Letter from the Chair

As I sit and write this update for the newsletter, spring seems to have left Colorado and been replaced by a last gasp of winter. Despite the cold and gloomy weather outside, things are looking good in the chemistry department. The last six months were filled with many notable highlights. Our faculty and students continue to win awards for their work. Of note, three faculty members received awards from the College of Natural Sciences for their work in teaching, research, and student mentoring. Given there are only eight total awards given in the College of Natural Sciences, this demonstrates the impact our faculty are having at CSU. Department faculty have also been recognized with major national awards, including Amber Krummel winning the Sloan Fellowship. This award is one of the most prestigious awards for young investigators in all fields of science. Amber’s award was the only one given to a faculty member in the state of Colorado. Our students have also won a range of awards for their work from the University and at national and international meetings. While these awards are often recognition of an individual’s contribution, they also clearly point to the overall positive direction of the department and our visibility on a national and international level.

Spring also marks a bittersweet moment in any college department: graduation. To our graduating students, both undergraduate and graduate, thank you for your contributions to our program, and welcome to the family of alumni that span the globe. I encourage you, and all of our family and friends, to keep in contact (check out our LinkedIn group if you want a starting point). And speaking of keeping in contact, one of the highlights of the spring semester was the alumni event held in conjunction with the ACS National Meeting in Denver. It was a great event that brought current and former department members together for an evening of fun and memories. It was also a chance for us to honor the contributions of Mike Elliott and Gary Maciel.

Finally, one last update on the building (and no, I’m not referring to the stadium). What has been a dream for more than a decade is moving towards reality. At this point, we have been given the go-ahead for a new 60,000 sq ft research building to house much of our synthetic program. This building will be a second facility and allow us to expand our research program by providing important new, modern space. We are currently in the design phase with a target to occupy the new building in 2018. More updates (and pictures) will be coming soon on our website and in future newsletters.

Enjoy your summer!

Charles S. Henry
Department Chair

Upcoming Events

May 15: Graduate Commencement
May 16: Undergraduate Commencement
May 19-21: CIF Summer School
June 15: Time-of-Flight Chemical Ionization Mass Spec User’s Meeting

In This Issue
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• Student Awards & Honors
• Alumni News

Henry Group, 2015
Honors and Accomplishments

Crans named Professor Laureate

Debbie Crans, professor of chemistry, and Jennifer Hoeting, professor of statistics, were named this year’s Professor Laureates by the College of Natural Sciences. This award acknowledges colleagues who have achieved, practiced, and demonstrated the best characteristics of a well-rounded, productive academician. Debbie, and fellow nominee Jennifer Hoeting, were recognized for this award on April 24 at the Annual Teaching & Mentoring Awards Ceremony.

Szamel named APS Fellow

Professor Grzegorz Szamel has been elected to fellowship in the American Physical Society, recommended by the Division of Chemical Physics. The fellowship award honors Professor Szamel “for his contribution to the understanding of glassy dynamics through computer simulations and fundamental theory.” He received a certificate at the APS March 2015 meeting in San Antonio, and his name and award citation appear in the March 2015 issue of APS News.

Tenaya Newkirk awarded Waterpik Excellence in Education Award

The Colorado State University Excellence in Education Award, sponsored by Water Pik, highlights excellence in the classroom by Colorado State University student-athletes and professors. This award is presented to a recipient at each home football game. Dr. Newkirk was honored at the home game on Nov. 22, after nomination from student-athletes, as someone that has impacted their educational experience in a positive way.

Prieto awarded 2014 Agnes Fay Morgan Research Award

Amy Prieto was recently awarded the Iota Sigma Pi Agnes Fay Morgan Research Award. This award recognizes outstanding young female scientists in the fields of chemistry and biochemistry.

Krummel awarded Sloan Fellowship

Amber Krummel, an assistant professor of chemistry at Colorado State University, has been named a 2015 Sloan Research Fellowship recipient by the Alfred P. Sloan Foundation.

“We are extremely proud of Amber and the fantastic science she has been doing,” said Chuck Henry, chemistry chair. “The Sloan award is one of the top awards given to young investigators in science annually, and it puts Dr. Krummel into an elite group.”

McNaughton and Reynolds awarded 2014-2015 College of Natural Sciences Teaching and Mentoring Awards

Brian McNaughton received the 2014-2015 Early Career Faculty Excellence in Undergraduate Teaching & Mentoring Award.

Melissa Reynolds received the 2014-2015 Faculty Excellence in Graduate Education & Mentoring Award.

The Teaching and Mentoring Awards were established in 1995 to recognize faculty and graduate students that have set a standard of excellence in the teaching and mentoring of students. These awards are the highest honor the College bestows for student education.

Ingrid Ulbrich receives faculty "Of the Month" Award

Instructor Ingrid Ulbrich was awarded the faculty "Of the Month" award Oct. 2014 from the National Residence Hall Honorary. "Of the Month" awards provide an opportunity for students, staff, and faculty to recognize outstanding individuals and programs on campus.

The nominating student had these words to say: "Dr. Ulbrich's view on teaching certain subjects in multiple ways is much like an element and its isomers - they may have the same basic formula, but it is the way they are structured that makes all the difference."
CSU Scholarship  Award Recipients

On April 23, the department recognized our graduating seniors and award recipients in the Department of Chemistry. Awardees are:

College of Natural Sciences Undergraduate Awards
ACS—Hach Land Grant Scholarship: Rachel Valiquette
Chemistry Undergraduate Scholarship: Lindsi Durrett and Juliette Granger
Clifford C. Hach Memorial Scholarship: Mitchell Bordelon, Susannah Miller, and Katrina Puck
Cornell Stanhope Scholarship: Hallie Winesett
Dr. Harry Puleston Memorial Scholarship: Suriya Vijayasarthathy
Dr. Jennifer Dawn Alexander Scholarship in Chemistry: Anne Marie Rauker
George Splittgerber Scholarship in Chemistry: Brent Wyatt
Professor Leslie DiVerdi Scholarship in Chemistry: Clifford Allington
Rueben G. Gustavson Memorial Award: Josie Hendrix

Additional Awards & Achievements
Andrew Abeleira (Farmer group) was awarded a $3,000 scholarship for air quality research and study from the Air and Waste Management Association. Abeleira was also awarded the "Air Quality Student Hero" scholarship from the Rocky Mountain States Section of the Air and Waste Management Association.

Scott Compel (Ackerson group) received a Best Student/Postdoc Presentation Award for his oral presentation at the Materials Research Society 2015 Spring Meeting. His presentation was entitled “Dynamic Assemblies of Gold Nanoclusters Enabled by Surface Modifications.”

Lucas Suazo (Reynolds group 2011) was recognized as the 2015 Denver Metro Chamber Student Leader of the Year at the 9NEWS Civic Leadership Luncheon March 19. The honor recognizes Lucas's academic and research accomplishments as well as his involvement in the community. Read more about his remarkable life at SOURCE.

Rodney Bush Fellowship in Organic Chemistry 2014-2015 Recipients (Tony Lake, Kate Berg, Kat Boehle and Michael Hilton)

College of Natural Sciences Graduate Awards
Dissertation Award in Chemistry: Kevin Whitcomb
Professor Albert & Joan Meyers Memorial Family Fellowship: Michael Hilton
Professor Louis S. Hegedus Fellowship: Angeline Ta
Teresa Fonseca Memorial Award: Jenee Cyran

Chemistry Graduate Awards
Graduate Outreach Award: Cheryle Beuning
Graduate Teaching Assistant Award: Nicholas Deweerd, Julie Holder, Mary Marisa, Erin Stuckert, Angeline Ta, and Scott Thullen
In science, it can be easy to privilege data over the communication of it. Yet language plays an active role in our ability to understand, describe and navigate our world. For instance, people from cultures that communicate spatial relationships in terms of cardinal directions (north, south, east, west) navigate better in new environments than people from cultures that use relative spatial terms like left or right. Language can affect cognition not only in social spheres but in the physical sciences as well. Physicist and philosopher David Bohm suggests that our subject-verb-object language structure might bias us toward a particle-like model for our universe when a wave-like, continuous model may be equally valid.

With encouragement from my boss, Tomislav Rovis, I wrote an essay that explores the way language has colored experiments and conclusions in organic chemistry. The essay focuses on the “anomeric effect,” a celebrated and controversial phenomenon that describes surprising equilibrium preferences of certain sugar derivatives. Specifically, I argue with a mix of science and philosophy that much of the controversy surrounding the origin of the anomeric effect takes its root in the use of imprecise and inconsistent definitions. It is my hope that the case studies within this essay will encourage scientists of all disciplines to treat not only their data but their words with care.

The proposed program plan would add a new 60,000 SF state-of-the-art research building to house a number of the hood intensive synthetic chemistry programs. The building would include 12,000 SF of lab space for new and current synthetic organic programs, 8,000 SF of lab space for new and current synthetic inorganic materials programs, and 5,000 SF of lab space for polymer chemists. The new building would be located on the Science Mall, just east of the current Chemistry building. The total estimated cost of the proposed new building is $55.4 million.

Alumni News

David Lacy (B.S. 2007 Shores group) accepted a position as Assistant Professor at the University of Buffalo. He was the first undergrad researcher in the Shores group and finished his Ph.D. from the University of California, Irvine, in 2012.

Alexa Barres (2012 REU student, Crans group) was recently named a 2015 NSF Graduate Research Fellow. This program supports outstanding young scientists and engineers and works to support the future diversity of the U.S. STEM workforce. Alexa is currently pursuing her Ph.D. at the University of Wisconsin, Madison.

Todd Hyster (Ph.D. 2013, Rovis Group) recently accepted a tenure track faculty position at Princeton University. Todd has been conducting his post-doc research at the California Institute of Technology since 2013.

Serena DeBeer (REU student, Crans group) was awarded the 2015 SBIC Early Career Award. Serena is a professor at the Max Planck Institute for Chemical Energy Conversion.

Ryan Whitcomb (B.S. 2014) was also named a 2015 NSF Graduate Research Fellow. Ryan is pursuing his Ph.D. at the University of Michigan.

2015 CURC Awards

The annual Celebrate Undergraduate Research & Creativity Showcase is held each April. This juried showcase features outstanding performers from every discipline. Eight chemistry students were awarded in the Research Posters category on April 22.

Highest Honors (Travel Award Recipients)

Mitchell Bordelon (Neilson group)  Helical relief of the geometrically-frustrated magnetic Fe3O3PO4 lattice

Steven Glade (Crans group)  Synthesis and Characterization of Oxovanadium Complexes Containing Anti-oxidant stressor Ligands for Anti-Parasitic Application

High Honors

Sara Dellinger (Crans group) and Taylor Lucia (Crans group) Exploring the properties of several Vitamin K analogs and their potential as substrates for the newly discovered Mycobacterium tuberculosis enzyme

Taylor Lucia (Crans group) Correlation of redox potential with 51V NMR chemical shifts of Vanadium(V) Catecholates

Susannah Miller (Crans group) Changing Acidity of Protonated Aniline near Oil-Water Interfaces

Lindsey Paricio (Reynolds group) Cell Growth and Bacteria Kill Rates of Plasma Treated Nitric Oxide Releasing Polymer Films

College Honors

Kyle Byrne (Santangelo group) Discovering the Structure and Function of Archaeal Nucleosomes

Nicholas McGlashen (Crans group) Hypoglycemic Effects of Biguanice-Vanadyl Complexes

Nicole Segaline (Crans group) and Katarina Werst (Crans group) Does asymmetry make a difference in membrane interactions of large vanadium insulin enhancing compounds?

New Chemistry Research Building

Conceptual sketch of proposed location
Professor Amy Prieto will be one of the featured scientists in this new Smithsonian exhibit—opening July 2015. The Lemelson Center for the Study of Invention and Innovation will be opening the Places of Invention Exhibition this summer. This exhibit will highlight Fort Collins as a city with breakthrough invention in clean energy and socially responsible innovation.

Click HERE for details.

Seven teams of researchers from across Colorado State University will be working together on some of our most pressing global problems, thanks to innovative investments from the Office of the Vice President of Research.

“The ability to use scientific discoveries to drive technological solutions to our most pressing global problems will require the integration of multiple disciplines and the formation of innovative partnerships across sectors,” said Alan Rudolph, Vice President for Research.

In the fall of this year, the OVPR at CSU has launched a new program entitled Catalyst for Innovative Partnerships (CIP). The new program seeks to build innovative multidisciplinary teams that will forge partnerships designed to optimally pursue new opportunities for translating discoveries into practice. Read more at SOURCE.

Chemistry faculty collaborate across campus in new OVPR program

Chemistry faculty are involved in four of the seven CIP teams.
1st row: Travis Bailey, Randy Bartels and Eugene Chen
2nd row: Ellen Fisher, Chair Chuck Henry, A.R. Ravishankara & Melissa Reynolds

Smithsonian exhibit to feature Fort Collins and local scientists

Photo courtesy of the Smithsonian Institution
Patients will see direct benefits from a new agreement connecting physicians with university researchers in northern Colorado. Joint research at Colorado State University, Poudre Valley Hospital and the Medical Center of the Rockies already has spawned development of several medical improvements, including a new arterial stent that helps prevent blood clotting and a hernia patch that fights infection.

“We’re translating academic research into real-world solutions,” said Melissa Reynolds, an associate professor of chemistry at CSU who is collaborating with local physicians on products that promote healing. “We get to have discussions about what the actual needs are at the clinical level. And that’s a value that can’t be replaced by anything else.” Now, as part of a newly signed memorandum of understanding, the organizations have agreed to combine resources and personnel to bring CSU research to patients faster and more efficiently. The entities will collaborate in several areas, including clinical trials, funding opportunities, technology transfer, employee education/training and marketing.

Princess of Thailand visits CSU to learn about cancer research

Her Royal Highness Princess Chulabhorn Mahidol of Thailand visited Fort Collins this January to discuss ongoing cancer research at Colorado State University with University Distinguished Professor Robert Williams and colleagues.

Dr. Williams was contacted by scientists at the Chulabhorn Research Institute last summer about presenting his research to the princess. They were particularly interested in hearing about natural products that could be reaped from resources in Thailand.

Much of Williams’ current work focuses on developing cancer-fighting drugs from a small organism that is indigenous to the waters of the Florida Keys. He said similar organisms exist throughout the world – including off the coast of Thailand.

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New pact with local hospitals to advance patient care in northern Colorado

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Photos & text courtesy of SOURCE.
Colorado State University hosted the American Chemical Society’s ACS on Campus Week this past February. The main event was a day of seminars—Basics in Scholarly Publishing, Grant Proposal Writing, ACS Career Pathways with panel discussions, and continued networking opportunities. This well-attended event provided opportunities for students to connect with others in the industry and gain valuable knowledge to help further their careers. Additional events included networking sessions, “ACS in a Box” webinars, and a comedy show.

**ACS on Campus Week**

There was a diverse collection of speakers from the science industry for the event—including some of our own colleagues from the chemistry department. Professor Debbie Crans, CIF Associate Director Karolien Denef, Assistant Professor Delphine Farmer, and Professor Ellen Fisher participated in these seminars throughout the day.

**Science for all ages**

Graduate students volunteered at the Denver Zoo during the ACS Public Outreach event on March 21st. More than 600 children were in attendance to participate in hands-on activities highlighting the wonderful world of science.
Celebrate! CSU Milestones

The Celebrate! CSU Milestones awardees are honored as employees celebrating retirement or reaching 10, 15, 20, 25, 30, 35, 40, 45 and 50 years of service to Colorado State University. 2014-2015 Chemistry recipients include:

Elliot Bernstein  40
Ronald Costello  10
Joseph DiVerdi  10
Thomas Frederick  10
Branka Ladanyi  35
Brian Newell  10
Tomislav Rovis  15
Grzegorz Szamel  20
Cindy Ungerman  25
Alan Van Orden  15

Chemistry Alumni & Friends Event

On March 23, alumni and friends of the chemistry department gathered for a night of celebration, friendship, and memories. During a small presentation, Dean Nerger announced the creation of the Nancy E. Levinger Undergraduate Research Fellowship, started by Nancy’s first undergraduate student, Kyle Kung (B.S. 1996).

ACS 57th Annual Meeting in Denver

Nearby, the 57th American Chemical Society meeting was in full swing at the Denver Convention Center. Faculty and students attended lectures and events throughout the week. Many students also presented their current research during poster sessions at various events.

Keeping the “early” pipeline full

The Department of Chemistry supports the Colorado Science and Engineering Fair by sponsoring two special awards in the junior and senior division. Professor DiVerdi recently received some encouraging words from one of this year’s CSEF award recipients: “I’ve always wanted to be a chemist when I grow up, and knowing that someone cares about what I’ve done means a great deal to me. Thank you!”
The Central Instrument Facility (CIF) continues to be a busy place with exciting projects in all of the laboratories, and expanded capabilities in spectroscopy and electron diffraction. Two proposals were submitted in response to a RFP from the OVPR seeking foundational core support for the CIF and to establish a satellite CIF facility on the north side of campus. If funded, the latter will accommodate early discovery materials research, starting with a walkup tabletop SEM microscope for rapid high-resolution imaging.

We also just placed an order for a new Helium Liquefier, ATL-160, that will support the Quantum Designs-MPMS and one NMR in Phase I, and continue support for other NMRs in Phase II. This system will recover and liquefy helium boil-off from these instruments and should improve our overall helium security and stabilize operation costs for instruments that use liquid helium.

The CIF inherited a GE Biacore T200 instrument from Dr. John Belisle (MIP). This instrument brings a new technology called Surface Plasmon Resonance, or SPR, to the CIF spectroscopy laboratory that will serve several of our chemical biology faculty as well as faculty at other departments (microbiology, engineering, biochemistry) on the main campus. SPR is a phenomenon that allows real-time, label-free detection of biomolecular interactions. Applications of SPR include biotherapeutic and drug discovery research, as well as protein activity and stability analysis in biopharmaceutical production. In the T200 instrument, target molecules, most frequently proteins, are immobilized on a prepared gold sensor surface and a sample containing a potential interacting partner in solution is injected over the surface through a series of flow cells. During the course of the interaction, polarized light is directed toward the sensor surface and the angle of minimum intensity reflected light is detected. This angle changes as molecules bind and dissociate and the interaction profile is thus recorded in real-time. As light does not penetrate the sample, interactions can be followed in colored, turbid, or opaque samples. No labels are required, and since detection is based on changes in plasmon resonance, it is nearly instantaneous. For more information on this instrument and its capabilities, please contact Karolien Denef, or visit: https://www.biacore.com/lifesciences/introduction.

A Fond Farewell

We are sad to say goodbye to Don Dick, who is retiring from the CIF after 44 years of service. He was in charge of the CIF’s mass spectrometry operations and mentored over 15 undergraduate students throughout his career. He looks forward to spending more time with family and fishing. Join us in wishing him all the best and thanking him for all he’s done for the CIF!

New Advances

Our electron microscopists, Roy Geiss and Pat McCurdy, have also been successful with developing some new highly advanced diffraction capabilities on our SEM and TEM. Aside from being able to do standard diffraction in TEM and STEM mode, it is now also possible to do nanodiffraction in the STEM mode at less than 2 nm resolution. We recently acquired an exciting new capability to do electron diffraction on bulk and thin samples in the SEM, called electron backscattered diffraction, or EBSD for short. Roy Geiss pioneered a new way to use EBSD to look at nanowires and nanoparticles and has given it the name transmission EBSD, or t-EBSD for short. If you have nanowires, nanorods or nanoparticles, and are interested in their crystal structure and/or orientation, please let us know so we can demonstrate to you or your students this powerful new technique.
Giving to Chemistry

New Scholarship Opportunities

Nancy E. Levinger Undergraduate Research Fellowship

Alumnus Kyle Kung (B.S. 1996) established this fellowship in honor of his professor and mentor, Dr. Nancy E. Levinger.

George Splittgerber Scholarship in Chemistry

This scholarship was established by alumnus Dr. Glenn Boutilier (B.S. 1974) and his wife Donna to honor longtime CSU chemistry professor, Dr. George Splittgerber.

The Mark P. Sweet Chemistry Scholarship

This scholarship was created in memory of alumnus Mark Sweet (Ph.D. 1989) by his family. This fund benefits students majoring in organic chemistry within the chemistry department in the College of Natural Sciences at Colorado State University.

Dr. Robert Williams Chair in Organic Chemistry Endowment

Dr. Robert Williams has had an extraordinary research and teaching career at Colorado State University. To honor his work and continue his research legacy, the College of Natural Sciences seeks to establish the Dr. Robert Williams Endowed Chair in Chemistry.

Dr. Williams has been dedicated to involving many students in his research through the Williams Research Group, training successive generations of scientists who are making their own marks in bio-organic chemistry and biosynthesis. His students have gone on to careers as scientists at pharmaceutical companies and as educators. “I love watching students become scientists,” Dr. Williams has said. “By the time they are done here, they’re ready to take on the world, and that’s very satisfying.”

The Dr. Robert Williams Endowed Chair in Chemistry will allow Colorado State University to recruit to the College of Natural Sciences an established organic chemist or chemical biologist who is an outstanding scholar, gifted teacher, and exceptional researcher who has made significant contributions to his or her field of study. Attracting and retaining top scholars and researchers allows Colorado State to recruit the best undergraduate and graduate students from Colorado, the nation, and around the world. A faculty member who is awarded the Dr. Robert Williams Endowed Chair in Chemistry will bring ongoing prestige to the University through research, mentoring, published works, and speaking engagements.

Please join us with a gift to support the Dr. Robert Williams Endowed Chair in Chemistry, and continue the legacy of teaching, mentoring, and groundbreaking research conducted by Dr. Williams, his colleagues, and his undergraduate, graduate, and postdoctoral students.