Brandon Bocklund

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Research Experience

- **Phases Research Lab, Pennsylvania State University** — **University Park, PA**
  NSF Research Trainee (Advisor: Zi-Kui Liu) — *2016 – Present*
  - Contributed to pycalphad, a library for computational thermodynamics using the CALPHAD method
  - Contributed to atomate, a computational tool for high-throughput ab-initio materials calculations with VASP
  - Developed NanoGrain, which uses thermodynamic models to predict the stability of nano-sized alloys
- **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 nanoplatlet-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 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*
  - Mentored 3 classes, interacting with over 250 students
  - Responsible for grading assignments and quizzes, promoting learning, and proctoring exams
    - EGR 100: Introduction to Engineering Design
    - EGR 102: Introduction to Engineering Modeling
    - EGR 291: Spatial Visualization

Education

- **Pennsylvania State University** — **University Park, PA**
  Ph.D. Materials Science and Engineering; Graduate Minor, Computational Materials — *2016 – Present*
  - 3.86 GPA
  - NSF Research Trainee in the CoMET Program (dftcomet.psu.edu)
  - Helen R. and Van H. Leichliter 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: pycalphad (pycalphad.org), atomate (pythonhosted.org/atomate), NanoGrain, ESPEI
Computational Tools and Software: Python, MATLAB, C++, VASP, Thermo-Calc, MongoDB, Solidworks, LaTeX
Materials Characterization Techniques: Differential Scanning Calorimetry (DSC), Electrical Impedance Spectroscopy (EIS), Hardness Analysis, Optical Microscopy, Thermal Gravimetric Analysis (TGA), Scanning Electron Microscopy (SEM), X-Ray Powder Diffraction Spectroscopy (XRD), Profilometry