Chair's message

This fall, I am teaching a First Year Seminar to 20 CST undergraduates and a weekly seminar to the Chemistry Department first-year graduate students. We’re all new to what we’re doing: the undergrads to college with all that entails; the grad students to being teaching assistants, taking graduate classes and choosing a research group; and me to being department chair. We’re all excited about the future and just a little nervous.

The outgoing chair, Dan Strongin, led our department through incredibly challenging times, including COVID (which unfortunately is ongoing) and the death of our beloved colleague Rod Andrade (see page 4). Also, longtime professors Scott Sieburth and Andrew Price retired during the past year. We miss them and wish them well. As I told my seminar students, we’ve all persevered and gotten through things in the past 18 months that we never imagined we could. Temple people had grit before grit was trendy.

The Temple Chemistry Department has a rich history, and I would love to hear your stories. Please call, write or visit us in Beury Hall and the Science Education and Research Center. And we invite you to connect with us on Twitter @TUChemBot.

I would love to hear your advice to today’s students, who may be sitting right where you once were. They too are eager to accomplish great things.

Ann Valentine
Professor and Chair

Chemistry Department returns to in-person research and teaching

The Chemistry Department returned to in-person research and teaching during the pandemic, under the guidance of two ad hoc faculty committees organized to assure that both could be done safely and effectively.

Chaired by Assistant Professor Sarah Wengryniuk, the seven-member Covid Rapid Response and Pandemic Planning Committee spent nearly two months during the summer of 2020 creating standard operating procedures and a related online COVID-19 departmental handbook for research activities.

“Our main goal was to ensure an environment in which the graduate and undergraduate students who were doing research in our labs felt safe returning to them, even before any of the professors did,” says Wengryniuk. “Students did a great job following and self-enforcing protocols. We only had a handful of potential exposures and no community spread.”

Another ad hoc group of six faculty members and three graduate students, the Return to Instruction Committee, established safety protocols for in-person teaching. The regulations were first implemented at the beginning of the fall 2020 semester—until a spike in cases quickly forced the return to virtual classes—then adopted for the spring 2021 semester.

Support Chemistry

You can contribute to the continued success of the College of Science and Technology and the Department of Chemistry by supporting scholarships, undergraduate research and innovative programs. Make your gift at giving.temple.edu/givetocst.
Well-traveled Jordan Aguirre, CST ’21, found a doctoral home at Temple

Jordan Aguirre was born in Bucks County, Pa. but raised in Umbria, Italy, where his parents are evangelical missionaries. After earning his BS and MSc degrees in chemistry at the University of Pisa, he earned his doctorate in chemistry from Temple last May.

Aguirre’s research investigated the feasibility of utilizing polymer, ceramic or ceramic/polymer composites to reduce the chances of lithium batteries short circuiting and starting fires. To better understand industrial needs, he spent the spring of 2019 in Phoenix interviewing 100 industry representatives as part of the NSF I-Corps™ Program.

“I consider myself lucky to make it out of a research program with a great community of peers and professors,” says Aguirre. “It was a very stimulating and positive experience. My doctoral advisor, Professor Stephanie Wunder, was very supportive but also expected us to be independent by teaching ourselves and learning through our own experiences. She did a great job of modeling that for us.”

Since July, he has been a postdoctoral associate lecturer who is researching catalysts while teaching general and inorganic chemistry at Boston University.

“I love teaching,” he says. “When I was a kid, I was always frustrated when people left out key details while explaining something. If I see a student intimidated by material, I love making it approachable and manageable.”

Brandon Presley, CST ’10, ’18, ’20, a Temple-made Janssen biotherapeutics researcher

Since January 2020, Brandon Presley has been a scientist developing methods for testing biotherapeutics for the Janssen Pharmaceutical Companies of Johnson & Johnson in Malvern, Pennsylvania.

“It’s very rewarding,” says the North Philadelphia native who earned his bachelor’s, masters and PhD at Temple. “Drugs that I am working on are literally saving or extending people’s lives or giving them a better quality of life.”

Prior to joining Janssen, Presley spent eight years with NMS Labs in Willow Grove. He analyzed abuse-deterrent formulations to help prevent the abuse of legally prescribed drugs like opioids. He also conducted testing of drugs and biological specimens to determine the presence of both legal and illegal drugs for a host of forensic investigations.

Presley’s interest in chemistry was triggered in high school, when he spent two summers conducting research thanks to the American Chemical Society’s Project SEED program for economically disadvantaged students. That passion was further strengthened at Temple, where he benefited from the ACS Scholars Program, the Alliance for Minority Participation and the College of Science and Technology’s Undergraduate Research Program.

“It all opened my eyes to the amazing world of research,” says Presley. “I was able to put into practice what I was learning in Professor Sue Jansen-Varnum’s analytical research laboratory.

“She saw my potential and encouraged me to pursue my PhD,” says Presley, who has taught courses at Temple as an adjunct faculty member since 2017.

Last year, Presley—who recently moved to Pottstown with his wife and three young sons—launched Simple Science Tees. The company’s most popular T-shirt proclaims “I’d rather be in the lab”—a sentiment that has struck a chord during the pandemic.

Undergraduate TU Chemistry Society earns Outstanding rating

The undergraduate Temple University Chemistry Society recently earned an Outstanding rating—the highest commendation that the American Chemical Society grants student chapters—and earned a Green Chemistry Award.

Returning

These measures included adopting university recommendations for decreasing student numbers and utilizing larger rooms for in-person classes, and having each instructor develop specific safety protocols for their courses. The committee also created a video, required viewing for all students, that included university and department safety protocols, including wearing both masks and face shields for laboratory courses in Beury Hall, and requiring instructors to submit a safety report after each session.

“Because of the practical nature of lab-based chemistry courses, we wanted to make it possible for students to have that experience,” says Elizabeth Cerkez, assistant professor of instruction and the committee chair.

“The regular safety reports showed that all of the precautions we took generated an environment where students and their instructors felt safe,” she reports.
Faculty Awards

- CST Teacher of the Year: Elizabeth Cerkez, assistant professor of instruction
- Lindback Distinguished Teaching Award and Honors Professor of the Year: Ann Valentine, professor

Faculty Notes

- Research Associate Professor Khaled Elokely is the new director of the Forensic Chemistry Professional Science Master’s degree program.
- Frank Davis, professor emeritus, joined the CST Board of Visitors, which is an advisory committee for the college. The department is also grateful for Frank’s help in guiding the graduate students of Professor Rodrigo Andrade in the wake of Dr. Andrade’s sudden death this past May.
- Assistant Professor Rongsheng (Ross) Wang was named a 2021 Cottrell Scholar for his teaching and research. The three-year, $100,000 award is given annually to 25 outstanding chemistry, physics or astronomy teacher-scholars by the Research Corporation for Science Advancement foundation. Read more about his research in CST’s Outlook magazine.

Sieberth and Price retire

Professor Scott Sieberth (May) and Associate Professor of Instruction Andrew Price (last December) retired during the past year. A key senior hire in 2001, Sieberth contributed greatly to the strengthening of the department’s organic research efforts. He was an excellent teacher and mentor of young faculty, and organized the 4:15 Institute, a popular, usually weekly social gathering that includes faculty, staff and alumni.

Price joined the department in 2007 and was a key component of both the department general chemistry and inorganic teaching efforts. An excellent, energetic teacher, he repeatedly contributed curricular changes that improved lecture and laboratory chemistry offerings in general chemistry.

Schafmeister’s company creates large molecule synthetic screening technology

Christian Schafmeister, professor of organic chemistry, has launched ThirdLaw Molecular LLC, which is developing spirillogomer-based macromolecules that could be used to replace monoclonal antibodies initially in diagnostic applications and in the future as therapeutics.

“The goal is to ward off future pandemics so that, if there is a threatening agent, we can quickly develop tests that can identify people with the disease and quarantine people who get it,” says Schafmeister. The technology is effective in screening against both infectious agents and live organisms.

Besides creating spirillogomers, the large molecules, ThirdLaw is also developing computational chemistry software for designing spirillogomers and other unnatural molecules.

Schafmeister took a sabbatical during the 2020-21 academic year to focus on the company. Its research is now being led by two of his former Temple doctoral students: Justin Northrup, CST ’16 and Conrad Pfeiffer, CST ’16.

Abdul-Aziz, CST ’07, researching sustainability chemistry issues at UC-Riverside

Since 2018, Kandis Leslie Abdul-Aziz has been an assistant professor of chemical and environmental engineering at the University of California, Riverside (UCR). Her research focuses on the rational design of novel materials for carbon dioxide capture, pollution control, fossil energy and biomass conversion.

Her laboratory is investigating defects in solid oxides that could lead to the creation of intelligent catalyst materials; exploring how to convert captured carbon into clean fuels, such as hydrogen; and using corn stalks to create activated carbon water filters.

“I really became interested in sustainability issues when I worked as a refinery chemist for Sunoco Chemicals in Philadelphia after I graduated from Temple [with a BS],” says Abdul-Aziz, who subsequently worked as a drug chemistry forensic scientist for the Philadelphia Police Department. She then earned her PhD in chemistry from the University of Illinois in 2017 and spent a year as a University of Pennsylvania provost postdoctoral researcher before joining UCR.

At Temple, the Philadelphian felt quite comfortable. Her mother, Joane Parker-Majors, worked at the university for nearly three decades before her retirement last year as the coordinator for vocational education at the College of Education and Human Development.

Abdul-Aziz’s most seminal experience was working with Spiridoula Matsika, professor of chemistry (theory/computation). “My fondest memory was the undergraduate research I did with her,” she says. “It allowed me to look beyond just the laboratory to see what other interesting things you could do with chemistry, such as combining math with chemistry and using supercomputers to study chemical systems.”
In Memoriam: Rod Andrade

Professor Rodrigo (Rod) B. Andrade passed away suddenly on May 24. Since his arrival in 2006 as an assistant professor, Rod was a consummate scholar and teacher to graduate and undergraduate students. He made profound contributions to organic synthesis methods.

Rod, who earned his PhD from MIT in 2001, focused on the total synthesis of architecturally complex natural products, particularly macrolide antibiotics and indole alkaloids. With his team, he developed innovative new chemistry for the efficient synthesis of parent compounds and more efficacious analogs for biological evaluation.

To address the critical problem of antibiotic resistance to erythromycin and some of its analogues, Rod’s team designed and constructed a series of compounds that proved to be active against several wild type and related resistant bacterial strains. They also overcame challenges in the construction of indole alkaloids in the Strychnos family. His group was known for the creative use of chiral N-sulfinyl metalloenamines as ambient nucleophiles in complex molecule synthesis.

Rod carried the same care and thoroughness in his scholarship to the classroom, where he was a well-loved instructor. He was also a beloved husband and proud father of two teenage daughters.

Rod Andrade’s caring spirit and intellect will live on through the students and colleagues he influenced on his career journey. His clear insights and elegant work stand as guides to serve future generations of chemists.

To contribute to the Professor Rodrigo Andrade Memorial Endowed Lecture, go to giving.temple.edu/givetocst

General chemistry mastery course revamped for online format

In response to the pandemic, a group of faculty members led by Associate Professor Graham Dobereiner totally revamped the General Chemistry I course into an online mastery experience for fall 2020. Most of the approximately 800 who take the course each fall semester are pre–health students who need to master key chemistry concepts.

Working remotely at their own pace, each student was required to complete 24 different learning modules. The students benefited from a series of videos the faculty recorded with the university’s Office of Digital Learning, and they worked through nearly 1,000 assessment questions. Faculty, teaching assistants and peer teachers interacted frequently with the students throughout the semester and provided support according to students’ needs. Regular synchronous meetings also provided structure.

“We scrapped the traditional exam model and set up a series of quizzes that the students may take as many times as they need to understand the material,” says Dobereiner. “Overall, the students did well on their assessments. We’re now looking to use elements of this new format and the materials we generated in in-person settings so we can benefit as many learners as possible.”

In developing the new course model, Dobereiner collaborated with teaching faculty, including James Bloxton, Elizabeth Cerkez, Jayakumar Gilbert, Andrew Price and Daniele Ramella, as well as graduate students and undergraduate peer teachers.