



CHEMISTRY RESEARCH BUILDING: New Home for Discovery at CSU

By Katie Courage

Colorado State University now has a state-of-the-art home dedicated to key, dynamic areas of chemistry research. The [Chemistry Research Building](#), which opened Aug. 14, is a 60,000-square-foot, hood-intensive facility that houses 11 faculty labs, as well as dozens of researchers, graduate students, and undergraduates.

Funded primarily by the state of Colorado, the \$55.4 million building promises to bring new levels of innovation to the University, the region, and the globe. “Our chemistry department continues to be at the forefront of discovery,” said [Jan Nerger](#), dean of the College of Natural Sciences. “They have done so for many years, despite cramped and aging infrastructure. This new building provides the department room to grow and fosters research excellence in cutting-edge chemistry – scientific discoveries we haven’t yet even imagined.”

The new building’s labs are not the standard, fractured silos. Instead, the building is constructed around four central flexible, open lab spaces. Each floor’s main lab is centered around a particular area of research excellence. “It allows researchers and students to openly collaborate and share ideas,” said [Chuck Henry](#), professor and chair of the chemistry department.

In addition to ideas, resources can also be shared more easily in the new design. “More sharing of chemicals can help us minimize quantities of reagents, and more sharing of equipment and instrumentation can help us stretch research funds,” says Professor [Matthew Shores](#), whose team moved into the new building.

In the first-floor lab, researchers are focused on materials chemistry. On the second floor, the research is centered on inorganic and polymer

chemistry. Faculty and others are working on synthetic organic chemistry in the third-floor lab. And on the fourth floor, research is geared toward chemical biology. Visitors to the building will be able to see more of the research going on inside, thanks to ample, windowed corridors around each floor.

The building also includes student research areas as well as dedicated collaboration spaces. Beyond what meets the eye, the building is equipped with robust – yet highly efficient – ventilation and plumbing.

About 100 people work in the new LEED Gold-certified building, while another 150 continue to research and work in the existing Chemistry Building. The main departmental office will remain in its current location. Future renovations will update the building’s space and provide for more flexible labs – and will allow the widely used [Central Instrument Facility](#) to expand to the entire basement.

The building project, designed by [Hord Coplan Macht](#) and built by [Haselden Construction](#), was kicked off in fall 2015 with a joint groundbreaking ceremony with the new [Biology Building](#). And in summer 2016 the department and construction crews [celebrated the building’s halfway point](#) by signing an interior wall of the building.

The structure was built in tandem with the Biology Building next door, allowing both projects to minimize costs and create a thoughtful, new, unified science corridor. The evolving CSU Science Mall includes bike and pedestrian paths, outdoor seating areas, native plant landscaping, and an integrated storm water recapture system.



MESSAGE FROM THE CHAIR



Greetings from beautiful Fort Collins. Like the change in seasons, the chemistry department has seen another year of substantial changes. Last spring, I announced the hire of two new faculty: Assistant Professor Jeffrey Bandar and Assistant Professor Joseph Zadrozny. What I didn't say at that time was that we were working on two additional hires: Associate Professor Robert Paton and Assistant Professor Garret Miyake. Paton was most recently a tenured associate professor at Oxford University and does computational organic research focused on catalysis. He joined the department January 1,

2018. Miyake's name will sound familiar to some of you. He was a graduate student with Professor Eugene Chen before holding a postdoctoral position with Caltech. Most recently, he was an assistant professor at CU-Boulder but returned to CSU this fall. A few other recent changes have also occurred. Professor Ellen Fisher is now assistant vice president for research but retains a faculty appointment in chemistry. Associate Professor Melissa Reynolds is currently serving as research associate dean while keeping 50 percent of her appointment in chemistry.

We are excited to announce numerous faculty promotions: Delphine Farmer and Amber Krummel both were promoted to the rank of associate professor; and Amy Prieto and Matthew Shores were promoted to the rank of professor this past year. Along with these recent promotions, six of our faculty members were awarded National Science Foundation grants for their outstanding research: Eugene

Chen, Debbie Crans, Richard Finke, Jamie Nelson, and myself.

Another big change coming is in the Central Instrument Facility (CIF). The CIF was recently awarded a \$500,000 grant from the Vice President for Research's office to expand their labs in both the main Chemistry Building (construction starting soon) and the new Chemistry Research Building. They have also received a new single-crystal XRD system which is available to CIF-trained users. The Bruker D8 QUEST ECO is a full-featured research instrument providing complete 3D structures, complementary to nuclear magnetic resonance and mass spectrometer, enabling not only the full range of service crystallography but also charge density and absolute structure investigations.

We sadly note the passing of a long-time faculty member and former chair, Professor Emeritus Rodney Skogerboe, who was still active in the department. A new scholarship had been created in his name just a month before his death. He will be deeply missed.

This fall also marked another major change with the opening of the new Chemistry Research Building. This new space will facilitate wonderful new research. At the same time, we continue to work with the University to find funding to renovate (or even rebuild) the existing Chemistry Building to continue to attract and retain world-class faculty and students.

Have a wonderful holiday season!

Charles S. Henry

Charles S. Henry, Ph.D.

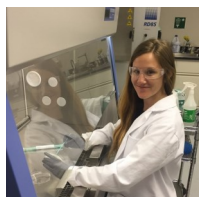
Professor and Chair

DEPARTMENT HIGHLIGHTS



TO SAVE FLORIDA'S ORANGES, CSU TEAM WILL STUDY DEADLY CITRUS DISEASE

Over the last decade, Florida's famous citrus industry has been battered by a disease called citrus greening, which has destroyed acres of crops and cost untold billions in revenue. Combining expertise in soil, plant pathology, entomology, and chemistry, a CSU team will research how the disease propagates and how it can be stopped. Their efforts are supported by a \$1.2 million gift from Cutrale, one of the largest suppliers of orange juice in the world. The CSU team, led by Thomas Borch, professor in the Department of Soil and Crop Sciences and the Department of Chemistry, is working along side Chuck Henry, professor and chair of the Department of Chemistry, to assess how effective pesticides have been at controlling the psyllids, and whether insecticide redistribution could better manage the psyllid populations. Read more on [SOURCE](#).



BACTERIAL BIOFILMS, BEGONE

By some estimates, bacterial strains resistant to antibiotics – so-called superbugs – will cause more deaths than cancer by 2050. Featured on [9 News Denver](#) and [Colorado Public Radio](#), CSU biomedical and chemistry researchers are using creative tactics to subvert these superbugs and their mechanisms of invasion. Researchers from the laboratory of Melissa Reynolds, associate professor of chemistry and the School of Biomedical Engineering, have created a new material that inhibits biofilm formation of the virulent superbug *Pseudomonas aeruginosa*. Their material, described in *Advanced Functional Materials*, could form the basis for a new kind of antibacterial surface that prevents infections and reduces our reliance on antibiotics. Bella Neufeld, the first author and graduate student who led the research, explained that her passion for finding new ways to fight superbugs is motivated by how adaptive and impenetrable they are, especially when they are allowed to form biofilms. Read more on [SOURCE](#).

UNDERGRADUATE STUDENT RESEARCH AND AWARDS



This past spring, over 30 awards and scholarships were given to our undergraduate and graduate students. One of those students, who received the [Nancy E. Levinger Undergraduate Research Fellowship](#), is Julia Trowbridge. You might recognize her name,

as she is also a writer and photographer for the [Rocky Mountain Collegian](#). Trowbridge is a sophomore undergraduate student who is studying chemistry with minors in English, mathematics, and economics. She is currently a researcher in the [Neilson Lab](#) where she studies inorganic materials. Trowbridge's research focuses on understanding an exciting new family of perovskites and their fundamental properties that underlie their function in high-efficiency solar cells. The research fellowship that she was given allowed her to continue her research over this past summer, when she had samples sent to the Argonne National Laboratory to use their Advanced Photon Source. Trowbridge stated that, "Working in Assistant Professor Neilson's lab has been a learning experience that extends far above the classroom setting. When I first started, I was given a challenge, and since then I've improved my knowledge on the specific research topic, inorganic chemistry, and the potential future of renewable energy. Because of this experience, I plan on going to graduate school and eventually working as a researcher at the National Renewable Energy Laboratory in Golden, Colorado."

Another one of our undergraduate recipients this past spring is Clifford Allington. He was awarded the [Clifford C. Hach Memorial Scholarship](#), the Physical Chemistry Award, and the American Chemical Society Undergraduate Award in Physical Chemistry. Allington is graduating in the spring of 2018 with majors in both

physics and chemistry and with a minor in mathematics. He began as a chemistry major at CSU in the fall of 2014 when he met his professor and mentor, [Amber Krummel](#). Krummel invited Allington to join her research group his second semester at CSU, where he was first exposed to topics such as quantum mechanics, electricity and magnetism, and optics. He added a second major in physics due to his love of these topics and is thankful for the overwhelming support he has had in this pursuit. The scholarships he has received have made his ambitious academic endeavors possible, in addition to supporting his growth as a research scientist. In the Krummel Group, Allington has had the opportunity to investigate the interesting optical properties associated with metallic nanostructures and the capabilities of such properties to access otherwise unobtainable spectroscopic information. Allington stated that, "I am very lucky for the multitude of support I have received both financially and pedagogically. Thanks to another professor, [Nancy E. Levinger](#), I had the opportunity to perform research internationally at the Max Planck Institute for the Structure and Dynamics of Matter in Hamburg, Germany. These opportunities have been integral to my development as a scientist and have nurtured my passion toward graduate studies to earn a Ph.D. in physical chemistry. It is my hope to one day become a professor that can help students such as myself have as wonderful of an experience with science as I have had."



To make a gift supporting students like Trowbridge and Allington or to learn more, [click here](#).

IN MEMORY



The Department of Chemistry lost a great colleague and friend this past year, Emeritus Professor [Rodney Skogerboe](#). During his 20 years at CSU, Skogerboe served as the chair of the Department of Chemistry for 10 years and directed the research of 54 Ph.D. students and eight master's students. A significant amount of Skogerboe's work focused on trace analysis of heavy metals in environmental and biological samples. He also served on the Food and Drug Administration Science Advisory Board, the State Air Pollution

Governance Board, and review boards for the National Science Foundation, the Department of Energy, and the Environmental Protection Agency. Skogerboe touched the lives of so many individuals, not only at CSU, but also around the world.

To honor the life of Emeritus Professor Skogerboe, his family wishes to have donations made to Colorado State University Foundation, for the [Rodney K. Skogerboe Scholarship in Chemistry](#).



Alumnus [Steven Glade](#) ('15), a man of science, as his family described, passed away this past August. Glade was a tremendous student who shined above the rest. He had been a good friend, a good boyfriend, a good son, a good brother, a good student, and a good scientist down to a science. He was a renaissance man with interests in chemistry, brewing beer, target shooting, snowboarding, traveling, and managing his men's soccer team, the Big Green. Glade was a kind and caring man who built and maintained strong relationships. He

graduated from Centaurus High School in Lafayette, Colorado in 2010 and graduated from CSU with bachelor degrees in chemistry and Spanish in 2015. He worked as a chemist at Gobi Analytical Labs. He was very bright and loved learning new things in his job. Everyone in the department and University send their thoughts and best wishes to Glade's family; he will be greatly missed.

To honor Glade, a scholarship has been established in his name at CSU. To learn more or to donate, [click here](#). Open the "select fund" drop-down menu, and search for "Glade."

SCHOLARSHIPS



The Department of Chemistry was honored this past October to have Michael and Iris Smith visit the new Chemistry Research Building and meet with the 10 recipients of the [Michael Smith Scholarship in Chemistry](#). Michael and Iris got to know each of the recipients and find out what led each student to become a chemistry major, what their interests are, how the scholarship has impacted and transformed their lives, and what their future goals are. The students selected to receive these scholarships are quite amazing; they represent a microcosm of both CSU and the state of Colorado in terms of diversity, ambition, and representation of first-generation students. One student, Kathleen Floyd, noted her thanks by saying, "Through your scholarship, I will have time to devote to the Honors Undergraduate Research Scholars

program. In this program, I will be able to participate in research that enhances my studies and has a positive impact on the world."

In other scholarship news, the [Professor Leslie DiVerdi Scholarship](#) has become fully endowed. Education has the power to touch and to transform lives. Leslie DiVerdi touched and transformed the lives of many students of chemistry during her life and her career at Colorado State University. The [Professor Leslie DiVerdi Scholarship](#), created in her name, seeks to continue the legacy of her work by providing needed support to bright and motivated undergraduate students majoring in chemistry. The Professor Leslie DiVerdi Scholarship was created in 2012 and as of this year it is fully endowed. To date each year, one student has been awarded funds from this scholarship. These funds have aided the students in pushing forward their education and their lives, preparing them to contribute to society. Scholarships do more than help pay for education — they also recognize and reward hard work and dedication. Students who earn and receive scholarship awards are touched deeply and can themselves be transformed.

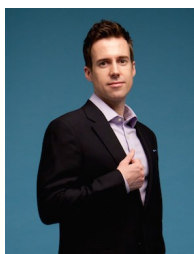


NEW FACULTY



GARRET MIYAKE JOINS FACULTY

[Garret Miyake](#), Ph.D., joined Colorado State University this fall as an assistant professor in chemistry. His research focus is on the development of organic and organometallic catalysis. The Miyake Group focuses on developing organic visible light photoredox catalysts for organocatalyzed atom transfer radical polymerization as well as the design of block copolymers that self-assemble to photonic crystals for applications in structural color in 3D printing and infrared reflective window coatings. Garret's recent awards include a 2017 Sloan Research Fellowship and the 2017 American Chemical Society Division of Polymer Chemistry Mark Young Scholar Award.



ROBERT PATON TO JOIN FACULTY

[Robert Paton](#), Ph.D., joined Colorado State University in January 2018 as an associate professor in chemistry. At Colorado State University, the Paton Group will continue to address the challenge of computational molecular design. The Paton Group's collaborations with academic groups around the world have led to support and scientific partnership with pharmaceutical and chemical industries. Paton's work has been recognized by the 2014 Silver Jubilee Prize of the Molecular Graphics and Modelling Society, the 2015 Harrison-Meldola Memorial Medal of the Royal Society of Chemistry, and an Outstanding Junior Faculty Award from the American Chemical Society computers in chemistry division.

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