



MESSAGE FROM THE CHAIR

Hello CSU Chemistry community, it's been a few years since we've connected via newsletter. Having just completed a tranche of employee evaluations, I think I am still stuck in 2023! But it presents a good opportunity to reflect on the department's accomplishments in the classroom, the laboratory, and the wider community. In 2023 we saw another successful Stille Symposium and our inaugural Oren Anderson Memorial Lectures in Inorganic Chemistry. Our award-winning Chemistry Club hosted their annual Spooktacular event. Our incredible grad students presented – and won! – at the Graduate Student Showcase. We also charged ahead with four new concentrations for our chemistry major – environmental, forensic, pre-health, and sustainability.

In 2023 we also saw amazing research happening in our labs, including \$12M in total research expenditures, a record for our department. In the last year, our faculty published promising research on biodegradable plastics, fast-charging batteries, environmental impacts of wildfire smoke, and so much more! The chemistry research done at CSU is broadly innovative, and as highlighted in this newsletter, at the forefront of sustainability efforts. The stories in this newsletter give some flavor for the breadth and depth of our department's research efforts.

We had the pleasure of welcoming two new members to our faculty in 2023. Assistant Professors Yuyang Dong and Brittney Morgan have joined our team, and we couldn't be more pleased to have them. Sadly, we said goodbye to Assistant Professor Joe Zadrozny as he continues his career at Ohio State University.

As we continue to achieve our research goals, we also aim to increase our alumni outreach. This includes starting an Alumni Seminar Event series and hosting a reception at the upcoming ACS National Meeting in Denver in August 2024. We also will be hosting the second Gerischer-Lewerenz Electrochemistry Symposium, which will include 30 speakers from all over the world; and CSU will host the 2024 International Conference on Coordination Chemistry, the first time that the meeting has been held in the United States in four decades.

Colorado State University's Department of Chemistry continues our commitment to excellence in research, education, and community engagement. We are excited for 2024 to bring us more breakthroughs, collaborations, and successes that will further elevate the reputation of the department.

I want to extend my deepest appreciation to each and every member of our community for their hard work, dedication, and passion for chemistry education and research. Together, we have made this year a resounding success, and I anticipate 2024 to be another successful year for us all.

Professor and Chair



SAVE THE DATE!

ALUMNI SPEAKER PANEL AND NETWORKING EVENT—APRIL 17

A panel will be held on the day as well as a Networking Mixer which will promote connection. The panel will include recent graduates of the department. The panel will also include an established alum. The panel will provide current grad students with insight into the current job market as well as building a career and establishing themselves in the scientific community. Save the Date [here](#).

AUGUST 2024 ACS NATIONAL MEETING—AUGUST 20

The Department of Chemistry will host a special Chemistry Alumni Event to coincide with the ACS National Meeting in Denver on August 20, 2024. We are excited to share the CSU Spur Campus with the chemistry community. More details will be announced this summer.



Follow us on LinkedIn to stay connected with these upcoming events!



OTHER UPCOMING EVENTS

MURALS 2024—MARCH 29

Students will present their scholarly work (creative writing, visual and performing arts, entrepreneurship, S.T.E.M., social sciences, humanities) while graduate students and faculty provide feedback and faculty serve as mentors. Throughout MURALS, students will have the opportunity to showcase their scholarly work and represent themselves, their departments and colleges to faculty, staff, peers, alumni, administration and FAMILY!

CURC 2024—APRIL 18

Celebrate Undergraduate Research and Creativity is an annual event held in April that showcases the creativity and scholarship of undergraduate students across various disciplines. The showcase culminates in a closing ceremony that recognizes all participants and honors award winners from events throughout the year.

ICCC 2024—JULY 28-AUGUST 3

The 2024 ICCC aims to bring together the leading minds in coordination chemistry to address global changes related to health, energy, catalysis, the environment, and fundamental science. We extend a warm welcome to the vibrant and diverse cultures, backgrounds, and perspectives of the global coordination chemistry community.

GERISCHER ELECTROCHEMISTRY TODAY SYMPOSIUM 2024—AUGUST 6-8

This symposium honors the scientific legacies of Heinz Gerischer and Hans-Joachim Lewerenz, who contributed to the fundamental understanding of semiconductor electrochemistry, photoelectrochemical solar cells, and fuel generating systems. The meeting will bring together approximately 100 scientists including 30 speakers from all over the world.

AUGUST 2024 ACS NATIONAL MEETING—AUGUST 18-22

Join us in Denver from August 18-22 to get the latest research in chemistry, network, and attend career events. The theme of this meeting is "Elevating Chemistry".

CSU CHEMIST WHO DEVELOPED REVOLUTIONARY BATTERY MENTORS NEXT GENERATION OF INNOVATORS

By Allison Sylte | Photo by Allie Ruckman



Even as Colorado State University Professor Amy Prieto continues to commercialize a fast-charging battery that's being touted as a game-changer for everything from electric vehicles to power tools, she's continuing to educate the next generation of innovators inside her lab in the Chemistry Building.

"CSU is truly unique in enabling what is called 'use-inspired research,'" Prieto said. "In our chemistry department, a lot of us might do some pretty fundamental research, but we always have an eye toward trying to solve some sort of practical problem. In our case, it's renewable energy, and in my lab, I want to think of better ways to produce and store that energy."

Prieto and her team of 11 Ph.D students and four undergrads are

currently working to study how readily available materials like sodium can be used to construct batteries. Since these materials are heavier than their more well-known lithium-ion counterparts, the hope is that these batteries can be used for non-portable applications like storing and using energy from solar cells or wind farms.

"We are looking for solutions to large-scale grid storage – for these applications you don't care how heavy it is, you want it to be cheap and pretty durable," Prieto said.

Some of what happens in the Prieto lab can best be compared to cooking new recipes – but unlike the average kitchen, researchers have to manipulate the ingredients inside an airtight plastic compartment while wearing thick plastic gloves. In addition to assembling makeshift batteries and testing them in a variety of different conditions, Prieto's team also set up chemical reactions to create nanoparticles made up of a variety of abundant elements that could be used to produce energy in the future for applications like solar cells.

Read full story at [SOURCE](#)

Watch our Day in the Life—Chemistry at CSU [video](#) which features the Prieto lab.

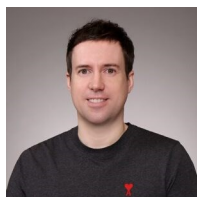
DEPARTMENT HIGHLIGHTS



RESEARCH SHOWS WILDFIRE SMOKE MAY LINGER IN HOMES LONG AFTER INITIAL BLAZE

The findings, published in Science Advances, show that wildfire smoke can attach to home surfaces like carpet, drapes or counters – extending the exposure for those inside and potentially causing health problems even after an initial cleaning activity by air purifiers. However, Professor Delphine Farmer said the research also shows that simple surface cleaning – like vacuuming, dusting or mopping – can reduce exposure and limit risk.

Read full story in [SOURCE](#)



INAUGURAL FIXMAN-LADANYI PROFESSORSHIP AWARDED TO ROBERT PATON

"Robert Paton, a professor of chemistry at Colorado State University, was awarded the inaugural Fixman-Ladanyi Professorship in Chemistry... "Rob is becoming 'the' person sought after for collaboration in computational organic chemistry. He is a dedicated and thoughtful teacher, and he is a valuable department citizen. Dr. Paton's well-rounded excellence sets a high standard for the Fixman-Ladanyi Professorship."

Read full story in [SOURCE](#)

CSU STUDENTS LEAD POLYMER RESEARCH INTO MORE RECYCLABLE PLASTICS



Chemistry and material science researchers at Colorado State University have developed a new class of recyclable polymers that could replace common single-use plastics with a large environmental footprint like grocery bags.

The work – described in a new edition of *Science* – was led by Chemistry Professor Garret Miyake in partnership with the National Renewable Energy Laboratory. In the paper the team describes an approach to create a series of polymers that display a diverse range of sought-after properties, are highly recyclable and can be made with just two simple building blocks.

The team is hopeful the new materials they describe could one day replace common polyolefin plastics, which are hard to recycle and

account for a large part of the 400 million metric tons of plastic produced each year globally.

Postdoctoral Fellow Yucheng Zhao is the co-first author on the new paper. He said that polyolefins are popular for current plastic needs because of material properties that make them easy to shape and durable, but also make them hard to recycle after use. To address that gap, the team developed an approach to make chemically recyclable polyolefin-like materials from two “hard” and “soft” building blocks. Those new synthesized polymers remain suitable for a wide number of uses based on their mechanical properties like flexibility and strength. Additionally, the materials can be recycled without separation, which is currently a major challenge in recycling mixed plastics.

They also feature other sought-after traits, like a high melting temperature and low gas transition temperature, and can be deconstructed back into the basic blocks again for recycling, said Zhao.

Emma Rettner is a Ph.D. student in the Materials Science and Engineering Graduate Program and was also a co-first author on the paper. She said this is the kind of work she had hoped to be a part of when she came to CSU, based on the university’s reputation around sustainability research.

Read full story in [SOURCE](#)

CSU DEPARTMENT OF CHEMISTRY ALUM, KIAH HICKS, INDUCTED INTO THE CSU ATHLETICS HALL OF FAME

On Friday, October 27, Kiah Hicks was inducted into the CSU Athletics Hall of Fame for Women’s Track and Field (2011-15). She excelled in the throws events and was a member of the 2015 MW Outdoor Championship team. Hicks won four conference titles and maintained a strong academic career. In 2015, she won the Thurman “Fum” McGraw Award for outstanding academic and athletic excellence, character, leadership, service, and Ram pride.

Kiah got her undergraduate degree in Chemistry at CSU before going to UNC Eshelman School of Pharmacy at UNC-Chapel Hill. She has gone on to become St. Mary’s Coumadin Clinic Supervisor and anticoagulation Pharmacist at Intermountain Healthcare. Kiah says she was able to balance her impressive athletic career and her studies in part due to a supportive Faculty saying, “I’m glad I became a Chemistry major because of the great Faculty, and the principles I learned here really helped me through Pharmacy School’s toughest courses.”

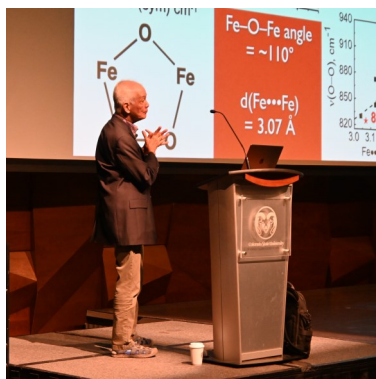
One of Kiah’s former professors, Nancy Levinger, was quoted in a 2015 *SOURCE* article as saying, “I’m so impressed with her ability to balance a very challenging and intense major at the same time as being a top-class athlete,” Levinger said. “It’s one thing to do athletics – I was one for four years – but it’s another to compete at the highest level. I wasn’t winning Mountain West titles and setting conference records the way Kiah has done.” Eight years later Professor Levinger



has this to add, “I continue to have that level of awe for Kiah. After graduating from CSU, she continued her studies in Pharmacy at the University of North Carolina, Chapel Hill. In itself, getting into this highly competitive program (it was ranked 1 or 2 in the nation!) is noteworthy. That Kiah’s talent in science took her easily through the tough program there is no surprise. Kiah was an inspiring student, and she continues to impress and inspire since graduating.

Read full story [here](#)

INAUGURAL OREN ANDERSON MEMORIAL LECTURE IN INORGANIC CHEMISTRY



On Tuesday, October 3, 2023, Professors Lawrence Que and Emily Que presented at our Inaugural Oren Anderson Memorial Lecture in Inorganic Chemistry. The lecture is named for the late Professor Oren Anderson who dedicated 37 years of teaching and groundbreaking research to the Department of Chemistry at CSU. His research focused on small and macromolecular

structures with particular emphasis on protein crystallography. The Oren Anderson Lecture allows scientists to present their research in Inorganic Chemistry.

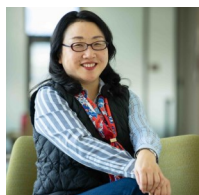
Oren Anderson was dedicated to his work and the students of the chemistry department. He insisted on teaching freshman general chemistry in addition to honors chemistry and inorganic chemistry. He also guided many graduate students in obtaining their master's and doctoral degrees. Oren was a pioneer in protein crystallography chemistry. He shared his findings with colleagues and students at conferences and through his teaching. The two speakers at the seminar

were Professors Lawrence Que and Emily Que. Father and daughter, their professional and personal lives intersected with Oren Anderson and his family.

Lawrence Que, PhD., presentation was titled "Synthetic Analogs For The Fe(IV)=O Intermediates Generated By Nonheme Iron Enzymes To Oxidize C-H and C=C Bonds." Lawrence shared his efforts to make and characterize synthetic analogs of intermediate Q, the dioxodiiron(IV) species capable of cleaving the 105-kcal/mol C-H bond of methane. Lawrence spoke fondly of Oren saying, "I met Oren Anderson early in my independent academic career at inorganic chemistry gatherings and we had found an immediate rapport, both scientific and personal. In the 80's, we started a scientific collaboration during which time we co-authored half a dozen of publications in which Oren provided his X-ray crystallographic expertise to solve the structures of a number of molecules we had been able to prepare. Eventually, my young family was also invited to visit Colorado during the winter months to experience the wonderful ski slopes provided by the Rocky Mountains. Later on, Oren's sons decided to go to college in Minnesota, which provided Oren and Jennifer further opportunities for our families to spend time together. Oren will be remembered for his dry wit and warm hospitality."

Read full story [here](#)

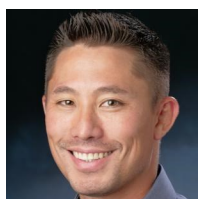
FACULTY NEWS



PLANTING THE SEED: DEI AND SOCIAL SCIENCE CONCEPTS AS PART OF CORE SCIENCE CURRICULUM

Akiko Nakamura, an assistant teaching professor in the Department of Chemistry, has been awarded a \$10,000 mini-grant from the Office of Inclusive Excellence leadership team for her proposal titled, "Diversity and Inclusion Value Equity (D.I.V.E.)."

Read full story in [SOURCE](#)



NEW CSU-LED CENTER WILL EXPLORE HOW LIGHT CAN BE USED TO MAKE MORE SUSTAINABLE CHEMICALS

The National Science Foundation has awarded Miyake a three-year, \$1.8 million grant to launch the Center for Sustainable Photoredox Catalysis, which will design chemical manufacturing processes harnessing light energy and utilizing readily-available materials as catalysts.

Read full story in [SOURCE](#)



CSU LEADS INTERDISCIPLINARY RESEARCH INTO ANTIBACTERIAL MATERIAL FOR INTERNAL MEDICAL DEVICES

Researchers at Colorado State University and the University of St. Andrews in Scotland have developed an effective and flexible antimicrobial material that could be used to coat medical devices placed inside the body.

The work combines previous research from both universities into metal-organic frameworks – three-dimensional crystalline materials made of metals and linkers that are porous and remain stable in water. Working together, the teams combined their two frameworks into a single thin-film membrane to slowly release nitric oxide.

Read full story in [SOURCE](#)

IN 2023/2024, THE CHEMISTRY DEPARTMENT WELCOMED NEW MEMBERS TO THE TEAM

In 2023, we welcomed two new faculty members to the Department of Chemistry. Assistant Professor, Yuyang Dong, started in the department in July of 2023. Assistant Teaching Professor, Brittney Morgan, started in the department in August of 2023.

Reflecting on her first year here so far, Brittney said, "It's been great working with such passionate and collaborative folks in the general chemistry teaching team and I look forward to getting to know the rest of the department better and working together for student success!"

In 2024, we welcomed two new lab coordinators to the department. Assistant Coordinator for Organic Chemistry Undergraduate Labs, Wendy Lindsey, started in the January of 2024. Assistant Teaching Professor and Inorganic Lab Coordinator, Ronnie Banerjee, started in February of 2024.

On starting their new position, Ronnie said, "This opportunity allows me to combine my love for training the next generation of stellar scientists while continuing my own research on functional materials."



FAREWELL TO PROFESSOR JOE ZADROZNY



Assistant Professor Joe Zadrozny left CSU's Department of Chemistry at in December 2023, and began his new position at Ohio State University. He worked in the department for six years. Joe's research was in inorganic and materials chemistry, employing synthetic chemistry to command the quantum properties of material and molecular magnets. During his time in the department, Joe was recognized for his excellence in research and teaching, including being awarded: NIH Trailblazer, CSU Early Career (Pre-Tenure) Faculty Excellence in Teaching and Mentoring, NSF CAREER, and Cottrell Teacher-Scholar Awards.

Reflecting on his career at CSU, Joe says, "During my time at CSU, I mentored a handful of PhDs and published frequently on my students' work in using inorganic chemistry to control magnetic properties of metal complexes. I loved teaching CSU students about group theory and the opportunity to teach general chemistry this fall, and I would heartily recommend both to anyone. I'm looking forward to the future but will always fondly remember my time here and people I met and collaborated with."

Joe values collaboration with both his students and colleagues. He credits his students' work and research efforts in keeping his lab funded. He and his group shared core scientific values including: "Good Science" not just breakthrough results, integrity in research process, experimental failures as opportunities to learn, open communication and collaboration, respect for all backgrounds and experiences, and a safe, supportive, and welcoming research environment.

Department Chair Matt Shores echoes the thoughts of the department saying, "Joe is a rising star in physical inorganic chemistry. His group's research efforts in magnetic resonance and molecular magnetism are elegant and creative. He was a good department citizen and an excellent colleague, and he will be missed."

SUPPORT THE DEPARTMENT

Your support of the department is incredibly valuable. Please consider making a difference to today's students, faculty, facilities, and programs—at whatever level is right for you. Thank you!

For more information on giving, contact:

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