

# Alec A. Jerger

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## Chemical Engineering

- Actively pursuing full-time Chemical Engineering opportunities where teamwork, advancement, and career fulfillment are held in high regard.
- Intelligent and driven engineer with experience in hands on research and undertaking innovative projects in a professional engineering workplace.

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## Education

### The University of Akron | Akron, OH | Graduated May 2020

B.S. Chemical Engineering with Polymer Specialization, Applied Math Minor, and Co-op Experience

Graduated with Honors | Summa Cum Laude | GPA: 3.93/4.0

President's List: Spring 2016, Fall 2017 & 2019 | Dean's List: Fall 2015 & 2016, Spring 2017 & 2019

ACS Rubber Division Scholar: October 2019

Outstanding Undergraduate Student Award: April 2017

Project Management and Teamwork Work Ethic Award: December 2016 & 2017

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## Professional Experience

### **Bridgestone Americas, Advanced Material Science (AMS); Akron, OH: June 2017 – May 2020**

Collaborated with multidisciplinary teams in the Bridgestone Research facility to create diverse types of polymers and rubber compounds, support tire builds for polymer evaluation, and improve industrial processes to reduce cost and increase efficiency.

#### **Fourth Term Co-op: Full-Time, May – Aug. 2019 | Part-Time, Aug. 2019 – May 2020**

- Completed a course on “Fundamental Skills for Managing Projects” to improve project management skills.
- Continued the innovative mixing project and developed a thorough plan to improve simulation validations.
- Took on a new project to find the effect different agitator designs have on mixing and polymer properties.
- Performed small scale polymer compound mixes using the original mixer constructed third term.
- Analyzed polymer backbone manipulation changing over time by using in-situ FTIR spectroscopy.
- Completed safety documentation for a new production mixer.
- Mentored a new co-op that started their first rotation in my department.

#### **Third Term Co-op: Full-Time, Aug. – Dec. 2018 | Part-Time, Jan. – May 2019**

- Took on an innovative project simulating fluid flow and mixing using computational fluid dynamics (CFD) to obtain flow properties within a high shear mixer. Gained knowledge on fluid dynamic modeling and residence time distribution (RTD) from this project.
  - Expanded 3D design knowledge by assembling mixer setups in AutoDesk Inventor and used Inventor to 3D print different rotor and stator designs for the mixer.
  - Performed independent experimental testing and collaborated with external partners.
- Independently compiled safety documentation and performed initial safety testing and optimization for an original mixer design fabricated in house.
- Synthesized backbone manipulated polymer for another tire build.

#### **Second Term Co-op: Full-Time, Jan. – June 2018 | Part-Time, June – Aug. 2018**

- Assisted in producing polymer for a large-scale tire build.
- Performed solvent extractions of natural rubber in order to optimize existing extraction processes. Gained knowledge on fractionation, product solubility, and process optimization through this project.
- Improved polymer properties through the process of polymer backbone manipulation.
  - Further improved knowledge on computer control systems, reactors, and overall equipment handling for high pressure, high hazard systems.
- Expanded safety knowledge by participating in a process hazard analysis and risk assessment for a new desolventization process.
- Enhanced AutoCAD skills by creating a P&ID for a new reactor setup.

### **First Term Co-op: Full-Time, June – Aug. 2017**

- Gained valuable computer experience on AutoCAD by modifying P&IDs for process designs, MathCAD by creating adaptable sheets for solution concentration calculations, and Excel by doing preliminary calculations for a possible new system.
- Hands on experience with reactors, heat exchangers, pumps, vessels, and other equipment when performing polymerization reactions within a reactor system.
- Improved temperature control of highly exothermic polymerizations.

### **The University of Akron; Akron, OH**

#### **Thermo-Responsive Polymer Research, Dr. Bi-min Newby: May 2019 – May 2020**

Tested properties of grafted poly (vinyl methyl ether) (PVME) on a cellulose membrane in order to create a thermo-responsive filter that will allow flow of water at low temperatures and flow of oil at high temperatures. Also, created a filter setup that allowed for accurate testing of pressure differentials and fluid flux across the grafted filter.

#### **College of Engineering Dean's Team: Aug. 2019 – May 2020**

Assisted the College of Engineering as an ambassador between the school and potential students currently in high school or interested in joining an engineering major. Primarily helped with visit days and group tours.

#### **Mass Transfer Operations Learning Assistant: Aug. – Dec. 2018 & 2019**

Tutored students on concepts from a core chemical engineering course including, but not limited to, flash calculations, distillation column sizing, crystallization yield, etc.

### **Target; Dayton, OH: July 2015 – Nov. 2017**

Maintained flow and organization within the store, communicated with customers to fulfill their needs, dealt with stressful situations, and troubleshoot on the spot problems. Performed the tasks of a Cart Attendant, Cashier, and Guest Service provider during summer and holiday breaks away from college.

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## **Organizations**

### **Tau Beta Pi (TBP): Nov. 2017 – Present**

- Student Advisory Board: Feb. 2020 – Present
- Chapter President: May 2019 – May 2020
- Chapter Vice President: Aug. 2018 – May 2019
- Chapter Recruitment Director: May 2018 – May 2019
- Attended National Convention: Oct. 2018 & 2019
- Core member of the organization by communicating with all eligible initiates and current members, promoting and improving chapter image, updating out of date documentation, and improving chapter organization and communication to improve efficiency. Currently working with chapter and national TBP organizations to provide easy to use tools and drive success.

### **American Institute of Chemical Engineers (AIChE): Aug. 2015 – May 2020**

- Class Representative: Aug. 2016 – May 2017
- Regional Conference Committee: Aug. 2019 – March 2020

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## **Other Skills**

- Project management via Bridgestone's "Fundamental Skills for Managing Projects" course, managing two innovation projects, and Akron's "Project Management and Teamwork" Chemical Engineering class
- Computer Science coding using C++
- P&ID drafting in AutoCAD
- Process simulation in ChemCAD
- 3D designing using Autodesk Inventor and some Solidworks
- Mathematical computation in Mathcad
- Microsoft Excel data analysis and VBA coding
- Microsoft Office including Word, PowerPoint, Visio, and Paint
- Painting and drawing