

Alex Hughes

Alexander_Hughes@mines.edu
(847)-404-1173

EDUCATION

Ph.D. in Materials Science, Colorado School of Mines

In progress

PhD Candidate

PI: Annalise Maughan

Expected 2028

GPA: 4.0/4.0

B.S. in Materials Science and Engineering, Michigan State University

May 2021

GPA: 4.0/4.0

Manufacturing concentration | Honors College | Deans List

Capstone: Failure Analysis of Torsionally Loaded Doorknob Cylinder

Advisor: Dr. Martin A. Crimp

B.A. in Russian Language, Michigan State University

Honors College | Deans List

Capstone: History of Homophobia in Russia

Advisor: Dr. Jason Merrill

RESEARCH EXPERIENCE

PhD Candidate, Colorado School of Mines

Aug. 2023 – Present

Department of Chemistry, Materials Science Program

- Performing solid state synthesis, PXRD analysis, and electrochemical testing on sodium ion conductors with a focus on battery electrolyte materials.
- Modifying existing and created personal Python codes to process data and create figures.

Professorial Assistant, Michigan State University

Sep. 2017 – May 2019

Department of Chemical Engineering and Materials Science

- Conducted EBSD, backscatter electron, and secondary electron microscopy by using a Tescan MIRA3 to examine Nimonic 75, pure nickel, and pure titanium.

PAPERS AND PRESENTATIONS

- **A.P. Hughes**, A. Pak, S. Faulkner, N.A. Strange, E. Ertekin, A.E. Maughan “From solid-state electrolytes to cathodes: tuning mixed ionic-electronic conductivity in sodium metal halides,” ChemRxiv, <https://doi.org/10.26434/chemrxiv.15001130/v1>. Submitted, *ACS Materials Au*
- Presentation: “From solid-state electrolytes to cathodes: tuning mixed ionic-electronic conductivity in sodium metal halides,” at Graduate Research and Discovery Symposium @ MINES, Apr 2026
- Presentation: “From solid-state electrolytes to cathodes: tuning mixed ionic-electronic conductivity in sodium metal halides,” at ACS Spring Meeting, Mar 2026
- Presentation: “Alloying and Conductivity of the NaMCl₄ system (M=Al³⁺, Fe³⁺, Ga³⁺)” at Colorado Center for Advanced Ceramics Conference, Aug 2025

- Poster: “Alloying and Conductivity of the NaMCl₄ system (M=Al³⁺, Fe³⁺, Ga³⁺)” at Graduate Research and Discovery Symposium @ MINES, Apr 2025
- Poster: “Substitution of aliovalent and differently coordinated ions and their effect on sodium ion conductivity in NaAlCl₄” at Colorado Center for Advanced Ceramics Conference, Aug 2024.
- Poster: “Substitution of aliovalent and differently coordinated ions and their effect on sodium conductivity in NaAlCl₄ and Na₂ZrCl₆” at Graduate Research And Discovery Symposium @ MINES, Apr 2024.
- Poster: “Size effect of creep in Nimonic 75” at Mid-Michigan Symposium for Undergraduate Research, Jul. 2018.
- Presentation: “Depth of Slip Transfer in Titanium” at University Undergraduate Research and Arts Forum, Apr. 2018.
- Presentation: “Absolute and Relative Pitch: Factors into the Origin and Acquisition” at IMSAloquium, Apr. 2016.

GRANTS AND AWARDS

- CoorsTek Fellowship
- MSU Board of Trustees Award for Academic Excellence (2021)
 - For maintaining a 4.0 GPA for the first 7 semesters at MSU
- Dean’s List
 - 8 Semesters
- Magna Cum Laude

LEADERSHIP EXPERIENCE

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| President | Jun. 2026 – Present |
| Red Cedar Rowing Foundation | |
| <ul style="list-style-type: none"> • Leading a board of directors of 7 total people to establish relationships with alumni and donors for the Michigan State University Crew Club. | |
| President | Jun. 2019 – Jun. 2020 |
| Treasurer | Jun. 2018 – Jun. 2019 |
| Michigan State University Crew Club | Aug. 2017 – May 2021 |
| <ul style="list-style-type: none"> • Led meetings of the 6-person executive board, hired coaches, scheduled races, coordinated driving and sleeping arrangements, led warm-up and cool down, and created and maintained a budget of \$60,000. | |

OTHER WORK EXPERIENCE

New Models Launch Engineer, Ford Motor Company
On contract through Kelly Services
Salary

Nov. 2021 – Jun. 2023
Nov. 2021 – Nov. 2022
Nov. 2022 – Jun. 2023

- Managed containment of arising issues, managed functional and quality testing for pre-production vehicles to delivery timeline, and compiled and presented critical launch metrics to launch leadership using Microsoft Excel and internal Ford software.

LANGUAGES

- English – fluent, native
- Russian – high intermediate
 - Critical Language Scholarship Advanced Russian Language and Area Studies Program (Summer 2020, canceled due to COVID)
 - Nationally competitive study abroad program funded by U.S. Department of State
 - Middlebury Language Schools (Summer 2019)
 - Nationally competitive intensive language study summer semester
 - Exchange between Illinois Mathematics and Science Academy and Zhores Alferov Physical Technical High School (Spirings 2016-2017)
 - High school student exchange; In Russia Spring 2017

MISCELLANIOUS

- Ranked top 5% in the world for healer role, Final Fantasy XIV
- Peak single fight: 11th in the world, peak for full raiding tier: 311th in the world