6 C Carbon 12.011
2 He Helium 4.0026
10 Ne Neon 20.180
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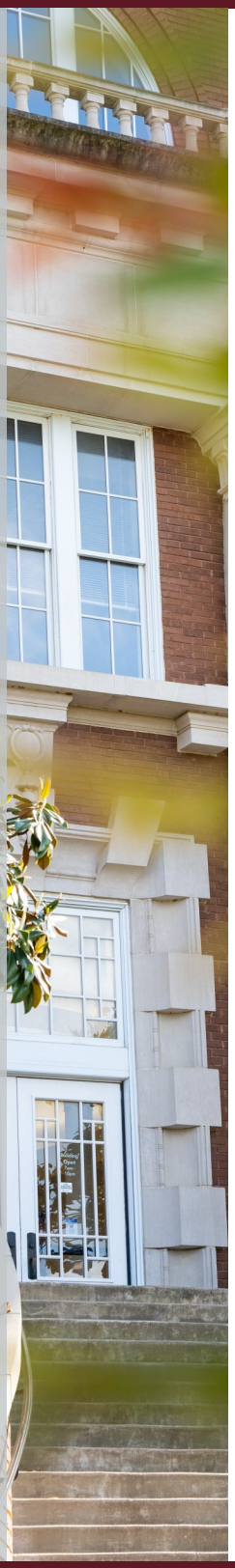

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Looking Ahead
Presidents' Note

Hey everyone! My name is **Katie Evans** (right), and I'm honored to serve as one of your Co-Presidents for the 2025-26 AIChE Student Chapter. I'm a senior from New Albany, MS, and I've had internship experiences at Spire Natural Gas Company in St. Louis, MO; PBF Energy in Chalmette, LA; and Toyota Motor Manufacturing in Blue Springs, MS. I'm excited to see what's in store for the Chapter this year, engage with students, and grow our great community.

My name is **Avery Byars** (left), and I'm your second Co-President for this year in AIChE! I'm a senior from Decatur, AL and have been involved in our AIChE chapter since freshman year. My work history includes engineering internships with Nissan in Canton, MS; Shaw Industries in Dalton, GA; and, most recently, ExxonMobil in Baton Rouge, LA. I am grateful to finish my last year at MSU serving an organization that has meant so much to my college career!

Our journey together began in our freshman year, and we've been a team ever since—where you find one of us, the other is usually close by. Over the years, we've faced challenges side by side, and we're excited to bring our shared commitment and collaboration to lead the AIChE chapter this academic year.

AIChE has been instrumental in our development, providing a network of mentors and peers who have supported us in our academic endeavors, community outreach, and personal growth. Through events like resume review workshops, company information sessions, and outreach initiatives, AIChE has helped many of our members secure competitive co-op and full-time opportunities.

We also host regular study sessions in the Swalm student lounge, working with professors and fellow students to schedule pre-test nights that include dinner and tutoring support. Additionally, the AIChE Alumni Mentoring Program pairs current students with alumni to provide valuable insight into navigating the corporate world. This year, we will also establish a new peer mentor program that pairs younger students with older students to foster relationships outside of the classroom.

Looking ahead, AIChE will continue to engage with the community through our outreach programs. Our K–12 STEM initiatives, such as Girl Scouts Day and Skate Odyssey, feature hands-on science experiments designed to inspire young students. We also aim to introduce more advanced activities for high school students to spark interest in chemical engineering. Moreover, we will continue to participate in more Bedz4Kidz bed builds to support children in need within the Golden Triangle area. We are also excited to bring back Mississippi State's ChemE Car team to compete at the Regional AIChE Conference in the spring.

We look forward to defending our title in the Homecoming Banner Competition and bringing back popular events such as crawfish boils, football tailgates, trivia nights, and kickball games. Our goal is to foster an inclusive, welcoming environment for all students this school year—we can't wait to get started this fall!

Polymers & Platoons | *Stellar Students*

Hunter Chunn, a senior in chemical engineering from Columbus, MS, has been balancing his time between undergraduate research and the Air Force ROTC program. He reflects on how both experiences have shaped his college career:

"My dad was in the Air Force, and for a long time I wanted to do AFROTC to follow in his footsteps. In high school, I became interested in engineering and eventually settled on the chemical discipline. At first, I thought the two paths would unite easily, but in college I found that my goals for military service and my goals as a chemical engineer were moving in different directions. Reconciling the two is something I'm still working on."

Through AFROTC, Chunn has gained leadership experience in roles ranging from mentoring a group of eight freshmen to chairing the committee that planned the detachment's spring formal. "AFROTC has also given me countless opportunities to network with professionals of all kinds," he said.

Balancing AFROTC, coursework, and research has required careful planning: "Prioritization is absolutely critical. Sometimes homework isn't too bad, and I can get ahead on ROTC work or research. Others, I may need to put off an experiment to finish a big assignment. Situational awareness and knowing what my priorities will be for several weeks helps me avoid last-minute work and keeps me on track."

Chunn first became involved in research during the summer of 2023 through an NSF Research Experience for Undergraduates (REU) at the University of Southern Mississippi. Working in the Nazarenko Research Group, he modified poly(vinylidene fluoride) microfiltration membranes with polydopamine (PDA) to improve their hydrophilicity and hydrocarbon separation efficiency. His work included testing PDA formulations, analyzing water contact angles, and presenting research updates. "All of this culminated in a poster presentation at a local conference, where I was recognized as one of the top two students in my cohort. That recognition led to an invitation to give a talk at the 2024 American Chemical Society Spring Meeting in New Orleans."

Returning to MSU in the fall, Chunn connected with Dr. Jessop after taking her Mass & Energy Balances course. She encouraged him to submit his REU poster to the AIChE Annual Student Conference, where he presented again. He soon joined her lab as an undergraduate research assistant, working part-time during the semester, and then full-time the following summer. "I began a project using an external reference for monomer-polymer systems without a stable internal reference for Raman spectroscopy. I've continued developing that project, and last summer, began analyzing our external reference in systems polymerized through both heat and UV light."

Research, Chunn said, has challenged him in ways coursework never could. "Unlike homework problems, research is completely open-ended. More than once I've been baffled by results that defied any prediction I made. But that's what makes research valuable. I've had to deep dive into literature, develop new analytical skills, and collaborate with engineers, chemists, physicists, and industry professionals. It's pushed my critical thinking and communication skills to the max. While I don't know if research will be my career, the skills and experiences I've taken from it will be invaluable wherever I go."

His advice to others considering AFROTC or research: "Both can be incredibly rewarding, but also incredibly taxing. It's easy to burn yourself out if you don't leave time for yourself. Remember that you're a human and a student first. Build good habits—eat well, get enough sleep, and make time for friends and family. For AFROTC specifically, get involved in detachment activities beyond training. It's a built-in community of like-minded people, and surrounding yourself with that support makes the journey much easier."

ROTCs at Mississippi State:

https://www.armyrotc.msstate.edu/

https://www.afrotc.msstate.edu/

Alayna Todd ('23) | *Alumna Highlight*

By Josh Bowman

From sewing her own prom dresses to engineering the next lunar spacesuit, Ms. Alayna Todd has built a career that fuses creativity with technical expertise. At Mississippi State, she discovered that she didn't have to choose between fashion design and ChE: "By the second week of freshman year spring, I knew exactly what I wanted to do. I absolutely fell in love with all things textiles, from the fabric manufacturing process to the chemical makeup of the fibers." That realization led her to double major, combining polymers, fabrics, and process understanding.

Juggling two full-time majors required careful planning and the support of professors and peers. She recalls an interaction with Dr. Julie Jessop: "She was so encouraging and understanding, and she knew right off the bat why I would pick those two majors. I didn't have to explain myself for a second." Todd also found encouragement in her ChE peers, especially teammates from her very first week at State, who became both friends and critical support through the program.

Now a Materials and Processes (M&P) engineer with KBR at Axiom Space in Houston, Todd admits that space wasn't always her area of expertise. But soon after joining, she was trusted to make decisions as a Subject Matter Expert: "My mentor told me that I may have just gotten out of college, but I knew what I was talking about. With his confidence in me, I had the gumption to step up to the plate."

Today, her work centers on astronaut and hardware safety through the selection, testing, and application of materials. She has managed procurement, troubleshooting, inventory, and drawing reviews, and even led new material testing at NASA facilities, including work on Artemis III lunar spacesuit materials. "The suit experiences such unique environments that it takes the typical knowledge of materials and tosses it out the window some days," she notes, "It's been an honor to work on such an incredible project that impacts the world and the future of human space flights."

Her ChE background continues to provide a strong foundation. "[It's] prepared me to handle the many unknowns of my job. Deadlines change, requirements change, and some problems have never been solved before." She laughs, "On my rough days, I remember that I survived Reactor, and sometimes that gives me the boost I need to keep going." Her knowledge of polymers and processes also translates directly to her work with nonmetallics, fabrics, and adhesives.

Outside the classroom, Todd attributes her leadership growth to involvement in AIChE, Engineering Student Council, CALS Ambassadors, and other student groups. These experiences developed her skills in communication, kindness, and active listening—qualities she continues to use in her professional career.

To students, she encourages, "You know more than you think you do, and you know how to solve problems. ChEs are trained to walk into a complicated problem and straighten it into an efficient solution. Learn the thought processes for solving problems, and that will take you so far in life. Never forget that ChEs may be the best, but it takes a village of specialties to make the world go around."

Her advice to current students is simple: "Enjoy your time at State! It goes by too quickly. Spend time in the lounge and invest in your project groups. Those people are your lifelines when the curriculum gets tougher." Todd keeps close ties with her Swalm mentor and Houston alumni group, and she proudly displays her MSU cowbells.

Thank you, Ms. Todd, for representing the School well in all your endeavors!

Alumni Engagement Opportunities

The Swalm School is proud of its graduates! You are inspirations to current students, and there are opportunities to continue engagement.

Keep us abreast of your latest accomplishments for the newsletter, website, and social media.

Volunteer to give a professional development seminar for CHE 3331. Recent presentations include Networking, Lifelong Learning, Global Cultural Awareness, Handling Pivot Points in Your Career, Being the Ideal Team Player, and Communication Skills.

Participate in the Swalm alumni mentoring program. Mentors contribute to the professional preparation of their mentees by interactively sharing their knowledge, experience, and counsel.

Those interested can email Dr. Julie Jessop at jessop@che.msstate.edu.

A Pipeline to Professionalism | *PE Licensure*

By Bryant McDuffie, P.E.

It is an honor to be a licensed Professional Engineer in the state of Mississippi, and I would like to share a bit about the path taken to get here—both to encourage others and to demystify the process.

Originally from Petal, I graduated from Mississippi State University in 2021 with a degree in Chemical Engineering. During my time at MSU, I participated in the Cooperative Education Program, which allowed me to gain hands-on experience through co-op rotations with CF Industries and Cooperative Energy. After graduation, I accepted a position with Atmos Energy, where I currently work as an engineer responsible for designing and managing the construction of natural gas pipeline systems.

Although licensure is not required in the natural gas industry, Atmos Energy places a strong emphasis on professional development and supports its engineers in obtaining their PE licenses. For me, the decision to pursue licensure was both a personal and professional goal—I knew it would expand my career opportunities and give me a competitive edge down the road.

The path to licensure begins with the Fundamentals of Engineering (FE) exam, which is administered by the National Council of Examiners for Engineering and Surveying (NCEES). I took and passed the FE while still relatively fresh out of college, and I recommend doing the same—the sooner, the better. When you are still in a "test-taking" mindset, the preparation is more manageable.

Mississippi allows you to take the PE exam before you complete the four years of required professional work experience, which is a great advantage. Preparing for the PE exam was a challenge, especially while balancing full-time work. I focused on consistent study habits and used quality preparation materials.

Once you pass the PE exam and log the necessary experience, you can officially apply for your license. The state of Mississippi even counts up to 6 months of co-op experience as part of the 4-year experience requirement, which helped me obtain my license sooner. The application process is detailed on both the NCEES and the Mississippi Board of Professional Engineers and Surveyors websites.

At Atmos Energy, the PE license plays a direct role in career progression. It is a prerequisite for senior engineering roles and is tied to internal promotions. Since obtaining my license, I have already experienced upward movement in my career, and I expect that to continue. Beyond promotions, having those two letters after your name also boosts your credibility and signals a level of responsibility and professionalism to clients, peers, and leadership.

Being a licensed engineer comes with ongoing responsibilities. Chief among

them is maintaining and expanding your knowledge through continuing education. In Mississippi, that includes a set number of professional development hours (PDHs), including courses in engineering ethics. Licensure has encouraged me to stay sharp and keep learning, which has absolutely changed how I approach my work.

To students or recent grads considering licensure: don't wait. Take the FE and PE exams as early as possible. The further you get from school, the harder it becomes to shift back into study mode. If professional licensure is even a remote possibility in your future, my recommendation is to take advantage of the timing and get it done.

Becoming a PE isn't just about passing exams—it's about committing to a higher standard of engineering. The process challenges you, grows you, and ultimately opens doors you might not even realize were closed. For me, it has been well worth the effort.

Thank you and congratulations Mr. McDuffie on your licensure!

In spring 2025, 12 Mississippi State CHE students passed the Fundamentals of Engineering (FE) exam—the first portion of the licensure process. Congratulations to **Alexa Aubrey, Nicholas Gardner, Johnny Hicks, Timothy Miller, and Victoria Taylor!**

AIChE's Anniversary!

The MSU AIChE student chapter was chartered in 1957, and it's received the Outstanding Student Chapter Award 22 times in the past 24 years. We're planning a platinum celebration in 2027, so please send us your AIChE photos and memories: jessop@che.msstate.edu. Thank you your part in building its legacy!

Depreciation by Day, Discovery by Night | *Study Abroad*

By Jim Caldwell

Nobel Prize winner Marie Curie once declared, "Nothing in life is to be feared, it is only to be understood". This summer, I had the opportunity to take **Engineering Economy in Europe**, a 7-week study abroad course led by Galyna Melnychuk, Director of International Programs at the College of Engineering. Before going on the trip, I was nervous about how the trip would go. I'd never traveled far for most of my life, so the idea of being halfway across the world from family was a daunting one. When I hopped off the plane and stepped onto European soil, I was unsure how the next month and a half would treat me. Though as time progressed, and I learned more about the places I stayed, I quickly realized I had nothing to fear.

Although the program emphasizes exploring Europe, the first three weeks mainly focused on learning economic principles and how to apply them to engineering projects. In Albi, a historic trading village in southern France, we studied how alternative payment methods can be used to enhance a project's profitability. We studied for hours on weekdays to learn the difference between values such as annual worth, future worth, and present worth. But the weekends brought an entirely different kind of education. Mrs. Galyna took us to experience some of the greatest moments of my life—canoeing across the Dordogne River, hiking the Dune du Pilat, and climbing the Boffi Mountains.

Our journey then carried us to Toulouse, where we spent a week at the National Institute of Applied Sciences. Class continued, and we prepared for our final exam before wrapping up the academic portion of the program. To celebrate the end of lectures, we all had a week to sightsee wherever we chose.

For my group, that meant Italy. My friends and I traveled through the beautiful cities of Como, Milan, Florence, Pisa, Rome, and the Vatican. After the class reassembled, the program continued in Spain, where we explored Bilbao, Madrid, and Barcelona. There was plenty of time to walk around the cities and try new things. The food in Spain was my favorite, especially the cheap and abundant empanadas.

From there, the pace quickened again. A bullet train took us north, and we stayed in Paris through Bastille Day, one of the biggest holidays in France. While there, we visited the Marie Curie Museum, a museum dedicated to the pioneering scientist who discovered the elements radium and polonium. We wrapped up the program in London and learned about their government by visiting the British Parliament itself.

When I boarded the plane home, I thought back to the student who had

arrived in Europe anxious about what lay ahead. In just seven weeks, I had climbed mountains, navigated new cities, and tasted food I'd never even heard of before. Engineering Economy in Europe is a great study abroad program if you want to learn one of the most practical subjects offered by Mississippi State University and see the beauty of Europe at the same time. Mrs. Galyna is a phenomenal teacher; she is always willing to help students and prides herself on encouraging people out of their comfort zones. The program didn't just teach me about present worth and future worth—it showed me the worth of curiosity and courage.

There are scholarships to help with travel expenses, and the application process is simple to navigate. Dust off your passport and find the right program for you:

https://www.bagley.msstate.edu/ programs/study-abroad/

Cleveland's Debut | *Campus*

Randy J. Cleveland, an '83 MSU PTE graduate who rose through ExxonMobil's ranks to lead XTO Energy and serve as Vice President, Americas, has long supported his alma mater—he was named MSU's 2022 National Alumnus of the Year and generously funded the transformation of the historic Materials Testing Laboratory into the modern Randy J. Cleveland Engineering Student Center. The newly revamped collaborative workspace, located between McCain Hall and the Walker Engineering Building, officially opened its doors with a lively pizza-and-social open house on September 2, welcoming students into a space built for growth.

ChEs in History

Carl Bosch (1874–1940) was a German chemical engineer and chemist famous for the Haber-Bosch process, enabling the large-scale synthesis of ammonia from N_2 and H_2, which revolutionized fertilizer production and agriculture. For his groundbreaking work, Bosch was awarded the Nobel Prize in Chemistry in 1931—a pioneer in scaling chemical processes from the lab to industry.

Congratulations to our Summer 2025 ChE Graduates!

Arie Baumgarter (OXE) Richard Hamilton Peyton Ray

AIChE
The Global Home of Chemical Engineers

Thanks to everyone who contributed to making this issue a success! Look for the next issue this December.
Josh Bowman, *Newsletter Editor*

Corny Corner Suggestions?
We'd love to hear them. Email Dr. Bill Elmore at elmore@che.msstate.edu.

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