

# Chemistry at Colorado State University

College of Natural Sciences, Spring 2016

## Letter from the Chair

I hope this edition of our newsletter finds you happy and healthy. As we near the end of the spring semester and the approaching joy of graduation, I am reminded of the constant changes that occur at institutions like ours. Many are happy—graduation, walking by the foundation of our new Chemistry Research Building, new faculty—while others leave sorrow in our hearts. The loss of four current and former department members—Branka Ladanyi, Marshall Fixman, Kathy Gibson and Leslie DiVerdi—has been felt by all. We celebrated these amazing individuals in a reception held earlier this month. Despite this sad news, there is much to be celebrated.

The new Research Building construction is progressing nicely and we are on schedule to open its doors in August 2017. Stay tuned for building naming campaign details in the coming months.

Our faculty, staff and students continue a tradition of excellence, receiving many honors in recognition of their contributions and achievements. Dr. Steve Strauss received the prestigious 2016 ACS Award for Creative Work in Fluorine Chemistry for his outstanding contributions to the chemistry of fluorine. Dr. Tony Rappé was named Professor Laureate, the highest academic title awarded by the College of Natural Sciences, and Dr. Nancy Levinger received the esteemed Jack E. Cermak Advising Award. During a recent Celebrate! CSU ceremony, staff members Karen Kahler and Karolien Deneff were recognized for their outstanding achievements. And our students continue to excel at both the graduate and undergraduate levels. Mitchell Bordelon just received an NSF graduate fellowship to pursue his Ph.D. at UC-Santa Barbara after a distinguished undergraduate career at CSU. Likewise, PhD student Virginia Bruce (McNaughton lab) received the WCC/Merck award, one of eight total recipients nationwide. These are just a few examples of the excellent recognition being given to our faculty, staff, and students.

We are also pleased to welcome Dr. Justin Sambur, who will join the department as an Assistant Professor this fall. His exciting research focuses on photoelectrochemistry. If the name sounds familiar to recent graduates, there is good reason. Dr. Sambur received his Ph.D. from CSU with Bruce Parkinson before completing a postdoctoral fellowship at Cornell.

While we have had a challenging year with the loss of long-time friends and colleagues, there is also much to be happy about, and we are excited to share the wonderful happenings with you in this latest edition of our newsletter.

Enjoy your summer!

*Charles S. Henry*

Department Chair



## Upcoming Events

May 13:

Colorado State  
Graduate Commencement

May 14:

Undergraduate Commencement

May 20:

Meyers Symposium

June 20-30:

CIF Summer School

Oct. 29:

Stille Symposium



Gateway to the Science Mall Groundbreaking, Oct. 2015

## In This Issue

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# Upcoming Events

## Albert I. and Joan Meyers Symposium set for May 20

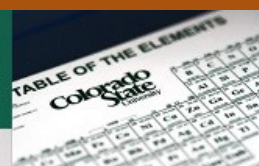
The Department of Chemistry at Colorado State University is honored to host the Albert I. and Joan Meyers Symposium sponsored by the Stille Endowment on Synthetic Chemistry and Chemical Biology on Friday, May 20th, 2016. Five world-renowned scientists will give plenary lectures on key advances in modern organic chemistry and chemical biology. The symposium will also feature a poster session and reception. Speakers include:

- Professor Donald Hilvert (ETH Zurich)
- Professor Barbara Imperiali (MIT)
- Professor Motomu Kanai (University of Tokyo)
- Dr. Andrew Phillips (C4 Therapeutics)
- Professor Scott Snyder (University of Chicago)

Click [here](#) to find out more and RSVP.

**SAVE THE DATE**  
**MAY 20, 2016**

Colorado  
State  
University

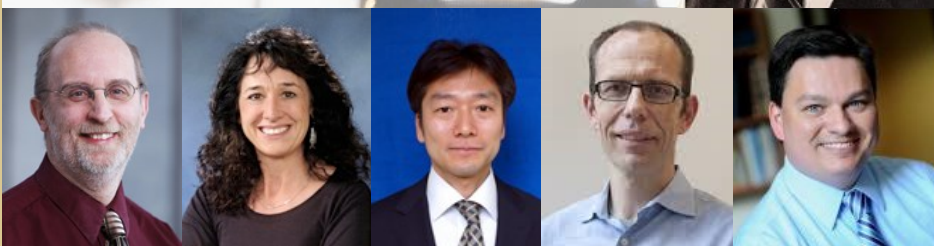
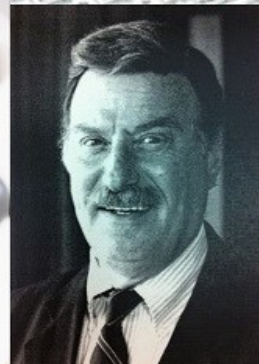


The 2016 Albert I. Meyers Symposium

## SYNTHETIC CHEMISTRY & CHEMICAL BIOLOGY

sponsored by the Stille Endowment

Colorado State University  
Fort Collins, Colorado



**SAVE THE DATE**  
**OCTOBER 29, 2016**

Colorado  
State  
University

The 2016 John K. and Dolores Stille Science Symposium

## DEVELOPMENT AND APPLICATION OF NMR FOR OUR WORLD

Stille Symposium in Tribute to Gary Maciel

Colorado State University  
Fort Collins, Colorado



## Stille Symposium in tribute to Gary Maciel set for Oct 29

The 8th Stille Symposium will be held at Colorado State University on October 29, 2016. Four world-renowned scientists will give plenary lectures on the development and application of NMR in our world. The symposium will also feature a poster session and reception.

The 2016 Stille Symposium honors the late John K. Stille, an internationally recognized scientist, who pioneered research in synthetic, polymer and organometallic chemistry and held the title of University Distinguished Professor at Colorado State University. Gary Maciel was an influential scientist who made numerous original, significant and innovative contributions to the NMR field. His impact on people was equally broad, deep and pervasive. He passed away in 2014.

Click [here](#) to find out more and RSVP.

### Speakers include:

- Joseph Ackerman (Washington University in St. Louis)
- Adrian Bax (National Institutes of Health)
- Ann McDermott (Columbia University)
- Rob Tycko (National Institutes of Health)



# Honors and Accomplishments

## Strauss receives 2016 ACS Award for Creative Work in Fluorine Chemistry

**Steven Strauss**, professor of chemistry at Colorado State University, received the **2016 American Chemical Society Award for Creative Work in Fluorine Chemistry**. The award, sponsored by the Juhua Group Technology Center in China, recognizes outstanding contributions to the chemistry of fluorine, the lightest halogen and most reactive chemical element in the periodic table.

Steve is only the fourth recipient of this annual award in the past 12 years working at a U.S. university, national lab, research institute or company. Steve was honored at an awards ceremony on March 15 at the ACS National Meeting in San Diego.



*Strauss receiving the 2016 ACS Award for Creative Work in Fluorine Chemistry at the National Awards Banquet. Presenting the award are ACS President Donna Nelson and the Juhua Group Technology Center sponsor representative Professor Kuiling Ding, Director of the Shanghai Institute of Organic Chemistry.*

## Crans recipient of the University of Sydney's International Research Collaboration Award

Professors Debbie Crans (CSU) and Peter Lay (USyd) recently received the University of Sydney's International Research Collaboration Award.



Crans visited the University of Sydney last fall to establish collaborations with Lay, who has complementary expertise in this field.

This [grant](#) will be enable long-term collaborations to be established on speciation of vanadium anti-diabetic drugs in the gastrointestinal tract, blood and target cells to enhance recent important breakthroughs in our research groups in this area and the mode(s) of action of the drugs.



## Neilson and Prieto received 2015 W.M. Keck Foundation Award

**Amy Prieto** and **Jamie Neilson**, both faculty members in the Department of Chemistry, have been jointly awarded \$1 million from the Keck Foundation to develop a novel method for discovering new, functional materials. Their goal: to perfect a process to precisely engineer materials exhibiting specific, desirable properties—be

that tensile strength, heat resistance, or conductivity, to name a few—rather than using traditional processes of trial and error, or relying on incomplete theory to predict new structures.

“The normal way to find a new material is to make a lot of new materials, screen them, and hope you get lucky,” Prieto said. “There are no guiding principles for how to strategically only make one material with the properties that you want.”

Said Neilson: “We’re flipping the problem upside down. Rather than thinking linearly, we’re asking, what property do we want? Let’s design a way to make a new material that will only work if it has the property that we are interested in.”

Read more at [SOURCE](#).





# Honors and Accomplishments

## Rappé named Professor Laureate

**Tony Rappé**, professor of chemistry, was named this year's **Professor Laureate** 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. Tony was recognized for this award on April 22 at the Annual Teaching & Mentoring Awards Ceremony.



## Krummel awarded 2015-2016 College of Natural Sciences Teaching and Mentoring Award

**Amber Krummel** received the **2015-2016 Early Career (pre-tenure) Faculty Excellence in Undergraduate Teaching and 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.



## Thomas Borch recognized for outstanding contributions to agronomy



**Borch** is the **2015 recipient** of the **Marion L. and Chrystie M. Jackson Soil Science Award**. He and fellow award winners were recognized during the scientific society's International Annual Meeting, Nov. 15-18, 2015. The annual awards are presented by the Soil Science Society of America (SSSA) for outstanding contributions to agronomy through education, national and international service and research.

This award is designed to recognize a mid-career soil scientist who has made outstanding contributions in the areas of soil chemistry and mineralogy. This award is supported by gifts from Dr. and Mrs. Marion L. Jackson to the Agronomic Science Foundation and administered by the Soil Science Society of America. The award consists of a certificate and \$3,000 honorarium.

Read more at [SOURCE](#).

## Crans named Fellow of the Faculty Institute for Inclusive Excellence

**Debbie Crans** was named a **CSU Faculty Institute for Inclusive Excellence Fellow**. The Faculty Institute for Inclusive Excellence aims to create a learning environment for faculty to engage in topics of diversity and inclusion in pedagogy, curriculum and campus communities.



## Prieto Battery teams with Intel to advance batteries for computers

**Prieto Battery**, a Colorado State University spinoff company, has announced a business collaboration with Intel's New Business Group, and an initial investment from Intel Capital. The announcement came during the [Intel Global Summit](#) in San Diego, Nov. 3.

**Prieto Battery** was co-founded in 2009 by **Associate Professor of Chemistry Amy Prieto** to commercialize her lab's 3-D lithium-ion battery technology. The collaboration with Intel is aimed at accelerating the introduction of Prieto's full, 3-D solid-state battery cell into the marketplace.

Prieto has agreed to complete a series of milestones to demonstrate the company's battery performance and readiness, with a focus on improving the performance of the battery against size, energy density and complexity vectors. Intel will stage their investment to each milestone; in exchange, Prieto will grant Intel the ability to implement the technology first in computing devices.



"This commitment from Intel, one of the global leaders in computing devices, is important for us at this stage of our company," said Prieto, who is CEO, CSO and co-founder of Prieto Battery. "We've been deliberate about trying to build relationships with companies like Intel that can help shape our commercialization roadmap and deliver strategic value for all stakeholders—most importantly, the end user of the technology."

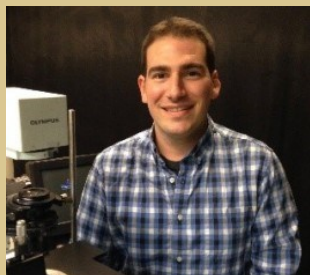
Read more at [SOURCE](#).



## 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. 2015-2016 Chemistry recipients include:

Eugene Chen	15
Ryan Holcomb	10
Brian Murphy	10
Amy Prieto	10
Yian Shi	20
Matthew Shores	10
Harmony Tucker	10
Robert Williams	35
Betty Wilmoth	10



The Department of Chemistry is excited to announce that Dr. Justin Sambur will be returning to his alma mater in August 2016 as an Assistant Professor in Analytical Chemistry.

At CSU, the Sambur group will aim to understand how single nanomaterials behave in working solar energy conversion and catalytic devices.

To learn more about Justin's research, click [here](#).



*Kahler, Denef and Levinger pose with their awards on April 19.*

## Celebrate! Colorado State Awards

Each year, Colorado State University celebrates the teaching, research and service achievements of CSU students, alumni and friends, academic faculty, administrative professionals and classified staff. This year, three outstanding chemistry faculty and staff were recognized during the ceremony on April 19.

### Outstanding Achievement Award: **Karen Kahler**

Recognizes meritorious and outstanding achievement in job skills and service to the University by State Classified employees.

### Distinguished Administrative Professional Award: **Karolien Denef**

Presented to administrative professional staff for continuing meritorious and outstanding achievement in the areas of outreach, teaching, administration, and/or research; awarded by the Administrative Professional Council.

### Jack E. Cermak Advising Award: **Nancy Levinger**

Endowed in 1984 to honor excellence in academic advising, including recognition by students and peers as an outstanding advisor; capacity to offer career as well as academic advising; interpersonal communication skills that lead to beneficial advising relationships; and contributions to the improvement of advising services and/or the appreciation of academic advising throughout the campus.

To learn more about these awards and to view the other winners, please visit [SOURCE](#).



## CSU Scholarship Award Recipients

In an upcoming awards ceremony this month, the chemistry department will recognize our graduating seniors and award recipients. Awardees are:

### College of Natural Sciences Undergraduate Awards

ACS—Hach Land Grant Scholarship: **Kaitlyn Ash, Rachel**

**Valiquette, Valerie Weed and Audrey Wolfgang**

Chemistry Undergraduate Scholarship: **Carson Hume and Erik Rognerud**

Clifford C. Hach Memorial Scholarship: **Clifford Allington, Josie Hendrix and Katrina Puck**

Cornell Stanhope Scholarship: **Delaney Nelson**

Dr. Harry Puleston Memorial Scholarship: **Kaylen Obray**

Dr. Jennifer Dawn Alexander Scholarship in Chemistry: **Anne Marie Rauker**

G.H. Whiteford Scholarship: **Rachel Valiquette**

George Splittgerber Scholarship in Chemistry: **Anne Marie Rauker**

Mark P. Sweet Chemistry Scholarship: **Chun-Kit Chu**

Professor Leslie DiVerdi Scholarship in Chemistry: **Clifford Allington**

Rueben G. Gustavson Memorial Award: **Travis Clolinger**

### College of Natural Sciences Graduate Awards

Dissertation Award in Chemistry: **Jenée Cyran**

Professor Albert I. & Joan Meyers Memorial Family Fellowship: **Peter 'George' Baumgartel**

Professor Louis S. Hegedus Fellowship: **Alix Overgard**

Teresa Fonseca Memorial Award: **Hannah Staley**

### Chemistry Undergraduate Awards

ACS Membership Award: **Erik Rognerud and Baylee Schell**

ACS UG Award in Analytical Chemistry: **David Mast**

ACS UG Award in Inorganic Chemistry: **Christopher Miller**

ACS UG Award in Organic Chemistry: **Susannah Miller**

Chemistry Early Achievement Award: **Erik Rognerud**

Chemistry Graduating Senior Award: **Mitchell Bordelon, Lindsay Durrett, Jessica Geisenhoff, Juliette Granger, Taylor Lucia, David Mast and Zichun Xu**

POLYED Organic Award: **Trevor Taggart**

Undergraduate Outreach Award: **Maia Holmes**

Undergraduate Service Award: **Anne Marie Rauker**

### Chemistry Graduate Awards

Graduate Outreach Award: **Christine Dunne**

Graduate Teaching Assistant Award: **Jakob Anderson, William Jones, Loryn Killpack, John Koniarczyk, Mary Marisa, Brian Reeves, Angeline Ta and Laura Tvedte**

## Additional Awards & Achievements

**Virginia Bruce (McNaughton group)** has been selected as one of eight inaugural winners of the **ACS Women Chemists Committee (WCC)/Merck Research Award**. Virginia's research focuses on developing novel protein drug leads that access the inside of mammalian cells, and modulate cell function and fate. As part of this award, Virginia will attend the 2016 Fall ACS National Meeting in Philadelphia and present her research at a WCC/Merck symposium.



**Andy Martinolich (Neilson group)** has been selected for the **2016 Ludo Frevel Crystallography Award** from the International Centre for Diffraction Data.



Approximately 10 of these prizes are awarded to the international community each year. This prize includes a \$2,500 award to help support the education and research program of promising graduate students in crystallography-related fields.

**Trey Murschell (Farmer group)** was selected as one of the Final Award Winners of the Pacificchem Student Poster Competition at December's meeting in Honolulu, Hawaii.

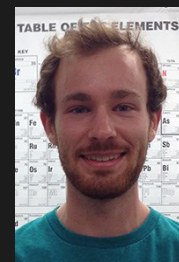


His poster was entitled "Fast, sensitive technique for real-time, in situ quantification of commonly applied pesticides in the atmosphere using high resolution time-of-flight chemical ionization mass spectrometry."

### Mitchell Bordelon wins 2016 NSF Graduate Research Fellowship

This fellowship provides a three-year annual stipend of \$34,000, along with a \$12,000 cost-of-education allowance for tuition and fees (paid to the institution). It includes opportunities for international research and professional development, and the freedom to conduct research at any accredited U.S. graduate education institution.

Mitchell will pursue a graduate degree at the University of California-Santa Barbara in the fall. His PhD research will be focused on correlated electronic phenomena in materials. During his time at CSU, Mitchell has spent many hours conducting research with both Professor Jamie Neilson (Chemistry) and Professor Kathryn Ross (Physics).



To read more about his research at CSU, click [here](#).

## New Chemistry Research Building



Chemistry students Juliette Granger, Kaylen Obray and Katrina Puck join in the fun at the Gateway to the Science Mall Groundbreaking.

### CONTINUED EXCELLENCE THROUGH ENHANCED RESEARCH CAPACITY

The new Chemistry Research Building will expand research opportunities for faculty as well as graduate and undergraduate students. The laboratory and research areas are designed to facilitate interdisciplinary, collaborative research in a state-of-the-art environment. It will significantly enhance our competitiveness for research funding, attracting top-rated faculty and students, and develop strategic relationships with chemistry-related industries in the State of Colorado and beyond.



### AN INNOVATIVE HUB FOR CHEMICAL SCIENCES

The cutting-edge, 60,000-square-foot Chemistry Research Building will house hood-intensive synthetic chemistry labs for organic and inorganic disciplines. Additional common spaces enhance vertical integration within the department, creating new collaborative research and educational opportunities for undergraduate and graduate students. This facility continues the tradition of excellence within the Department of Chemistry and the College of Natural Sciences.

## 2016 CURC Awards

The annual **Celebrate Undergraduate Research and Creativity Showcase** was held April 18<sup>th</sup>. This juried showcase features outstanding performers from every discipline. 11 chemistry students were awarded in the Research Posters category on April 25.

### Highest Honors

**Katarina Werst (Crans group) and Nicole Segaline (Crans group)** *Modeling uncoupling affect of benzoic acid on Mycobacterium tuberculosis*

### High Honors

**Mitchell Bordelon (Neilson group)** *Electronic properties of the anti-perovskite materials Ca<sub>3</sub>GeO and Ca<sub>3</sub>GeN*

**Katrina Puck (Henry group)** *Development of a paper sensor for detecting zinc*

### College Honors

**John Allen (Neilson group)** *Synthesis of YIn<sub>1-x</sub>Mn<sub>x</sub>O<sub>3</sub> pigments with microwave technology*

**Juliette Granger (Neilson group)** *The discovery of (CH<sub>3</sub>NH<sub>3</sub>)<sub>2</sub>Sn<sub>16</sub>: a hybrid double perovskite for photovoltaics*

**John Peter Hough (Crans group) & Allison Groninger (Crans group)** *Exploring the interactions between the anti-tuberculosis agent, pyrazinoic acid, and lipid model membrane systems*

**David Mast (Henry group)** *Fabrication of cobalt phthalocyanine modified PMMA/graphite based microfluidic devices for the selective detection of dithiothreitol*

**Jackson McCue (Crans group)** *The interaction of HPTS and Cu<sup>2+</sup> in reverse micelles*

**Kaylen Obray (DiVerdi group)** *Solid alkane reverse micelles (SARMS)-confining water in the solid state*

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# In the News

Keep in touch with what's happening in the world of chemistry at Colorado State University. SOURCE provides news & events about the greater CSU community. Our chemistry page offers news, seminar, and event information. Book-mark these pages today!

## SOURCE Natural Sciences CHEMISTRY

### CSU team's discovery could revolutionize plastics

Two Colorado State University researchers are taking a red pen to conventional wisdom with their creation of a totally recyclable bioplastic that can be heated, returned to its original state and reused.

No one's ever done that before. The process they discovered to create the plastic was thought to be impossible.

"It completely closes the life cycle of a material. It's a truly sustainable material," said CSU chemistry professor Eugene Chen, who worked with postdoctoral fellow Miao Hong to find the recipe for the miracle plastic.

"Conventional recycling is actually sort of misleading," Chen said. "You can convert a material to something else to lengthen its life cycle, but you can't recycle it back to the building block and then recreate the material."

Instead, the plastic in your petroleum-derived water bottle usually gets turned into lower quality plastic that can't be reused for the same purpose.

Not the case with Chen and Hong's plastic. They created a polymer—a large molecule made up of smaller monomers—that can be used and reused again and again.

Excerpts from *The Coloradoan*. Read full article [here](#). Also featured at [ACS Meeting](#) in March.



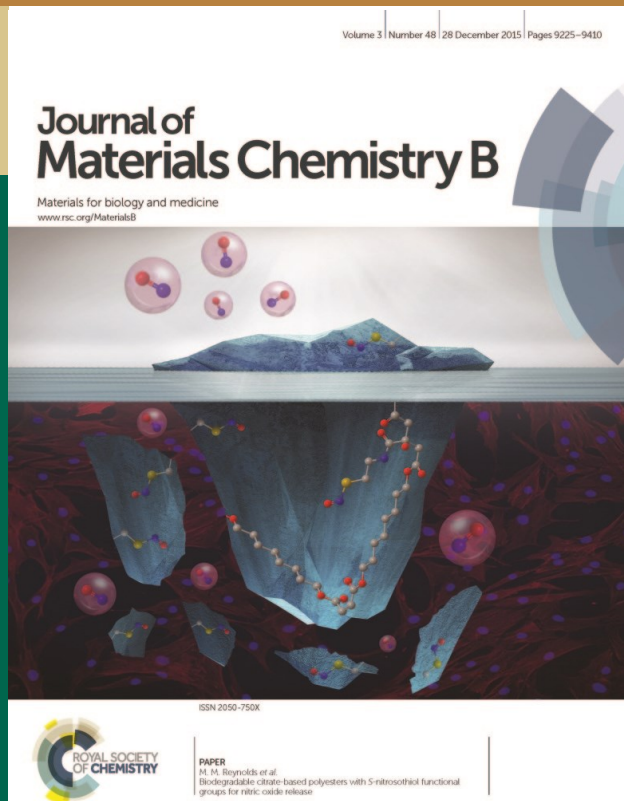
### Polymer chemistry highlighted on cover of Journal of Materials Chemistry B

Chemistry graduate students (**Pam Yapor, Alec Lutzke and Bella Neufeld**) and post-doctoral researchers (**Adoracion Pegalajar-Jurado and Vinod Damodaran**) had their work selected and highlighted on the cover of *Journal of Materials Chemistry B*.

Their research article "[Biodegradable citrate-based polyesters with S-nitrosothiol functional groups for nitric oxide release](#)" describes the synthesis and characterization of a new nitric oxide (NO) releasing polymer system based on non-toxic citric acid and naturally-occurring cysteamine and L-cysteine. The polymer is fully biodegradable and exhibits therapeutically-relevant levels of NO release under physiological conditions and may be suitable for future biomedical applications.

This group has been working in the lab alongside **Dr. Melissa Reynolds**, spending countless hours studying and developing advanced biocompatible materials to ease and speed the healing process.

Read more [here](#).







## A Fellowship in France

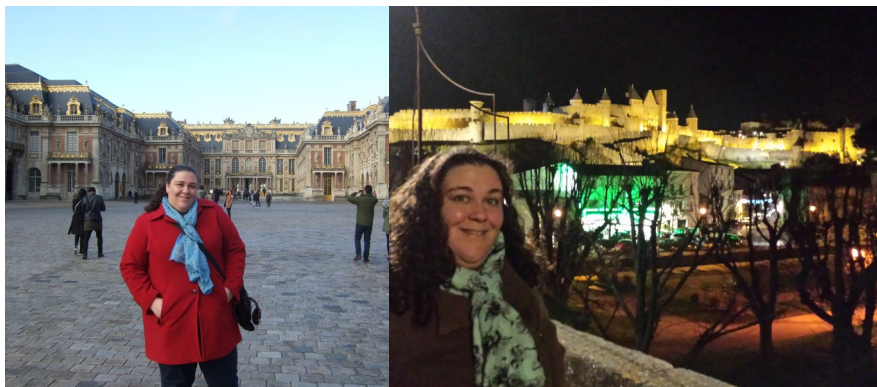
After submitting a research grant proposal, Chemistry Graduate Student **Cheryle Beuning (Crans group)** was awarded a six month 2015 STEM Chateaubriand Fellowship from the French government. This fellowship funds collaborative research between US and French research groups. The award is given to conduct research for four to nine months for American PhD students enrolled in a STEM major at a US university with existing collaborators in France. The 2015 year had 43 awards total with 10 awarded to Chemistry PhD students.

Cheryle worked at the Laboratoire de Chimie de Coordination (LCC) in Toulouse, France with the Dr. Christelle Hureau team. The team's research focuses on metal complexation of the amyloid beta peptide, the peptide associated with Alzheimer's disease. The group studies copper and zinc complexation to the peptide that results in increased aggregation and some small peptide models for A $\beta$  including DAHK and GHK. They also study inhibition of A $\beta$  aggregation by metal chelating ligands. They are leading researchers in this area.

The research Cheryle conducted at the LCC included studying the fluorescent peptides DAHW and GHW and how they compare to the well characterized DAHK and GHK counterparts; much literature on these peptides were published by the group. She worked on studying the Cu(II) coordination to the tryptophan (W) peptides in comparison to the lysine (K) counterparts and the Cu(II) exchange kinetics between the W and K peptides. These studies are important models for a fluorescent modified A $\beta$  for some future experiments. There is a significant difference in the Cu(II) exchange rates between the GHK/GHW and DAHK/DAHW peptides which is most likely attributed to the different Cu(II) coordination of the peptides. The research is finished, and the manuscript is currently being written for publication.

Cheryle also visited Amsterdam, Bordeaux, Paris, Carcassonne and Canet en Roussillon (Mediterranean coast) during her time in Europe. She enjoyed the French cuisine especially confit canard, a southern French delicacy. She visited the Tour de Eiffel, the Louvre and Versailles during her Paris trip. She enjoyed walking in Toulouse on sunny days and seeing the Pyrénées Mountains in the distance on a cloud free day. Her group at the LCC was very welcoming and hospitable, often having many group gatherings every month, Cheryle's favorite being the French tradition of Raclette.

Global collaborations are becoming more and more prevalent in industry and academia. The sharing of knowledge to solve problems is imperative for progress in combating diseases such as Alzheimer's. Programs like the Chateaubriand fellowship are becoming more competitive due to the shift in global collaboration in STEM fields.



## Pi/Pie Day 3.14.16

For those of you who were at the ACS meeting or on Spring Break, you missed a lot of fun in the stockroom (technically now called Chemistry Scientific Stores). On March 14<sup>th</sup> (3.14) we celebrated Pi/Pie Day with awesome fruit pies made by *Me Oh My Pies* of Laporte, Colo.



We hosted 101 attendees from 15 different departments at CSU!



We raffled a new Nalgene carboy which was won by Virginia Bruce of the McNaughton group here in Chemistry.

There was over \$5,800 in free lab items given away (donated to the stockroom by a gracious benefactor). We all enjoyed seeing a lot of familiar faces but also a lot of new faces. Next year we may have to celebrate Albert Einstein's birthday (same day 3/14). But you can come by before that, too!

## Alumni News

Former McNaughton lab researchers **Melissa Gray** (now a graduate student at Stanford) and **Sandra DePorter** (now a post-doctoral researcher at Stanford), in collaboration with researchers at Yale, have reported a nanobody that selectively kills certain breast cancer cells. The research is highlighted on the back cover of *ChemBioChem*.

Click [here](#) for more information.



# News from the CIF

These are exciting times at the CIF, with new instrument additions in both our Imaging & Surface Science and Materials & Life Sciences labs, including an EBSD detector on the SEM, two new X-ray diffractometers, and two new triple quadrupole mass spectrometers. We are also gearing up for our third annual summer school, taking place June 20-30.

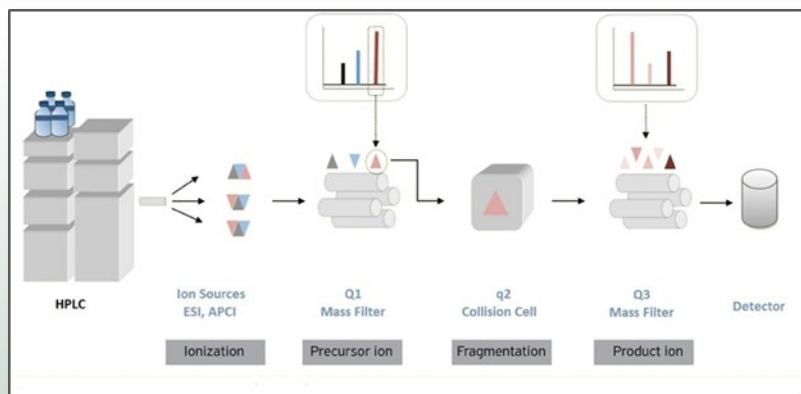
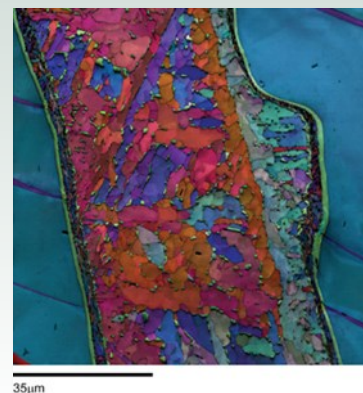


## Bruker D8 Discover X-ray Diffractometer

The CIF will be adding two new diffractometers to the X-ray laboratory this summer by way of a Keck Foundation award made to our colleagues, Drs. Prieto and Neilson. The Bruker D8 Discover with DAVINCI design increases ease-of-use with real-time component detection and plug-and-play functionality which will make switching between different X-ray applications a breeze. The systems will be capable of reflectometry, high-resolution diffraction, in-plane grazing incidence diffraction (IP-GID), as well as residual stress and texture investigations. These systems will put the X-ray lab at the forefront of advanced measurement techniques and will greatly benefit the chemistry department and CSU as a whole!

## Electron back scatter detection on the SEM

We recently acquired a new electron backscatter diffraction (EBSD) camera. This technique allows researchers to collect diffraction (Kikuchi) patterns from the surface of thin films, or from nano-particles/rods/tubes in the scanning electron microscope. The DigiView camera offers excellent performance over a wide range of EBSD applications, providing the highest indexing success rates and best orientation precision values on the market at speeds up to 200 indexed points per second. This high resolution camera, when paired with TEAM™ software, enables users to obtain outstanding results from both routine and advanced materials and analyses and provides a flexible solution that guarantees users the best possible data quality and smart insight into their characterization needs.



## GC and UPLC triple quadrupole mass spectrometers

The CIF mass spec lab has recently added two new triple quadrupole mass spectrometers: a Thermo GC-TSQ8000 Evo triple quad with EI and CI ionization and a Waters Xevo TQD UPLC triple quad with ESI ionization. A triple quadrupole mass spectrometer is made up of two quadrupole mass analyzers, with a (non-mass-resolving) radio frequency-only quadrupole between them (see schematic), acting as a collision cell for collision-induced dissociation (CID) to fragment selected precursors/parent ions, and to generate fragment/daughter ions. Triple quads are typically used for “selected reaction monitoring” (SRM) in which an ion of a particular mass is selected in the first stage of the MS, and a daughter ion (or multiple daughter ions; MRM) is selected in the second stage for detection. The triple quad has therefore superior detection sensitivity in targeted analysis and can be used for quantification in SRM, especially when small molecules are being analyzed. Both instruments will soon be available to students for open-access operations.

## CIF Summer School on Advanced Applications of NMR Spectroscopy and Mass Spectrometry

Our third annual summer school will take place June 20-30. We are finalizing quite an exciting program with some big names on the list of invited speakers, including: Dr. Phil Crews (UCSC), marine natural products chemist; Dr. Rich Shoemaker, Director of the NMR facility at CU Boulder; Dr. Natalie Serkova, Director of the University of Colorado Cancer Center Core Facility (UCCC) for animal imaging and metabolomic NMR; and Dr. Sarah Robinson, Scientist in the Structural Elucidation Group at Genentech. The school will also feature lectures and workshops by our own faculty, including Dr. Joseph DiVerdi and Dr. Delphine Farmer, various scientists from both the CIF and the PMF CORES and even some of our chemistry postdocs (Dr. Tiffany Piou). We also have participation of several key vendors who will be sponsoring three evening socials at local venues. This school will be a great opportunity to learn and gain hands-on experience with different experimental approaches used in NMR and MS.



# In Memoriam

## Celebrating the lives of Leslie DiVerdi, Marshall Fixman, Kathy Gibson and Branka Ladanyi

The Department of Chemistry has recently lost four great friends and colleagues. On April 6 we celebrated the lives of these remarkable individuals.

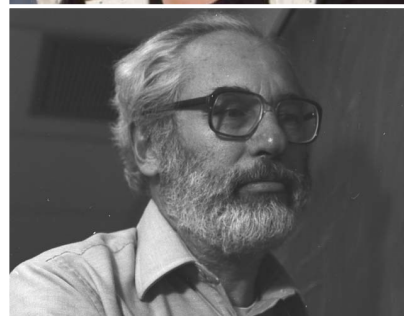
**Leslie DiVerdi**, 63, passed away Jan. 10 in Rochester, N.Y.

She joined the chemistry department at CSU in 1989 and quickly became a force in the general chemistry program. The magnitude, breadth, and quality of her impact on her colleagues, students and advisees is beyond comparison, her colleagues say. The gravity of her approach to her work and levity of heart combined to make her appreciated by all whose lives were touched by her.



**Marshall Fixman**, 85, passed away Feb. 27 in Loveland, Colo.

Fixman, a University Distinguished Professor Emeritus, joined the CSU faculty in 1979 with his wife, Branka Ladanyi. Throughout his career, Fixman worked on fundamental problems in polymer physical chemistry. He continually expanded and improved physical theories and mathematical techniques. Marshall earned many honors including ACS Pure Chemistry, ACS Award in Polymer Chemistry, APS High Polymer Prize and election to the U.S. National Academy of Sciences.



**Kathy Gibson**, 62, passed away Jan. 2 in Fort Collins.

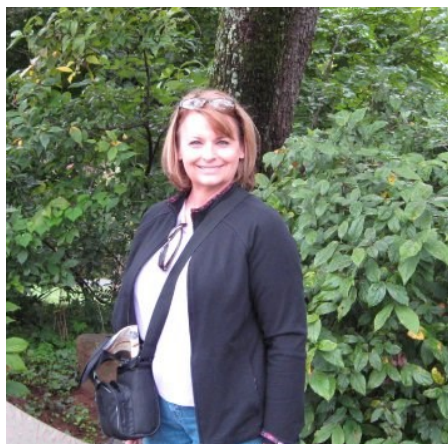
Gibson came to the Department of Chemistry as the graduate coordinator in 2009. During her time at CSU, she created lasting relationships with faculty, staff and students. Although she retired in 2013, she often came back to help on special projects and could be seen stopping in the halls for a quick hug and friendly hello. She is dearly missed.



**Branka Ladanyi**, 68, passed away Jan. 29 in Aurora, Colo.

Colleagues called Ladanyi a person of exceptional talent and grace, a pioneer in her field and for women in academia. She joined the CSU faculty in 1979 with her husband, Marshall Fixman. Over her career she contributed profoundly to the theory and modeling of liquids, supercritical fluids, and molecular clusters.

Branka demonstrated leadership as editor-in-chief of the *Journal of Chemical Physics* and in ACS and APS executive committees. We will miss her gentle ways that led us over the years, her vast knowledge of the physics and chemistry of liquids, and her humble approach to science and life.





# 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.

Please visit our [Giving page](#) to learn more about all of the current giving opportunities.



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## Ten Chemistry Scholarships Created by Michael Smith

Ten new full-tuition undergraduate scholarships for the Colorado State University College of Natural Sciences' Department of Chemistry have been created thanks to a generous \$400,000 gift from Michael Smith. The scholarships are part of Smith's larger \$13 million [gift to Colorado State](#).



Michael Smith studied Chemistry at Colorado State in the 1970s, and he is now chairman and CEO of Freeport Liquefied Natural Gas Development. He also holds an Honorary Doctorate of Humane Letters from the University. "We are very proud that Michael Smith has his roots in CSU'S Chemistry Department," said Jan Nerger, Dean of the College of Natural Sciences. "We are grateful to him for paving the way for future scholars who, hopefully, will have the same impact as he has had as an entrepreneur," she said.

The scholarships aim to encourage diversity and build awareness of the value and rewards associated with careers in science and technology. The scholars will have distinguished themselves through their intellectual curiosity and academic abilities as well as in their character and potential for leadership and entrepreneurship.

Read more [here](#).

## 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.