

## EDUCATION

**Purdue University** · Aug. 2020 to Current  
Ph.D. Materials Science and Engineering 2023

**Purdue University** · Jan. 2019 to Dec. 2020  
M.S. Aerospace Engineering 2023

**University of California San Diego** ·  
Sept. 2013 to June 2018  
B.S. Structural Engineering 2018

## SKILLS

Abaqus, MATLAB, Mathematica, Microsoft Office Suite, SolidWorks

## EMPLOYMENT

### PURDUE UNIVERSITY, THE COMPOSITE MANUFACTURING AND SIMULATION CENTER

Research Assistant

1105 Challenger Avenue,  
<https://www.purdue.edu/cmssc/>  
Aug. 2020 to Current

- Extrusion deposition additive manufacturing of a carbon-reinforced carbon composite for hypersonic flight.
- Investigating an optimal conversion process and densification step in order to reduce processing cost and time.

### THE COMPOSITE MANUFACTURING AND SIMULATION CENTER

Lab Assistant

May 2019 to Aug. 2020

- Manufactured composite plates via wet-layup, resin transfer molding, and compression molding techniques to characterize material properties.
- Examined heat transfer, anisotropic shrinkage, residual stresses, cure kinetics, permeability, and rheology during manufacturing.
- Tested and characterized different material samples under compression, tension, and flexure in accordance with ASTM standards.

## PROJECTS

### STRUCTURAL DESIGN OF APV-3 AIRCRAFT COMPOSITE REPLACEMENT WING

Jan. 2018 to July 2018

Structural Analysis Engineer (Loads and Testing Lead)

- Developed MATLAB code to produce V-n diagram and compared 17 critical load cases (9 standard cases, 4 gust cases, and 4 roll cases) using the internal shear and moment diagrams.
- Analyzed the design for buckling failure, bending laminate failure, bearing failure, bolt shear failure, & bonded joint failure using the worst load case.
- Verified the design using finite element analysis in Abaqus.
- Fabricated 6-foot wing skin and 6-foot C-channel spars using prepreg carbon fiber with a honeycomb core.
- Designed whiffle tree in order to load and test the composite wing using strain gauges and displacement sensors for data extraction.

### CUBESAT PROJECT, STUDENTS FOR THE EXPLORATION AND DEVELOPMENT OF SPACE

Feb. 2015 to June 2017

Propulsion Engineer (Propulsion Team Co-Lead)

- Competed for a spot as secondary payloads aboard the NASA SLS as part of the NASA Centennial Challenges, Cube Quest Challenge
- Helped design and 3D print 1 lbf monopropellant thruster for rocket grade hydrogen peroxide in Inconel 718.
- Performed two hot-fire tests at Mark Zucrow Laboratories, Purdue University to verify design and reliability.
- Performed computational blowdown analysis through MATLAB to evaluate burn times and tank depletion time.
- Manufactured prototype blowdown system to verify solenoid valve actuation & thruster performance under cold flow conditions.

### 3D-PRINTED LIQUID BI-PROPELLANT METAL ROCKET ENGINE, STUDENTS FOR THE EXPLORATION AND DEVELOPMENT OF SPACE

Dec. 2014 to  
May 2016

Propulsion Engineer (Injector Plate)

- Designed manifold and inlet side orifice diameters of LOX/RP-1 engine to account for shrinkage of injector material and pressure loss across injector during 3D printing.
- 18-foot rocket successfully launched to 5000 feet with 750 lbf engine made from Inconel 718.

## AWARDS

Bill and Melinda Gates Millennium Scholarship Foundation · GATES MILLENNIUM SCHOLAR

Apr. 2013