electrochemical performance.
  - Evaluated **coulombic efficiency, capacity retention, and dQ/dV curves**; carried out analysis in **Python and MATLAB**. [Click for poster]

- **Undergraduate Research – UC San Diego (Prof. Oleg Shpyrko)** 2024 - Present
  - Conducted **synchrotron experiments** at Argonne National Laboratory's Advanced Photon Source to study temperature-dependent Na^+ dynamics in solid electrolytes.
  - Working on diffraction analysis and **Rietveld refinement** to characterize electrolyte structure.
  - Organized group meetings and hosted a Journal Club on solid-state battery literature.

Publications & Presentations

- **Poster:** *Optimizing LMFP cathode areal capacity for Li-ion cells* – UChicago PME Capstone Poster Session (2025).
- **Presentations:** Presented solid-state battery papers at UCSD Physics Journal Club (2024).
- **Paper:** *Li-FeS_2 vs.* Zn/MnO_2 *AA Cells Energy Capacity* (IB Extended Essay, 2022). [Click for paper]

Leadership

- **Society of Physics Students,** *UC San Diego*
  - **Treasurer (2025 - Present):** Manage $3,000 annual budget & process reimbursement requests. Successfully secured funding in spite of funding cuts.
  - **Media Team (2022 - 2024):** Organized outreach events, designed posters, managed website & discord server to bring our physics community closer together.

Skills

Experimental: Glovebox, battery cycler, hot roller, slurry casting, XPCS, oscilloscope
Programming: Python, MATLAB, Linux/Unix, HPC (SDSC Expanse), Avogadro
Music Production: Vocal recording, production, arrangement, mixing, Ableton Live, Logic Pro
Languages: English (native), French (native)