

MISSOURI S&T AICHE | SEMESTER NEWSLETTER

Missouri University of Science and Technology: American Institute of Chemical Engineers (Rolla, MO)

December 2015

A Word from the New Advisor of Missouri S&T AIChE

-Dr. Christi Patton Luks

I have enjoyed my first semester as advisor of the S&T AIChE student chapter. I came to Missouri S&T in Fall 2014, and have slowly been getting acquainted with the school. Working with the chapter has helped me get to know the students outside of the classroom. I have been faculty advisor to other organizations at my previous job and I have been very active with the national organization of AIChE. I hope that those experiences can be useful to the present and future officers as we continue to improve the chapter.

I want to help strengthen the S&T national reputation by encouraging our students to participate in the national AIChE competitions. This year our Chem-E-Car team placed 5th in the national competition and a student Mason Donell placed 3rd in the poster competition. Five students participated in the national design competition this past year. There are opportunities to create a video or write an app for a mobile device and win prizes. There are competitions based on process safety each year (essay or design). Student researchers can win prizes at the regional and national level with posters or presentations. I hope that, if you are intrigued by any of these student competitions, that you will visit with me about how to become more involved. Let's prove that the S&T students are among the very best!



Dr. Christi Patton Luks, AIChE Advisor



This is a picture of all of the AIChE members that attended the last general meeting in which we held elections of new officers for next semester. Photo credit: L Rosamond Hoyle.

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Recruitment Report

-Mickey-Lee Larkan

The Fall 2016 semester has heralded a greater number of students involved in both the department and AIChE. The Recruitment committee has increased by three members this semester, which is a sizeable increase for the committee. Involvement in AIChE has also increased due to the incoming freshman. Freshman departmental tours were given in order to give freshmen a look into the Chemical Engineering department. An overwhelming number of these students have decided to pursue a degree in Chemical Engineering and have now become members of AIChE. To increase exposure of freshman to the department, AIChE was also involved with the MinerRama and over thirty students signed up to become members at this function.

In addition to the freshman recruiting efforts, the committee also continued to lead departmental tours for prospective students. These students were looking at both the school the departments. More of these students may come to the Missouri University of Science and Technology to study Chemical Engineering due to the new Bio-Medical minor being offered. Bertelsmeyer Hall continues to be a selling point for these students due to the state-of-the-art laboratories and lecture halls.

AIChE Campus and Community Involvement

-Tarique Ahmad, External Activities Coordinator

The Student Chapter of the American Institute of Chemical Engineers at the Missouri University of Science and Technology not only serves as an asset to students, giving them the opportunity to network with Alumni and Employers, but we also strive to give back to the campus and community. AIChE has representation in both Student Council on campus and the Student Advisory Council within the Chemical Engineering department.

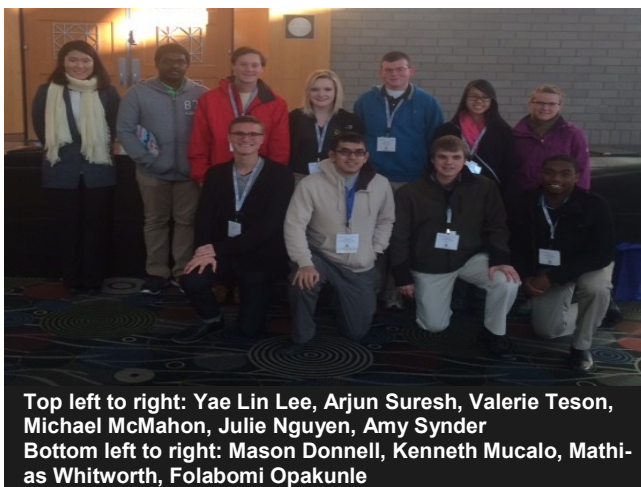
Through these two organizations AIChE works to share ideas and bring up concerns that the students, Chemical Engineering Department, and AIChE members may have on campus or within the department as well as to participate in events throughout campus. For example, AIChE is currently working with the department to bring more computers with the software needed for our classes as well as updating the Chemical Engineering Department website. Also, this semester the chapter has started working with the Student Design Center to begin the process of making Chem-E-Car an official member of the Student Design Center which would give it more resources and funds. The chapter continues to look for more ways be involved on campus, for example we are looking into starting a St. Pats Team. AIChE has been adopting a mile long strip on highway 44, southwest of the University campus, for the past few years. The student chapter heads to its section of the highway twice a semester to clean up debris that have piled up. During each trip students work on the different half of the highway to ensure that it's clean. On our two trips this semester we picked up more than ten bags of garbage on each trip. Along with the highway cleanup the AIChE also volunteered at the Great Circle in St. James, Missouri this semester. At the Great Circle, AIChE volunteers worked to ensure that the kids that lived at the Great Circle had a welcoming and clean environment by raking various sections of the property. We hope that we are able continue and add on to the contribution that we have in the community next semester.



Picture from the second Highway Cleanup this semester.



Great Circle volunteer event in St. James, MO



Top left to right: Yae Lin Lee, Arjun Suresh, Valerie Teson, Michael McMahon, Julie Nguyen, Amy Synder
Bottom left to right: Mason Donnell, Kenneth Mucalo, Mathias Whitworth, Folabomi Opakunle

Update on Annual Student Conference in Salt Lake City, Utah

-Kenneth Mucalo, President

On a chilly Friday morning, 11 Missouri S&T students gathered at the parking lot in front of Bertelsmeyer Hall. With only two and a half hours into the new day, the students are tired, but are eager to head off to the 2015 Annual American Institute of Chemical Engineers (AIChE) Student Conference in the Salt Palace, Salt Lake City, Utah. Eager to visit a new city, meet new people, learn new things, or to participate in its various competitions.

The 2015 Annual AIChE Student Conference held between November 6th and 9th was not only the gathering of Universities across the United States, but also a gathering of Universities from abroad. The conference hosted students from Qatar, Mexico, Canada, Korea, and 12 other countries. The students are welcomed to the conference with breakfast, and an important message. The message was delivered by Rocket Engineer Allan McDonald. Using his experience from the tragic shuttle Challenger launch in 1987, he conveys the importance of calling out unethical shortcuts and issues, even if pressured not to.

After the address from Mr. McDonald, for 3 days students were free to: network with AIChE professionals, faculty and students from other universities, attend seminars that cover topics from how to improve your student chapter to technical lecture, compete in competitions such as Chem-E-Jopardy, the Chem-E-Car competition, and poster competition, and explore beautiful Salt Lake City from exploring it's downtown to hike some scenic trails outside the city.

At the conference, a Missouri S&T student Mason Donnell achieved 3rd place in the poster competition. Mason's research was about a polymer specially designed to bind onto endotoxins that are produced by certain types of bacteria. In high concentrations these endotoxins are toxic to humans. The American Midwest has endotoxin contamination problems in its lakes and rivers, and decontamination can be a troublesome, inefficient process. These polymers are a potential cheap solution on increasing the efficiency of the decontamination process.

Now Missouri S&T AIChE chapter is looking forward in attending next year's Annual AIChE Student Conference which will take place on the West Coast in San Francisco. New city, new opportunities for students, and another chance to win gold in its competitions.

Chapter Constitution Revised

-Mathias Whitworth,
Secretary

The chapter ratified a new amendment to the constitution this semester. A need was seen for there to be another person that is solely in charge of fundraising for our chapter. To improve fundraising efforts for the future, the fundraising responsibilities have been transferred from the Vice President to a Fundraising Committee Coordinator that will be appointed by the Treasurer. This appointment will then be approved by the rest of the elected AIChE officers.



Mason Donnell wins 3rd place in Poster Competition

“The Supersmash Brothers tournament had a larger turnout than I was expecting. It was fun to not only see participants competing, but also sharing tips and tricks with each other. This is an event I would like to see the Chem-E-Car team do every semester.”

-Valerie Teson

Chapter Fundraising: Kickoff for the ShopwithScrip Fundraiser

-Shayan Sazdar, Vice President

The AIChE chapter held several successful fundraisers this semester including a pancake brunch, a root beer float social, and the new ShopwithScrip gift card fundraiser raising over \$290. The Chem-E-Car team also raised over \$110 during its first Supersmash Brothers tournament fundraiser. Thank you to all of the volunteers and individuals who made these fundraisers a success!

The ShopwithScrip fundraiser that was kicked off this semester was introduced by chapter advisor, Dr. Christi Luks. ShopwithScrip, a service of the Great Lakes Scrip Center, allows organizations such as AIChE to raise funds through purchases of gift cards. The catalog includes gift cards from more than 300 retailers (such as Walmart, Subway, Panera, hotel chains, etc.) nationwide. Gift cards can be bought from the chapter at face value with check or cash and then AIChE orders those gift cards at a discounted price (rebate) making for a very easy way to raise funds for the chapter. New order dates will be announced soon for next semester.



Mathias Whitworth and Michael McMahon at the pancake brunch fundraiser

Also, on behalf of the entire chapter, I would like to thank all of the individuals, alumni, and companies that spent time with the chapter and that made generous donations this semester. Without their generosity and support, the chapter would not have been able to hold so many valuable networking events nor offer reduced prices for attending the national conference!



Winners of the Supersmash Brothers fundraising tournament. Left to Right 1st—3rd: Devin Klein, Isaac Lewis, Joseph Garuccio



Matt Wilton from ADM presenting at a general meeting.

Fall 2014 Speaker Series

-Shayan Sazdar, Vice President

The AIChE student chapter was pleased to host many worthwhile academic and industry speaker events at James E. Bertelsmeyer Hall as well as other exciting networking opportunities for members this fall semester.

The speaker series started during the first meeting with a representative from the Missouri S&T Office of Graduate Studies who presented chapter members an opportunity to learn more about graduate school preparation as well as the different graduate degree opportunities available at Missouri S&T. Throughout the rest of the semester, the AIChE chapter once again hosted an exciting line up of information and Q&A sessions with many new and returning industry speakers. In addition to company information sessions, UMR alumnus Denis Backer and Christian Allen from Monsanto shared words of wisdom and reflected on their own various experiences in industry with our chapter during their visits. The AIChE chapter is tremendously grateful to all of the speakers for spending their time with us in Rolla. To learn more about all of the speaker series events, please refer to the next section.

As usual, the Fall corporate mixer event held on September 21st was a notably fun and worthwhile evening for the student chapter. The event brought an excellent show of representatives from a total of seven different companies: The Clorox Company, Emerson Process Management, ExxonMobil, Marathon Petroleum, MAVERICK Technologies, MYNAH Technologies, and Phillips 66. Over 40 students attended the event to chat with company representatives before the fall career fair and participate in our panel Q&A session with the company representatives. The event this semester was once again a valuable opportunity for students and employers to learn more about each other and the AIChE chapter is very thankful to all of those individuals and companies who helped make this fall's event a success.

Lastly, the student chapter joined with the St. Louis section of AIChE for a plant tour and dinner at the Bissinger's Chocolate Factory on September 16th. Seven members made the trip to St. Louis for the enjoyable and delicious opportunity to tour a chocolate plant and dine with chemical engineers and chemical engineering students from other campuses.

An important update on OrgSync

-Mathias Whitworth
Secretary

I encourage all students to join AIChE on OrgSync. It is a really good tool for our organization because it allows the officers to communicate information about all of our events with our members easily. Anybody that has joined AIChE on OrgSync can see the date, time, and location of all of our upcoming events. If you haven't already, join AIChE on OrgSync so that you can stay informed about what we are doing and can become more involved.



Picture from the general meeting in which Saurabh Pinge from LafargeHolcim presented.

“The most valuable thing that I attained was that this won't be the easiest road. You can make your path the way you want if you put in the effort and time to make things blow up amazingly for you. “

-Paige Bogert



Picture from the general meeting in which Saurabh Pinge from LafargeHolcim presented.

Fall 2014 Speaker Series (cont.)

-Shayan Sazdar, Vice-President

Industry guest speakers

- August 26th, Melissa Shoemaker, Missouri S&T Office of Graduate Studies.**
Melissa discussed the various graduate degree, certificate programs, and fellowship opportunities available at Missouri S&T as well as provided helpful insight for preparing graduate school applications.
- September 9th, Denis Backer, UMR alumnus.**
Denis presented an exciting personal compilation of notes and tips for good chemical engineering practices from his industry experience.
- September 17th, Dave Sextro and Zach Sample, MYNAH Technologies.**
Dave and Zach discussed the importance of process simulation with MYNAH products and services to process safety and provided a breakdown of the company and its current recruiting.
- October 7th, John Mills and Michael Goedecker, MAVERICK Technologies.**
John and Michael presented the chapter with an overview of MAVERICK Technologies and their different career opportunities for chemical engineers in automation and process control services.
- October 1st, Saurabh Pinge, LafargeHolcim.**
Saurabh provided a summary of LafargeHolcim as a whole and discussed his career experiences working at different departments within the company.
- October 21st, Allen Christian, Monsanto.**
Allen highlighted various stories from his career journey starting from college, going through graduate school, and working in different industries before coming to Monsanto.
- November 4th, Matt Wilton, Archer Daniels Midland.**
Matt highlighted the products and career opportunities in chemical engineering at ADM as well as shared valuable on-the-job career advice for newly hired engineers.
- November 18th, Brock Jacobs, ICL Performance Products.**
Brock presented on ICL plant processes and products and discussed the different chemical engineering opportunities available at ICL.

The Success, Evolution, and Future of the Chem-E-Car Team

-Folabomi Opakunle, Chem-E-Car President

Chem-E-Car earns 5th place at Nationals

In the beginning of the Fall 2015 Semester, the Missouri S&T Chem-E-Car team gathered in the lab, assembled their Personal Protective Equipment, and began preparations for the upcoming National Chem-E-Car competition that was to be held in Salt Lake City, Utah the weekend of November 6th. The team had qualified for the competition in April, 2015 by placing 3rd place in the Mid-America Regional Competition held at the University of Kansas. The team worked tirelessly throughout the semester to design a car fit for a National competition.

Box⁷ (Box to the seventh power) is the name of the Missouri S&T Car that competed against 33 schools across the world in Salt Lake City, Utah. The name originates from the fact that the device requires seven separate boxes to house the chemical reactions, battery, and electrical components while considering proper double-containment for the safety of the car. The driving mechanism of the car is the decomposition of Hydrogen Peroxide catalyzed by Potassium Iodide. A black box was created to house a small tube shaped in the form of a manometer; behind the tube shaped manometer is a photo resistor set at a marked point. The oxygen gas produced in the reaction pushes dyed water through this tube. The car's power mechanism is a traditional homemade lead-acid battery with 6 cells; each cell produces two Volts.

At the competition, all teams were required to carry a load of 230mL of water and to travel the required distance of 25.3 meters. Box⁷ earned 5th place in the competition, traveling 24.886 meters. The achievement marks one of the best results in the team's history of competing at the national level.



The car taken to Chem-E-Car National competition called Box⁷



Arjun Suresh and Yae Lin Lee working on Box⁷ in the Chem-E-Car lab.



The floor team at National Competition.
Left to Right: Folabomi Opakunle, Yae Lin Lee, Valerie Teson, Arjun Suresh, Aaron Latal, Michael McMahon

"On the day before the competition, the team went through a car inspection with safety judges. The judges pointed out two things that needed to be fixed. It was very intense to bike around the Salt Lake City that night and try to find a toy store to get a silly putty for fixing our car."

-Yae Lin Lee

"The recognition award is a small but great program in the Chem-E-Car team. A lot of individual effort goes into the design and construction of the cars and this is a fun way to recognize team members who put the extra effort in to help the team out."

-Robert Boxerman



Robert Boxerman (pictured center) receiving the monthly Chem-E-Car recognition award.

Evolution of the Team

With the record breaking incoming freshman class of 2015, the Chem-E-Car Officers implemented new recruitment methods. We participated in Missouri S&T Miner-Rama fair; something that hasn't been done for a couple of years. At Miner-Rama, we had videos of past competition displayed on a TV to excite prospective members as well as had a display board informing them of the objective of our design team.

In addition, we developed a recruitment flyer that invited students to join us in an informational meeting held early in the semester. In the meeting, we introduced the new members to the organizational structure of the Missouri S&T Chem-E-Car team. Furthermore, we emphasized the competition and safety rules enforced by the American Institute of Chemical Engineers Chem-E-Car Committee.

As a result of our recruitment efforts we expanded the team size from 9 members to 39 members, this semester, alone. All members were assigned to 3 different teams: Competition Team, Team 2, and Training Team. Teams were created based on the design team experiences each member possessed. As we progressed through the fall semester, Team 2 and Training Team strived to develop a new Chem-E-Car to compete at the upcoming Mid-America Regional Competition that will be held at Kansas State University in April, 2016.



Pictured is the team that built "Box⁷" that earned 5th at National Competition

"As I expected, Chem-E-Car provides obstacles that I'm not used to, but certainly am capable of overcoming. It's a new experience with new people and I am glad to have taken this opportunity."

-Marc St. Amor



The Zinc Bromide battery cells that Team 2 is using as their power mechanism.

Future of the Team

The Chem-E-Car Officers were able to make significant progress with the team this year, but we have much to look forward to on the horizon.

Team 2 has decided to pursue a zinc-bromide battery for their power mechanism and the driving mechanism is the hydrolysis of acetic anhydride catalyzed by triethylamine to create a pH change. They built 2 cells for the battery, and it produces about 1.8 Volts per cell. They have also developed the chassis and the battery box. Team 2's goal is to finalize the driving mechanism reaction of the car and to build the containment unit in time for the regional competition.

Training Team has decided to pursue a vanadium battery for their power mechanism. The team is considering this reaction to become their driving mechanism. They are planning a blue bottle chemical reaction as a backup. They will conduct further testing next semester before finalizing the prototype and moving forward with the design.

Some of the Chem-E-Car team goals for next semester are to have 2 cars competing at the Mid-America Regional Competition in April, 2016 and to be a part of the Missouri S&T Student Design and Experimental Learning Center. Currently, we are in the preliminary stages of participating in the center and a constitution has been developed to help make the transition next semester.

The Fall 2015 Semester has been a successful one. The Chem-E-Car team made significant progress and our goal is to continue to further our success each term. We hope to continue to make Missouri S&T and our Chemical and Biochemical Department proud, and, most importantly, we strive to learn and enhance our growth as individuals and as a team.



The chassis that Team 2 built for the upcoming Regional Competition.

Spring 2016 AIChE Officers

Congratulations to all of the Spring 2016 officers for winning their elections! We are looking forward to your leadership next semester. Also, congratulations to Kevin Ewald on his approved appointment to the Fundraising Committee Coordinator.

Shayan Sazdar, *President*
Alex Kessel, *Vice President*
Katherine Bremer, *Secretary*
Matthew Crywus, *Treasurer*
Paige Bogert, *Recruitment Officer*
Aaron Latal, *Chem-E-Car President*
Yasseen Osman, *External Activities Coordinator*
Kevin Ewald, *Fundraising Committee Coordinator*

Stay up to date with AIChE online!

We are in the process of updating our current website www.mstorgsync.com. The goal of this update is to make the website more professional and more informative. It will include all of the current and upcoming AIChE events and meetings, a page with all the information necessary to participate in AIChE's ShopwithScrip ongoing fundraiser, links to our Facebook and Twitter pages, and many more updates. Make sure to visit our improved website next semester. In the meantime, be sure to:

Like us on Facebook



Follow us on Twitter



Request an invite on OrgSync



Also, as always, we encourage members to register as a national member for all of the latest updates from AIChE. Visit <http://www.aiche.org/community/students/student-membership> to register. National membership is free for students!

Acknowledgments

This newsletter was prepared by Mathias Whitworth (newsletter coordinator), the newsletter committee, and AIChE chapter advisor, Dr. Christi Luks.

Fall 2015 Officers

Kenneth Mucalo
President

Shayan Sazdar
Vice President

Mathias Whitworth
Secretary

Michael Clemons
Treasurer

Mickey-Lee Larkan
Recruitment Officer

Folabomi Opakunle
Chem-E-Car President

Tarique Ahmad
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