John Peterson

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EDUCATION

University of Utah **May 2025**
Honors BS in Chemical Engineering, GPA: 3.90 SLC, UT
Minoring in Mathematics

WORK EXPERIENCE

Idaho National Laboratory, Center for Advanced Energy Studies **Jun 2024 | Aug 2024**
NSF REU Internship | Dr. John Russell Idaho Falls, ID

- Engineered modifiable Morse potentials for simulating material behavior in nuclear environments.
- Improved melting point prediction accuracy by 30% while maintaining computational efficiency.
- Authored a technical paper and presented findings at two research poster conferences.

University of Utah, College of Engineering **Sep 2022 | Aug 2024**
Student Researcher | Dr. Deisy Fernandes SLC, UT

- Designed and independently executed experiments to model intercalant release from 3D-printed graphene monolayers for drug delivery applications.
- Synthesized and characterized graphene using Raman spectroscopy and atomic force microscopy.

University of Utah, Housing and Residential Education **Aug 2023 | Present**
Resident Advisor SLC, UT

- Serving as an advocate and developing community curriculum for more than 80 freshmen.

PROJECTS

- **DIY Photolithography:**
  - Led a team of 7 in designing, building, and validating a ~2 μm resolution maskless photolithography stepper.
  - Developed as an educational and research platform for the Chemical Engineering curriculum, enabling low-cost lithography access (~$3k build cost) in collaboration with the open source HackerFab project.
- **STEM Outreach:**
  - Designed an acoustic levitation device with a K–12 learning module for hands-on engineering education.
- **Miscellaneous:**
  - Developed spincoater for thin film deposition; Quantification of mixing in custom microfluidics channels; Thermal modeling of heat transfer in metal fins; Computational modeling of supersonic flow over a wing;

PUBLICATIONS

Peterson, J., Russel, J. (2024). Modified Morse potentials for classical molecular dynamics simulation of nuclear materials. *In Review*. Presented at INL, and CAES 2024 summer poster sessions.

HONORS

- **National Science Foundation: Research Experience for Undergraduates** funding for summer research.
- **Undergraduate Research Opportunity Program** funding for 2 semesters of research work.
- **Merit Scholarships:** Utah Flagship, Robert Henricks, Mark & Alice Isaacson, and Scott & Jacque Stratton.
- **Dean's List** for 8 consecutive semesters as a member of the University of Utah **Honors College.**

SKILLS & INTERESTS

- **Skills:** Programming (Python/C++); AFM/SEM; Raman/IR Spectroscopy; Data Analysis; CAD (Fusion); Experimental Design; Molecular Dynamics (LAMMPS/VMD/HPC); Science Communication;
- **Passions:** Playing Piano and Trumpet; Musical Conducting; Mathematics; Graphics Programming;