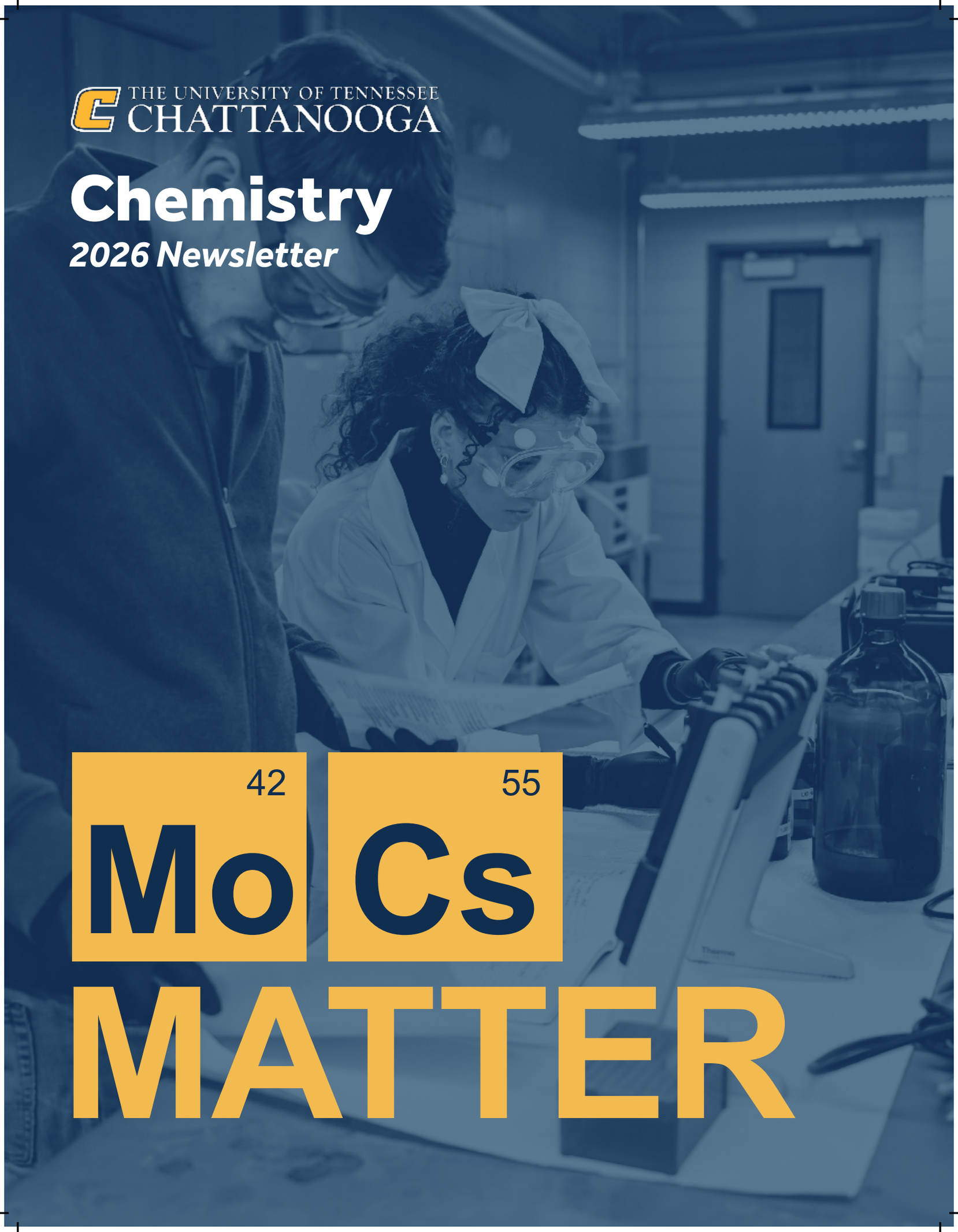


THE UNIVERSITY OF TENNESSEE CHATTANOOGA

Chemistry

2026 Newsletter

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MATTER

BEST SUMMER I'VE EVER HAD:

Chemistry students reflect on research at Oak Ridge National Laboratory

Working at one of the most prestigious science labs in the country can be intimidating, especially when you're surrounded by some of the top researchers in the field.

Megan Black, who received a bachelor's degree in chemistry from in December 2025, interning at Oak Ridge National Laboratory in summer 2025 gave her access to scientific experiences she had never had before.

"You never know who you're sitting down at lunch with," said Black, a Chattanooga native. "There have been times when I will be talking about something and realize a very established researcher is sitting next to me."

Laurel Washburn, who received a bachelor's degree in chemistry from UTC in May 2025, was also blown away by Oak Ridge's high-tech resources.

"They have a supercomputer here which I have access to," Washburn said. "I'm going to be able to actually run a calculation or multiple calculations for my research on it, which is one of the fastest in the world."

Regardless of their experience level, each student is contributing to real research projects in a national lab.

"Experience is the best way to learn," said Washburn, who didn't expect to end up in chemistry, let alone Oak Ridge.

She earned a degree in apparel merchandising from Indiana University in 2015 before deciding to switch fields.

"Going back, I have a stronger drive and understanding of what I want to do and what I want to accomplish," she said. "I went in with the mindset of what I was going to be doing after and what I can do to make sure I have a good career."

Washburn worked in a biochemistry group at ORNL running simulations of adenine, one of the four components of RNA and DNA. Using computer models, she studied how these molecules interact when stacked together, which helps researchers understand the behavior of RNA strands in different environments.

She's also learned to automate her workflow and written scripts, which allowed her to run hundreds of calculations with the click of a button.



Megan Black



Laurel Washburn

Her classes at UTC helped lay the foundation, and she thanked her faculty mentors, Dr. Luis Sanchez Diaz, an assistant professor in the Department of Physics, and Dr. Titus Albu in the Department of Chemistry.

"I think that my ability to do research at UTC in the chemistry department is what really made it possible because I'd already had some experience," she said. "It's pretty cool to be able to get research experience as an undergraduate and have a full project that you worked on."

Black is getting her second ORNL research experience.

She previously worked with Diaz for a different undergraduate research program that led her to Oak Ridge for the first time, where she spent a few days a week using equipment and meeting researchers.

"They told me to apply for the Science Undergraduate Laboratory Internships (SULI) program," Black said. "I actually got accepted into a different group, which turned out to be a really cool thing."

Black spent last summer working in the carbon fiber composites group, where she's helping turn biomass—plant-based material—into carbon-rich samples that could eventually be used in battery technology.

On a typical day, she prepared samples, monitored their transformation inside a furnace that reaches 1,000 degrees Celsius, or used X-ray scattering to analyze how their structure changes during the process. She also learned how to interpret the data.

"The biggest portion of my time was spent trying to read more about the project and understand as we're getting data on where things are going," she said. "Something that was kind of unique to me with this project is that it didn't have a developed methodology already."

With all of the knowledge she's gained, she said she can see how her coursework applies in ways she didn't expect.

"You are taking the class and you can say, 'I've learned this instrument and that instrument,'" Black said, "but then you're doing a project and getting data ... you can see the utility in knowing how to use all of these techniques."

STUDENT PROFILES

Brielyn Hallam

Brielyn Hallam has chemistry in her blood.

Growing up with two chemists as parents made it a natural fit when she was considering colleges, but her own experience helped her choose a specific field.

"I knew I had always been really into dermatology," said Hallam, a University of Tennessee at Chattanooga sophomore from Nazareth, Pennsylvania. "I did struggle with a lot of skin issues growing up like acne. I knew what products worked for certain things, but I did not know how to formulate them."

When she came to UTC to study biochemistry, her goal was to transfer to UT Knoxville after a couple of years. Those plans have now changed.

"After my first semester freshman year, I ended up loving it here and I was like, 'Why leave?'" she said. "I've met so many good people and it's just where I feel like I need to be in life."

Hallam's introduction into the world of cosmetics and biochemistry took place after Assistant Professor Luis Sanchez Diaz's "The First Year Experience in Chemistry" class.

"He would invite us to these seminars to ask questions with professors from other schools," she said. "I ended up going to a couple of those; eventually, he noticed and asked what I wanted to do with my future."



Brielyn Hallam, wearing safety goggles and a lab coat, measures liquid from a dropper into a beaker while holding a brown glass bottle in a cosmetic chemistry lab as another student observes nearby



Brielyn Hallam (center) stands with fellow students and instructors in a cosmetic science lab in France, all wearing lab coats and posing together among lab benches and equipment.

"I told him I wanted to make cosmetics. He was like, 'Well, I do viscosity research and that could probably be beneficial.'"

That conversation led her into his research group, where she found direction and support.

"It gives me somebody for references, of course, but he also helps me connect with so many other groups of people," she said. "I have somebody higher up who really cares and will help me with my future."

The work she completed with Sanchez Diaz focuses on viscosity, or how different temperatures or ingredients change the texture of a product. It confirmed for her that she enjoys the type of lab work involved in creating skincare and makeup. Already, she is getting valuable research experience in ways that some people only ever dream about.

Last summer, Hallam participated in a study abroad internship with ISIPCA in Versailles, a French school known for perfumery and cosmetics. She spent two weeks living in a small house, attending morning information sessions, and spending her afternoons in the lab.

"The first week was just perfumery," she said. "We were learning the basics of that and then we got to formulate some of our own products. The second week was more cosmetic-focused, so we did some shampoos, some lipsticks, some lotions and things like that."

Outside the classroom, she noticed how different the pace of life felt.

"It's such a different culture," she said. "Even though my day was longer than it would be here, it was not stressful at all. I got to go to the markets and buy my own food and just experience life how they live it."

The trip confirmed her desire to pursue opportunities abroad. She is now exploring internships with companies such as Estée Lauder and e.l.f. Beauty, with hopes to earn a master's degree overseas.

"I want to work for a bigger company to get the basics down," Hallam said. "Then I want to eventually open my own cosmetic store and be a business owner."

For now, the focus remains on learning everything she can and continuing the work that first sparked her interest.

"I've learned that I enjoy what I will be doing firsthand," she said. "It's a great experience to have."

Neel Patel Homecoming King: at Home in Chemistry



This year on Saturday, Nov. 1, the Homecoming football game, where UTC fell to Western Carolina 35-28, ended in a nail-biter. For chemistry major Neel Patel, there was extra suspense, as he waited to learn during halftime festivities that he was crowned Homecoming King. Patel, a senior chemistry major and member of the UTC Honors College's Innovations in Honors program, is the vice president of the Asian Student Government Association and the Salvation Army.

The Hendersonville, Tennessee, native made UTC history on two fronts during this year's Homecoming election.

"I'm the first-ever South Asian to win Homecoming King, and that was a big part of why I wanted to run," Patel said. "I wanted to be that representation for others. Also, a chemistry major has never won either. That was double the motivation, double the passion. I was glad UTC reflected back on me the way UTC has poured into me."

Patel said the UTC Department of Chemistry feels like a second home to him.

"The chemistry department is small and intimate, and all the professors know your name," said Neel. "Everyone knew I was running and they were all-in support. It was really sweet. It's like a tight-knit home here."

Neel gives back across campus as a mentor for first-generation students and a resident assistant.

"My first semester at UTC was really rough," Patel said. "The first three weeks, there were so many circumstances stacked against me. I would have loved to be mentored; I didn't know anything about it. Just having a mentor that was also first gen would have helped me so much."

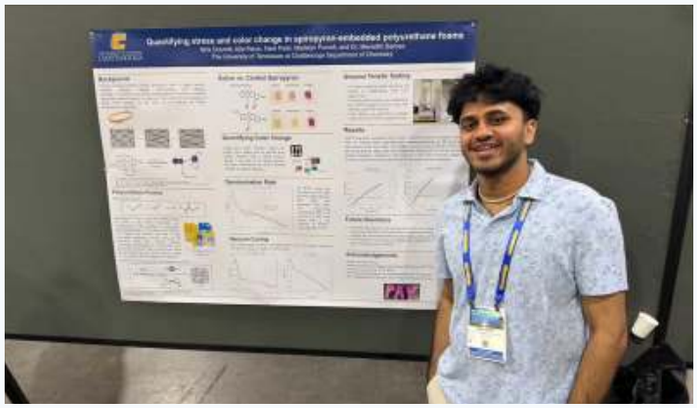
"I personally help because I know I would have succeeded from that help," he said. "It helps heal me a little knowing I can help them."

He encouraged other first-generation students to seek out the many resources that are available to them.

Neel's accomplishments in chemistry have been equally impressive. He completed a National Science Foundation Research Experiences for Undergraduates program in summer 2024 at the University of Kansas. His research focused on developing and characterizing self-assembled monolayers of decanethiol on gold.

"Research shows you not just what's been done, but what hasn't, and that's where the excitement lies, in contributing something new.

As someone who moves at 100 miles per hour, it also teaches me to slow down when things fail and step back to understand what's really going on," says Patel.



Upon returning to UTC, Neel looked for opportunities in the chemistry department and began conducting research with assistant professor Dr. Meredith Barbee, where he studies polyurethane foams. These widely used commercial materials are found in applications in the automotive and construction industry. Patel and Barbee have found a way to make polyurethane foams change color when they experience mechanical forces through compression.

"Neel has conducted organic synthesis and polymer synthesis in my lab. He's learned to use confocal fluorescence microscopy to map stress in these materials, and we're able to understand how polyurethane foams distribute mechanical load," says Barbee.

Patel is working to complete his honors thesis research and plans to pursue a doctoral degree in chemistry after graduation.

"If my freshman self saw all the things I was a part of, involved with, all the things that I've achieved, he would have definitely been proud of how far I've come," he said.



Neel Patel (left) and Carolina Shank were crowned Homecoming King and Queen at the 2025 Homecoming game. Photo by Angela Foster.

STUDENT PROFILES

Elijah Wright Service to the Nation through Chemistry

Graduates of UTC Chemistry go on to advanced opportunities in graduate and professional schools and exciting careers in industry and education. This year, one student has gone on to something truly special — a career of service to our nation as a 2nd lieutenant in the United States Army. Elijah Wright, originally from Cleveland, Tennessee, graduated in December 2025 with a Bachelor of Science in Chemistry. He was a member of the UTC Reserve Officers' Training Corps (ROTC) while in college.

He was commissioned as an officer in a ceremony on campus on Dec. 19, 2025 into a chemical role as an active-duty officer. Family, friends, and UTC faculty Professor Keenan Dungey, Professor John Lee, and Assistant Professor Meredith Barbee attended the ceremony. He was given his oath of service by Retired Army LTC Chris Ingle and gave his first salute to Former Petty Officer 3rd Class David Denton. Congratulations to Elijah on his graduation and commissioning. The department is thankful for his service!



Faculty celebrated Elijah Wright's commissioning. From left to right: Dr. Keenan Dungey, 2nd Lieutenant Elijah Wright ('25), Dr. John Lee, and Dr. Meredith Barbee.



Elijah Wright is recognized at the December 2025 commissioning ceremony.

FACULTY AND STAFF UPDATES

Meet Dr. Samuel David

This year, our department welcomed a new assistant professor of Biochemistry, Dr. Samuel David. He earned his Ph.D. from the University of Kentucky and completed post-doctoral studies at Yale University and the University of Pennsylvania. At UTC, he is teaching Proteins and Nucleic Acids lecture and lab as well as biochemistry lecture and Organic Chemistry 1 and 2.

Dr. David's research areas are in (i) discovering a new apoptosis pathway in cells; (ii) synthesizing small natural products with medicinal properties and (iii) new labs for the undergraduate chemistry organic and biochemistry curriculum. He has been actively involved in research with undergraduates and has about 2-3 students on average per semester. Dr. David has published several papers in organic synthesis and in biochemistry as the corresponding author, with undergraduates as co-authors.

His hobbies include hiking and camping around the Chattanooga area. He looks forward to continuing to work productively with the students, faculty, and staff at UTC.



Zuan Xu Earns Master's Degree in Accounting



If you visit the department's main office in Grote Hall, chances are you will meet our accountant, Zuan Xu. She joined the department in February 2024 as an accounting specialist. She holds a bachelor's degree in accounting from Dalton State College. In December 2025, she celebrated a significant career milestone by earning her master's degree in accounting at UTC's Gary W. Rollins College of Business. Congratulations on a fantastic accomplishment!



ALUMNI UPDATES

Kerry Rickerd: The Impact of Work as a Chemist



For Kerry Rickerd, who graduated from UTC with a degree in chemistry in 2000, chemistry is a part of who she is. Rickerd gave the keynote speech at the 2026 Lab Coat ceremony, where current UTC chemistry majors who have passed the milestone course Organic 1, are recognized for their accomplishment and officially welcomed into the chemistry career. This year marked our department's 4th annual ceremony. Rickerd spoke to students about her career path and lessons she has learned over her career as a chemist.

Rickerd's first chemistry job was as an intern while she was a UTC student. "I started doing titrations just like I was doing at school, and I thought that was the coolest thing to actually do the same thing at school as at work," she said. "I felt like a real scientist." Like most beginning chemists, she also did lots of routine lab tasks, but the internship laid the foundation for a career in chemistry.

After she graduated from UTC, she began working as a research process development chemist at a local pharmaceutical company, Chattem Chemicals. She used what she learned in organic chemistry to synthesize a drug that is still in production, learned to design analytical methods, and trained operators to manufacture drugs in the plant on a larger scale.

Later, she began working at the Tennessee Valley Authority, analyzing samples and conducting method development and calibrations for different analytical equipment as a project leader. She also worked on a team that measured mercury levels and pesticides in fish in the Tennessee River.

“Some of the most meaningful relationships of my career have come from lab benches, shared experiences, and late-night problem solving. As you move forward, you’re going to find mentors that push you, colleagues who support you, and someday students who look up to you for guidance.”

— Kerry Rickerd

After years of gaining a variety of experiences, Rickerd made a leap into management, which is where she has spent the last 19 years of her career. She first rejoined the company where she did her internship, then worked at McKee Foods Corporation. Currently, Rickerd is the Analytics Technical Manager at Wacker in Charleston, Tennessee. She manages chemical labs that test raw materials and finished products. Wacker is a global company that manufactures polysilicon, which goes into making solar panels and semiconductor chips. “One out of every two cell phones in the entire world has Wacker materials, and it’s made right here in Tennessee.”

Rickerd reflected on her career so far, and shared important lessons with UTC students. “When I think back to my own early days in chemistry, I remember feeling a bit of excitement and uncertainty. I was fascinated by the science but didn’t fully understand what it meant to be a chemist. Over the years, through the labs I’ve worked in, the colleagues I’ve partnered with, and the challenges I’ve faced, I learned that chemistry is much more than reactions and equations. It becomes a part of who you are.”

She also pointed out that chemistry doesn’t always work perfectly the first time, and that challenges help chemists grow in their critical thinking skills. She encouraged students to take on humility, responsibility, and integrity throughout their careers. “The results you produce matter, the data you sign your name to matters,” she said, “Whether you’re analyzing samples or developing a new process, people depend on your accuracy, your judgment, and your integrity.”



Rickerd also reflected on the role of community in developing a career as a scientist. “Some of the most meaningful relationships of my career have come from lab benches, shared experiences, and late-night problem solving. As you move forward, you’re going to find mentors that push you, colleagues who support you, and someday students who look up to you for guidance.”

Rickerd has had an impactful and meaningful career, and we look forward as a department to her future accomplishments. Chemistry has given purpose to her career. She ended her address focusing on impact, “Contributions ripple outward. You may not always see the outcome, but you can make a difference.”

ALUMNI UPDATES

Trevor Paratore: Chemistry Beyond Planet Earth

Dr. Trevor Paratore graduated from UTC with a degree in chemistry in 2020. As an undergraduate, he was highly involved in research. He studied the photoacoustic effect in ethylene gas with Professor Han Park and worked with Professor John Lee to isolate a key cyclometallated intermediate believed to exist within a known cobalt(III) C–H activation mechanism.

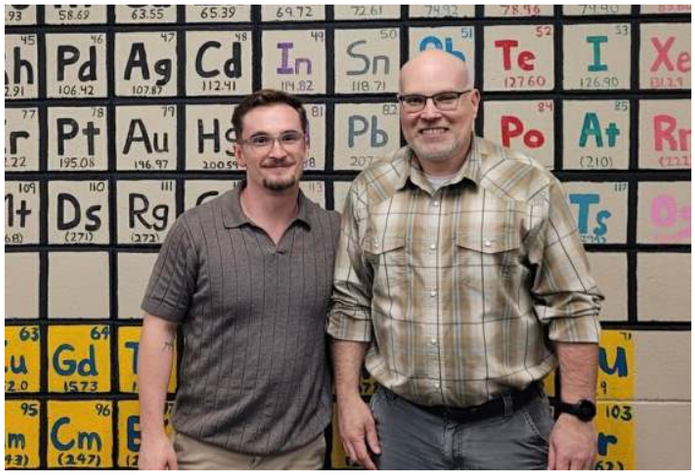
After graduating from UTC, Paratore continued his chemistry studies at Worcester Polytechnic Institute, where he earned a doctoral degree in physical chemistry in 2025. His research focused on biological membrane structure and function.

After earning his Ph.D., Paratore began a postdoctoral appointment at the Massachusetts Institute of Technology, where he joined Professor Sara Seager in the Department of Earth, Atmospheric and Planetary Sciences. He contributed to the Venus Life Finder Mission.

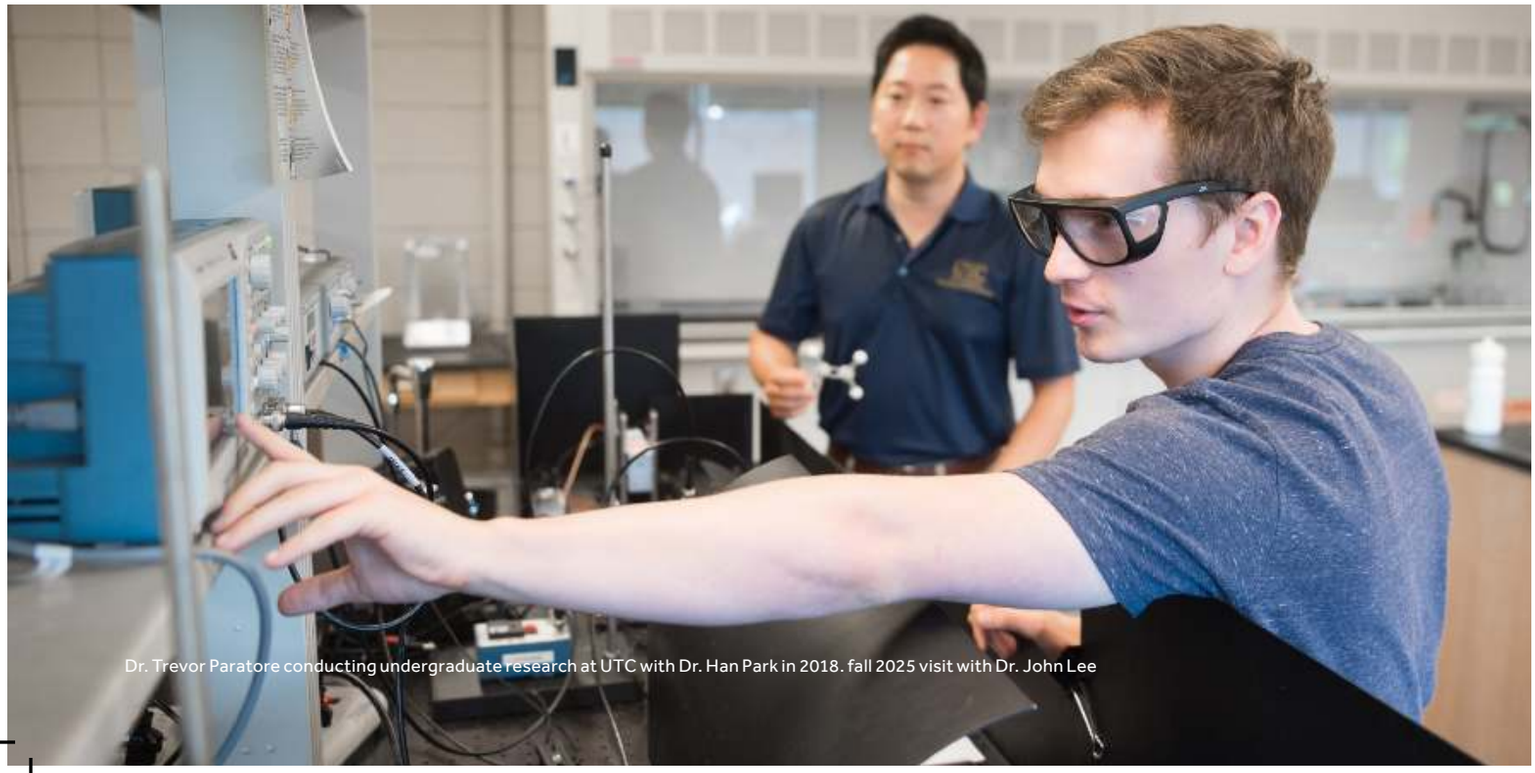
"I led a project exploring how biomolecules, such as lipids, proteins, and amino acids, might support the emergence of life in the harsh environment of Venus' cloud layer," Paratore said. "I developed and adapted biophysical methods, including confocal microscopy and circular dichroism, to assess higher-order structural formation of lipids and short peptides in concentrated sulfuric acid."

Paratore returned to UTC for a departmental seminar in October 2025 and shared his work on the Venus Life Finder Mission. Chemistry students also joined him for lunch and discussion during his visit.

He now works for Nikon Instruments Inc. as an advanced imaging specialist, applying his background in spectroscopy and microscopy to support the sales and use of Nikon imaging solutions. We look forward to following the next stage of his career.



Dr. Trevor Paratore during his fall 2025 visit with Dr. John Lee



Dr. Trevor Paratore conducting undergraduate research at UTC with Dr. Han Park in 2018. fall 2025 visit with Dr. John Lee



URP 2025: In 2025, there were 11 chemistry students and 6 physics students who participated in our annual summer Undergraduate Research Program (URP).

UTC is a comprehensive, community-engaged campus of the UT System. UTC is an EEO/AA/Titles VI and IX Section 504/ADA/ADEA institution. 2011886-27

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