



# CATALYST

DEPARTMENT OF CHEMISTRY  
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# Letter from the Chair

## The Changing Face of Chemistry at the U



Cynthia Burrows  
1995



Janis Louie  
2001



Jennifer Shumaker-Parry  
2005



Valeria Molinero  
2006



Holly Sebahar  
2008



Jen Heemstra  
2010



Bethany Buck-Koehntop  
2011



Shelley Minter  
2011



Caroline Saouma  
2014



Luisa Whittaker-Brooks  
2014

## Dear Colleagues, Alumni and Friends,

While Henry Eyring as the first dean of the Graduate School in 1946 is credited with changing the landscape of graduate education and research at the U, it was under Peter Stang's tenure as Chair of the Department of Chemistry (1989-1995) that the faces of the chemistry faculty began a gradual shift from all-male to approaching gender equity. In 1990, Dr. Janet Grissom joined the faculty as a tenure-track assistant professor and as part of a dual-career hire along with Chuck Grissom. After a successful start, including the award of an NIH grant, Janet opted to go to medical school at the U and begin her present career as a psychiatrist. Her leaving created open lab space for my own arrival in spring 1995. Scott and I were also a dual-career hire, both of us having already reached full professorships at Stony Brook.

I had only a short time as the lone female on the faculty. The next dual-career hire was Sheila David and Pete Beal in 1996; I still mourn their move back to California a decade later. Janis Louie (Cope Scholar and Ninja Warrior\*) joined us in 2001, Jennifer Shumaker-Parry (Nanoparticleer and Biotech Track Director) in 2005 and Vale Molinero (Director of the Henry Eyring Center for Theoretical Chemistry) in 2006, all hired as assistant professors, and now all tenured faculty.

Half of our cadre of women faculty was hired by Henry White when he was chair. A big boost to our educational mission came in 2008 when Dr. Holly Sebahar joined as our coordinator of undergraduate organic lab courses. Now, as a full professor-lecturer, she inspires hundreds of sophomores in organic lecture and lab every year and leads an undergrad outreach team reaching thousands of K-12 school kids. Jen Heemstra joined the fledgling Center for Cell and Genome Science in 2010 and will soon be its Deputy Director and a tenured associate professor. The department also benefits from her marriage—John Heemstra is an award-winning assistant professor-lecturer in Chemistry (see page 9). We hired Beth Buck-Koehntop in 2011 to help fill the gap in biophysical chemistry and to move into the recently constructed David M. Grant NMR Center.

Next, we took advantage of the USTAR program to lure Shelley Minter (as full prof) away from St. Louis University and then hired Caroline Saouma (as assistant prof) to build research programs in alternative energy. Most recently, Luisa Whittaker-Brooks joined us as part of a University and NSF-sponsored

*Photo of Luisa Whittaker-Brooks courtesy of L'Oreal USA*

*\*Read more about Janis Louie competing on NBC's "American Ninja Warrior" on our website - [www.chem.utah.edu](http://www.chem.utah.edu)*

effort to establish a Materials Research Science and Engineering Center at the U. Collectively, the women faculty members have thriving programs and busy lives—14 children (and one on the way!). We manage millions of dollars and have crazy schedules, but we (usually) love what we're doing and wouldn't trade roles with our grandmothers. Alongside us, we have the support of husbands and male colleagues who match our passion for science, curiosity in the lab, and commitment to families.

The slow but steady progress toward gender equity stems from a family-friendly environment at the U. In fact, Chemistry was perhaps the first department on campus to create a maternity leave policy that eventually became a template for the campus-wide parental leave program. Then-Chair Peter Armentrout also extended this to a graduate student and postdoctoral benefit as well, and in this regard, we remain among the most progressive departments on campus. These benefits make the University workplace better for everyone; moms *and* dads are eligible for parental leave, and valuing families helps the career-life equilibrium for students and faculty.

With nine tenure-line women faculty out of 32 total, we approach the national fraction of women obtaining PhDs and pursuing postdoctoral training in chemistry (~30%), and we rank ahead of peer institutions for the number of women on the faculty. The establishment of the Curie Club provides visible support of the careers of women students and faculty. Increasing diversity, whether it is gender, race, orientation, religion or country of origin, is certain to enhance the educational and cultural experience for our students and to enrich creative thinking in our research endeavors. We still have an uphill climb to reach all of our diversity goals, but I truly appreciate my “old-white-guy” colleagues for helping us make huge strides so far. **Thank U** for your support.

And, thanks for reading,

Cynthia J. Burrows

Distinguished Professor and Chair

Thatcher Presidential Endowed Chair of Biological Chemistry

## Introducing Professor Rodrigo Noriega

Rodrigo Noriega will soon join the Department's faculty as an Assistant Professor in the field of experimental physical chemistry.

Rodrigo earned his PhD in Applied Physics from Stanford University, working with Alberto Salleo in the Materials Science and Engineering department on the connection between structural disorder and charge transport in organic semiconductors, culminating in a *Nature Materials* article that was highlighted in *Nature Materials* and *Science*.

Rodrigo's postdoctoral work with Naomi Ginsberg at UC-Berkeley focused on the effects of local environment on the photophysical properties of biomimetic light harvesters and new organic light-emitting diode materials using ultrafast spectroscopy and single molecule measurements.



Rodrigo Noriega

As a faculty member, Rodrigo aims to provide a molecular-scale description of the behavior of macromolecules as they undergo dramatic conformational transformations and to understand charge generation and transport in the intricate microstructures present in organic semiconducting devices, leading to their development as building blocks for efficient energy harvesting, storage, and conversion.

Like many of our faculty, Rodrigo's decision to come to Utah was made possible by a dual-career hire. His wife Megan Vanneman will be joining the Epidemiology and Population Health Sciences departments in the U's School of Medicine.

We look forward to welcoming Rodrigo and Megan to Utah later this summer!

# 2016 Distinguished Alumni Awards



(From left) Chair Cynthia Burrows, James Sugihara, Sung Wan Kim, Jaqueline Kiplinger, Milton Lee, and College of Science Dean Henry White.

On Monday, April 18th, the Department of Chemistry honored four former students as our 2016 Distinguished Alumni: Sung Wan Kim (PhD '69), Jaqueline L. Kiplinger (PhD '96), Milton L. Lee (BA '71), and James M. Sugihara (PhD '47). The Distinguished Alumni were recognized at an awards dinner at the Alumni House.

The alumni also spoke to current students. Professor Sung Wan Kim presented a seminar entitled "Biomaterials to Gene Delivery," impressing students and faculty with his ability to spot up-and-coming areas of research and make a name for himself in those fields.

Jaqueline Kiplinger gave a lecture on "Finding Elements of Opportunity at the Bottom of the Periodic Table" and also spoke to graduate students about opportunities and challenges of working at a national lab, based on her career at Los Alamos.



Sung Wan Kim receives his 2016 Distinguished Alumnus Award

Milton Lee's seminar, entitled "Small Adventures in Separation Science," told the story of his journey from a Utah undergrad, to an LDS graduate student at Indiana studying compounds in marijuana smoke, to a professor at BYU.



Sung Wan Kim tells the audience at dinner about beating Professor Henry Eyring in one of Eyring's legendary foot races.

**Sung Wan Kim** received his PhD in physical chemistry with Henry Eyring in 1969. He is now a Distinguished Professor of Pharmaceutics and Pharmaceutical Chemistry and a Distinguished Professor of Bioengineering at the U. He was Director of the Center for Controlled Chemical Delivery from 1985-2006. Dr. Kim is a pioneer in drug delivery research focused on hydrogels, biodegradable drug conjugates, self-regulating drug delivery and stimuli sensitive polymers.

**Jaqueline L. Kiplinger** earned her PhD in organometallic fluorocarbon chemistry at the University of Utah with Professor Tom Richmond in 1996. After postdoctoral work at UC-Berkeley, she joined Los Alamos National Laboratory where she is now a Fellow. She is recognized as a pioneer in uranium and thorium chemistry, and has received numerous awards for her research, service, and mentorship to the next generation of scientists.



*Jaqueline Kiplinger receives her 2016 Distinguished Alumna Award*



*(From left) Tom Richmond with several alumni from his group: Carrie Kelly, Brian Bennett, Jaqueline Kiplinger, and Roger Harrison.*

**Milton L. Lee** received his BA in chemistry from the University of Utah in 1971. He attended graduate school at Indiana University, earning his PhD with Professor Milos Novotny in 1975. In 1976, he joined the faculty at BYU, where he is now the H. Tracy Hall Professor of Chemistry. He specializes in microseparation techniques, column technology for microseparations, and instrumentation for capillary separations and high performance separations-mass spectrometry.



*Milton Lee receives his Distinguished Alumnus Award at the event*



*Milton Lee with his family at the Distinguished Alumni Awards Dinner. (From left) Laura Lee, Milton Lee, Harold Lee (MS'76), and Susan Lee*

**James M. Sugihara** earned the first PhD ever awarded by the University of Utah in 1947. He was a member of the faculty until 1964, when he accepted a professorship at North Dakota State University, where he served as dean of the College of Science and Mathematics. He was named Dean of the Graduate School and Director of Research in 1974. In 1998, he was awarded an honorary doctorate at NDSU and retired as Professor Emeritus.



*James Sugihara with Shwan Javdan and Elizabeth Fine, two recent Sugihara Scholars. The James M. Sugihara Award provides funds for a chemistry major to live in the Crocker Science House.*



## Academic Journals Bring Science to the U

Did you know the University of Utah is home to four prominent chemistry publications?

The *Journal of the American Chemical Society*, *The Journal of Organic Chemistry*, *Accounts of Chemical Research*, and the *Journal of the Electrochemical Society* all have an editorial presence in the Department of Chemistry. Not only do these publications bring a degree of prestige to the department, they also provide constant exposure to the best research happening in their respective fields. In addition to the science, the Journals support 10 editorial and professional staff positions in the department.

**The *Journal of the American Chemical Society* (JACS)** is led by Editor Peter Stang. JACS is “the flagship journal of the American Chemical Society and the world’s preeminent journal in all of chemistry and interfacing areas of science,” according to the ACS. The weekly periodical has published fundamental research papers essential to the field since it was founded in 1879. It reaches over 26,000 subscribers, the most of any ACS journal.

**About the Editor:** Distinguished Professor and David P. Gardner Presidential Chair Peter Stang has a long record of service with JACS, serving as an Associate Editor from 1982-1999 and Editor-in-Chief since 2002. Many will recall that Cheves Walling served as Editor of JACS at the U from 1975 to 1981. Along with Professor Stang’s leadership, Distinguished Professors Henry White and Matthew Sigman serve as Associate Editors of JACS. On July 1, Professor Shelley Minteer will succeed Henry White as Associate Editor. Assistant Managing Editor Lingling Chen and Coordinating Editor Katherine Snow are also based at the University of Utah.

***Accounts of Chemical Research*** presents “short, concise and critical articles offering easy-to-read overviews of basic research and applications in all areas of chemistry and biochemistry,” according to the ACS. In addition, the monthly periodical also publishes special issues devoted to a single topic of unusual activity and significance. Distinguished Professor Cynthia Burrows is the fourth Editor-in-Chief of *Accounts*, a journal that will celebrate its 50th anniversary next year.

**About the Editor:** Distinguished Professor and Thatcher Presidential Chair Cynthia Burrows has been a member of numerous editorial boards. From 2001-2013, she served as Senior Editor of *The Journal of Organic Chemistry*, after 2 years as Associate Editor of *Organic Letters*. In 2014, she became Editor-in-Chief of *Accounts of Chemical Research*. Associate Coordinating Editor Laura Grünwald is also based at the University of Utah.

*The Journal of Organic Chemistry (JOC)* is also based in the Department of Chemistry. Distinguished Professor C. Dale Poulter is the Editor-in-Chief of *JOC*. The journal, since its inception in 1936, publishes fundamental research in all branches of the theory and practice of organic chemistry.

**About the Editor:** Distinguished Professor and John A. Widtsoe Chair Dale Poulter previously served as Associate Editor of *JOC* (1990-1995), Associate Editor of *Organic Letters* (1999-2001), and Senior Editor of *JOC* (2000-2001). In 2001, he became the Editor-in-Chief of *JOC*. Coordinating Editor Katie Turner is also based at the University of Utah.

*Journal of the Electrochemical Society (JES)* is a peer-reviewed leader in the field of electrochemical and solid-state science and technology including experimental and theoretical aspects of electrodes, interfaces, and devices. *JES* has been in publication for more than 110 years. Professor Shelley D. Minteer serves as Technical Editor.

**About the Editor:** Shelley Minteer is a USTAR Professor with a joint appointment in Chemistry and Materials Science and Engineering and Fellow of The Electrochemical Society. Her technical interest areas for *JES* are physical and analytical electrochemistry, electrocatalysis, and photoelectrochemistry.



JES cover reprinted with permission from the ECS

## Curie Club Hosts Women Faculty for Lunch with Professor Carol Gross

On March 23rd, the Curie Club hosted a lunch for all the women faculty members in the College of Science to meet Carol Gross, a Professor at UCSF and member of the National Academy who studies functional and regulatory networks in bacteria. Her other passion is increasing diversity in STEM both by mentoring students/faculty, and developing programs to increase student diversity.

Professor Gross gave a Hugo Rossi Lecture entitled “Participation of Women in Science: Problems and Solutions” during her visit to the U. There is abundant evidence that women are underrepresented in STEM disciplines. In this talk, Professor Gross discussed some of the root causes, documented disparities, and presented strategies to enhance the success of women graduate students and faculty.

Along with attending her important talk, many women faculty joined the Curie Club to meet Professor Gross in a more intimate lunch.



Professor Carol Gross

# News from the Department

## Inaugural Robert W. Parry Lecture Held in April



(From left) Joel Miller, Cindy Burrows, Harry Gray, Marjorie Parry

On April 12th, the Department of Chemistry held the inaugural Robert W. Parry Lectureship in Inorganic Chemistry. This annual lecture honors Distinguished Professor Bob Parry, one of our most notable former faculty members.

The lecture was delivered by Professor Harry Gray, a world-class inorganic chemist from CalTech, a friend of Bob Parry's, and a donor to the fund. As Bob's friend, he had some wonderful stories to share with those in attendance. Bob's wife Marjorie Parry and one of their granddaughters also attended, making the first Parry Lecture a truly special event.

Distinguished Professor Robert W. Parry was a giant in our profession. He was the founding editor of *Inorganic Chemistry* in 1960. He served as the President of the American Chemical Society in 1982, won the first Utah Governor's Medal in Science and Technology in 1987, and received the American Chemical Society's Priestley Medal in 1993. In his 60-year career, Bob taught thousands of undergrads and mentored over 60 Ph.D. students and postdocs. Together with Henry Eyring and Cheves Walling, Bob played a key role in the growth and development of chemistry at Utah.

## Alumnus Kirk Ririe Awarded U Honorary Doctorate



Kirk M. Ririe

Congratulations to Kirk M. Ririe (BS '05), who received an honorary Doctor of Science degree at the University's commencement ceremony on May 5th, 2016. This is the highest honor given by the U.

Ririe is a visionary scientist and inventor with numerous patents to his name. He currently serves as CEO of BioFire Defense, which delivers a fully integrated suite of biological agent identification products and life science systems to the biodefense and first responder community. Among his inventions, he built the prototype to shorten the processing time of the Nobel prize winning DNA analysis technique called PCR from hours to minutes. This prototype, and assistance from his alma mater, the University of Utah, spurred his founding of BioFire Diagnostics, Inc. and the invention of the LightCycler. His latest invention, FilmArray System and Respiratory Panel, was approved by the FDA in 2011 to quickly test dozens of organisms simultaneously. Ririe is the recipient of numerous awards, including recognition as a Chemistry Distinguished Alumnus in 2015, Entrepreneur of the Year from Ernst & Young in 2004, and the Franklin Jefferson Award in Science and Technology Innovation in 1999.

## Department Raising Funds for Lectureship Honoring Ted Eyring

Professor Emeritus Ted Eyring is a prominent figure in the memories of chemistry alumni. Ted has been a pillar of the department for over 50 years, and visitors still hope to drop in on him in his office. Since his retirement in 2013, we still see him around the building on occasion, and happily report he is doing well.

To celebrate Ted's recent retirement, and the consideration he always gave to his students and colleagues, the Department is raising funds to endow the Edward M. Eyring Lectureship in Chemistry. The Eyring Lectureship will invite eminent physical chemists to present their latest research to our students and faculty at an annual lecture. We welcome your support.



*Ted Eyring at his retirement party*

Gifts and pledges can be made online to the Edward M. Eyring Lectureship in Chemistry at [www.chem.utah.edu/community/donate.php](http://www.chem.utah.edu/community/donate.php).

Pledges of \$2,500 or more can be extended over a three-year period. Corporate matching programs are a potential way to double the impact of your gift.

**In addition, we are collecting memories and updates from Ted's former students and colleagues to pass along to him. Please write a short note to Ted and send it by email to [alyssa.geisler@utah.edu](mailto:alyssa.geisler@utah.edu).**

Please join us in recognizing Ted's tireless dedication to teaching, research, and service at the University of Utah.

## John Heemstra Wins U of U Early Career Teaching Award



*John Heemstra hiking with his sons*

Congratulations to John Heemstra, who was selected for a 2016 U of U Early Career Teaching Award. Dr. Heemstra has taught general, organic and biochemistry with huge success for the past three years. His past students have enjoyed his teaching so much that they report wanting to take all of the chemistry courses he is scheduled to teach. We are so fortunate to have such a talented educator on our team.

Professor Heemstra earned his PhD in chemistry at the University of Illinois at Urbana-Champaign in 2007 and was a postdoctoral fellow at Harvard Medical School. He joined the teaching faculty at the University of Utah in 2012. In his short time with the Department, he has won numerous teaching awards, nominated by both faculty and students.

## Three Students Win \$150,000 NSF Pre-Doctoral Fellowships



*Recipients of 2016 NSF Pre-Doctoral Fellowships: Julieann Selden and Sophia Robinson (left) and Sophia Bertram (right)*

Three students from the Department of Chemistry have won 2016 pre-doctoral fellowships from the National Science Foundation Graduate Research Fellowship Program.

- Sophie Bertram, who graduated in May 2014, was awarded an NSF Graduate Research Fellowship to pursue her PhD at MIT.

- Sophia Robinson is a member of Matt Sigman's group. She's working on a collaborative project with Shelley Minter.
  - Julieann Selden is a member of Ilya Zharov's group. She's working on a Materials Research Science & Engineering-related project.
- Congratulations to these fantastic scientists!



# Commencement

2016



Department of  
**CHEMISTRY**  
THE UNIVERSITY OF UTAH



Bachelor's degrees awarded

78



Minor's awarded

203



Master's degrees awarded

5



Doctoral degrees awarded

20

University-wide  
Graduates

8,291



4,614



3,677



Degrees Awarded

8,761



Bachelor's degrees awarded

5,631



Master's degrees awarded

2,175



Doctoral degrees awarded

693



Graduates represent **50** U.S. states  
and **92** countries.



Juris Doctors

124



Doctors of Medicine

81



Doctors of Pharmacy

57

(MANY FORMER  
CHEMISTRY  
STUDENTS!)

# News from Chemistry Alumni

## Joe Stewart (MS '91)

After graduation, Joe Stewart worked for three years at an environmental testing laboratory using GC/MS as a tool for analyzing soil and water extracts, as well as industrial hygiene-related sorbent tubes and air samples. Then he decided to start his own company, OnSite Analytical Services. He built a small laboratory in West Valley City and did analytical work for the stack testing, plume mapping, and petroleum refining industries. This was fun and varied work. One memorable job was an investigation of unwanted explosions in a specific process, located about 500 yards downrange of another explosion test site constantly bombarding him with shockwaves on the job.

In 1999, Joe closed his business and began work for Kennecott Utah Copper, moving from process chemist to, eventually, Senior Project Engineer. He worked on troubleshooting water treatment systems, performing risk analysis for proposed capital projects, managing the site-wide contaminant transport model, and modeling water mixing strategies. In 2009, he became a research engineer at the Utah Water Research Laboratory, where he manages a variety of LC/MS and GC/MS systems, and develops compound specific analytical methods to meet research needs. He will also complete a graduate degree in Technical Writing this December.

Joe credits graduate school for stretching his brain further than he ever thought it could go.

He and his wife of 23 years, Allison, have four children, Tim (16), Kim (17), Ben (21) and Isaac (22). Ben is currently pursuing mechanical engineering at the U.

## Courtney Gwinn (BS '12)

Courtney Gwinn is currently an MD Candidate at the University of Washington School of Medicine in the class of 2016. She is about to begin her residency in Internal Medicine, also at the University of Washington.

## Richard Nkansah (MS '12)

Richard Nkansah currently lives in Bend, Oregon with his wife, Zola, where he works as a chemist for a pharmaceutical company. His work is filled with a number of interesting problem statements and opportunities to make better medicines through science and engineering. Zola works as an admissions specialist and recruiter for the Oregon State University, Cascades campus in Bend.



*Zola, Donovan, and Richard Nkansah*

They recently celebrated 5 years of marriage and have been getting used to chasing their baby boy, Donovan, born in April of 2015. In their free time they enjoy running and hiking through the central Oregon forests and parks as well as floating the Deschutes River on warm summer days.

## Sabah UI-Hasan (BS '12)

Sabah UI-Hasan is currently a Ph.D. Eugene Cota-Robles Fellow in Quantitative and Systems Biology at the University of California, Merced. She is also part of BIOTA, a science documentary series that

merges art and science to spotlight symbiotic relationships and strives to reach audiences traditionally underrepresented in science. The first episode of the documentary web series premiered at The Leonardo in Salt Lake City on April 28, 2016. Find the show online at <http://biotatv.org.tumblr.com/>.

## Miles Roberts (BS '14)

Miles Roberts graduated with his BS in Chemistry in 2014. He moved to the Big Island of Hawaii the summer after graduation and began attending the Daniel K. Inouye College of Pharmacy located in Hilo. Hilo's tropical environment is a stark change from the desert of Utah, but he and his wife manage with frequent trips to the beach. Hilo is the second rainiest city in the U.S. (it rained all day, every day for their first month there because Hurricane Iselle hit the Island). Miles and his wife's first child was born in October 2015, Luna Liliko'i Roberts.

Miles hopes to return to Utah for a portion of his fourth year pharmacy rotations. He will receive his Doctorate of Pharmacy in May 2018. He is proud to have graduated from the U and often thinks about the friendships made and counsel received as an undergrad. Miles is especially grateful for Professors Jon Rainier and Holly Sebahar, great examples of amazing teachers.



*Miles Roberts with his daughter Luna*

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The Cheves T. Walling Graduate Research Award goes to the writer of the year's top PhD dissertation. This year, the award was given to two researchers who shared the top spot.

**Jay Kitt**

"Raman Microscopy Studies of Liquid/Solid Interfaces Within Individual Porous Silica Particles"

**David Baumann**

"Synthesis of Diacyl Glycerol Lactone-Based Bryostatin Analogs: Progress Towards a Simplified Binding Domain that Retains the Biological Properties of the Natural Product"

*Professor John Conboy presents the Walling Awards at the Department Awards Ceremony on April 19th.*

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