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Newsletter - Spring 2014

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Message from the Chair

This last edition of my "Letter from the Chair" column for our departmental newsletter has been rumbling around my head for quite some time now. Several versions have been started during the wee hours of a few sleepless nights, and slightly better drafts were composed on predawn walks with the dog. It has, as usual, taken me to the nearly 11th hour to finally sit down and put these thoughts "on paper". As this is my last missive to you, our departmental alumni and friends, I trust you will allow me some creative license as I wax nostalgic and invoke metaphors from one of my all-time favorite movies, *The Wizard of Oz.*

Before we get to Oz, I find myself reflecting on the cycle of academic life that is juxtaposed upon nature's cycle in the western hemisphere. While spring blossoms with emerging new life in the plants and trees in my yard and across the CSU campus, it also brings to a close a large fraction of the academic activity on campus. Soon we will be honoring traditional academic rites of passage through the celebration of all types of graduations. Endings and yet new beginnings. Rejoicing and yet uncertainty about new paths forward. On many levels, this spring's inherent dichotomy seems somehow sharper and more poignant to me. As a department, we have been deeply saddened by the unexpected passing of our dear friend and colleague, Emeritus Professor Gary Maciel. Yet we simultaneously celebrate the amazing impact he had on our department, the scientific community and countless students, including a current chemistry major who had embarked on a new research project with Gary just this spring. I will miss Gary tremendously, especially his incredible spirit and enthusiasm for science, but I rejoice in the Maciel legacy that lives on through his students and the graduate fellowship named after him. [Contributions can be made to the Gary E. Maciel Fellowship endowment through the CSU Foundation: https://advancing.colostate.edu/CNS/CHEM/GIVE]

Completing my term as Department Chair on June 30, I am experiencing my own ending and new beginning. When I look around the Department, I cannot help being both humbled by and proud of the transformations that have occurred during my 5 years as Chair. Despite the challenges of the country's economic recession and the accompanying state budget cuts to higher education, our Department has emerged stronger and better today. Among our recent faculty hires, there are many rising stars and exciting new directions in cutting-edge research, complemented by our significantly expanded central instrument facility staff and capabilities. Our graduate student population boasts greater diversity, accomplishment, and promise than ever. We have created a cross-disciplinary graduate program of study in Chemical Biology, added a BS/MS combined degree program, and expanded our offerings to include a range of materials synthesis and sustainable chemistry courses in scientific writing, chemistry of addictions, and environmental chemistry. We have added faculty members focused specifically on improving advising, teaching and learning in our general chemistry program and with our chemistry majors. To this end, a new Chemistry Learning Resource Center (The CLERC) will be established this summer to further implement our educational mission and goals to assist faculty, graduate teaching assistants, and students broadly across the chemistry curriculum at CSU. Just listing these extraordinary departmental accomplishments gives me a tremendous sense of success.

This spring, along with musing on the changing seasons, I've also felt a lot like Dorothy in *The Wizard of Oz*. When undergoing change or uncertain circumstances people often refer to the line Dorothy says to Toto upon arrival in Oz about not being in Kansas anymore. And although I have often felt that way since leaving Kansas in 1980, that's not the image of Dorothy I've been conjuring up of late. Rather, I think about lessons learned from Dorothy's story, as she embarks on an adventure in a strange land, following the yellow brick road wide-eyed and open to the possibilities and promise of what lies ahead for her in the Emerald City. Along the way, she befriends nearly everyone she meets, shares her optimism about the future and enlists their help in completing her journey. After the Wizard sends Dorothy and her companions off to chase an inconsequential broomstick, she learns the power of friendship and the true daring that lies in living one's values, regardless the cost. In the end, one of the most lasting messages of the movie is that Dorothy had the ability to achieve her heart's desire within herself all along. She just had to get those ruby slippers clicking.



Professor Debbie Crans Named AAAS Fellow

Professor Debbie Crans was named a Fellow of the American Association for the Advancement of Science, a prestigious peer honor awarded to a

select group of scientists across the country each year.

Crans was cited "for distinguished contributions elucidating the chemistry and biochemistry of vanadium, as well as professional service within the field of inorganic chemistry."

Her research focuses on the chemistry of transition metal compounds and she has expanded her work to include lipid and lipid-like environments in bulk and on the nanoscale. She has long been interested in the insulin-enhancing effect of vanadium and other transition metal compounds, and applications of metals in diabetes and cancer. This has led to projects in the application of colloidal systems for drug formulation and processing of biofuels as it involves lipid biomass conversions.

Professor Matt Shores Receives CNS Faculty Excellence in Undergraduate Research Mentoring Award



Professor Matt Shores received the

CNS Faculty Excellence in Undergraduate Research Mentoring award. These awards are the highest honor the College bestows for student education, and recognize faculty that have set a standard of excellence in the teaching and mentoring of students.

The *Journal of Chemical Physics* has selected an article by **Professor Elliot Bernstein** to appear in the 2013 JCP Editor's Choice collection. Articles selected represent the most innovative and influential articles of 2013.

Dr. Bernstein's article, Generation and reactivity of putative support systems, Ce-Al neutral binary oxide nanoclusters: CO oxidation and C-H bond activation, along with the other articles selected by the JCP, are freely available throughout 2014 on the JCP website: http://scitation.aip.org/content/jcp-editors--choice-for-2013.

Professor Rick Finke Receives Scholarship Impact Award

Congratulations to **Professor Richard G. Finke**, who received the 2014 CSU Scholarship Impact Award, the highest research award given by the University. Rick's nominating letter notes he has contributions of exceptional *scholarly breadth and depth* across the chemical sciences with a connecting theme of creative chemical mechanistic probing and insights that result. The significance and far reaching impact of those mechanistic insights are two reasons Rick's work is so broadly cited by the scientific community. Rick is the second member of the Chemistry Department to receive this highest university honor; Prof. Ellen Fisher received the scholarship impact award in 2010.

Profs. Chen and Rovis Receive Prestigious Keck Foundation Grant

Professors Tomislav Rovis and **Eugene Chen** were selected to receive a Keck Foundation Grant in the amount of \$1,000,000 for their project entitled "Artificial Metalloenzymes: A New Catalysis Platform for the Synthesis of Fine Chemicals and Advanced Materials". The W. M. Keck Foundation is notorious for supporting high risk, high reward science. Chen and Rovis will use the funds to initiate a new research program in the area of chemical and material synthesis utilizing unnatural metal-containing biomolecules as catalysts. The aim of the work is to take advantage of the tunability of biomolecules with the extensive range of transition metals for new chemical transformations.

Professor Delphine Farmer Named SoGES Fellow



Professor Delphine Farmer has been named a 2014-2015 SoGES Resident Fellow. SoGES Resident Fellows are a select group of CSU faculty members who engage in scholarly, creative research and problem solving

consistent with the mission and the six focal areas of the School. SoGES Fellow awards encourage interdisciplinary understanding of complex global environmental issues, foster collaborative cross-campus partnerships, and support sustainability research at CSU. Farmer's research focus will combine instrument development and advanced analytical chemistry, with atmospheric science and physical chemistry, to understand air pollution and climate-relevant processes.

Honors and Accomplishments

Celebrate Undergraduate Research and Creativity (CURC) Honor Recipients

We are pleased to announce 4 students received High Honors, and 5 received College Honors at the 2014 CURC Showcase. For more than 20 years, CSU has celebrated the accomplishments of undergraduate researchers in a symposium where student present the results of their research. Congratulations to this year's CURC Honor recipients!

High Honors:

Mengmeng Fang (Advisor Prof. Delphine Farmer) Susannah Miller (Advisor Prof. Debbie Crans) Nicole Puissant (Advisor Prof. Chuck Henry) Angela Warner (Advisor Prof. Nancy Levinger)

College Honors:

David Mast (Advisor Prof. Joseph Di Verdi) Arielle Howell (Advisor Prof. Melissa Reynolds) Cole Borque (Advisor Prof. Melissa Reynolds) Alexandra Roach (Advisor Prof. Melissa Reynolds) Steven Glade (Advisor Prof. Debbie Crans)

Undergraduate Student Receives Recognition at the Rocky Mountain International Society for Pharmaceutical Engineering (ISPE)



Ashley Anderson (Crans selected Group) was bv the board of directors of the Rocky Mountain International Society for Pharmaceutical Engineering (ISPE) compete at the Nation

al ISPE Annual Meeting in Washington DC where she represented CSU with a poster on her research project. Her poster "Comparison of two catechol drug delivery methods for derivation of a pharmacological model" is based on a joint project with Michael Johnson and Brant Lemons. Myles Sedgwick (Ph.D 2012), was also a coauthor on this work. The science that formed the basis for the presentation was recently published as a cover article in the New Journal of Chemistry's hot top issue. 'Stabilization of a vanadium(V)-catechol complex by compartmentalization and reduced solvation inside reverse micelles.'



Jamie Neely (Rovis Group), was selected as the graduate student speaker at the Gordon Research Conference on Organic Reactions and Processes based on her poster presentation 'Rh(III)-Catalyzed Pyridine Synthesis from Unsaturated Oxime Esters and Alkenes: Complementary Selectivity for 2- and 3-Substituted Pyridines.'



Lisa Dysleski Named 2014 Best Teacher



Congratulations to **Lisa Dysleski**, who was selected as a 2014 Best Teacher by the Colorado State University Alumni Association. Each year, the alumni association recognizes outstanding Colorado State University educators with Best Teacher Awards. The teachers, nominated by students and

to alumni, are selected by a committee comprising faculty, students, and members of the Alumni Association Board of Directors.

Prior to joining the dean's office as the assistant director of the College of Natural Sciences Learning Community in the summer of 2013, Lisa was a faculty member with a senior teaching appointment in CSU's Department of Chemistry, teaching general chemistry and serving as the department's key academic advisor.



Finding Langmuir Students in the **Fisher Group** received High Honors at CSU's Eighth Annual Art and Science Exhibition for their entry entitled '*Finding*

Langmuir'. Langmuir, a lovely blue Beta, hangs out in the Fisher group office in a non-working plasma reactor. The Exhibition showcases the creative energies of students, faculty, and staff at Colorado State University and exemplifies the common ties between scientific inquiry and artistic practice.

2013-2014 Chemistry Scholarships & Awards

ACS - Hach Land Grant Fund Scholarship

Rachel Valiquette

Hanna Vik

ACS Undergraduate Award in Analytical Chemistry

Zichun Xu

ACS Undergraduate Award in Inorganic Chemistry

Trenton Danna

ACS Undergraduate Award in Organic Chemistry

Adam Golos

Jennifer Dawn Alexander Scholarship

Susannah Miller

Chemistry Dissertation Award Bryon W. Larson

Chemistry Undergraduate Scholarship

Gilman Plitt Katrina Puck

Chemistry Early Achievement Award Kathryn Wybenga

Clifford C. Hach Memorial Scholarship

Mitchell Bordelon Melissa Gray

Kenzie Moore

Cornell Stanhope Scholarship Anne Marie Rauker

Teresa Fonseca Memorial Award Kevin Whitcomb

Graduate Teaching Assistant Award

Joshua Blechle Timothy Dreier Christine Dunne Bella Neufeld Thomas Ni Annalise Nunn

Professor Leslie Di Verdi Scholarship Erika Boyd

> Reuben G. Gustavson Award Erin Fawcett

Chemistry Life Sciences Bridge Award

Cameron Morris

POLYED Organic Award Chuanqi Wang



Suriya Vijayasarathy

Undergraduate Outreach Award

Emily Nock

Graduate Outreach Award Patrick Brophy

Undergraduate Service Award Melissa Gray

Undergraduate Research Assistant Award

Sarah Boyle Mengmeng Fang Adam Golos David Mast Erik Sletten

Chemistry Graduating Senior Award

Kelsey Schulte Paul Skogerboe

Physical Chemistry Award Zichuan Tian



Left to right: Ellen Fisher, Bella Neufeld, Annalise Nunn and Christine Dunne.



Left to right: Mengmeng Fang, Ellen Fisher, Erik Sletten, and David Mast.



Left to right: Ellen Fisher, Paul Skogerboe and Kelsey Schulte.

Campaign for New Williams Endowed Chair



The College of Natural Sciences has begun a new campaign 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. Dr. Williams has personally pledged 10% of the total needed to establish the Chair.

Please join us and Dr. Williams 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.

Contributions can be made to the Dr. Robert Williams Endowed Chair in Chemistry through the CSU Foundation: <u>https://advancing.colostate.edu/WILLIAMSCHAIR</u>

Giving to Chemistry

Through the generous gifts of Chemistry alumni and friends, we are able to offer support to our students as well as resources to our faculty. Financial assistance through scholarships is very important to our students, and in many cases allows them to stay in school. In addition to improving learning opportunities, gifts also play a critical role in providing faculty the needed resources to perform cutting-edge research.

SUPPORTING Colorado State University

To make a gift, please visit <u>https://advancing.colostate.edu/CNS/CHEM/GIVE/</u>



News and Notes

Mark Your Calendar!

The Chemistry department will once again host an **alumni** reception in Denver on **Monday, March 23, 2015**.

Join us in recognition and celebration of students, faculty, alumni, donors and friends and their amazing contributions!

More info will appear in the Fall 2014 newsletter.



Celebrate CSU Milestones

We congratulate the Chemistry faculty and staff who have reached service milestones during the 2013-2014 fiscal year at Colo-

rado State University, and thank them for their many years of dedicated service.

Korina Brim	25 years
Richard Finke	20 years
Ellen Fisher	20 years
Alan Kennan	15 years
Robert Payne	10 years
Patricia Somers	10 years
Andrea Wong	10 years

Colorado Center for Drug Discovery Receives Additional Funding

The Colorado Center for Drug Discovery (C2D2) announced it has secured additional funding that will be used to continue supporting the discovery and development of novel medications created at Colorado research institutions to treat cancer, infectious diseases and other illnesses. The new award of \$750,000 comes from the State of Colorado's OEDIT Bioscience Discovery Evaluation Grant Program. C2D2 will receive \$500K for 2014-2015 and an additional \$250K in 2016.

Created in 2010 as part of a state-wide initiative to grow the drug discovery capabilities of Colorado institutions, C2D2 has assisted >25 projects across all of Colorado's major research

institutions by providing funding and/or research assistance. This renewal grant will enable C2D2 to continue to provide ready access to medicinal chemistry support (i.e., preparation of new analogs, supply compounds for testing) which can be a significant research impediment for many biomedical researchers.



Alumni News

Ryan Rafferty (PhD 2011, Williams Group) will join the faculty at Kansas State University as an Assistant Professor. Prior to joining KSU, Ryan held a postdoctoral position at the University of Illinois Urbana-Champaign with Dr. Paul Hergenrother.

Will Richardson (BS 2012) will attend graduate school at the University of South Carolina following summer research with Prof. Natalia Shustova at USC. Following his graduation from CSU, Will worked at Zeller-Gmelin in Richmond, Virginia performing surface analyses and mechanical tests on a range of substrates.

Ryan Whitcomb (BS 2014) will attend graduate school at the University of Michigan in their Applied Physics program. Ryan will graduate with double majors in chemistry (ACS certified) and physics He plans to pursue his Ph.D. at the intersection of these two fields in theoretical chemical physics or physical chemistry. He has performed research with Prof. Amy Prieto and Prof. Tony Rappé and he spent a summer in research at Rutgers University in their Physics REU program. Ryan presented the results of his Rutgers research at the National meeting of the American Vacuum Society last fall.

Kelsey Schulte (BS 2014) will attend graduate school at Texas A&M. Kelsey will graduate with an ACS certified degree in chemistry, and plans to pursue her PhD in inorganic and/or materials chemistry. Kelsey has performed stellar undergraduate research with Prof. Matthew Shores, and they are preparing three manuscripts for publication based on her undergrad research.

Chemistry Welcomes Distinguished NAS Member



Dr. A. R. Ravishankara joined Colorado State University as a full professor in January of 2014, with joint appointments in the Chemistry and Atmospheric Science Departments.

Dr. Ravishankara (Ravi) is known for his research related to the understanding of ozone layer depletion, climate change, and air quality. He has been involved in laboratory studies of key reactions that play critical roles in climate change and air quality; field measurements of chemicals, such as nitrogen oxides and aerosols; and calculations to understand and predict atmospheric changes.

Ravi's research led to his nomination and subsequent election in 2000 as a member of the National Academy of Sciences, one of the highest honors a scientist can receive. Researchers must be nominated by an existing academy member and are carefully vetted before their names are placed on a ballot and voted on at the organization's annual meeting. Fewer than 100 members are elected each year from all fields of science. Approximately 2,200 U.S. scientists and 400 foreign researchers are members of the National Academy of Sciences. Of those members, approximately 200 are Nobel Prize winners.

Dr. Ravishankara's measurements in the laboratory and in the atmosphere have contributed to deciphering the ozone layer depletion, including the ozone hole; to quantifying the role of chemically active species on climate and its changes; and to advancing understanding of the formation, removal, and properties of pollutants. He is an author or coauthor of nearly 350 peer-reviewed publications with more than 15,000 citations, making him a highly cited author in the ISI list. He has extensive experience with research funding in the US and has been a manager of multiple National Oceanic and Atmospheric Administration (NOAA) programs.

Before coming to CSU, Dr. Ravishankara was the Director of the Chemical Sciences Division of the Earth System Research Laboratory of NOAA in Boulder, Colorado. He was also a Professor of Chemistry, Adjoint, at the University of Colorado in Boulder until January of 2013. Dr. Ravishankara obtained his Bachelors (B.Sc.) and Masters (M.Sc.) degrees from the University of Mysore in India and his Ph.D. from the University of Florida, Gainesville. He did a roughly 1 year post-doctoral Fellowship at the University of Maryland prior to joining Georgia Institute of Technology in Atlanta, Georgia. After 8 years in Georgia, Ravi joined the staff of NOAA in Boulder.

In addition to being a member of the US National Academy of Sciences, Dr. Ravishankara is also a Fellow of the American Geophysical Union, of the Royal Society of Chemistry, of the American Association for the Advancement of Science, and of the International Union of Pure and Applied Chemistry. His many awards include the Polanyi Medal of the Royal Society of Chemistry, the Stratospheric Ozone Protection award of the US Environmental Protection Agency, and the American Chemical Society's award for Creative Advances in Environmental Sciences. He has delivered dozens of named lecturers in many countries and institutions such as Robertson Memorial Lecture at NAS, Hinshelwood Lectures at Oxford (UK), Schiff Lecture at University of York (Canada), Morino Lecture (Japan), Centenary Lecture of the Indian Institute of Science (India), and Royal Society Centenary Lecturer (UK). He has also delivered many keynote lectures and invited talks at various National and International meetings and conferences. He is currently a co-chair of the WMO/UNEP Science Assessment Panel on Stratospheric Ozone and a member of the Science Advisory Panel of the UN Climate Clean Air Coalition. He has led other assessment report for the US and UNEP, and serves on many national and international committees.

Welcome New Faculty & Staff

Dr. Ingrid (Laughman) Ulbrich



Ingrid joined the faculty in January 2014 as an Instructor and General Chemistry Coordinator. Ingrid has taken an unusual path to her current role at CSU. After completing her bachelor's degree in Environmental Engineering at MIT, Ingrid worked for five years as an environmental analyst at a quasi-governmental air

quality non-profit in Boston. The organization studied all facets of interstate and sometimes international air pollution, and Ingrid's analysis contributed to the scientific basis for policy recommendations to national and international organizations.

While she held this job, Ingrid recognized that her coworkers with Ph.D.'s knew how to study and solve big problems. She wanted those skills for herself, and decided to pursue a Ph.D. She returned to her hometown of Boulder and studied sources and transformations of tropospheric aerosols using mass spectrometry and applied mathematics at the University of Colorado. While learning how to solve the big problems during her Ph.D. studies, Ingrid realized that her true passion was in helping other students start down the path to solving big problems by developing their critical thinking skills, so she became an instructor at CU.

In the classroom, Ingrid encourages students to use what they already know to figure out the answers to new problems. She loves working with students in small groups during office hours to help each resolve misunderstandings and find connections between the topics in general chemistry. In addition to teaching general chemistry, Ingrid would like to connect her loves of chemistry and food to teach a course on the Chemistry of Cooking. In the rest of her spare time, Ingrid knits, sings, and studies tae kwon do.

Dr. Karolien Denef



Karolien grew up in Belgium and obtained her undergraduate degree in Bio-Engineering from the Katholieke Universiteit Leuven. She came to Colorado State University in 2000 to perform her Ph.D. research on soil organic matter dynamics in agro-ecosystems. Upon completion of her graduate work, Karolien became a post-doctoral fellow at the

University of Ghent in Belgium, in the Department of Applied Analytical and Physical Chemistry. The use of advanced analytical tools including high-resolution and GC- and LC-isotope ratio mass spectrometry allowed her to investigate the links between microbial community structure and ecosystem function. After a couple of years working in the private sector as an environmental consultant and business developer, she returned to CSU in 2010 for a split research scientist position with Dr. Keith Paustian and Dr. Francesca Cotrufo at the Natural Resource Ecology Lab (NREL). In 2011, she also took on the Managing Director responsibilities of the EcoCore Analytical Facility of the NREL, a CSU specialized facility for elemental, isotope and molecular analyses.

Karolien's research interests lie at the intersection of environmental chemistry and biology, with a focus on what controls the storage and movement of carbon and nutrients in managed ecosystems, the importance and characteristics of organo-mineral interactions as well as microbial organic matter processing for carbon sequestration, and the impacts of land use and climate change.

Karolien joined the CIF in October 2013. As Associate Director, she assists in the management and promotion of CIF facilities and expansion of its research enabling, service and training components. She is also responsible for managing the new Cell Culture Facility, the development and coordination of the CIF Summer Schools, and will soon also provide mass spec and NMR training, maintenance and other related services.



Dr. Roy Geiss

Roy received his Ph.D. in Applied Physics from Cornell University under Prof. John Silcox. He did a post-doc at the University of Virginia and served 20 years as a Research Scientist at IBM Research Division, San Jose, CA. Most recently, Roy worked as Materials Research Engineer at NIST, Boulder, CO. His research is on a wide variety of hard and soft materials using both transmission electron microscopy (TEM) and scanning electron microscopy (SEM) and associated techniques such as EDS, electron diffraction and image analysis and simulations. Roy has been

an integral part of getting our new multimillion dollar high resolution TEM up and running this spring.

CSU Adds New High-resolution Electron Microscope

By the end of April, Amy Prieto and her students will no longer have to drive to the Colorado School of Mines to analyze their nanomaterial samples with a specialized microscope. Instead, the Colorado State University professor and her team will walk down a flight of stairs and use a new \$1.9 million high-resolution transmission electron microscope.



A TEM transmits a beam of electrons through a very thin specimen. As the electrons pass through the sample, they interact with the specimen and form an image that enables researcher to examine details as small as single columns of atoms

"It's very exciting," said Prieto, associate professor of Chemistry and CEO of Prieto Battery. "We've been driving to (the Colorado School of Mines) to run samples in their TEM or sending them to a colleague of mine in Kentucky."

Several CSU entities, including the Department of Chemistry, College of Natural Sciences, the Vice President of Research, the Provost's Office and others, partnered to purchase the TEM, renovate the Central Instrument Facility where it is housed, and hire Dr. Roy Geiss, a new research scientist, to oversee the use of the instrument. "Many people and units at the University worked together to make this happen," said Ellen Fisher, chair of the Chemistry Department. "It was truly a university-wide effort."

Prieto and others have long wanted another TEM to support CSU's growing expertise and body of research in advanced materials. There are now roughly 60

researchers working in this area, up from approximately 30 faculty 10 years ago.

The new microscope is designed to evaluate hard materials such as those Prieto develops for use in solar cells and batteries. It images very tiny features, down to single columns of atoms.

Both Prieto and Fisher believe the new instrument has the potential to transform materials research at CSU. The TEM will not only allow researchers like Prieto to examine their samples faster and on site but also experiment with new ways of evaluating their makeup and structure - also known as characterization - an important aspect of materials science



Installation of CSU's new transmission electron microscope is underway. It takes several weeks to install and calibrate the high-resolution microscope.

Fisher said in addition to Prieto's battery and solar work, the TEM will aid other groups' research on using metal nanoparticles in the thermal treatment of tumors,

creating new catalysts to improve drug discovery processes, constructing next-generation antimicrobial biomedical devices, and developing advanced composites for diverse applications. "We are going to be able to do experiments we haven't been able to do before," she said. "This instrument will benefit a vast array of researchers campus-wide."

Message from the Chair, Cont.

As Chair, I have often felt like I was just warding off evil flying monkeys in response to the constant demands of the position. But that portrayal largely ignores the amazing and rewarding parts of the expedition that has been my time as Chair, including my many traveling companions. Like Dorothy, my journey has crossed with those of some absolutely extraordinary, gifted, and brilliant individuals who ultimately have become my heart, my courage, and my brains. My students, always creative, inspiring, and engaging, have and always will be my heart. My dedicated and passionate staff, many of whom I have hired over the past 5 years, give me enormous courage. My colleague friends across the University, provide me with much wisdom, guidance, and support, and challenge me to think more deeply, to dream bigger, and to dare greatly. For all of my fellow travelers, I am and continue to be grateful and appreciative. Thank you.

As I pass the Chair torch to my capable colleague Prof. Chuck Henry, I also thank the friends, alumni and other supporters of the Department of Chemistry at Colorado State University, for indulging my side trip to Oz and for their sustained encouragement, support and friendship. Please stay in touch with me and the Department. I am excited to see what the future brings to CSU Chemistry with Chuck at the helm and I also look forward to my next adventure along the green and gold brick road.

In Memoriam

Roy G. Wier passed away November 28, 2013, in San Antonio, Texas, at the age of 86. After receiving his degree from Colorado State University, he joined the department as a research glass blower from 1964 until his retirement in 1992.



Professor Emeritus Gary Maciel passed away April 4, 2014, at the age of 79. Prof. Maciel joined Colorado State as a faculty member in 1971 and officially retired from the university in 2011, although he continued to maintain an active research program and to mentor undergraduate students. His research centered on nuclear magnetic resonance (NMR), a field that uses the magnetic properties of atomic nuclei to elucidate details of molecular structure and behavior in a wide range of samples.

In his 40 years at CSU, Prof. Maciel made significant contributions to NMR spectroscopy, both theory and application. His research efforts focused heavily on the application of NMR techniques to solid state samples, environmental problems such as pollutants in soil samples, biomass conversion (i.e. development of biofuels), and analysis of thin films of a range of materials. From 1978-1990, he was

the Director of the CSU NMR Center, which serviced not only CSU, but the entire Front Range community. Although the center ceased to exist in 1990, it is still recognized as having been instrumental in the development of multiple NMR techniques and for training of dozens of students and postdocs; thus, Professor Maciel's work has had tremendous impact on the use of NMR spectroscopy far beyond that occurring at CSU and has created a lasting legacy.

Maciel's career produced not only outstanding research, but also enormous contributions to the training and education of students, having graduated over 70 Ph.D. and M.S. students and served as a mentor to countless others. His efforts in both research and education have garnered numerous awards and recognition including AAAS Fellow, the ACS Colorado Section Award, the Sigma Xi/CSU Honor Scientist, and editorial board membership on several prominent journals in his field. In recognition of his work on recruiting and educating graduate students, the Maciel Graduate Fellowship was established in 1998 by a private donation. This fellowship provides continuing support for outstanding physical chemistry graduate students.

Dr. Maciel received his Bachelor's degree in 1956 from the University of California at Berkeley and his Ph.D. in 1960 from the Massachusetts Institute of Technology. He held National Science Foundation predoctoral and postdoctoral fellowships at the Massachusetts Institute of Technology and has been a special National Institutes of Health Fellow at Harvard University and Carnegie-Mellon University.

In addition to his scientific contributions, Gary's exuberantly generous spirit, quick wit and infectious laugh will be missed by everyone who knew him. He was passionate about everything he did and lived life to its fullest. With his passing, the Department acknowledges a deep and lasting loss of a truly valued educator, scientist, colleague and friend.

Contributions can be made to the Gary E. Maciel Fellowship endowment through the CSU Foundation: <u>https://advancing.colostate.edu/CNS/CHEM/GIVE</u>

Maciel Fellowship Recipients

Angela Hanna (2014-2017)	Zackary I. Cleveland (2003-2006)
Jacob M. Nite (2010-2013)	Michael A. Woodhouse (2003-2006)
Kevin J. Whitcomb (2008-2011)	Joseph J. Valente (2002-2005)
Michael F. Cuddy, II (2007-2010)	Michael J. Scott (2001-2004)
Jennifer L. O'Patchen (2004-2007)	Lisa K. Boes (1999-2000)