

Samantha Buczek

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EDUCATION

Drexel University, Philadelphia, PA

PhD in Material Science and Engineering, Hill Fellow
Adviser: Dr. Yury Gogotsi

August 2017- Present

Lafayette College, Easton, PA

Honors in Chemical Engineering, Bachelor of Science
Lehigh Valley Chapter of the ASM Prize – *Spring 2017*
Pi Mu Epsilon (Math Honor Society) - *Spring 2016*
Dean's List - *Spring 2015-Spring 2017*

August 2013- May 2017
Cumulative/Major GPA: 3.62/3.69

SKILLS

Laboratory: ExOne ProMetal R-1 and post processing, Ultimaker 2 Fused Filament Fabrication, DHR-1 TA, Phenom ProX, Sinterface PAT1, Malvern Zetasizer, Instron 3 Point Bend and Tensile Tests, Charpy Test, Gas Chromatography, Photolithography

Software: Autodesk Inventor, AutoCAD, Cura, Mathematica, Minitab, MATLAB, MS Office Suite, ImageJ, NIS-Elements Microscope Imaging Software, **Phenom ProSuite:** ParticleMetric, FiberMetric, Elemental Analysis

Language: Polish (fluent)

RELEVANT EXPERIENCE

Honors Thesis, Lafayette College

Fall 2016-Spring 2017

Studied the structure-property relationships in 3D inkjet printed bimodal mixtures of 420 stainless steel monodispersed powder using theory and experiment. Analyzed the packing density of monodispersed 420 SS powder for 15, 30, and 75 (diameter) micron powder as well as a bimodal mixture to determine the effect of volume fraction on the packing density of hard spheres in 3D printed metal matrices. This study will aid in the future investigation of the interfacial morphology of 3D printed laminar composites as a function of particle diameter ration and volume fraction and the effect on microhardness profile.

Research Assistant, Lafayette College

Summer 2016

- Characterized polymer coated gold nanoparticles using Zetasizer to understand the effects of temperature and salt concentration on the swelling behavior
- Performed regular maintenance and troubleshooting on the R-1 3D metal printer

EXCEL Scholar, Lafayette College

Summer 2015

- Optimized the quality of metal 3D printed parts by determining the feature resolution using SEM and the green state part strength through mechanical testing
- Investigated the relationship between polymer concentration in a binder and its thermo-physical properties
- Optimized the range of polymer concentration for binder jetting

Teaching Assistant, Lafayette College

Fall 2014-Fall 2015

- Organized and prepared laboratory experiments around photolithography, soft lithography, and 3D printing for Introduction to Engineering class
- Facilitated instructor with the laboratory instruction, fabricated over 80 students' designs using photolithography for microfluidics project, and provided personalized feedback to students
- Redesigned the lab experience with the instructor to replace the photolithography section with additive manufacturing processes for microfluidics development

INTERPERSONAL EXPERIENCE

PARDner Advisor, Lafayette College

Spring 2015-Spring 2017

- Mentor 18 first year students to ease their transition into their new academic environment
- Collaborate with the faculty running the Connected Communities Program, and organize events that create new spaces for collective knowledge making

- Provide academic guidance to students throughout the semester, so they can optimize their time and experience at Lafayette

Student Consultant, Lafayette College

Spring 2016

- Provided student input and perspective to a professor as feedback on their classroom practices
- Attended lecture once a week, performed mid-semester reviews with students, and made recommendations on improving the course

Summer Program to Advance Leadership in STEM (SPAL), Lafayette College

Summer 2013

- Selected along with 8 other students to partake in this program (out of an incoming class of ~650)
- Completed two courses (Calculus I, college writing) to allow room for more advanced courses
- Participated in lab modules in sciences and engineering, and visited local employers of scientists and engineers to better understand potential career paths

EXTRACURRICULAR ACTIVITIES

Mathematics Lab Assistant

Fall 2015-Spring 2017

- Aid students with their *Wolfram Mathematica* based projects

American Institute of Chemical Engineers

Fall 2013-Spring 2017

- Volunteer, attend, and facilitate events held by AIChE chapter of Lafayette College
- Participated in the mentoring program sponsored by AIChE throughout my first year

International Students Association

Fall 2013-Spring 2017

- Explore and celebrate cultural differences and diversity through participation in different events and initiatives hosted by ISA
- Partake in weekly soccer matches

PRESENTATIONS

Buczek, S., Cramer, A., and Ferri, J. (March 2016). *Comparative framework for binder formulations used for inkjet metal printing*. Poster presentation. AIChE Regional Conference, University of Delaware, Newark, DE

Buczek, S., Cramer, A., and Ferri, J. (March 2016). *Comparative framework for binder formulations used for inkjet metal printing*. Poster presentation. David and Lorraine Freed Research Symposium, Lehigh University, Bethlehem, PA

Buczek, S., Cramer, A., and Ferri, J. (September 2015). *Comparative framework for binder formulations used for inkjet metal printing*. Poster presentation. EXCEL Research Poster Session, Lafayette College, Easton, PA