Centering on RESEARCH
Dear Alumni and Friends of the Department of Chemistry,

Greetings! As the new editor of ChemBond, I’m excited to bring you our 2009 issue, filled with the accomplishments of the Department of Chemistry from the past academic year.

The previous editor, Professor Jack Thayer, retired Jan. 2. As assistant head of the department, I have been asked to take over as editor of ChemBond. I have some mighty shoes to fill in my new role because Jack did an excellent job as editor for many years. Hopefully I won’t disappoint!

The 2008 academic year was a great one for the department. Inside this issue, you’ll read about many of our accomplishments. Our faculty received numerous accolades and research funding from various government agencies, including the National Science Foundation and National Institutes of Health.

Of course, our students are expanding their knowledge while developing their research skills. Please check out our lead story. It looks at just a few of our many great graduate students and postdocs, and the work they are doing in our various research facilities.

I invite you to share your alumni news with us on our department’s Web site (www.che.uc.edu/alumni_community), as well as any suggestions you may have on ways our department can improve, grow and excel.

Sincerely,
Allan Pinhas
Professor and Assistant Head

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Dima Receives NSF CAREER Award

Ruxandra Dima's five-year award totals more than $600,000 for her research on cytoskeletal protofilaments. By: Kim Burdett

Ruxandra Dima has been climbing the research ladder since her arrival at the University of Cincinnati in 2006, but the latest rung she's cleared has by far been her greatest.

The assistant professor of chemistry was recently told that she received the National Science Foundation's CAREER Award, one of the most esteemed and competitive grants given by the foundation.

"Aside from getting a tenure-track position at a major research university, this is the highest accomplishment I've received," Dima says. "It's gratifying to know that something you do is appreciated."

The CAREER Award is given to junior faculty who "exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations," according to NSF's Web site.

The five-year, $611,521 grant was awarded to Dima from the NSF directorate for biological sciences for her proposal on "multiscale investigations of micromechanics of cytoskeletal protofilaments."

Dima's research in biophysical chemistry looks at filaments in the cell, such as actin and microtubules, and how their mechanical properties are affected by forces in the cell.

"Tension applied to cells during cell-cell or cell-extracellular matrix attachment leads to the deformation of cells and induces changes in protein synthesis and channel activation," Dima explains. "Cytoskeletal filaments such as actin and microtubules mediate the action of force through their mechanical properties and extensive communications with cellular co-factors."

"The goal of our research is to elucidate the effect of forces on the internal organization of the filaments and its connection with the large-scale mechanical behavior of filaments."

While her research focuses explicitly on the behavior of these filaments, what she finds may affect not just how we look at the cells' mechanisms, but how we can alter them to prevent or treat diseases.

One of the main cytoskeletal filaments, microtubules, is involved in the process of mitosis. If this specific filament doesn't function properly in a cell, mitosis cannot occur. By learning the details of the large-scale behavior, then, scientists may ultimately be able to block mitosis, thus preventing bad cells (such as cancer cells) from forming or spreading.

With funding for her research on the topic, she'll help bring the scientific community one step closer to learning that process.

Studies of microtubule (MT) rigidity with a bottom-up approach.
The tubulin heterodimer is the basic building block of MT shown in (a) cartoon representation and (b) surface representation. (c) The dimers are joined together in protofilaments, (d) the protofilaments join sideways to form the long hollow cylinder shown in (e) which is the MT, a major component of the (f) cell cytoskeleton.
Alumni

Matthew Doyle (‘81, MS; ‘83, PhD) was recently appointed Vice President, Live Well Collaborative, a joint non-profit corporation formed between UC and Procter & Gamble, in addition to his role as Global Research and Development at P&G.

Tom Novinson (‘69, PhD) retired in 2009 after 30 years at the U.S. Government Lab in California. He has authored 20 U.S. patents and published 75 chemistry and medicine journal articles. He won a national award for chemistry invention, and invented several cardiovascular drugs for a major drug company. His son won the National Merit Scholarship and is attending the University of California - San Diego.

Undergraduate

Kimberly Bauer, Stephen Denny, Henry Korman, Lauren Rainwater and Seth Vensil were inducted into Phi Beta Kappa.

Chelsea Korte received the Science and Engineering POLYED Undergraduate Award for excellence over the full year of organic chemistry by the American Chemical Society (ACS) Divisions of Polymer Chemistry and Polymeric Materials. She also received the departmental Stella Porter & Hoke S. Greene Scholarship for an outstanding sophomore chemistry major demonstrating outstanding academic achievement.

Andrew Warner received the Analytical Chemistry Division of the American Chemical Society Award for the highest achievement in analytical chemistry.

Henry Korman received the Hypercube Scholar Award for an outstanding senior showing great potential for success in graduate school.

Mostafa Ibrahim and Justin Morrison received the M. Brayton Graff Senior Scholarship, given to outstanding junior chemistry majors who show great promise and potential in the field.

Graduate

Kady Krivos, Jennifer Lunn, Rebecca Rohlfis and Stephen Taylor received University Research Council (URC) Summer Fellowships.

Dev Chatterjee received the McMicken Dean’s Award for Outstanding Doctoral Student.

Bridgett Coleman had a winning poster in the Physical and Life Sciences and Engineering Graduate Poster Forum on “Matrix Isolation Investigation of the Mechanism of Tetramethylethylene Ozonolysis.”

Sridhar Rajam received an English Speaking Union of the United States Travel Award.

Eme Amba, Bridgett Coleman, Nyote Oliver and Teresa Cook were awarded travel grants to attend the 36th National Organization for the Professional Advancement of Black Chemists and Chemical Engineers Conference.

Rebecca Rohlfis received a travel award to attend the RNA Conference in Madison, Wis.

Vikas Shingade received a Harry B. Gray Travel Award and a Graduate Student Governance Association (GSGA) Travel Award to attend the 237th ACS National Meeting in Salt Lake City, Utah.

Sumit Chakraborty will also be attending the meeting with an ACS Division of Inorganic Chemistry travel grant.

Floyd Stanley and Dan Waddell received NSF Graduate Research Fellowship Honorable Mentions.

Kady Krivos received an award for a 10 minute talk for her excellent poster/presentation at the 7th North American FT MS Conference.

Stephen Taylor was selected to participate in the two-week National School on Neutron and X-ray Scattering in Oak Ridge and Argonne National Labs. He also received the Procter & Gamble Fellowship in recognition for outstanding research performance by a graduate student showing great potential.

Ronnie Muvirimi was selected to give an oral presentation at the graduate student session of the Renewable Energy-Solar Fuels Gordon Research Conference.

Dan Lewallen had a winning poster for “Most Interesting Scientific Research” at the 5th annual BioOhio Conference on his poster “Detection of Intact Influenza Viruses Using Synthetic Glycans.”

Sujit Mahajan had a winning poster at the Midwest Carbohydrate Symposium on “Synthesis of Multivalent Ligands for Detection of Shiga and Ricin Toxins.”
Ashish Kulkarni had a winning poster at the Midwest Carbohydrate Symposium on “Synthetic Glycans for the Detection and Capture of Shiga Toxins.”

Postdoc

Balu Addepalli had a winning poster at the Rustbelt RNA Meeting.

Harshad Joshi received a URC Postdoctoral Fellowship.

Staff

Deborah Lieberman received the McMicken Dean’s Award for Staff Excellence. (See page 13.)

Faculty

Hairong Guan received a Petroleum Research Fund grant from the American Chemical Society.

Anna Gudmundsdottir was promoted to professor.

Bill Heineman was inducted into the inaugural class of Fellows of the American Chemical Society, a group of 162 chemists with distinctive service to ACS and the field of chemistry.

Pat Limbach has been named the 2009 Cincinnati Chemist of the Year by the American Chemical Society.

James Mack was promoted to associate professor.

John Thayer was honored with a presentation of his bound publications for recognition of a lifetime of scholarship in the department.

Connick Named ‘Young Observer’

Bill Connick hopes attendance at international meeting will spur collaboration, new ideas. By: Kim Burdett

Bill Connick, associate professor of chemistry, was recently named one of nine Young Observers in the United States who will attend the 45th International Union of Pure and Applied Chemistry (IUPAC) General Assembly.

The program, established by the U.S. National Committee for IUPAC, sends American citizens or permanent residents under the age of 45—from industry, academia and national laboratories—to the IUPAC World Chemistry Congress and General Assembly, held every two years.

“I'm very excited to have the opportunity to attend the General Assembly and Congress of IUPAC in Scotland,” Connick says. “I'm trying to meet other chemists and get my ideas out there, which will hopefully develop into some collaboration.”

The congress, an international chemistry conference, will feature 50 symposia about the impact of chemical sciences, with “Chemistry Solutions” as an overall theme.

Connick will present at the congress, an oral presentation called “Two-Electron Transfer Reagents” about his interests in two-electron transfer as alternatives to one-electron transfer in the development of efficient catalysts to address the energy problem.

But that will not be his only role in Glasgow. As a young observer, Connick will be able to participate in the assembly that precedes the congress, a program that allows participants to discuss key research efforts in the field. The assemblies, handpicked by each participant based on his or her interests, also act as a springboard of international collaboration for the chemists.

“It's a great opportunity to meet other scientists who not only have the same research interests as mine, but also share interests in the impact of chemistry on the world.”
Kimberly Bauer knows when you’re helping people with their health care that you need to speak their language. She has just the right personal chemistry to do that. It also helps that she’s graduating with a double major in chemistry and Spanish. By: Wendy Beckman

Kimberly Bauer, a double major in chemistry and Spanish, is the 2009 C-Ring Award recipient. Nominated by Debbie Brawn, director of Programs and Administration for the University Honors Program, the award is given annually to an outstanding graduating woman at the University of Cincinnati.

“Kim has an immense passion for learning about the world. During her time at UC, she has participated in six academic study abroad programs and visited at least 29 countries,” Brawn wrote in her nomination letter.

“Many different opportunities have presented themselves to me at UC,” says Bauer. “For example, I went to Nicaragua as part of an Honors program. In Nicaragua, I worked in a maternity clinic — a casa materna. If the women were not brought to me, they would be left hours from any town with only a sister or a husband to help them deliver their babies.”

Bauer had developed such strong relationships with the women in the village that when she returned to South America to study medical Spanish in Peru, she stopped by Nicaragua to check on the women whose babies she had helped deliver.

“In the United States, we have many resources at our disposal such as the Internet, commercials and other sources of information,” she says. “We are able to question our doctors. In Central and South America, women would never question their doctors. They don't ask such things as, 'Is there another non-invasive procedure?' or 'Is there another doctor I can consult?' You don't question a doctor's authority.”

Bauer points out that in Peru, where she was always dressed in a white coat and was always accompanied by doctors herself, she was viewed as a doctor and treated as such. When she asked questions, she was answered mostly in simple answers of “yes” or “no.” In Nicaragua she was alone more often and dressed more casually. It was there that the patients tended to let their guard down more and talked more openly with her.

Ten years from now Bauer could see herself working in Washington, D.C., setting health care policy and making a difference in the lives of women. Just as easily, though, she can see herself working for the World Health Organization or the Pan American Health Organization breaking down barriers and helping women gain access to the health care they need.

“I’d like to work in hands-on health care and in policy,” Bauer says. “I feel you need the experience with the hands-on aspects to make the right decisions. Your policy ideas might be good but unless you’ve been in the trenches, they might not be workable or realistic.”
James Mack sees the chemistry department as his family. They see the assistant professor not only in the spotlight, at conferences and lectures, but during the everyday routine as he works in the lab and teaches in the classroom.

So it means a great deal to him, he says, to be named the Lowenstein Scholar, a three-year honor awarded to an outstanding faculty member within 10 years completion of his/her PhD.

“To be honored with an award like this one is really important,” he says. “It’s good to have people you work with think what you’re doing is really important, and that the scholarship you’re doing is beneficial to the department.”

It’s recognition of the promises and early success of a young faculty member, and Mack, who has been with McMicken College and University of Cincinnati since 2003, contributes fundamental knowledge to the field of chemistry with his novel research in solid state synthesis.

His research, considered “green chemistry,” looks at ways to mix compounds without the use of solvents, which create 3.5 billion pounds of common organic chemical waste per year.

“We tried a different approach to see if we can avoid chemical waste. Is there another way we can get compound A and compound B to mix together? Well, we discovered that we can using high-speed ball milling (HSBM).”

Using custom-made stainless steel vials and a ball bearing, he mixes solid reactants in a milling apparatus that shakes the vial at 60 Hz for varying lengths of time. The impact of the ball breaks the reactants into smaller particles until a reaction can take place.

No solvent, no waste, no problem.

Using solvents in chemistry is so ingrained in the processes of science, though, that it will take a cultural shift for scientists to get on board with solvent-free experimentation. That’s to be expected, Mack says, because solvents have been around since the years of Aristotle.

“It’s hard to change the minds of scientists who have been entrenched in one idea for 20 years,” Mack says. “They need a mindset change, and I’m up for the challenge.”

By implementing HSBM, the researcher has also been able to do away with metallic catalysts as well. Need to add copper to create a reaction? Just make the vial out of copper, Mack says. It will save the experimenter on supply costs and waste products.

“Why not just use a copper vial and run the experiment in there? Then you’ll always have the catalyst and it will never be thrown away.”

HSBM has much wider implications, of which Mack is still studying. Most of his research comes from the National Science Foundation CAREER Award he received in 2006, but the Lowenstein research stipend will help him continue his research.

For example, he wants to look into the effects palladium, platinum and gold vials could have during synthesis, but the metals are so costly he hasn’t been able to purchase the supplies.

“We can make the vials and caps out of anything, so if we can use palladium or other precious metals, we’ll be able to do chemistry with different catalysts,” Mack says. “It will ultimately open a lot of doors.”
Off Center

Research opportunities don’t solely exist inside the department. Graduate students have also been able to collaborate with colleagues in various university outlets, including the UC Genome Research Institute, UC College of Medicine and Cincinnati Children’s Hospital Medical Center.

Federal research labs have also had a significant presence in the department, such as the Food and Drug Administration, Environmental Protection Agency and the National Institute of Occupational Safety and Health.

Centering on Research

Graduate students and postdocs in the department’s various research facilities study the vast and diverse facets of chemistry.

By: Kim Burdett
Photos by: Melanie Cannon

Equipment whirring. Test tubes clinking. Bunsens burning.

A walk through Rieveschl Hall and Crosley Tower will offer a glimpse into the numerous research labs that make up the department, but an observer will discover one thing just as ubiquitous as the lab instruments are the graduate students and postdoctoral fellows that use them.

Last year, 112 graduate students and seven postdocs were enrolled in the chemistry department. The arguable backbone of the department, the students have immersed themselves in the field, collaborating with faculty, learning about their subspecialties, and creating, running and analyzing experiments.

And the prospects are endless. Biosensors, polymers, metallomics, mass spectrometry and green chemistry are just a few of the students’ many concentrations.

Considering UC was labeled 18th in the nation for federal research expenditures by National Science Foundation data (up from 28th in 2006)—with McMicken College alone almost doubling funding since 2006 from $6 million to $11 million—grad students and postdocs are given ample opportunity to work on cutting-edge research in the multiple labs, centers and facilities that make up the chemistry department.
Life in Plastic

Gui Lin has been studying polymers since he received his BS in polymer science and engineering from Beijing University of Chemical Technology. The postdoctoral research fellow in the Polymer Research Center says the overwhelming possibilities of polymers are what drew him to the field.

“Polymers are very promising,” he says. “If you look around, so many things are made from polymers.”

Since his arrival at UC in 2006, Lin has spent his time working with biodegradable plastic, researching ways to improve the mechanical properties by creating nanocomposites with inorganic fillers—made of things like silicate and graphite—to make the final product stronger while also environmentally safe.

Current biodegradable plastic doesn’t have the tenseness of regular plastic, making it more difficult to use in machinery and other instruments that have over the years replaced metals. By filling the plastic with clay however, the mechanical properties better enable the synthetic material as a substitute.

“The implication of this kind of material is to replace all normal kinds of plastics,” Lin says.

This is great news for the environment, says recent PhD graduate Xiujuan Zhang, a longtime colleague and wife of Lin, who shares his passion for nanocomposite research. “Normal plastics are in landfills for several years before they degrade,” she says. “But these plastics can decompose more than 97 percent into carbon dioxide and water.”

This doesn’t even take into account that the polymers they use are also byproducts from the biofuel industry—making use of waste for an even greener product.

The two came to UC because they wanted to work with distinguished research professor James Mark, an expert on polymers. While here, they collaborated with Mark on the Polymer Data Handbook and have earned reputable achievements in the field themselves.

Lin has also spent time collaborating with industry researchers on silicone hydrogels and their implications for longer-lasting contact lenses.

“I’m just trying to contribute to polymer materials,” Lin says about his career. After his fellowship ends next year, he hopes to get a job working with the Environmental Protection Agency. “I don’t just want to do mechanical and other functional properties, but also prepare polymers in environmental areas.”
Good as Gold

There are more than 70,000 cases of E. coli in the U.S. each year, with 10 to 15 percent of them developing hemolytic uremic syndrome (HUS)—which can cause brain damage, renal failure or death.

But research being done by PhD student Ashish Kulkarni in the Center for Biosensors and Chemical Sensors hopes to limit HUS by utilizing carbohydrates to identify which Shiga toxin is being produced by the bacteria.

“The major problem with this bacterium is that it releases Shiga toxins and there are no good predictors of which one,” Kulkarni says.

There are two types of Shiga toxins—Stx1 and Stx2—but Stx2 is considered more dangerous and requires further medical attention than Stx1.

“When a patient is infected, they go to the doctor. The doctor gives the patient antibiotics without knowing which bacteria it is,” Kulkarni explains. “Antibiotics are good for killing bacteria, but in this case it forces the release of more Shiga toxins which is more toxic than the bacteria itself. The antibiotic is not really helping, it’s making it worse.”

Kulkarni has been spending his time at UC working with Chemistry Professor Suri Iyer and Alison Weiss, professor of molecular genetics in the College of Medicine, on detection methods to differentiate between the toxins.

“Antibodies can do the trick, Kulkarni says, but they are expensive and need refrigeration—a problem for developing nations that have large E. coli outbreaks without funding or technology.

By developing novel gold glyconanoparticles though, Kulkarni is learning ways to detect the type of Shiga toxins as well as develop inhibitors to combat the untreatable disease, all in a cheaper, more efficient manner.

Kulkarni’s research will produce three manuscripts from his three years here, and he has goals to publish more over the next few years. After his time is up at UC, he hopes to get a postdoctoral fellowship to continue his research on synthetic organic chemistry.

Ultimately, he just wants the challenge. It was, after all, why he landed on carbohydrate research in the first place.

“I really like the idea of working with carbohydrates because they are really exciting molecules,” he says. “While it can be sometimes challenging to make, the biology of carbohydrates is fascinating to study and develop into therapeutic candidates.”
It was her awareness of chemical warfare agents in the environment that influenced Karolin Kroening to do something about them. When she came to UC in 2006 as a PhD student, she decided to dedicate her research to the degradation products from the agents.

“Chemical warfare agents from World War I and World War II remain in the environment, as well as their degradation products, and this is a problem,” Kroening says, citing drinking water contamination and an accident with a decades-old mustard gas shell discovered by a fisherman in the Pacific Ocean. “People think the agents have just been used in the past and that they don’t exist anymore, but that’s just not true.”

Kroening is conducting environmental and toxicological analyses to see how much arsenic and sulfur exists in various testing samples. Kroening is part of a new field, metallomics, which studies metals and metalloids in biological samples. The Metallomics Center, led by professor of analytical chemistry Joseph Caruso, was opened in 2007 in collaboration with Agilent Technologies to further enhance the field.

That collaboration allows the department to utilize the inductively coupled plasma mass spectrometry (ICP-MS) technique, which is capable of determining very low metal concentrations. The ICP-MS instrument was one of the main draws for Kroening, who was familiar with the technique while she worked at a biomaterial company in Germany.

“ICP-MS is a technique I worked with, but I never could get my hands on the instrument and run it by myself,” she says. “But here Dr. Caruso gives me the opportunity to learn the basics, details, operation and in-depth troubleshooting of the instrument.”

By supplementing African Green Monkey kidney cells with degradation products, Kroening was able to observe the toxicity and speciation of arsenic compounds in varying concentrations and time ranges in the cells.

While her research has mostly focused on environmental aspects of metallomics, she has started transitioning her focus into the biomedical arena. She is currently studying protein phosphorylation in cerebral spinal fluid.

Ultimately, she wants to keep doing research, in the form of a postdoc after defending her dissertation.

“In industry, you do a lot of the same things everyday. Here I can make decisions and design my own experiments,” she says. “I don’t mind working late into the night, getting home as the sun rises, or working weekends. Doing research is really fun.”
During the 2009 Lindau Meeting of Nobel Laureates and Students, 23 Nobel Laureates met with more than 600 young researchers from around the world. One of those 600 young researchers was Dan Lewallen, a third-year doctoral chemistry student.

Lewallen is working on the challenging project of detection and differentiation of influenza virus using synthetic glycans (a type of carbohydrate) under the guidance of Suri Iyer, assistant professor of chemistry.

"There is a great need for early diagnosis of influenza virus, and more specifically, differentiation of highly pathogenic variants from less pathogenic ones," says Iyer. Lewallen and Iyer have been collaborating with the biosensor team at the Los Alamos National Laboratory. "Preliminary studies suggest that synthetic molecules developed in our laboratories can differentiate between H1N1 and H3N2 variants."

Lewallen was even a coauthor on a paper discussing the studies, which was recently published in the Journal of the American Chemical Society.

“Our goal is to develop a hand-held sensor with an instant response using carbohydrates,” says Lewallen. “For example, for a swine flu sensor, we could get a nasal or mouth swab and use a buffer wash to get the particles off. We would like to see some response with what we call a ‘binding event’ where they selectively bind those particles and nothing else. Our long-term goal is we have to get carbohydrates that would recognize the ‘bad stuff’ and the bad stuff only.”

Lewallen applied for UC’s nomination to the Lindau program in late 2008 and was one of three students nominated by the university. To have been eligible, a student must have completed by September 2009 at least two but not more than four years of study toward a doctoral degree in chemistry or a related discipline; must be a U.S. citizen; must be currently enrolled at a university as a full-time graduate student; and must be participating in a research project funded by the U.S. Department of Energy, National Science Foundation, National Institute of Health or other federal agency. A nomination should be initiated by the student’s research mentor.
Lewallen’s research topic, “Investigation of the parameters involved in carbohydrate-protein interactions,” is funded by the National Institutes of Health, specifically, the National Institute of Allergy and Infectious Diseases.

During the meeting, the Laureates lectured in the mornings on the topic of their choice related to physiology and medicine and participated in less-formal small-group discussions with the students in the afternoons and some evenings. The primary purpose of the meeting was to allow participants to benefit from informal interaction with the Nobel Prize winners.

During lunches and dinners, Laureates joined participants at local restaurants for informal discussions. Various social events also allowed participants to meet other attendees from around the world.

“Daniel has outstanding academic credentials,” says Iyer. “He is the first student in the past three years to score As in all of his courses. He has presented several posters at regional and national meetings that include UC Graduate Poster Forum, Central Region Meeting of the American Chemical Society, the 40th National Organic Symposium and the Annual Midwest Carbohydrate & Glycobiology Symposium.”

Sharing knowledge is clearly important to Lewallen. No wonder he was looking forward to going to Lindau.

“I believe that this conference will afford me the invaluable opportunity to discuss my education and work with some of the most intelligent scientists alive,” he wrote in his application. “There is nothing more inspirational than meeting a Nobel Prize winner and having roundtable discussions with them. The opportunity to freely discuss my work and to interact with Nobel Laureates cannot be matched by any other conference in the world.”

Debbie Lieberman doesn’t think she’s going above and beyond her job description as the academic director of the organic chemistry labs. She thinks she is just doing her job: working hard to give the students the best lab experiences they can have.

This mentality has pushed Lieberman to collaborate on grant proposals, implement new lab experiments and purchase new instruments for the students—just a few of the many contributions she’s made to the chemistry department in her 20 years at the university.

And that is why the college is recognizing her for her efforts. Lieberman was the 2009 recipient of the McMicken Excellence Award, recognition by A&S to an outstanding staff member.

“Debbie strongly exemplifies all that is great about academics,” Professor and Head Pat Limbach says in his nomination letter, citing her commitment to student success and intellectual challenge as reasons why she is an outstanding employee.

“She cares about our undergraduates and strives to provide them with the best learning environment possible in our organic program.”

When a student sends Lieberman a thank-you card, or turns into a chemistry major after taking her lab, she thinks the extra work is worth it.

“It’s nice to know that you’ve made enough difference in the lives of these kids that they want to stay and work with you, and that they like what they’re working on.”

Overall, she’s grateful to be recognized by the college, especially for a job she enjoys to do.

“I look back at the things I’ve done, and to me it’s just part of the job,” she says. “But it’s really nice to know that the college notices what I’ve done.”
Oesper Award Speaker Kroto Talks ‘Kentucky Fried Creationism’

Sir Harry Kroto, the 1996 Nobel Prize chemist and the Francis Eppes Professor of Chemistry and Biochemistry at Florida State University, returned to UC on Oct. 24 to speak at the 2008 Ralph and Helen Oesper Banquet and Poster Session.

The banquet, honoring Professor Alan Marshall of Florida State University, featured the second visit by Kroto in one year (he spoke in April 2008 for the graduate student association symposia) at the request of Marshall.

Marshall, known for his co-invention and continuous development of Fourier transform ion cyclotron resonance (FTICR) mass spectrometry, is a fellow of the American Physical Society, the American Association for the Advancement of Science, the Society for Applied Spectroscopy, and has received numerous awards, including three American Chemical Society national awards.

The Oesper Symposium, an annual event that has brought numerous Nobel Prize winners to University of Cincinnati, featured Kroto when he came to campus to discuss “Kentucky Fried Creationism and Other Food for Thought.” His visit to the Creation Museum in northern Kentucky spurred the discussion.

“It is interesting to ponder the fact that although almost every area of the sciences has contributed to the tens of thousands of pieces that make up the ‘Darwinian evolution jigsaw puzzle,’ organizations such as the Discovering Institute and Creationist Museum seem to have no difficulty in convincing large numbers of people (many with a lot of money) that we are all wrong,” Kroto says.

The Oesper Symposium featured the following speakers (from left to right): Roman Zubarev, Jack Beauchamp, Hilkka Kenttamaa, Alan Marshall, Neil Kelleher, Michael Bowers and Sir Harold Kroto.

Zimmer Award Brings International Scholar to Rieveschl

Manabu Abe, professor of chemistry at Hiroshima University in Japan, was the 2009 Hans and Marleis Zimmer International Scholar In-Residence, coming to the department to discuss his research on reactive intermediates chemistry, focusing on singlet and triplet diradicals.

His presentation, “Generation of Long-lived Singlet 1,3-biradicals, and Their Related Chemistry,” was given on April 3 and was the culmination of a week-long visit by Abe as the Zimmer scholar.

Department Head Pat Limbach presents Manabu Abe with the Zimmer Award.

The program provides the capability to invite internationally recognized scholars to the department to spend time with faculty and students, discussing research and developing collaborations.

“To have a chance to come to the United States, to be able to communicate and exchange research ideas, to collaborate—it’s a great experience for me,” Abe says. “And, of course, it is a great honor.”

The 2004 Zimmer Scholar, Cornelia Bohne, also visited the chemistry department during Abe’s visit, presenting a talk titled “Controlling Bimolecular Reactions in Supramolecular Systems.”

“You get a good feel for the department and time to explore collaborations because you spend the entire week here,” Bohne says. “Receiving the Zimmer Award is a great honor. It is a very different type of award because it is given to international scholars so it can create internationalization in research.”

Photos: Melanie Cannon
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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.

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- **Financial Aid and Scholarship**, including new and existing funds for undergraduates and graduate students.

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Specific details on existing departmental funds and goals can be found online at: [www.che.uc.edu/alumni_community/](http://www.che.uc.edu/alumni_community/).

To make a gift, please contact:

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Ault Named Distinguished Teaching Professor

The chemistry professor was recognized for his passion of teaching and research by the university. By: Wendy Beckman

Bruce Ault’s prior awards include “Cincinnati Chemist of the Year” from the Cincinnati Section of the American Chemical Society, the Distinguished Research Award from the Sigma Xi Society (Cincinnati Chapter) and the George Barbour Award for Promoting Good Faculty-Student Relations and Faculty Service Award from the University of Cincinnati. Since 1979, the National Science Foundation has continuously funded his work. Now UC adds the Distinguished Teaching Professor Award to the list.

“Our whole purpose for being here is the students,” Ault says. “It’s why we’re here; it’s why we exist and it’s why we get to do the fun things we do.”

It is difficult to find Bruce Ault without students. Whenever two or more students are gathered — there’s Bruce Ault. Whether it’s directing the National Science Foundation-sponsored Research Experience for Undergraduates (REU) program, pushing a cart for UC’s Helping Hands to get students moved into the residence halls, creating projects for Women in Science and Engineering’s Research Experiences for Women Undergraduates or helping with some of the many K–12 outreach programs that the chemistry department offers, Ault seems to have a hand in it.

To Ault, teaching, conducting research and publishing are intertwined and overlapping.

“We teach the process of science through research and we teach the broader scientific community when we publish,” he says.

“Like my more senior colleagues, I have had to make the transition from lecture to more active and more interactive classroom activities,” Ault says. “I’ve worked to change from being the ‘sage on the stage’ to being ‘the guide on the side,’ I suppose you could say. I often feel a twinge of guilt because it’s easy. I think, ‘But I’m being paid to teach!’ Then I correct myself. ‘No — I’m being paid for them to learn.’”