

Department of Chemistry



HEALTH & SUSTAINABILITY

UC Chemistry sets sights on a new mantra for its mission

ALSO FEATURED:

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From the Editor

Hello again!

I am excited to bring you our 2018 issue of ChemBond, filled with the accomplishments of the Department of Chemistry from the past academic year. The 2017-2018 school year was both a great one and a very sad one for the Department. Inside this issue, you will read about many of our accomplishments. Our faculty and students have received numerous accolades, as well as funding for research from government agencies such as the National Science Foundation and the National Institutes of Health. In addition, you will read about the retirements of a large number of faculty members. On a sad note, you also will read about the untimely deaths of some of our colleagues. We extend our deepest sympathies to their families.

The main focus of this issue of ChemBond is sustainability, and in it you will learn about the introduction of sustainability into our undergraduate and graduate courses. You will also learn about our new department head, and meet our three newest faculty members.

I invite you to share your alumni news with us on the department's website (www.che.uc.edu/ alumni_community), as well as, any suggestions you may have about ways your Department can improve, grow, and excel.

Thank you for your continued interest in the Department of Chemistry and the University of Cincinnati.

Sincerely,



Allan Pinhas

Allan Pinhas Professor & Editor of CHEMBOND allan.pinhas@uc.edu 513-556-9255

I wish to thank Anne Bowling and John(na) Jackson in the A&S MarComm Office for all their hard work making this issue possible.



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New chemistry department head Tom Beck focuses on theoretical and computational chemistry.

New Department Head Endorses Eco Initiatives

After 29 years with University of Cincinnati Chemistry, Tom Beck discusses research, inspiration and "one of the most important subjects facing humanity."

By: John(na) Jackson

Tom Beck understands the urgency of being a part of an environmental movement, despite the difficulties. As a field, energy and climate studies tend not to be the most uplifting of subjects in which to delve. Studying human impact on dwindling natural resources comes with its gloom and doom baggage. So it is lucky for Beck that he also has a great sense of humor.

Inspired in his earlier years by comedian George Carlin, Beck can recount the impact of Carlin's scathing criticism of contemporary environmentalism and the way it contextualized his relationship to areas of eco-based research. "The planet isn't going anywhere," Carlin jokes. "*We* are."

According to Beck, these words were influential in driving him to his achievements in the field of energy studies. A self-identified pragmatist, Beck is dedicated not only to research, but to also bridging the knowledge gap that exists between the heights of the ivory tower and the bottom of the poisoned well.

"I'm great at catastrophic thinking," says Beck. "But, on the other side, you look at the lifespan of the earth, so far. Say you drew a line across a room - you could not draw with a pencil a line that gives you the lifetime of humans on earth, let alone only the last 200 years of burning fossil fuels. The earth has been through really catastrophic impacts."

"If we continue down this path we may be in a lot of difficulty. The planet will get along in the long term, however," says Beck. "That's my message to the people: Don't assume that we're the end all be all."

"Old Timer" Teaches New Tricks

"Shocked" at one day finding himself a chemistry department "old timer," Beck has shared his talents with the University of Cincinnati chemistry department for the past 29 years as a professor; and, now serves as the newest head of the department.

For Beck, time flew as he was having fun teaching the basics of physical chemistry, quantum mechanics and thermodynamics at both undergraduate and graduate levels.

Around five years ago Beck proposed to lead a course on sustainability. He considers sustainability to be "one of the most important subjects facing humanity," yet at the time he realized he knew very little about it.

"I'm sitting here thinking - I know the basic science, but I don't really know anything about energy science," recalls Beck. "And most citizens do not. Even educated people - I'm a physical scientist and really don't know the basic issues involved in world energy. So I proposed to teach a class on sustainable energy."

In his classes, Beck encourages students to "do problem solving every day." He walks students through understanding embodied costs of energy usage and alternatives, as well as the potential pitfalls. "If we got rid of all fossil fuels, what would it take to run this country?" asks Beck.

Beck cites the famous Fermi Problem as his pedagogical inspiration - an estimation process created by Enrico Fermi that is notable for correctly (within a margin of error) calculating the amount of piano tuners working in Chicago. It is these kind of "practical mental games" that Beck wants his students to practice.

"I think sustainability is important globally. It's one of - if not the most important issues facing humanity," says Beck. "I think it's important for young people, especially, not to tell them *how* to think about it, but to know something about it, because it will affect their lives more than my life."

"One of the Most Important Subjects Facing Humanity"

Outside of the classroom, Beck's research is considered non-traditional chemical work - meaning his focus is



Tom Beck shakes hands with some of his favorite chemistry technology.

more theoretical and computational than it is Bunsen burners and beakers.

Using mathematics and the fundamentals of physics, Beck works to understand molecules and their structures, and how they interact to create solids, liquids and surfaces. Beck's current research group focuses on water and ions. By understanding more about ion movement and changes in their properties, Beck is getting closer to one of his ultimate sustainable goals: building a better battery.

According to Beck, many in the field are looking towards energy storage as the key to the future of housing sustainable energy - making more efficient batteries to power storage centers - a potential game-changer in cutting back our use of fossil fuels.

"There's no doubt we're going to run out of our energy sources, that's not really questionable," says Beck. "What are we going to do? We might as well get on it. To change infrastructure, looking at history, it doesn't happen in five years. It takes several decades for a major energy transition to happen."

While Beck foresees this transition as being "rocky" in nature, he is also optimistic.

"Theory matters and I love theory," remarks Beck. "But Americans are very suspicious of theory. That's a good thing and a bad thing. Because you can't just ride on theory, and Americans are 'cando' people. I do believe that humanity has a way to be innovative."

To make sustainable practices more compelling, Beck encourages people to consider their finances along with their air quality. "Without obsessing, make it a game," says Beck. "Make energy consumption a challenge, not just to save the planet, but to save yourself money."

Making Certain the Kids Will Be Alright

He also believes that the future of the environmental movement may lie in sharing these tactics with large corporations by appealing to their selfinterest and desire for longevity. Beck proposes approaching companies with suggestions like, "You might want to consider your heating techniques here, or how you get your energy there, because these changes are coming, and this may work out for you better economically."

In regards to achieving these milestones, Beck claims it is, "not simple, and not completely impossible."



He suggests taking a personal inventory of your own energy consumption: How much do you drive? Is it expensive to heat your home? Do you eat a lot of meat?

According to Beck, "Pushing the hard line at the limit, in a practical sense,

doesn't work. But, if you say, cut your meat consumption by 80 percent that would be a radical change."

While sustainability might not have been on Beck's radar all along, he is deeply committed to reducing our dependence on fossil fuels by investing his time and research in ecologically sound alternatives.

"I don't like to be a missionary," he says, "but I have young kids now. And, it really does make you think about the future more."

Beck will lead the UC Chemistry Department as interest in sustainability continues to attract new students

In his new role, Beck will provide strategic direction as the department furthers its focus on sustainability and health sciences

By: Lindsey Carr

The newly appointed head of the Department of Chemistry, Tom Beck, has been a professor of chemistry at the University of Cincinnati since 1989. For the past 29 years, he's taught several undergraduate and graduate courses, from basic to computational chemistry. His responsibilities now include teaching, financial and strategic planning, new-faculty hires and more.

Beck's research on sustainable, green chemistry got him noticed for the role. He says growing numbers of students are interested in the topic, and that student enrollment in the department has nearly doubled in the past ten years. Beck's interest in green chemistry stems from his disapproval of Ohio's energy policy and production, where he notes a lack of progress. "I think we need research going on in Ohio," he says. "You don't have to be way on the left to support clean energy."

Beck says that chemistry, as a core science, deals with a lot of sustainability issues. His goal is to address them in all the department's courses as he steps into his new role. "The concepts in these courses are not changing, but the applications are," he says, noting recent media coverage of plastic pollution in the environment. Studying the chemistry of these types of plastics is vital in implementing change, and that's why Beck says it's discussed in freshman chemistry courses.

As for the future, the department's overarching vision will focus on sustainability and health. "I would like to see more [student] involvement in the community at large," Beck says. "I think the students need to [get involved in] these basic issues."

The role of department head is not a one-person job, says Beck. "It takes a

group of people to run this department," he says. The expertise of previous heads—whether they've been excellent strategists, prominent researchers or a combination of the two —will serve useful as he leads the department. Faculty members also serve as valuable advisors for overcoming obstacles and defining goals, he says.



Beck's pastime is playing music in the Cincinnati Dancing Pigs jug band. Beck, far right.

The Michelmans establish a new research fellowship for students, especially in green chemistry

By: Maggie Stacey



The father-son pair Drs. John and Rick Michelman are supporting advances in green chemistry while acknowledging the positive experiences they had as students at UC by establishing The Drs. John and Richard Michelman Undergraduate Fellowship: A Fund Established to Support the Research of Exceptional Undergraduate Chemistry Majors at the University of Cincinnati.

The fellowship provides financial aid for summer research opportunities to junior and senior chemistry students and to chemistry graduate students and postdoctoral persons to act as mentors. Special consideration is given to those whose research focuses on green chemistry.

The Michelmans both have PhDs in chemistry. John is retired from Michelman Inc., the Cincinnati-based company which makes sustainable and environmentally friendly coatings, additives for industrial manufacturing materials for enhanced performance, and chemistry for printing and packages. Rick remains the Chief Growth and Technology Officer. Both Michelmans had positive experiences in undergraduate research at UC, and established this fellowship to recognize the part UC played in those experiences.

"This is our way of saying thanks to UC for what it helped us become,"

explained Rick. "This is a case where we found our experiences to be rewarding and we wish that upon others."

The call for mentorship

John noted that "UC was life changing for me, the experience was good," he said. "UC showed me the value of being an achiever." Both John and Rick completed undergraduate summer research at UC, and both reported positive experiences with faculty during those times. Even after Harvard graduate school, John said he found his favorite professor, Thomas Cameron, at UC. Rick spoke fondly of his research mentor, Milton Orchin, as well. "He really gave me a great foundation and cared about me as a person, not just about the work that I accomplished."

Mentorship is important to the Michelmans. Rick explained that professors embedded in research are great, but don't often have time to spend with students. Whereas graduate students are more like undergraduate partners. "I think the theme of mentorship makes a difference," noted Rick. He said mentors offer daily communication, guidance with research, and insight about what graduate student life will be like. Overall, he said, mentors provide students the tools they need to be successful.

The 2018 recipient

The Michelman's fellowship is awarded to students and mentors whose research preferably focuses on green and/or sustainable chemistry. James Brunemann, the 2018 recipient, proposed research done in professor James Mack's laboratory that combined mechanochemistry (research on solventfree reactions) with professor Anne Vonderheide's analytical tools.

"This combination of approaches is unique and will enable a better understanding of the chemical processes involved with mechanochemistry," explained Bruce Ault, head of the awards committee. "The proposal...demonstrated the enthusiasm for research we would like to see in all of our students."

Brunemann's summer research sought to change a chemistry norm. Chemical reactions have been done in solution for decades, but these solutions are often toxic when disposed of. A main goal of green chemistry is to minimize the use of toxic solvents. Explained Brunemann: "This research is meaningful because we are finding completely new ways to do chemistry, while also minimizing risks to human health and the environment."

The success and honor

John emphasized the importance of understanding the hard work that goes into earning the fellowship. "I think it's an honor to earn this - it doesn't just go to somebody who happens to be an undergrad, it goes to somebody who is very talented and interested in following a chemical career," he said. "And by the way, it looks really good on a resume for graduate school."

"We're mostly interested that the students are successful and learn how to do great research and development that's what's most important to us," added Rick.

The Michelmans would like to extend their thanks to Dean Ken Petren, Shelly Deavy, and Jessica Wiles for their assistance in completing the fellowship establishment process and implementation with ease.

In-Kwon Kim — Closing in on Cancer Treatment

As part of UC's Cancer Cluster Initiative, recent faculty hire In-Kwon Kim works to design more precise methods of cancer treatment.

By: Lindsey Carr

The work of In-Kwon Kim, assistant professor of chemistry, and his team could significantly improve the field of cancer research, putting UC and UC affiliates at the forefront of next-level cancer prevention and treatment.

Kim joined the chemistry department in August of 2016 as part of UC's Cancer Cluster Initiative.

Before coming to UC, Kim was an assistant professor and researcher of biochemistry and molecular biophysics at Washington University's School of Medicine. His work focused primarily on the structures and mechanisms of enzymes involved in metabolism and DNA repair, ultimately leading to his interest in protein mechanics for drug discovery and development.

UC's Cancer Cluster Hiring Initiative

As Precision Cancer Medicine is one of UC's primary investigative clusters, Kim's research group focuses primarily on cancer research. Their ultimate goal: to design new cancer treatment drugs that specifically target and repair genetic mutations caused by cancer cells with more precision than those currently on the market.

Kim serves on the department's Graduate Research Program Admissions Committee and teaches biochemistry courses to graduate and undergraduate students. He emphasizes protein interaction to his students as a crucial topic of study. "The most important thing is to have students understand how we develop drugs based on known [protein] structures," he says.

Right now, Kim's research group is working with PARP inhibitors, drugs designed to target enzymes that aid in



DNA repair, for breast cancer treatment. These inhibitors are actively being tested in clinical trials, and although the results are mostly positive, the work isn't done, says Kim. "Instead of just killing everything, we're trying to specifically kill breast cancer cells." If successful, these new drugs could significantly improve the accuracy in which cancer is detected and treated, says Kim.

Student Involvement

Last month, Kim's study was published in the Journal for Biological Chemistry. The article lists two members of his research team, Yasin Pourfarjam, a graduate student, and Jessica Ventura, an undergraduate student, as co-first authors. Pourfarjam is pursuing his PhD in Chemistry, and has been a member of Kim's group since 2017.

Ventura joined Kim's group last year as a member of the College of Engineering's Women in Science and Engineering (WISE) program. Kim says her work dramatically impacted the trajectory of his research. She experimented with protein crystallization, which is an incredibly difficult and time-consuming process, he says. "She crystallized this protein with ligand in a week or so. It was amazing, [and] totally unexpected. Her work changed the direction of research in my lab."

Kim says he appreciates the collaborative opportunities he receives as a faculty member. He discusses his research regularly with other research scientists from UC's College of Medicine and Cincinnati Children's Hospital in an effort to strengthen UC's relationship with neighboring community partners.

Noe Alvarez — The Nano Frontier

Researcher combines chemistry fundamentals and state-of-the-art engineering instruments for nanomaterials research to study carbon nanotubes (CNTs).

By: Stuart Lindle

Over a decade ago, when Noe Alvarez was in graduate school, CNTs — thin, spaghetti-like tubes made out of carbon — were his favorite molecules. Even today, many of the potential applications are still unknown. But Alvarez remains optimistic that this material will be indispensable in finding sustainable solutions to global issues. "Carbon-carbon bonds are one of the strongest in nature," said Alvarez. "Besides its mechanical strength, [CNTs] also have the potential — depending on the tube — to be more electrically conductive than copper or gold."

Alvarez and his lab are currently exploring the potential for fibers made from CNTs to be used in the detection of metals, such as lead, in water, because of their electrical conductivity and their fineness—about a quarter of the width of a human hair.

Last fall, Alvarez served as a committee member during the sustainable faculty search. He hopes to collaborate with incoming faculty members to find new applications for CNTs.

Alvarez received his PhD in Chemistry from Rice University where he worked on multiple aspects of single-walled CNTs at the Richard Smalley Institute for Nanoscale Science and Technology under supervision of James M. Tour and Robert H. Hauge.

He spoke at length with Richard Smalley -co-discoverer of buckyballs- who opened his eyes to the potential for CNTs. He took a leap of faith and has been committed to nanotechnology ever since.

"Smalley told me that nanotubes would change the world, from water treatment to energy storage. When a Nobel Prize winner is telling you how something is, you listen."



After graduating from Rice, he spent 6 months working on nanotube synthesis at the National Institute of Advanced Industrial Science and Technology, a Japanese research facility headquartered in Tokyo.

In 2011, Alvarez received a NASA tech award for his contribution to the development of scientific and technical innovation.

When he first came to UC, he knew he was interested in working with carbon to create something tangible. "I was interested in using these molecules to create something, assemble them so I could physically handle, test and measure," said Alvarez.

Alvarez is currently recruiting grad students and searching for potential applications for CNTs. In his teaching, he's been able to introduce these concepts to students who may otherwise not have had the chance to learn about a rapidly developing area of chemistry and engineering.

"I still think we have many things to learn about CNTs," said Alvarez. "And I still think that Smalley's prediction ... has not happened yet. But when that occurs, the tiny tubes face a big future."



The view from inside a carbon nanotube. Created by Michael Ströck on February 1, 2006.



Ashley Ross — Body Talk

Understanding how the brain and immune system talk to one another opens doors to understanding autoimmune disorders.

By: Stuart Lindle

Recent faculty hire and bioanalytical chemist Ashley Ross is developing methods to probe brain-immune communications utilizing electrochemistry, microfluidics and fluorescence microscopy.

"[These diseases] can be influenced by how neurotransmitters are communicating with cells in the brain and also outside the brain," said Ross.

The research conducted in the Ross Lab also is being used to collaborate with medical researchers at Children's Hospital to study Attention Deficit Hyperactivity Disorder (ADHD).

Ross joined the University of Cincinnati's Department of Chemistry

last fall, after working under Dr. Rebecca Pompano as a post-doctoral scholar at the University of Virginia (UVA) developing microfluidic methods to spatially resolved stimulation in the lymph node. During her post-doc, she was awarded the American Association of Immunologists Careers in Immunology Fellowship.

At the UVA, Ross received her PhD in Analytical Chemistry under Dr. Jill Venton developing electrochemical methods to probe adenosine signaling the brain.

Ross now combines microfluidics and electrochemistry to study the brain's immune system. Using electrochemistry and resources at UC – including the UC Sensors Community – Ross wants to develop new methods to understand brainchemistry in ways that haven't been possible before.

The availability of resources and potential for collaboration drew Ross to UC. "I was really interested in the sensors community they have here," she said. "So I thought there would be a nice support system here that would let me do the research I want to do."

"The ability to look at how chemicals are actually dictating either behavior or disease progression is, I think, a really useful additive to what they are already doing."

Ross first discovered her love for electrochemistry during a summer rotation in graduate school. It was then that she learned how it can be applied to study the chemistry of the brain.

"I thought that was a really neat application," she said. "I didn't think going into graduate school I'd be anywhere near studying brain chemistry, but I found it really fascinating."

Last January, Ross presented at the UC Sensor Community Retreat sponsored by the Office of Research, "Sensor Advances, Networking and Charting Our Future." Along with other UC faculty, she presented the wide breadth of applications for sensors — from basic science to commercialization.

"A lot of people in the neuroscience field can do mappings that look globally at what is going on in the brain, or they use electrophysiology where they can look at specific cells, but they can't really get chemical information and signaling dynamics," she said. "The ability to look at how chemicals are actually dictating either behavior or disease progression is, I think, a really useful additive to what they are already doing."

While her focus now is on developing methodologies, in the future Ross hopes to collaborate more with the medical community to use electrochemistry and microfluidics to study autoimmune disorders and neuroinflammation.

James Mark (1934 - 2017): In Memoriam

"His ability to speak to us was phenomenal and the entire class would be riveted by his lectures."

By: John(na) Jackson

James E. Mark is remembered for being an internationally renowned polymer chemist who has radically altered our understanding of rubber elasticity during his revered career.

Born on December 14, 1934 in Wilkes-Barre, PA, Mark received his B.S. from Wilkes College, and earned a Ph.D. in physical chemistry from the University of Pennsylvania.

He was also given the opportunity to work under Nobel Prize Honoree Paul Flory during his time as a postdoctoral fellow at Stanford University. This led to his position as Assistant Professor of Chemistry at the Polytechnic Institute of Brooklyn.

In 1964, Mark was named a professor of chemistry at the University of Michigan before joining the University of Cincinnati in 1977 under the same title. He then became the UC's first honoree to be named a Distinguished Research Professor. He remained in his position at UC until 2008 when he retired.

According to the scientific journal Polymer, "Professor Mark's research interests pertain to the physical chemistry of polymers, including the elasticity of polymer networks, hybrid organic-inorganic composites, liquidcrystalline polymers, and a variety of computer simulations."

During his career, Mark published approximately 650 research papers and co-authored or co-edited 20 books. He was the founding editor of the Computational and Theoretical Polymer Science journal, an editor for the journal Polymer, and served on a number of journal editorial boards. He was also a Fellow of the New York Academy of Sciences, the American Physical Society, and the American Association for the Advancement of Science.

"Professor Mark's prolific scientific contributions have come not only from the combination of an imaginative mind and boundless energy but also from effective collaborations. Hundreds of students, postdocs, colleagues and friends, including the editors of and contributors to this issue, are the beneficiaries of his open communications and cooperative character," according to an honorary issue of Polymer dedicated to Mark's career.

Anne Vonderheide, assistant professor, Director of Undergraduate Studies, remembers not just her time with him within the department, but also participating in his classes during graduate school. "His ability to speak to us was phenomenal and the entire class would be riveted by his lectures," recalls Vonderheide. "I've never seen anything like it. Back then professors didn't use fancy Power Points or props. It was just him. And once in a while, he would bring in different polymer samples to show us the characteristic he was teaching. That is my fondest memory - his teaching us of his love of polymers and our enjoying and savoring every word he uttered."

Survived by his loving wife, Helen Jones, Mark is remembered by her as an enthusiast of fine dining. She describes him as an excellent cook with an adventurous palate who loved to explore new cuisine while traveling. The two were also passionate advocates for homeless animals and rescued many cats from shelters over the years together. Jones affectionately remembers Mark as "a most caring 'foster dad'."

Mark passed away on September 23, 2017 in St. Petersburg, FL with his family by his side.





Bill Connick (1966 - 2018): In Memoriam By: Bruce Ault

William "Bill" Connick, the youngest child of Robert and Frances Connick, was born and raised in Berkeley, California. He was a Professor in the Department of Chemistry and Director of the Center for Biosensors and Chemical Sensors at the University of Cincinnati. He was regarded as an outstanding scientist, educator, mentor and colleague.

Bill was also the devoted father of Oliver and George (9 and 6 years) and the loving husband of Marcelle. It was important to Bill to spend time with his sons. He made up math problems for Oliver and tutored George on his numbers and letters. Bill could be very silly as well as serious, and loved playing, joking and goofing around with Marcelle and the boys.

In the summertime, Bill enjoyed camping with his extended family in Northern California. When he was in his 20s, he began a long-term project to plant redwood trees at the family campground, braving poison oak and black berry bushes to plant seedlings and nurturing them over many years. These trees have grown tall and broad, providing shade for the camp and constitute a legacy that is cherished by his family.

Bill earned his B.A. in Chemistry from Williams College in 1988, M.A. in Chemistry from the University of Cambridge in 1992 and Ph.D. in Chemistry from the California Institute of Technology in 1997 in the laboratory of Dr. Harry Gray. He performed a postdoctoral fellowship at the University of Rochester with Dr. Rich Eisenberg, and then joined the faculty of the University of Cincinnati in 1998. He received a Beckman Young Investigator Award (2001-2004) from the Arnold and Mabel Beckman Foundation and a National Science Foundation CAREER Award (2002-2007) for his research focused on cooperative two-electron transfer reactions. He was named an IUPAC Young Observer in 2009, the Cincinnati Section of the American Chemical Society Chemist of the Year in 2014, and Visiting Scholar at the Université de Bordeaux in 2015.

Bill's research impacted diverse areas of science. He was a world expert in multielectron photophysics for energy sustainability. He also developed sensors for the measurement of different targets such as pollutants in ground water and tracing the source of radioactive pollutants in nuclear forensics.

Bill's contributions to science, and the education that he provided to the students working with him on these projects, will continue to have an impact on our world. Students regarded Bill as an inspirational lecturer in the classroom - funny, enthusiastic, dedicated, and extremely knowledgeable. Bill was awarded a 2018 Faculty Excellence Award for exceptional performance.

Bill is survived by his wife, Marcelle, his sons, George and Oliver, his four sisters -Mary, Liz, Megan and Sarah - and his brother, Arthur.

George Kreishman (1946 - 2018): In Memoriam By: John(na) Jackson

George Paul Kreishman, born January 28, 1946, is a fondly remembered Emeritus Faculty member of the University of Cincinnati Chemistry department. He passed May 12, 2018 in Ogre, Latvia. Kreishman was born in Nuremberg, Germany while his family attempted to immigrate to the US to avoid Soviet occupation in their home nation of Latvia.

In 1949, the Kreishman family settled into life in Milwaukee, WI. Kreishman would grow from helping to build their family home to eventually graduating from the University of Wisconsin at Milwaukee.

He continued his education at the California Institute of Technology. For the entirety of his career Kreishman maintained a heavy focus on chemistry as his educational passion. He has taught chemistry classes at both the UC as well as the University of Latvia. After a long and successful tenure at UC, Kreishman moved on to teach at the University of Latvia from which he ultimately retired.

According to family and friends, Kreishman was a fan of playing golf, as well as watching other televised sports, completing crossword puzzles, summers on the water in Michigan and playing with his two dogs.

Kreishman is mostly remembered for the pride and joy he expressed towards his family. He was known for treasuring the time he had to spend with his children and grandchildren.

His memorial service was held in Milwaukee. Donations to the University of Cincinnati College of Arts & Sciences Scholarship Fund were accepted in his memory.



DEPARTMENTAL AWARDS - 2018

CHEMBOND

RALPH & HELEN OESPER AWARD

Oesper's bequest has been used not only to establish the annual Oesper Symposium and Award, but to establish a faculty position in Chemical Education and the History of Chemistry, to support a yearly departmental colloquium on the History of Chemistry, to establish a scholarships for outstanding high school chemistry students, and to purchase new additions for the Oesper Collection of Books and Prints. Dave Thirumalai, professor at University of Texas at Austin, will receive this year's annual Ralph & Helen Oesper Award. The symposium will begin at 9 a.m. on Friday, November 9, 2018 in TUC 400. The poster session will be held from 5:30 p.m. to 7:30 p.m. in TUC Great Hall, followed by the banquet at 7:00 p.m. Professor Eric Anslyn, University of Texas at Austin, will speak after dinner at 8 p.m.

Speakers at the symposium include professor Carlos Camacho, University of Pittsburgh; professor Riina Tehver, Denison University; professor Changbong Hyeon, Korea Institute for Advanced Study; professor Ed O'Brien, Penn State University; professor Greg Morrison, University of Houston; professor Margaret Cheung-Wyker, University of Houston; professor Mike Kinczewski, Case Western Reserve University.



HANS & MARLIES ZIMMER INTERNATIONAL SCHOLARS

The Zimmer Fund is an endowed fund that invites internationally recognized scholars to the Department of Chemistry to spend time with our faculty and students. In the process, it is felt that common grounds can be found for ongoing collaborations and exchange of ideas and students.



Thierry Toupance holds a professorship in chemistry and a research position at the Institute of Molecular Sciences at the University of Bordeaux. His research highlights the use of hybrid nanomaterials for environmental and technical applications, such as gas-sensing, opto-electronics and energy conversion. Dr. Toupance recently participated in the 14th International Conference on Organic Electronics in June of 2018 as a member of the local organization committee.



Mona Treguer-Delapierre is an esteemed professor of chemistry at the University of Bordeaux and a member of the French National Center for Scientific Research (CNRS). Her research focuses on the application of hybrid nanomaterials for biological and medical use. Dr. Treguer-Delapierre spoke last July at the 2th International Conference and Exhibition on Materials Science and Chemistry.

Alumni & Friends: Thanks to Our Generous Donors

By: Lindsey Carr

Thanks to our generous annual donors, the chemistry department received more than \$45,000 in scholarship funding last year, 95 percent of which has gone directly to students.

These generous contributions enable undergraduate and graduate students in the Department of Chemistry to pursue their areas of study with some of UC's finest faculty and programs.

Last year, more than \$35,000 in scholarship funds were awarded to 29 exemplary undergraduate students. Our gracious donors made it possible for these students to participate in several programs, such as STEM Undergraduate Summer Research. Experiences such as these provide outstanding students with the opportunity to engage in a stimulating research environment with some of the college's most seasoned researchers. Such experiential learning opportunities will prove to be a monumental step in preparing A&S students for the next step on their journey to success. These scholarships also enable some of our most gifted undergraduate students to continue their pursuit of a STEM degree.

The chemistry department's graduate students received over \$90,000 to pursue their studies and research. This year, 27 graduate students benefitted from scholarships and departmental awards. Thanks to our charitable donors, A&S was able to provide these graduate students with resources to participate in exceptional programs to further their educational pursuits.

Our alumni and friends' generous donations impact more than our current chemistry students. They also enable the department to better attract prospective students, faculty, researchers and programs to the college. With these gifts, the chemistry department can continue its excellence and provide students and faculty with the tools to thrive.

We would like to thank all who contributed to the advancement of the chemistry department. Your generosity and kindness will continue to improve the success of our students, faculty and programs.

Chemistry Awards 2018

Undergraduate Awards

ChemCats: ACS Commendable Student Chapter Award in recognition for commitment and achievement presented to the University of Cincinnati Student Chapter

Ananya Basu: Award for the Highest Achievement in General Chemistry

Shivani Dighamber: Award for the Highest Achievement in Organic Chemistry

Nana Agyeman: Award for the Highest Achievement in Organic Chemistry

David Stamper: American Chemical Society Division of Organic Chemistry Award for the most outstanding senior organic student

Jessica Wedig: American Chemical Society Division of Analytical Chemistry Award for the highest achievement in analytical chemistry

Shiyuan "Phillip" Zhou: Division of Inorganic Chemistry Award for excellence in inorganic chemistry

James Brunemann: American Chemical Society Division of Physical Chemistry Award for excellence in physical chemistry based on research, coursework and plans that include a career in chemistry

Niket Yadav: Biochemistry Prize for the biochemistry major showing great promise and potential

Son Dong: Undergraduate Scholar Award for an outstanding senior showing great potential for success in graduate school Hope Guthier: Student Affiliates of the American Chemical Society Award for a senior chemistry major who demonstrated excellence in the major field

Jordan Hill: Student Affiliates of the American Chemical Society Award for a senior chemistry major who demonstrated excellence in the major field

Alexander Wilson: Student Affiliates of the American Chemical Society Award for a senior chemistry major who demonstrated excellence in the major field

Jeremiah Allen: American Institute of Chemists Award for a senior chemistry major showing great promise and potential in the field

Taylor Beck: American Institute of Chemists Award for a senior chemistry major showing great promise and potential in the field

Rachel Wright: American Institute of Chemists Award for a senior chemistry major showing great promise and potential in the field

Weishi Li: Henry Storch Award for the senior chemistry major with the highest grade point average in subjects outside the major area

Kathryn Rost: Darl McDaniel Scholarship for an outstanding freshman chemistry major with great potential

Alexander Beckes: Kaplan Scholarship for the best undergraduate student in organic chemistry, who is a chemistry or biochemistry major Maya Radic: Kaplan Scholarship for the best undergraduate student in organic chemistry, who is a chemistry or biochemistry major

Hanna Sorensen: Stella Potter & Hoke S. Greene Scholarship for an outstanding sophomore chemistry major demonstrating outstanding academic achievement

Grace Buckey: Lubrizol Scholarship for an outstanding sophomore or junior chemistry major with great potential

Tristin Glossip: Lubrizol Scholarship for an outstanding sophomore or junior chemistry major with great potential

Kyle Necamp: Lubrizol Scholarship for an outstanding sophomore or junior chemistry major with great potential

Pranita Dhungana: M. Brayton Graff Scholarship for an outstanding junior chemistry major showing great promise and potential in the field

Nathan Ranly: M. Brayton Graff Scholarship for an outstanding junior chemistry major showing great promise and potential in the field

Beksultan Midinov: Department of Chemistry STEM Undergraduate Summer Research Fellowship

Clement Smith: Department of Chemistry STEM Undergraduate Summer Research Fellowship

James Brunemann: Michelman Undergraduate Summer Research Fellowship

Chemistry Awards 2018

Graduate Awards

Emily Westbrook: Cassandra McGee Service Award for a graduate student who demonstrates random acts of kindness, outstanding service to the department or overall excellence in humanitarian efforts

Spencer Hendrickson: Thomas B. Cameron Prize for the graduate teaching assistant in freshman chemistry who represents the highest ideals and achievement in the teaching of chemistry

Yasin Pourfarjam: Robert M. Koppenhoefer Research Associate Award for an outstanding second year graduate student in biochemistry

Mario Perera: Dover Publishing Award for a graduate student who demonstrates outstanding communication skills in organic chemistry

Upasana Banerjee: Milton Orchin Award for an outstanding second or third year graduate student in organic chemistry

Mirelis Santos-Cancel: The William V. and Mary L. Caruso Award for an outstanding second or third year graduate student in analytical chemistry

Henry Hochstetter Prize for excellent performance as a graduate teaching assistant:

Scott Abernathy	Paolo Guerini	
Mohammad Avestan	Melissa Kelley	
Mariana	Raj Merugu	
Bonafim-Piveta	Skyler Smith	
Joel Collett	Caroline Williams	
Kiera Gazica		
Doctoral Enhancement Fellowships		
for research accomplishments to date		
and future research potential:		
Upasana Banerjee	Mary Warmin	
Andrew Eisenhart	Zhao Yu	

Will Lum: Hillstrom Travel Award for an outstanding graduate student to present their research at a national or international conference & University Research Council Summer Graduate Student Fellowship

DeVonna Gatlin: Ann P. Villalobos Fellowship for recognition of outstanding research performance by a graduate student

Joel Anderson: Shubert Fellowship for recognition of outstanding research performance by a graduate student showing great potential in their career

Congliang Sun: Twitchell Fellowship for recognition of outstanding research performance by a graduate student showing great potential in their career

Niranga Wijesiri, Mario Perera: Lange Fellowship for recognition of outstanding research performance by a graduate student showing great potential in their career

Upasana Banerjee: Laws Fellowship for recognition of outstanding research performance by a graduate student showing great potential in their career

Congliang Sun: Caruso Scholarship Award

Haizhou Zhu: H. Brain Halsall Award supports a graduate student in their third year or beyond to promote & encourage perseverance and dedication to the field of chemistry

lan Bruzas, Abdolreza Javidialesaadi: Hans **H. Jaffe Award** to an outstanding graduate student majoring in physical chemistry

Mary Warmin: James O. Koehler Prize for outstanding all-around contributions in research, teaching and service to the department by a graduate student

Jessie Ringo: CGSA Graduate Student of the Year Award for outstanding all-around contributions to the Chemistry Graduate Student Association and the Department of Chemistry

Undergraduate University, College & Departmental Recognition

CHEMBOND

Phi Beta Kappa Electe	es:
Pranita Dhungana	Alexander
Jordan Hill	Wilson Niket
McMicken College Grad	d ladio n with
Summa cum	
laude: Weishi Li	Dakota Lipps
Niket Yadov	Son Dong
Magna cum laude:	
Jordan Hall Hope	Thomas Young
Guthier	Jeremiah Allen
Alexander Wilson	
Cum laude: Taylor	
Beck	Lan-Anh Ho
Rachel Wright	C. Connor Boone
Departmental High Ho	nors:
Jeremiah Allen Taylor	Weishi Li
Beck	Alexander
Son Dong	Wilson Rachel
Hope Guthier Jordan	Wright Niket
Hill Departmental	Yadav
Honors: C. Connor	
Boone Jessica Burke	Macie Pifer
Casey Helmicki	Bradley
Lan-Anh Ho	Sherman Matt
Dakota Lipps	Walsh Thomas
	Young

Department of Chemistry awarded significant funding for instrumentation

In the Spring 2014 issue of ChemBond, you met the excellent staff members who run our various instrumentation facilities. Information about these facilities may be found on the web on the Department's homepage under the subheading Core Facilities.

To continually update our instrumentation, the staff members and the Chemistry faculty have written proposals to the National Science Foundation Major Research Instrumentation Program (NSF-MRI). Through the hard work of these individuals, in the past three years, the Department has been awarded over one million dollars by the NSF-MRI Program. With those funds and

some matching funds from the university, we were able to purchase a dual source single crystal X-ray diffractometer, a 400MHz NMR spectrometer, and MALDI Mass Spectrometer. These instruments greatly promote our research efforts, and thus, further the education of our graduate and our undergraduate students.



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Your generous gift to the Department of Chemistry affirms your commitment to the mission of academic excellence in teaching and research and helps strengthen the professional potential of students, faculty and staff. Gifts from alumni and friends support scholarships, cutting-edge research, state-of-the-art equipment, community outreach and other vitally needed resources addressing immediate and long-term needs. Whether you are a former undergraduate, post-doctoral fellow or educator, you play a critical role in an essential mission. Gifts of all amounts matter: From \$1 to \$1 million, your contributions directly benefit current and future members of the Department of Chemistry. Specific details on existing departmental funds and goals can be found online at artsci.uc.edu/departments/chemistry/giving.html.

To make a gift, please contact: Jessica Wiles Assistant Director of Constituent Development, College of Arts & Sciences The University of Cincinnati Foundation PO Box 210367 Cincinnati, OH 45221-0367 513-556-1217 uc.edu/foundation