

Research Experience

- **Phases Research Lab, Pennsylvania State University** **University Park, PA**
NASA Space Technology Research Fellow (Advisor: Zi-Kui Liu) 2016 – Present
 - Developed ESPEI, a user tool for multicomponent CALPHAD modeling and uncertainty quantification
 - Developed DFTTK, a high-throughput framework for *ab-initio* quasi-harmonic phonon calculations with VASP
 - Research projects:
 - Joining stainless steel to Ti-6Al-4V in functionally graded, additively manufactured alloys
 - Applying ESPEI to quantify uncertainty in a new CALPHAD description of Cu-Mg
 - Deriving a thermodynamic model to predict the effect of oxygen impurities on glass formability of BMGs
- **Solid State Ionics Laboratory, Michigan State University** **East Lansing, MI**
Undergraduate Research Assistant (Advisor: Jason D. Nicholas) 2015 – 2016
 - Fabricated and improved the performance of solid oxide fuel cells
 - Characterized fuel cells with EIS, XRD, and SEM
 - Developed Rp Plotter, a GUI-based Python application for data analysis and visualization
 - Participated in a 10 week professional development course
- **Composite Materials & Structures Center, Michigan State University** **East Lansing, MI**
Undergraduate Research Assistant (Advisor: Lawrence T. Drzal) 2014 – 2015
 - Designed a graphene nanoplatelet-based capacitive deionization cell
 - Characterized graphene nanoplatelet papers using scanning electron microscopy
 - Used Solidworks to create a 3D printed model for the deionization cell apparatus
 - Participated in a 10 week professional development course

Teaching Experience

- **Department of Materials Science and Engineering, Penn State University** **State College, PA**
Teaching Assistant 2017
 - MatSE 404/BME 444: Surfaces and the Biological Response to Materials
 - Developed and graded problems for homework and exams
 - MatSE 462: General Properties Laboratory in Materials
 - Independently taught and graded assignments for two lab sections of 5 students
 - Instructed students on using techniques for characterizing mechanical, electrical and optical properties
- **College of Engineering, Michigan State University** **East Lansing, MI**
Undergraduate Lab Mentor 2015 – 2016

Education

- **Pennsylvania State University** **University Park, PA**
Ph.D. Materials Science and Engineering; Graduate Minor, Computational Materials 2016 – Present
 - 3.7 GPA
 - NASA Space Technology Research Fellow (2018 – Present)
 - Honorable Mention, National Science Foundation Graduate Research Fellowship Program (2018)
 - NSF Research Trainee in the CoMET Program (dftcomet.psu.edu) (2016 – 2018)
 - Helen R. and Van H. Leichter Graduate Fellowship recipient (2016)
- **Michigan State University** **East Lansing, MI**
B.S. Materials Science and Engineering 2012 – 2016
 - 3.56 GPA
 - Dean's List, 5 semesters
 - MSU College of Engineering Endowed Opportunity Fund scholarship recipient (2015 – 2016)

Technical Skills

Software Developed: ESPEI (espei.org), pycalphad (pycalphad.org), DFTTK (github.com/phasesresearchlab/dfttk)
Computational Tools and Software: Python, VASP, pycalphad, Thermo-Calc, MongoDB