

# Joshua Heads

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## OBJECTIVE

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- A Chemical Engineering student seeking a full time position to meaningfully contribute to the chemical industry.

## EDUCATION

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**Prairie A&M University** Prairie View, TX Expected Graduation Date May 2017  
*Bachelor's Degree in Chemical Engineering* **GPA: 3.39/4.0**

## TECHNICAL EXPERIENCE

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Summer 2014-Present **Prairie View A&M University (Prairie View, TX)**

### **Senior Design Project: Design a Dimethyl ether production plant (Present)**

- Spearheaded a team of five to complete the design by conducting detail analysis of the market, production routes, reactor selection, and waste treatment which led to the best overall capital cost of building the plant.
- Designed the catalytic distillation column and fixed-bed reactor using Aspen HYSYS simulation.

### **Organic/Computational Chemist: Synthesis and Analysis of Novel Organic Materials (2014-Present)**

- Led a group of peers in the green synthesis of various brominated organic material to be tested as flame retardants.
- Developing efficient synthesis routes for Allene compounds which will be used in studies of photovoltaic applications.
- Successfully synthesized and characterized the different novel substances using analytical instruments (NMR, FTIR).

Summer 2016 **Los Alamos National Laboratory (Los Alamos, NM)**

### **Chemist: Modeling of New Iron Clusters for Single Molecule Magnet Studies**

- Utilized Density Functional Theory computations to analyze the magnetic properties of ferromagnetic iron nanoparticles.
- Enhanced the magnetic properties of various clusters by size variations and geometries and ligand effects via modeling.

## SKILLS

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- **Technical:** Analytical Instruments, Linux operating systems, Microsoft Office Gaussian (Computational chemistry software), MATLAB, C++, NWChem, Visual Molecular Dynamics, Aspen HYSYS, Polymath, Laboratory Safety
- **Soft skills:** Communication, Leadership, Team Work, Adaptability, Strong work-ethic, Problem Solving and Presentation
- **Relevant Coursework:** Process Controls, Thermodynamics, Organic Chemistry, Physical Chemistry, Physics, Material and Energy Balances, Kinetics and Reactor design, Advanced Math for Engineers, Biochemistry and Material Science

## LEADERSHIP EXPERIENCE

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2016-Present **Epsilon Gamma Iota, Inc.**

### **President**

- Led productive weekly meetings and secured speakers for professional development seminars such as SpaceX, Fermi Lab, Applied Materials and Legacy Institute for Financial Education (L.I.F.E)
- Increased member's participation, our awareness around campus and hosted joint programs with other organizations.

2014-Present **American Chemical Society: Project S.E.E.D**

### **Vice President/Supervisor**

- Enlightened and assisted high school students on various chemistry related research projects by holding weekly meetings, lectures, laboratory experiments and a summer evaluation symposium towards the end of the program.
- Led productive weekly meetings and increased the awareness and productivity of the chemistry club on campus.

## EXTRACURRICULAR ACTIVITIES

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2014-Present **Tau Beta Pi (Engineering Honor Society)**

### **Recording Secretary/Tau Beta Pi Mindset Programs Chair**

- Maintained comprehensive log of items discussed and debated during meetings, conferences, workshops and brainstorming sessions.
- Enlighten junior high school students in the STEM field by constructing STEM related modules that gave the students an idea of how STEM principles make everyday life more efficient.

## HONORS & AWARDS

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- Co-Author: "Teaching Chemistry with Computers", *International Journal of Information and Education Technology*, Vol. 5, No. 3, March 2015
- National Society of Black Chemist and Chemical Engineers Travel Grant award to present research in Orlando, Florida
- Selected to attend 7<sup>th</sup> international Dimethyl Ether (DME 7) conference in Houston, Texas (2016)
- 1<sup>st</sup> place for Physical Sciences at the 13<sup>th</sup> annual Pathway Research Symposium which included 900 students from the Texas A&M University System (2016)