

Letter from the Chair, Ellen R. Fisher



As an eternal optimist, I'm happy to announce that Spring is definitely here in Fort Collins. We've had some of those fiercely windy days everyone talks about, the trees on campus are budding out, daffodils are blooming, and I'm itching to clean out my basement! Spring also means that we will soon be saying goodbye to another class of

Chemistry graduates at commencement this month, many of whom will be matriculating graduate and professional programs across the country. A beautiful "blooming" of another sort.

As you will read inside, the 2011-2012 AY has been guite noteworthy for both our faculty and our students. All of our faculty (including our newest faculty member, Prof. Delphine Farmer) currently have extramural support for their research programs. In addition, many of our faculty members have been honored with local, regional, and national awards and recognition. For example, Prof. Rick Finke was honored with the ACS Colorado Local Section award, highlighted by an extremely well-attended dinner and lecture in March and Prof. Steve Strauss was recently selected as this year's College of Natural Sciences Professor Laureate. On the student side, it is always gratifying when our students gain national recognition, such as with recent graduate Dr. Garrett Miyake (Ph.D. 2011, advisor: Eugene Chen) being selected to receive the 2012 ACS AkzoNobel Award for Outstanding Graduate Research in Polymer Chemistry. These represent just a few of the recent success stories from the Department and I encourage you to peruse the inside pages for more details.

As we seek to continue building relationships with the friends and alumni of CSU Chemistry, we've introduced a couple of new features to this edition of the newsletter. First, we are providing Faculty Highlights, to showcase the superb, cutting-edge research that is ongoing in the department. In this edition, we highlight three faculty members who will be promoted as of July 1, 2012, Profs. Chuck Henry (promoted to Full Professor), Amy Prieto, and Matt Shores (each promoted to Associate Professor with tenure). Congratulations to Chuck, Amy, and Matt! We plan to continue this feature in future editions of the newsletter, eventually spotlighting all of the research groups in the Department. Second, we have also added a section on Alumni News to highlight the great things our graduates do after leaving CSU. We really want to know what's happening with you! Since becoming Chair, it has truly been my privilege to meet many of our alumni and to hear about their experiences at CSU and how CSU has impacted their lives after graduation. So, if you have any news you would like to share with the Department and other alumni, please let us know by sending a quick email to chemnews@lamar.colostate.edu.

Finally, I will say a word about optimism. А colleague of mine, a self-proclaimed pessimist, recently reminded me of an old joke about optimists always looking for the horse in a room full of horse manure. At the risk of being accused of "horse hunting", I am remarkably and genuinely optimistic as this academic year draws to a close. The Department and the University have largely weathered the last few years of pretty dramatic cutbacks and the State's budget is looking up; our faculty and students continue to be innovative and productive leaders in their fields; and our staff remain dedicated and creative problem solvers. Next year promises to be even better as we seek to grow our course offerings in sustainable chemistry and nanoscience, to firmly establish facilities for three fledgling centers for state-of-the-art research in sustainable monomers and polymers, drug discovery, and catalysis, and to grow our graduate program in international directions. As Chair, I would not trade my "queendom" for a horse, nor could I ask for a horse of a different color.

Upcoming Events

Professor Amy Prieto has been asked to speak at the **TEDxCSU**. This event focuses on global discussions on sustainability and environmental stewardship. The event will be held **April 23** at

2 p.m. at the Fort Collins Lincoln Center Performance Hall.



Celebrate! CSU Milestones All-university event May 3 at 3:00 p.m. Lory Student Center Ballroom



Professor Laureate Lecture and Teaching & Mentoring Awards May 3 4:30 p.m. - 6:30 p.m. Grey Rock Room, LSC



Summer REU

May 29 through August 4 Making, Measuring and Building Devices: Chemistry Applied to Real World Problems

Honors and Accomplishments



On December 6, 2011, the CSU Chemistry Department was honored to host Nobel Laureate, **Ei-ichi Negishi**, as this year's **Boulder Scientific Distinguished Lecturer**. Dr. Negishi received the **2010 Nobel Prize in Chemistry** "for palladiumcatalyzed cross couplings in organic synthesis" and was shared between **Prof. Negishi, Richard F. Heck** (University of Delaware), and **Akira Suzuki** (Hokkaido University, Japan).

This winter, Assistant Professor **Melissa Reynolds** was recognized for her outstanding effort to teach the many graduate and undergraduate students in her courses, as well as mentoring many other students. Melissa is responsible for creating programs that



encourage professional development as well as entrepreneurship. The positivity she brings to the bioscience community as a whole is well known by those she works with. To acknowledge all of these attributes, the Colorado **Bioscience Association** has awarded Melissa with an Educator of the Year award. Melissa's current work includes creating an artificial wound healing-material that can be used on the battlefield or during natural disasters.



Honors and Accomplishments



Professor **Elliott Bernstein** was invited by the Japanese government on a prominent six-week **JSPS Bridging Fellowship** in an effort to strengthen ties between labs in Japan and the U.S. While in Japan, photoelectron spectroscopy was the main focus of Professor Bernstein and Professor T. Suzuki's research. During his 35 years at Colorado State University, Bernstein has taught courses in introductory chemistry, general physical chemistry, analytical and instrumental analysis, thermodynamics, kinetics, spectroscopy, statistical mechanics and quantum mechanics and this most recent Bridging Fellowship award is only one of Bernstein's many achievements at CSU.

Chuck Henry and **Eugene Chen** have been chosen to receive two of the **2012 College of Natural Sciences Awards for Outstanding Teaching and Mentoring**. Chuck was selected for the **Faculty Excellence in Undergraduate Research Mentoring Award** and Eugene was selected for the **Faculty Excellence in Graduate Education and Mentoring Award**. These awards are a great testament to this department's commitment to fostering students at every level.



Professor and Department Chair Ellen R. Fisher was named a 2011 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.

Fisher, an analytical, materials and physical chemist, is being honored for her important contributions to understanding of gas-phase and plasma chemistry and plasma-surface interactions. Her work focuses on understanding the fundamental chemical processes that take place during plasma processing and chemical vapor deposition. She also works to advance applications for semiconductor materials, improve solar cell efficiency, develop composite nanomaterials and explore environmental applications for plasma chemistry. Fisher's cuttingedge research has resulted in three patents, more than 125 peer-reviewed journal articles and over 100 invited talks.

Professor Fisher joined CSU in 1993, and has served as Department Chair since 2009. She has received numerous honors, including Professor Laureate in the College of Natural Sciences, CSU Scholarship Impact Award, and Fellow of the American Vacuum Society. In an awards ceremony held on March 8 by the department and the ACS Colorado Section, Professor **Rick Finke** was honored for receiving the **ACS Colorado Section Award**. Rick was acknowledged for his production of seminal publications as well as his contributions in both science and service.



ACS Colorado Section Chair-Elect, Dr. Ryan M. Richards (left) with Dr. Rick Finke.

Professor **Debbie Crans** was elected by the **ACS Joint Board-Council Committee** on Science as a **divisional representative** for a 2012-2014 term.

Chris Rithner, the director of the Department's Central Instrument Facility, has been selected as the recipient of the 2012 Distinguished Administrative Professional award. This award is given out annually to AP employees who have demonstrated continuing meritorious and outstanding achievement in the areas of outreach, teaching, research, administration, and/or service at CSU. Clearly, Chris has been an outstanding contributor to the department in all of these areas.

Find us on Facebook: Chemistry at Colorado State University





Professor **Eugene Chen** was recognized in **Angewandte Chemie International Edition** for his research in creating sustainable bioplastics that are

produced from renewable resources. Chen and his team have created a platform of processes that convert small molecules derived from nonedible plant biomass and turns those molecules into bioplastics. As a result, the CSU Ventures Tech Transfer Office

has been working on obtaining patents for Chen's work. Chen's research on bioplastics has been supported by grants from the U.S. Department of Energy and the National Science Foundation.



Working with Chen on this research are, postdoctoral fellow Yangjian Hu, research scientist Yuetao Zhang and graduate student Garret Miyake(Ph.D. 2011).



First year graduate student **Scott Compel** collected 127 pounds of food items from the Department to donate to the Larimer County Food Bank this winter.



We congratulate the Chemistry faculty and staff who have reached service milestones during the 2011-2012 fiscal year at Colorado State University.

Steven Alles	10 years
George B. Barisas	30 years
Olga Boltalina	10 years
Jane Burkman	15 years
Debbie Crans	25 years
Lisa Dysleski	15 years
C. Michael Elliott	30 years
Elizabeth McCoy	5 years
Anthony Rappé	30 years
Dawn Rickey	10 years
Steven Strauss	30 years
K. Todd Wikelski	10 years

An all university event will be held May 3 to celebrate CSU faculty and staff that have dedicated many years of service to the university.



If you haven't checked us out lately, be sure to visit our new and improved website at http://www.chem.colostate.edu/



Ms. Yupaporn Sameenoi, a PhD student in Professor Chuck Henry's research group, has been named a Presidential International Scholar. This program is aimed

toward introducing visiting scholars to research from CSU and to also encourage leadership and connection with other research programs across CSU. Yupaporn, originally from Thailand, came to CSU in 2008 to pursue her Ph.D in analytical chemistry. She now works with Professor Henry in researching the development of a device for field testing of air pollution. Once Yupaporn completes her Ph.D, she will return to Thailand and work as a faculty member in the chemistry department at Burapha University.



Undergraduate **Chris Nickell** has recently been awarded the **Jack and June Richardson Honors Scholarship**. This award is also in acknowledgement of the student's thesis adviser, in this case Prof. Melissa Reynolds. The scholarship is awarded to a student that shows excellent academic dedication and ability as well as the potential to make a significant humanitarian or intellectual contribution.



Todd Hyster (Rovis Group) was selected for the **Marie Curie Fellowship** as part of the International Training Network. Todd will work in the group of Thomas

Ward at the University of Basel. In Basel Todd will work to expand artificial metalloenzymes, technology developed in the Ward group to encompass C–H activation methods developed in the Rovis group. This research will lead to exciting new advances in asymmetric catalysis, offering a new approach to C-H activation reactions.



Undergraduate student **Kellie Woll** (left, with her advisor Debbie Crans) was selected to speak at the

Materials Conference in Nebraska . The title of her talk was "Physical Characterization of Novel AOT-Lecithin Based Gel for Delivery of Carboplatin". **Sasha Mintz** (pictured below), also attended the conference and was chosen to present her poster on Co-Administration of Anti-Cancer Drugs: Bisphosphonates and Taxol.



Steve Strauss has been selected as the 2012 College of Natural Sciences Professor Laureate. This 3-year award recognizes faculty members who have demonstrated sustained



excellence in all three areas of the University's mission: teaching, research, and service.

Strauss will receive his Professor Laureate award and give a lecture titled, "What is a Pure Compound? - An Impure Chemist Responds" on Thursday, May 3 at 4:30 pm in the Lory Student Center Grey Rock room. The lecture, which will include Strauss' personal and professional experiences, will be preceded by acknowledgement of the college's 2012 Teaching and Mentoring Award winners.

Professor Strauss has won four teaching awards during his tenure at Colorado State University, acknowledging he continues to be one of the most effective and popular teachers, in addition to being a world-renown researcher.

Strauss has worked at the university for more than 30 years, acting as a mentor and advisor to numerous students and postdoctoral researchers. He continues to support his students' careers and future endeavors after graduation.

Professor Laureate is the highest academic title awarded by the college and is intended to honor faculty who have made outstanding contributions to its mission with work in the areas of research, teaching, mentoring, service and outreach.

Faculty Profiles



Dr. Charles S. Henry will be promoted to the rank of Professor in July 2012. Professor Henry h as been a professor at CSU since August 2002. He received his BS

in Chemistry from Missouri Southern State College and his Ph.D. in Analytical Chemistry from the University of Arkansas. Dr. Henry completed an NIH postdoctoral fellowship at the University of Kansas, and went on to teach as an assistant professor at Mississippi State University for 3 years before joining the faculty at CSU.

Research in the Henry group focuses on three general areas centered around the theme of miniaturization in Analytical Chemistry. The first area centers on use of microfluidic techniques for chemical characterization of atmospheric aerosols and other environmental samples. The second area focuses on development of biosensors for understanding spatial and temporal changes in chemical gradients that form in biological tissues. The final area centers on development of ultracheap clinical and environmental diagnostic tools made from ordinary filter paper in an area called paperbased microfluidics.

In recognition of his significant contributions to both science and academics, Professor Henry has received several awards during his career at CSU. He was named a U.S. Fulbright Scholar in 2009, received the Cleantech Research Award in Water Technology in 2011 and most recently was awarded the College of Natural Sciences Faculty Excellence in Undergraduate Research Mentoring Award.



Dr. Amy L. Prieto will be promoted to the rank of A s s o c i a t e Professor in July 2012. Dr. Prieto received

her BA in Chemistry and Philosophy from Williams College and her Ph.D. in Chemistry from the University of California, Berkeley. After receiving her Ph.D. she was a Postdoctoral Research Fellow at Berkeley for one year and at Harvard University for three years. Dr. Prieto has been an Assistant Professor at Colorado State University since 2005.

The Prieto group's research interests are in development of new synthesis strategies for nanoscale solid state materials with useful and interesting properties in three main areas: creation of a three-dimensional nanostructured architecture for lithium-ion batteries with high power density; synthesizing nanoparticles of earth-abundant, non toxic elements for inexpensive and efficient photovoltaics; and synthesizing nanoparticles of Mg exhibiting improved kinetics for hydrogen storage applications. Each of these projects requires the synthesis of nanostructured materials, the characterization of these materials (typically with diffraction and microscopy techniques) as well as the incorporation of her materials into functional devices.

Dr. Prieto received an NSF CAREER award (2010), the Award for Excellence in Storage Technology Commercialization from the Colorado Cleantech Industry Association (2011), and the ACS ExxonMobil Solid-State Chemistry Faculty Fellowship (2011).

In addition to her research and academic accomplishments, she has been the faculty advisor the CSU Chem Club, and is co-Director of the Chemistry Summer REU program.



Dr. Matthew S. Shores will be promoted to A s s o c i a t e Professor in July 2012. Prior to joining

CSU in 2005, he was a Postdoctoral Research Fellow at the Massachusetts Institute of Technology for 3 years. Dr. Shores received his BA in Chemistry and Philosophy from Gustavus Adolphus College and his Ph.D. in Chemistry from the University of California, Berkeley.

The Shores research group interests center on understanding and managing spin in single metal ion complexes, exchange-coupled clusters, and two- and threedimensional extended solids. Their research includes the preparation of high-nuclearity complexes of paramagnetic transition metal ions bridged by 1,3,5-triethynylbenzene ligands. These rigid ligands will enforce ferromagnetic coupling between metal ions as well as a disklike topology.

The Shores group also explores the potential of spin-crossover complexes to function as chemical sensors and developing a design for the synthesis of molecular species capable of spin and color transformations when bound to a charged analyte. The Shores group has an ongoing collaboration with the Rappé group who perform computational studies on their compounds.

Dr. Shores is a member of Phi Beta Kappa, was the 2008 awardee of a Honda Initial Grant, and was the recipient of an Elf-Atochem Fellowship during his graduate studies. Dr. Shores is committed to increasing undergraduate research opportunities, and serves as co-Director of Chemistry's Summer REU program.

Chem Club Halloween

The Mad Scientist Halloween event is meant to be a fun, safe, and educational environment for families to spend time together and celebrate Halloween. The Chemistry Club's goal is to expose young people to various areas of science in a positive setting to help inspire young people, as well as their guardians, to see science in all aspects of their daily life. This year, October 2011, we focused on chemistry, physics, and entomology. We were lucky enough to have physics demonstrations from Science Toy Magic as well as a wonderful bug petting zoo brought by the CSU Gillette Entomology Club. The event attracted over 140 families, most of which brought multiple children and adults of all ages. Although we do encourage donations to help cover the cost of chemicals, the event is free and open to the public so that all children and all families have a safe and fun place to trick-or-treat and to learn about science—Robin Ward, 2011-2012 Chem Club President







Alumni News

Jeanne Sirovatka (PhD 1999) recently joined Sandoz in Broomfield, Colorado as their new Associate Director of QC Supply Chain. Jeanne was previously the Site Head of Quality at Roche Colorado.

Camelia Stan (BS 2008) is pursuing a joint Chemistry-Materials PhD at Stanford University. Camelia is part of the Dr. Thomas S. Duffy group and is writing her thesis presentation on the high-pressure phase diagram of PbF₂. Camelia is '*loving*' the program at Stanford, '*because I'm doing things I didn't even think I COULD do with my degree*'.

Dan Leslie (BS 2005) is a postdoc at Harvard in the Wyss Institute for Biologically Inspired Engineering.

Lee Wise (BS 2008) is teaching high school chemistry at Grandview High in Aurora

Dan Nelson (BS 2010) just passed his PhD candidacy exam at the University of Virginia where he works for James Landers.

Two of our chemistry undergraduates will graduate with the DVM from CSU this spring - Jaclyn Christakos (BS 2008) and Daniel Targoff (BS 2008).

Chris Elles (BS 1999) joined the faculty at the University of Kansas. Chris's area of specialization is Physical Chemistry, ultrafast spectroscopy and chemical reaction dynamics.

Shannon Riha (PhD 2011) is a postdoctoral fellow at Argonne National Labs working with Dr. Alex Martinson in the Materials Science Division.

Joseph Mondloch (PhD 2011) is working with Joseph T. Hupp in the Department of Chemistry at Northwestern University. He's a Department of Energy (DOE) office of Energy Efficiency and Renewable Energy (EERE) postdoctoral research awardee.

Justin Sambur (PhD 2011) won an NSF American Competitiveness in Chemistry Fellowship (ACC-F), one of ten awarded annually. He works with Peng Chen at Cornell University.



 Alumni Dinner in St. Louis, Missouri October 2011
From right: Joe Ackerman, Ph.D. (PhD 1977), Delores Blehm (BS 1965), Chemistry Chair Ellen R. Fisher, Bettye Thomas,
Leyland Thomas, M.D. (BS 1970), Russ Chong, Ph.D. (PhD 1986), Cory Lawson (BS 1979- Env. Health),
Jon Lawson, Ph.D. (PhD 1982), and Brenda Ackerman



Robert "Bob" Diehl (BS 1989) with Ellen Fisher at his law firm, Bishop & Diehl, in Schaumburg, IL. Bob continues to use his background in chemistry in his career as he prepares and prosecutes patents in a variety of areas, including the chemical arts.

Paul Dekker (BS 1974) is enjoying retirement after a long career with Abbott Labs as a Lab Manager. Paul also has a master's degree in chemistry from the University of Wisconsin. In his retirement, Paul enjoys skiing, opera, and remains a dedicated alumnus and supporter of the Chemistry Department.





Alum Garret Miyake (at left, with Dr. Eugene Chen) has been named as the 2012 recipient of the AkzoNobel Award for Outstanding Graduate Research in Polymer Chemistry. This award is given for the best paper presented at the AkzoNobel Award Symposium as part of the PMSE program at the 2011 Fall ACS Meeting. A half-day symposium in Garret's

honor will be held as a PMSE session at the ACS National Meeting in Philadelphia, August 19-23, 2012. Garret received his PhD in Chemistry from Colorado State University in May 2011 under Professor Eugene Chen, and is completing his postdoctoral fellowship at Caltech with Professor Bob Grubbs.

Why I Give



Last fall, Dr. Nancy Levinger, University Distinguished Teaching Scholar, Professor of Chemistry and dedicated supporter of undergraduate research at CSU, provided the keynote address at the College of Natural Sciences annual scholarship donor luncheon. Her "Why I Give" presentation is excerpted here.

As an undergraduate student, I was incredibly fortunate to have multiple opportunities to try my hand at research. My first try came at my Alma Mater, Northwestern University, through a special project assigned in our physics class. Following an article in the "Amateur Scientist" series from Scientific American, a friend and I chose to build a dye laser from scratch. The project was only supposed to last one quarter but ours took a lot longer than anticipated, finishing several months later!

Pursuing this project presented many experiences that a college student might not normally have. I learned that research involves a lot of tenacity; building up the various parts of the system did not immediately lead to a functioning laser. We also experienced design break down when we returned to the project after our summer break; the glue we used for the dye cell dried out to the point that windows fell off and methanol solution poured out over the high voltage electronics, setting it on fire. But the thrill of success when we finally saw the flash of laser light made the many tedious hours completely worthwhile!

In addition to my laser project, I was lucky to find undergraduate research positions in the Chemistry Department at CSU working with Prof. Branka Ladanyi, during the summer between my sophomore and junior years, and then in the Van Duyne lab at Northwestern. Through research, I learned many lessons that coursework did not present: perseverance to stick with a project even when things are not going the way you want them to, motivation to get a experiments done even when you are tired and want to pack it up for the day, creativity to solve problems that I had never before encountered and had no idea how to solve, and courage to work with equipment that failed.

From these experiences, I gained the self-confidence that would carry me through my doctoral and postdoctoral research and land me a position as a professor at CSU, nearly 20 years ago. Over the past two decades, I have paid this forward by including 30 undergraduate students in my research. Some of these students have gone on to complete doctoral degrees and start their own research programs at leading educational institutions. Undergraduate research had an incredible impact in my life, in the lives of my own research students and in the lives of so many others.

I give to CSU because I know the impact that undergraduate research can have on students. I know how important it is to struggle in the lab, to work on problems for which no answers are known, to learn to use complex scientific equipment or computer code, to be challenged to grow intellectually. Gifts to fellowships, scholarships and departments such as Chemistry provide critical funding that helps students with the financial assistance they need to stay in school, and pursue their goals, often through cutting-edge research projects. It offers resources not supplied by traditional funding sources, increasing opportunities for students to interact with mentors and gain specialized knowledge that will have a lasting effect as our students go forward into the world. I give because I want to ensure educational and research opportunities continue to exist for all students at CSU!

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. To make a gift, please visit

https://advancing.colostate.edu/CNS/CHEM/GIVE.



