



MISSISSIPPI STATE UNIVERSITY
— JAMES WORTH —
BAGLEY
COLLEGE OF ENGINEERING

DAYE C. SWALM SCHOOL OF
CHEMICAL ENGINEERING

**SPECIAL
POINTS OF
INTEREST:**

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VOLUME 2, ISSUE 1

JULY 2021

2020 Hindsight

By: Dr. Julie Jessop

2020 brought many disappointments: cancelled conferences, postponed competitions, online classes, virtual meetings... However, students and faculty in the Swalm School of Chemical Engineering kept our tradition of excellence in the midst of the pandemic and its effects.

Our AIChE student chapter received the Outstanding Student Chapter Award for the 19th time over the past 20 years! Our student chapter members garnered collegiate, regional, and national awards:

- **Kassidy Adams**—2020 Harry Simrall Award for Excellence in Engineering.
- **Obinna Muoh**—2020 Epting/Matthews Co-op Student of the Year.

- Both Kassidy and Obinna were inducted into the MSU Bagley College of Engineering Student Hall of Fame.



- **Cameron Gruich**—NSF Graduate Research Fellowship.



- **Arigaa Zolboot**—2020 -2021 Mississippi Automotive Manufacturers Association scholarship, as well as the 2020 Donald F. and Mildred Topp Othmer Scholarship Award.

- **Mayukh Datta**—2021 Humanity in Action Fellowship.

A special shoutout goes to the AIChE student leaders,

who kept the chapter alive and active even though social distancing requirements kept us apart for most of the academic year. The chapter:

- Collected 532 cans to donate to Bully's Closet & Pantry on campus.
- Organized its annual Girl Scout STEM Badge Day virtually for more than 65 girls in grades K-12.
- Fielded teams for the Southern Regional ChemE Jeopardy and ChemE Car competitions.
- Hosted virtual company information sessions for Chemours, Dow, Ergon, and Westlake Chemicals.

Thus, looking back over the last academic year, we are encouraged by the resourcefulness and indomitable spirit exhibited by our student body throughout the pandemic. Hail State!

Opportunities for Alumni Engagement

The Swalm School of Chemical Engineering is proud of its graduates! Your successes are an inspiration to our current students, and we want to provide opportunities for you to continue your engagement with the School at whatever level you feel comfortable:

- Keep us abreast of your latest accomplishments. We would like to highlight them on our website and/or in our newsletter.
- Volunteer to give a seminar in our Professional Development Seminar (CHE 3331). Our current students love to hear from our alumni regarding their career paths. Examples of presentations from the Spring 2021 semester include: Networking, **Jim Chapman** (2001); Management vs. Leadership, **Michael Faulkner** (1989); Pivoting, **Bonnie Chapman** (1996); Careers in the Medical Field, **Van Wurm** (1988); and Programming & Advanced Excel for Industrial Applications, **Andrew Weaver** (2020).
- Participate in the alumni mentoring program that our AIChE student leaders and Advisory Board are working to develop and pilot this coming academic year.

Have questions about and/or ideas for alumni engagement? Want to send an update? Want to volunteer? Email Dr. Julie Jessop, Associate Director, at jessop@che.msstate.edu.

Undergraduate Research Highlight

By: Clayton Dickerson

The importance of experiential learning is touted throughout our chemical engineering curriculum. One opportunity to gain experience outside the classroom is undergraduate research. Students can work for a professor on a project as a research assistant for pay or work under the guidance of a professor on a directed independent study for credit. Students can also do research to complete an undergraduate honors thesis. For example, **Mitchell Harvey** recently completed his honor thesis, *Development of a Novel Chemical Timer*, based on his contributions to the MSU Chem-E Car Team for the 2021 Regional AIChE Competition. Because chemical engineering is such a versatile major, students can look for research projects in chemical engineering and beyond, such as chemistry, mechanical engineering, biological sciences, environmental en-

gineering, etc. I found my research project in petroleum engineering.

Dr. Maryam Mirabolghasemi and I created a case study of oilwell produced water treatment, comparing the economics of modern treatment technologies and beneficial reuse of the high-salinity water to the deep well disposal that is the industry norm. This research was funded by the Bagley College of Engineering and Department of Research & Economic Development at Mississippi State University. Using water data from the Marcellus Shale Energy and Environmental Lab site in Morgantown, West Virginia, we compared the relative effectiveness between High Pressure Reverse Osmosis, Direct Contact Membrane Desalination, and Electrodialysis to reduce the total dissolved solids (TDS) of high salinity water. The results demonstrate the importance of location in produced water management, with disposal and reuse both in-

creasing in cost as the disposal/reuse sites are located farther away from the production well. Also, the quality of the water played a role in the economic viability of different technologies, some becoming more economically viable as salinity properties changed and others losing viability with the presence of high organic loads. To find out more, check out the conference paper that we wrote for the April 2021 SPE Western Regional Meeting at the following link:

“A Comparative Produced Water Management Decision Making WorkFlow: MSEEL Case Study”

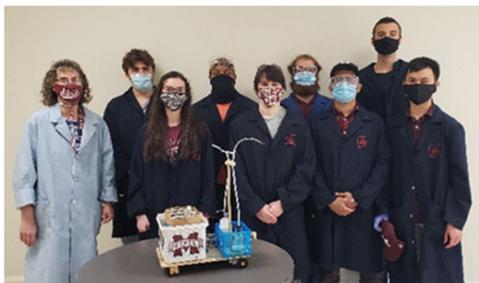
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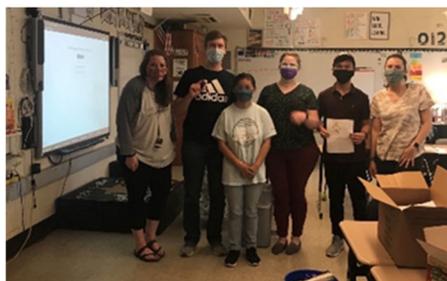
Activity Collage

By: Dr. Julie Jessop

During AY2020-2021, MSU worked to protect its student body with strict guidelines for how student organizations could operate. In general, meetings had to occur online; however, small groups were allowed to meet on campus if PPE and social distancing were maintained. Within these constraints, AIChE was able to build ChemE cars for the regional competitions. **Holden Honigfort** led the team that competed in the postponed 2020 competition held virtually on October 25. **Quyen Tran** led the team (photo below) that competed in the 2021 competition held



virtually on March 28. A special thanks is due alumnus **Dalton Winans-Pruitt** (2019), who served as the On-site Safety Judge for both teams.



Catherine Boltz, our K-12 STEM Outreach Chair, organized virtual outreach events in the spring. Volunteers packed boxes donated by International Paper with experimental supplies for all local participants. On January 30, we held the Girl Scouts STEM Badge Day with 9 different experiments targeting three age groups. Alumna **Danielle Winans-Pruitt** (2017) provided the keynote address. On April 30, we facilitated 3 different experiments for the 4th Grade After-school Science Club at Henderson Ward

Stewart Elementary (photo left).

The virtual requirements of the fall semester prompted us to revitalize the relationship with our sister AIChE chapter at the *Universidad Nacional Autonoma de Honduras*. **Kassidy Adams**, our Sister Chapter liaison, coordinated activities such as Trivia Night, a pen pal program, and Independence Day celebrations.

At the very end of the spring semester, student organizations were allowed to hold outdoor gatherings. We were able to close out the year with the annual crawfish boil at Little Dooley (photo right).



This summer, AIChE volunteers remained active by welcoming the newest batch of nearly 100 first-year and transfer students at the 25 MSU summer orientations (photo left).



Conference Highlight

By: Nancy Usey

The 2020 AIChE Annual Student Conference was held virtually November 13-16. Student chapter leaders attended talks and workshops throughout the weekend. One presentation that stood out to me was: “Creativity and Grit: Coping with a Difficult Job Market.” It communicated the importance of technical aptitude, leadership capability, soft skills, and hard work in figuring out one’s next step after graduation. Andrea Wright, a chemical engineer with ExxonMobil in Baytown, TX, spoke on this subject from her own personal experiences. When evaluating a candidate, recruiters are looking at three main categories: technical ability, leadership, and teamwork and service while constantly asking themselves the question, “Will

this person make my team better?”

Since GPA is the most widely accepted indicator of technical skill, students with lower grades must be able to explain to interviewers any of the challenges that contributed to their lower GPA’s. Internships and work experiences can also be used to communicate one’s technical skills while also showing how well one works in a team environment. Since many internships were canceled due to COVID-19, students can also pull from school projects and classroom learning to convey technical prowess. When speaking on one’s leadership initiative, it is not enough to merely state the organizations in which one invests his or her time. Students must be able to speak to their personal contributions to improve those organizations to truly impress recruiters. Service is a category



that allows students to elaborate on their passions, so they should seize the opportunity to discuss service projects in which they have been involved (e.g., food banks, STEAM outreach programs, hurricane relief efforts, etc.).

In parting words, Ms. Wright encouraged students to be open to unexpected possibilities throughout their career, since every steppingstone prepares one with new skills and experiences to ready oneself for the next jump.

Grit is passion and perseverance for long-term goals.

~ Angela Duckworth, CEO of Character Lab ~

Co-op Highlight

By: Arigaa Zolboot

Like many ChE students, I was nervous about my future due to the uncertainty of COVID-19 back in July 2020. However, I believe persistence and hard work pay off. I applied to the numerous intern and co-op positions that Dr. Elmore sent out to all the students in our department and hoped that I could obtain an internship in the Fall semester instead of continuing my studies through online classes.

A week before classes began at MSU, I received an offer from Nufarm Americas Inc., an herbicide manufacturing company, in their formulation and packaging plant located in Greenville, MS. My main assignment was to create Standard Operating Procedures (SOPs) for all the equipment at their packaging lines. I did not have a great understanding of SOPs at the time. My supervisor, the Process Engineer at the plant, explained that the SOP is an important guide to anybody who is not familiar with the equipment or process,

including people with less work experience like me. Being an international student and having almost no hands-on experience were an advantage in this case. If I could follow the procedure without confusion, then anybody with this procedure could run the equipment. I worked with the plant operators to learn the equipment and their day-to-day issues. I created SOPs that are simple and clear with many visual aids. One of the operators from our biggest North American facility paid me one of greatest compliments that I received during my internship: “Arigaa, these SOPs are perfect. No modifications are needed. I believe anybody who has your SOPs can run all the equipment and they might gain confidence because they can run the equipment by themselves on their first try.”



Within the first two months of my internship, my supervisor accepted another position. He was very involved and left big shoes to fill. As his direct assistant, I worked to ensure that our production ran smoothly. This opportunity helped me develop both my technical and soft skills. With the amazing support of my team, I led several capital projects, troubleshoot packaging lines and PLC systems, and continued as a summer intern at Nufarm’s facility in Chicago, IL.

Without all the people who saw my potential and provided me with these excellent experiences, I could not have gained all my current knowledge and skills to be well-prepared for the rest of my MSU journey. I am so grateful that Nufarm took a chance hiring an international student who did not have much hands-on experience and gave me opportunities to learn and grow as a person and as an engineer. I am very excited to return to campus this Fall and see all of my friends, mentors, and professors in person and to graduate in May 2022 with my ChE B.S.

Kassidy Adams ★Ω
Dipesh Adhikari
Haley Adkison
John Badley Ω
Luke Bennett ★Ω
Andrea Beyer Ω
Sidney Blassingame
Gage Bloodworth
Heather Bouse Ω
Ashley Burt ★Ω
Joshua Campbell
Addison Caughman ★Ω
Isabel Cheney Ω
Allison Clark ★Ω
Germaine Cooley
Kinsey Dahlin ★Ω
Anna DeStefano ★
Devin Derry
Ankit Dhakal
Clayton Dickerson ★Ω
Summer Dill ★Ω
Sydney Duncan ★

Zachary Evans
Bram Finkel
Dylan Firchau
Thomas Griffin
Cameron Gruich Ω
Logan Hadaway
William Hammett Ω
James Handy Ω
Mitchell Harvey ★Ω
Gabrielle Heckler ★Ω
Bradia Henfield Ω
Kerrington Higginbotham Ω
Jemealia Howard
Freddie Jackson
Daisia Jones
Brooke Kemper Ω
Jake Kirkpatrick Ω
Will Lee
Jaylan Lenoir Ω
Hannah Levens Ω
Maggie Merrell ★Ω
Matthew Morganti

Obinna Muoh ★Ω
Huyen Nguyen Ω
John O'Keefe
Allen Lin
Joseph Loveall
Erin Lowe ★Ω
Andrew Ludwick
Lauren McCreless Ω
Bryant McDuffie Ω
Megan McNerny
Mikail Onstott
Austin Owens
Latonia Parker Ω
Kenneth Partridge Ω
Tyler Penton Ω
Henry Reynolds Ω
Matthew Roberson
Erin Rowcliff Ω
Caitlin Seay Ω
Steeler Shannon Ω
Emily Shelton Ω
Faith Smith

Matthew Sparks
Peyton Spencer
Lauren Summerlin
Lillian Thomas ★Ω
Matthew Townsend ★Ω
Zachary Wagner ★Ω
Riley Watson
Morgan Webb ★Ω
Candace Wheeler ★Ω
Amber Whitehead Ω
Paul Winters ★Ω
Jacob Wood Ω
Payton Worrell
Brett Yarborough

★ = AY2020-2021 AIChE member
Ω = Omega Chi Epsilon member



Looking Ahead

By: Lauren Brown and Nathan Mitchell

My name is **Nathan Mitchell**, and I am serving as one of your 2021-2022 co-presidents for the MSU chapter. I am originally from Hattiesburg, MS. This summer I am working my third co-op term with SABIC Innovative Plastics in Bay St. Louis, MS. This is my final year here at MSU, and I will graduate in May 2022. I look forward to meeting all of you and to all the great work our AIChE chapter will be doing during this next year!

My name is **Lauren Brown**, and I am also a co-president for the MSU AIChE chapter this year. I am from Memphis, TN and just finished my third co-op term with International Paper at the Columbus Mill. This year will be my 5th year at MSU, and I will also be graduating in May. Since my freshman year, I have been very active within the MSU chapter and am very excited for the upcoming school year and events within AIChE.

Due to limited in-person events last year, AIChE hopes to increase engagement and fellowship throughout the year. AIChE will host social events for the students, such as the annual crawfish boil. These events will give the students the opportunity to build relationships and network with fellow students. Additionally, AIChE is working with the Advisory Board to develop an alumni mentoring program, which will be piloted this year.

AIChE will continue serving the community through service projects. AIChE will expand K-12 STEM Outreach throughout the Starkville area. This past year, we had a successful event with the 4th grade science club at Henderson Ward Stewart Elementary School. This year AIChE hopes to engage in more frequent events with local schools, as well as the Boys & Girls Club to get students excited about STEM. In addition, AIChE will

host the annual Girl Scouts STEM Badge Day in the spring. AIChE is looking forward to promoting STEM to students throughout the Starkville community.

In addition to service projects, AIChE encourages students to stay involved through the national and regional conferences. At these conferences, students have the opportunity to network, attend career workshops, and compete in ChemE Jeopardy, ChemE Car, and/or research competitions. This fall, the National AIChE Conference will be held in Boston, MA, as well as virtually. The 2022 Southern Regional Conference location is currently to be determined. However, the MSU AIChE chapter still plans on financially supporting eligible students to attend these conferences to represent our chapter.

Watch for further details on chapter activities! Have questions or ideas? Email us at aiche.msstate@gmail.com.