

Hannah Morin

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EDUCATION

PhD Carnegie Mellon University (Pittsburgh, PA):
Engineering and Public Policy and Materials Science and Engineering
Expected June 2025

MS Carnegie Mellon University (Pittsburgh, PA):
Materials Science and Engineering
Expected May 2024

MA University of Chicago (Chicago, IL): Public Policy, June 2021
Certificate in Energy and Environmental Policy

BS University of Chicago (Chicago, IL): Chemistry with Honors, June 2020
Thesis: "Effect of Cell Chemistry on Transition Metal Migration and Electrolyte Decomposition in Lithium-ion Batteries"

Hopewell Valley Central High School (Pennington, NJ), June 2016 (Graduated top 10)

AWARDS, HONORS

CMU Energy Week 2023 Best Poster
Herbert L. Toor Award for best Part A Qualifier Paper (Jan 17 2023)
Sloan Transportation Fellowship
UChicago Dean's List (2016-2020)
National Merit Scholar (2016-2020)

PUBLICATIONS

Morin, Hannah R., Donald G. Graczyk, Yifen Tsai, Susan Lopykinski, Hakim Iddir, Juan C. Garcia, Nancy L. Dietz Rago, Stephen Trask, LeRoy Flores, Seoung-Bum Son, Zhengcheng Zhang, Noah M. Johnson and Ira Bloom. "Transition Metal Dissolution from NMC-Family Oxides: A Case Study. *ACS Applied Energy Materials* (2020)

PRESENTATIONS & POSTERS

Morin, Hannah, Jay Whitacre, Jeremy Michalek "How Much Does Electric Vehicle Degradation from Fast Charging Cost?". Poster presented at the Transportation Research Board Conference hosted by the National Academy of Science and Engineering. Jan 10 2024; Washington DC

Morin, Hannah, Jay Whitacre, Jeremy Michalek “Battered by Chemistry: Electric Vehicle Battery Replacement Costs Under Diverse Fast Charging Scenarios”. Poster presented at the United States Association for Energy Economics. 2024; Chicago IL

Morin, Hannah, Jay Whitacre, Jeremy Michalek. “Electric Vehicle Battery Replacement Costs Under Realistic Fast Charging Behaviors” Poster presented at the Electrochemical Society. 2023; Boston MA

Morin, Hannah “Vehicle to Grid” Presented at the NEDC Partner Meeting (EPA organized) on behalf of the New Jersey Department of Environmental Protection. 2021 October 20; Pittsburgh PA

Morin, Hannah “Certification for Carbon Removal: Social and Environmental Impacts” Presented to the Institute for Carbon Removal Law and Policy at American University for Harris Policy Labs. 2021 March 18; Chicago IL

Morin, Hannah R. “Effect of Cell Chemistry on Transition Metal Migration and Electrolyte Decomposition in Lithium-ion Batteries”. BS Thesis. Presented at the Chemistry & Biological Chemistry Honors Thesis Symposium. 2020 May 7; Chicago IL.

Morin, Hannah R. “Identification of Organics in Si NMC and Si LCO Cells”. Presented at: Argonne National Lab, Chemical Science and Engineering Division 2019 August 22; Lemont IL

Morin, Hannah R., Ritu Sahore, Donald Graczyk, Yifen Tsai, Ira Bloom Effects of Cathode “Corrosion By Electrolyte Decomposition Products: An investigation of Transition Metal Loss from Lithium Ion Batteries at High Voltage”. Poster presented at: Chicago Area Undergraduate Research Symposium 2019 April 13; Chicago, IL

Morin, Hannah R. “Students Participating in Killer Engineering, Robotics FRC Team 293” Presented at BITcon, Bristol-Meyers Squibb’s annual IT conference, April 19 2016.

RESEARCH EXPERIENCE

Whitacre Lab, Carnegie Mellon

July 2021 – Present

PhD Student

- Joint PhD in (1) Materials Science and Engineering & (2) Engineering and Public Policy
- Research Focus: Lithium ion batteries & techno-economic analysis. This includes EV fast charging, V2X, recycling, second life, and consumer charging behavior

NJ Department of Environmental Protection, V2X Research

June – Oct 2021

Intern

- Produced a white paper on Vehicle to Grid opportunities around electric school buses using bidirectional charging.

- Interviewed multiple industry experts by phone, including companies that build V2G buses, former PJM consultants and professors
- Findings presented at the Northeast Diesel Collaborative (2021), a regional initiative bringing together state environmental groups, regional EPAs and private sector companies to work to reduce diesel emissions.

Tirrell Lab, University of Chicago

April 2019 – March 2020

Research Assistant in the lab of Matthew Tirrell

- Researched modified cellulose nanocrystals (CNCs) based materials for anti-fouling separation membranes and molecular selectivity
- Designed cellulose nanocrystals with modified polymers with the goal of filtering by chemical selectivity

Lithium Ion Battery Research, Argonne National Lab

Summer 2018, 2019

Research Assistant in the lab of Ira Bloom, head of battery post-test at ANL

- First author publication, “Transition Metal Dissolution from NMC-Family Oxides: A Case Study” *ACS Applied Energy Materials*
- Conducted independent research investigating corrosion mechanisms in NMC cathodes
- Conducted independent research investigating SEI formation on pure silicon anodes cycled against NMC and LCO cathodes
- Presented poster on a 10-week independent project during which 200+ coin cells were made and tested. Publication pending.
- Proficiency gained in coin cell assembly, glove box usage and HPLC-MS.

Falkowski Lab, Rutgers University

Summer 2017

Research Assistant in the lab of Paul Falkowski, a National Academy of Science member,

- Improved methodology for expressing coral proteins involved in aragonite formation of stony coral
- Studied Brushite formation under high pH conditions using SEM and X-ray diffraction
- Proficiency gained in transformation, spectrophotometry, SDS page and Agarose gels, and other basic lab skills

WORK EXPERIENCE & EXTRA CURRICULAR ACTIVITIES

Graduate Student Assembly CMU, President

Dec 2022 - Present

- CMU's Graduate Student Assembly (GSA) supports the graduate student experience by deploying it's annual budget of ~ \$1M for advocacy, social events, and grant programs. In my role as President, I oversee all GSA operations to ensure our advocacy, funding, and community-building events work to serve and uplift our graduate student community.
- University Collaboration: I represent graduate student interests in interactions

with a broad set of stakeholders, including ad hoc meetings with CMU administrators across the University and an annual presentation to the Board of Trustees. In fostering relationships across the university, I co-host the President's Dinner, chair the Provost Graduate Student Advisory Board meetings, and meet at least monthly with both the Dean of Students and Provost. I lead weekly GSA executive committee meetings, chair monthly GSA general body meetings, and participate in university councils and committees, including Faculty Senate, the University Leadership Student Advisory Council, and select Board of Trustees meetings.

- **Supervisory Role:** Serving as a co-supervisor for a full-time staff member, I contribute to annual reviews and support the development both of GSA's staff members. Additionally, I support eight GSA Vice Presidents and a handful of advocates, ensuring they have the necessary resources or guidance to cultivate their leadership skills and achieve their goals.
- **Tangible wins:** Achievements during my term include securing Parental Accommodations for non-birthing parents, establishing a Professional Development Grant fund, raising the minimum PhD stipend, successfully hiring a new staff position, implementing an independent financial process for constituency spending, introducing a new social event for singles, enhancing representative engagement through active learning activities, introducing annual an planning structure for internal operations, and restructuring CMU Student Government roles

Graduate Student Assembly, Vice President of Campus Affairs May 2022 - Dec 2022

- Elected to serve as one of eight members of the executive committee
- Sat on 7 regular University committee meetings
- Ran committee meetings
- Supervised the work of two family and partner advocates
- Facilitated child care grant application and disbursement process with family and partner advocates

Graduate Student Assembly, EPP Representative Sep 2021 - May 2022

- Elected to serve as one of two representatives for the graduate students of Engineering and Public Policy
- Attend monthly general body meetings and volunteered at events sponsored by the GSA
- Attended monthly meetings with the EPP department head Peter Adams
- GSA Representative Award Fall 2021
- Member of University committees:
 - Design Review Committee (monthly)
 - Public Art committee (1/semester)
 - Sustainability Committee (Monthly)
- Interviewed University candidates: Police Chief (2022)

External Advocacy Committee (Graduate Student Assembly)

Sep 2021 -May 2021

Member

- Travelled to DC to meet with over 30+ representatives and senators Fall 2021 and Spring 2022
- Advocated for graduate student issues including mental health, food insecurity, immigration, and funding
- Our work was written up in Forbes

Material Science and Engineering DEI Committee

Jan 2022 -Present

Member

- Spearheading effort to create a student-run micro course for incoming students with degrees outside of material science, as my experience as one lacked support
- MSE Incoming Graduate Student Boot camp - week long review session for incoming students taught by upper class-men interested in being professors. 1 week half days, navigating a student teacher dropping out last minute due to a medical emergency
- Generally support the activities of the committee, including the creation of DEI media club

Battle of The Buildings, University of Chicago

Nov -May 2021

Lead Organizer

- Partnered with UChicago Facilities and Housing and Residence life to hold an energy and water reduction competition during the month of April - "Battle of the Buildings" based on the Energy Star competition of the same name.
- Secured grant funding advertising and plug volt meters for a student interactive element.
- Created daily tips to reduce energy and water usage as well as posters which will remain long term in the dorms.

Student Government, University of Chicago

September 2016 – June 2020

Committee on Campus Sustainability, member

- Successfully pressured the University to increase its emission reduction commitment
- Helped form both the UCEA, a university wide sustainability alliance committee, and the green fund, a \$50,000 fund for improving campus sustainability and overseen by UCEA
- Lead organizer and budget coordinator for Hyde Park Clean Up Day, a community trash pick up
- Coordinated the Sustainability Town Hall Meeting for ~50 students, staff and members of the community, including design of break-out sessions and activities.
- Aided in organizing the Sustainability Case Competition and Wild and Scenic Film Festival

University of Chicago Model United Nations (ChoMUN) September 2018 – June 2020

Assistant Chair (Research Analyst and Logistical Assistant Director)

- Facilitated historical simulations for thirty attendees, producing content to challenge their strategic impulses during the University of Chicago's annual model UN conference for college students
- Proficiency in public speaking gained during weekly simulations of other committees or different historical simulations

Housing and Residence Life, University of Chicago September 2018 – June 2020

Resident Assistant

- Executed conflict mediation and crisis management for ~100 plus students in addition to mentoring, supporting and identifying the needs of these students on a daily basis.
- Organized in addition to organizing weekly community events and field trips around Chicago.
- Key player in efforts to improve hiring processes and equitable working conditions with a student petition and individual meetings with university administration

Hyde Park Clean Up

April 22, 2018

Lead Organizer

- Organized trash cleans up in the Hyde Park Area, reaching out and partnering with CCS and other UChicago student organizations for marketing and staffing
- Successfully secured funding from the University of Chicago Dean's Fund,

Thompson House Council

September 2017 – June 2018

President

- Chaired weekly meetings to organize group trips to laser tag, sushi dinners, paint ball, Second City and more for a community of ~90 students.
- Raised over \$4000 through house fundraisers.

Polsky Exchange

March 2017 – March 2018

Fabrication Laboratory Intern

- Developed and taught fabrication courses at University of Chicago's maker space and entrepreneur incubator
- Advised MBAs and start-ups on prototyping and design, often aiding idea development
- Taught classes in in the Maker Space of the University of Chicago's Entrepreneur incubator
- Managed machines and prints (3D printers, laser cutter, wood shop tools), aid in prototyping, and consult with MBAs about projects, in addition to creating my own

independent projects.

Greg's Landscaping

Office Assistant Manager, May 2016 – September 2016

- Assistant accountant, logistics coordinator, customer service ambassador, website manager/content creator. QuickBooks proficient.

Hopewell Valley CHS Robotics Club (SPIKE)

September 2014 – June

2016

Team President (Sep 2015- June 2016), Head of Fundraising (Sep 2014-June 2015)

- Founded a Sponsorship committee junior year, raising \$10,000 in its first year
- Obtained Hopewell Valley Education Foundation grant for \$4,000
- Selected as a FIRST Deans' list semi-finalist, a nominated award for Robotics leadership
- Organized summer program to teach new members (Summer 2015) and set up team government structure

RELEVANT COURSEWORK

ECON 26730 Global Energy & Climate Challenge: Economics, Science & Policy

CHEM 30600 Chemistry of The Elements and Materials

ENGL 12704 Writing Persuasion: Health and the Environment

CHEM 201(2)00 Inorganic Chemistry I & II

CHEM 26100 Quantum Mechanics

CHEM 26200 Thermodynamics

CHEM 26300 Chemical Kinetics & Dynamics

CHEM 26700 Experimental Physical Chem

ECON 19800 Introduction to Microeconomics

BIOS 22249 Principles of Toxicology

ENGL 13000 Academic and Professional Writing

ENGL 12704 Speech Writing: Reagan and Obama

PHYS 13200 Electricity & Magnetism

CMSC 12100 Computer Science with Applications I (Python)

REFERENCES

Dr. Ira Bloom (Employer)

Sr. Chemist, Group Leader

Chemical Sciences and Engineering Division
Argonne National Lab
(630) 252-4516
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John (Jack) T. Vaughey
Argonne National Lab
Senior Chemist/Group Leader
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