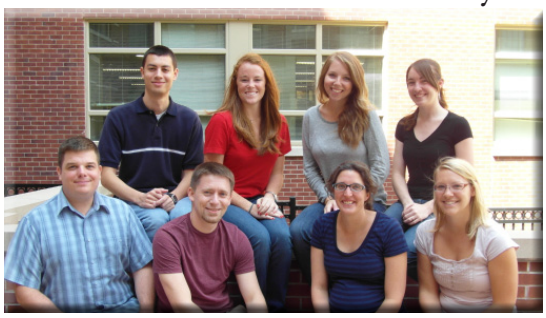
THE UNIVERSITY OF IOWA
COLLEGE OF LIBERAL ARTS & SCIENCES

# Department of Chemistry Newsletter


Fall 2012

## Transport and Containment of Actinides: The Final Frontier

**by Casey Westlake**



Forbes Research Group. (Back row from left) Joshua de Groot, Erin Flores, Anna Libo, Amy Donovan. (Front row from left) Jacob Ertman, Daniel Uhruh, Tori Forbes, Melissa Fairley.

Research that could help the world deal with the next nuclear disaster is happening right here, in a quiet corner of the Chemistry Building.

Dr. Tori Forbes, who joined the faculty in 2010, focuses on research that could change how we deal with nuclear fuels. Forbes' group is studying actinides, a group of radioactive metals that includes uranium and plutonium and plays a key role in nuclear power.

"The actinides are really the final frontier of the periodic table," Forbes said. "There's still amazing amounts of information that we do not know."

Forbes focuses on binding actinides to carbon-based compounds, which could be used to help recycle nuclear waste. Currently, uranium used at nuclear power plants is moved to waste ponds to await disposal. But a nanotube material recently synthesized in Forbes' lab could help change this.

"You could take that waste, because there's still a lot of energy associated with it, and recycle it into a new fuel, but in order to do that, you need to separate out all the waste products in the fuel and reprocess it," Forbes said, adding that the material could potentially separate waste from the remaining usable fuel.

Forbes also studies what happens when actinides are exposed to the environment, in scenarios such as the nuclear meltdown seen at the Fukushima plant in Japan or long-term storage of nuclear waste, where manmade containers would only last about 500 years, leaving the still-radioactive waste exposed.

"If the actinides would just stay put, then it's not a problem in terms of storing the stuff, but what a lot of research has seen is that they don't stay put, that they travel kilometers from point sources, through the groundwater, which could then impact the biosphere," Forbes said.

Building on research that suggests actinides are transported by attaching to particles that dissolve in groundwater, Forbes and her lab are trying to create particles that could serve as transporters. After synthesizing actinide crystals with an iron oxide core, Forbes and her students examine them in solution and analyze the molecular structure of the dry crystals. To do this, they bombard the crystals with x-rays to determine their structure, using facilities here at Iowa or at the Advanced

*Continued on page 2...*

## The View from the Front Office

**by Mark Arnold**

Starting with this issue of the Department of Chemistry's newsletter, our objective is to convey the exciting scholarship being pursued within the Department. Our focus will be the people, research programs, teaching innovations, infrastructure, and sources of financial support that make this scholarship possible.

Presently, 29 research programs within the department serve to advance chemistry in many different and wonderful directions. Most have interdisciplinary activities that impact science and technology across campus, the State of Iowa, the nation, and the world. These programs explore and uncover fundamental chemical principles within an array of disciplines, including biosciences, environmental sciences, nanosciences, and more. Many of these programs also contribute to economic development through discovery

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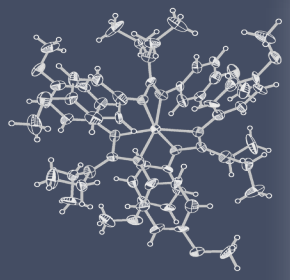
In this issue:





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## Transport and Containment of Actinides- The Final Frontier (continued from page 1)

Photon Source at Argonne National Laboratory. They also use techniques such as infrared spectroscopy, nuclear magnetic resonance, and surface analysis to find similarities between the synthesized crystals and the particles found in nature.

The comparisons, Forbes hopes, "will allow people who are trying to do transport modeling to have a much better understanding of how things are moving. That way, if we understand that this is indeed the pathway for mobility, then we can engineer barriers to stop the particles from moving and then carrying these toxic radioactive elements along with them."

The group, which consists of a postdoctoral student, a graduate student, and seven undergraduates, offers students a chance to learn about radiochemistry and room temperature synthesis of compounds.

"The hands-on experience has really solidified things we've learned," senior Anna Libo said. Melissa Fairley, also a senior, added that Forbes "takes time out of her day" for her students.

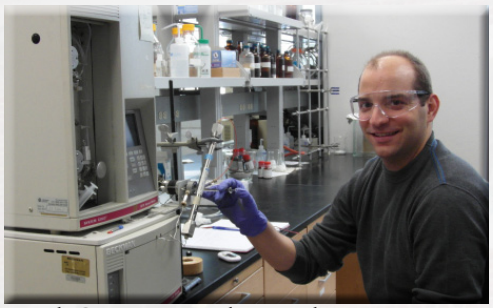
Forbes, who was hired as part of the Water Sustainability Initiative at Iowa, is part of a cluster of faculty from a variety of disciplines, including geology, mass communications, and public health, whose research focuses on water availability and quality. Working with the group, Forbes said, has exposed her to ideas that she never would have imagined on her own.

In addition to focusing on environmental issues, Forbes hopes to revive radiochemistry, a shrinking discipline in many universities. She plans to teach an introductory radiochemistry course, is collaborating with the Radiology Department to develop a laboratory course, and hopes to develop an undergraduate degree program with a focus in radiochemistry.

Forbes studied chemistry and environmental studies at Beloit College. She spent two years as a research assistant with Woods Hole Oceanographic Institute before studying for a Ph. D. in Environmental Mineralogy at Notre Dame, where she developed an interest in the nuclear waste cycle. Forbes and her husband Andrew, a professor in the Biology Department, have seen both personal and professional benefits to coming here.

"We just loved Iowa. We loved Iowa City. We loved that it's a city of literature, and we were excited that it's a great place to raise kids," she said. "There's so many great things about it. People don't get it. They really don't get it. We're always amazed at Iowa City."

## Discovering New Molecules in Nature by Casey Westlake



Joseph Cannistra, a graduate student in James Gloer's lab.

Fungus: for many people it brings to mind mushrooms and moldy bread, or a reason to wear sandals in a locker room shower. For Professor Jim Gloer, it means a natural world of scientific possibility.

Gloer and his six graduate students are hard at work extracting and identifying chemical compounds made only by fungi. Antibiotics such as penicillin and cephalosporin and the cholesterol-lowering drug Lovastatin are all derived from chemicals made only by fungi. These discoveries are the "grandfather" of Gloer's research.

"These are unique chemicals that nobody would've gone to the blackboard and designed one day as the next antibiotic," Gloer said. "They're very distinctive — you don't find them anywhere else." He notes that many fungi remain to be explored, and there is no doubt that other unique chemicals await discovery among them.

While pharmaceutical companies can collect thousands of samples to search for these kinds of chemicals, Gloer and his students take a more strategic approach, working with fungi specialists called mycologists to specifically target candidate species. "We try to use observations in fungal ecology to target specific types of organisms, rather than go out and scoop up whatever we can find and randomly screen 100,000 of something."

As one example, some fungi colonize or parasitize other fungi, showing an antifungal effect. "There's a need for antifungal agents in both agriculture and medicine, so we study these organisms that attack others as logical sources of antifungal agents," he said.

After choosing target species, Gloer's students grow samples of the fungus, extract the chemicals, and then test for biological activity. If activity is detected, the goal becomes separating the chemicals in the mixture and determining which chemicals cause the activity. Gloer says that this kind of work is sometimes labeled as a "fishing expedition." But Gloer and his group are trying to catch "fish" no one's ever seen before.

"It's not like you can go to the back of the book and see how to separate or identify the components of this mixture, because you're the only person on earth with this mixture," Gloer said. After using chromatography and fractionation to separate a mixture, Gloer's students then examine the fractions with spectroscopic tools like nuclear magnetic resonance and further bioassays. When they find fractions of the mixture that show unique chemical properties and biological activity, they continue to break down the mixture until they have a pure compound.

"Sometimes you can get pure compounds pretty quickly, sometimes you beat your head against the wall for a month trying to purify something on a micro scale," he said.

Once they have a pure substance, they bring to bear the full array of spectroscopic tools necessary to determine its molecular structure. When the group finds a substance that is novel and has potentially beneficial properties, they work with collaborators and industry to evaluate it further. Either way, once the details of a given chemical structure are elucidated, they move on to the next sample.

Outside the lab, Gloer teaches a graduate course in spectroscopic methods and an undergraduate course in organic chemistry for non-majors. "They've all heard horror stories about Organic I, so we have to try to overcome that, and get them interested if we can," he said. "That's part of the fun of it. You see these kids learning this stuff, some of them were scared of it when they came in, and they actually kind of like it at the end of the day."

Gloer got his start in natural products in graduate school at the University of Illinois, where he studied chemicals produced by marine sponges and went scuba diving for samples in the Caribbean. An analogue of a chemical he discovered is still being considered as an anticancer agent.

While nothing Gloer has discovered since then has made it into humans as a pharmaceutical candidate, the results have still been fascinating. For example, they've seen over the years that certain fungi produce chemicals to defend themselves against insects and that fungi usually rely on "cocktails" of chemicals to provide this protection. But in Gloer's mind, helping students grow and develop is the most important result of the group's work.

"I think our results are useful even when we don't find new chemicals, because we find answers to scientifically interesting, fundamental questions, or at least we shed light on some of them," he said. "But also, of course, the kids that graduate from here are very important 'products', too. They go on and do good things wherever they go, whether it's academics or industry or wherever. Even if we don't end up finding disease cures ourselves, maybe they will."

## The View from the Front Office (continued from page 1)

of innovative technologies, and some even create spin-off companies dedicated to translational research. Two research programs are highlighted in this newsletter – the isolation of novel natural products in the Gloer group and the characterization of actinides in the Forbes group.

None of these exciting programs would be possible without the contributions and dedication of the faculty, staff, and students in the Department. Our students, including undergraduate, graduate, and post-doctoral associates, are critical to the energy and vitality of these research programs. Of these, the graduate students represent the heart of the research group; they are typically involved in these groups the longest, and are in a position to have a lasting impact through the quality and quantity of their research. For this reason, the growth and recognition of our department depends greatly on the quality of the graduate students who join our program.

One means used by the Department to attract the best and brightest graduate students is to offer fellowships, many of which are supported by contributions from alumni and friends of the department. Presently, the Department has a number of donor accounts specifically targeted for graduate student fellowships. I'd like to highlight the impact of one of these fellowship funds.

The Ralph Shriner Graduate Student Fellowship program was established by a generous initial donation from Dr. Fred Raths and his wife, the late Bonnie Raths. Dr. Raths graduated with his Ph.D. from the University of Iowa in June 1954 after working under the guidance of Professor Ralph Shriner. Rath's dissertation research centered on catalytic dehydration of epoxides with emphasis on the dehydration of 3,4-epoxyheptane as well as the synthesis and reactivity of 2,4-heptadiene. He retired in 1991 as Vice President of Operations for Buckman Labs in Memphis; during his career at Buckman Labs, he contributed to 16 patents, many describing methods to produce sulfur-containing compounds for use as fungicides and pesticides.

In 2000, Fred and his wife endowed the Ralph Shriner Graduate Student Fellowship Fund for the purpose of supporting promising graduate students, as a way to accelerate progress toward their degree by reducing financial burdens and providing the freedom to focus on research. These funds have supported 19 graduate students as Shriner Fellows, of which 12 are currently active graduate students in our program.

Dr. Raths' leadership in creating the Shriner Fellowship program is greatly appreciated by all members of the Department. We consider generous donations of this type as investments in the future of the Department, as well as in the students who can make our program great. More investments are needed as we continue to grow into a top-ranked, nationally recognized chemistry program.


Mark Arnold
Professor and Chair
Edwin B. Green Chair Professor
in Laser Chemistry

# Faculty Honors and Accomplishments

## Prof. Sarah Larsen Recognized for Outstanding Achievements

**Professor Sarah Larsen**, a member of the chemistry faculty since 1995, is a shining example of achievement in the three traditional facets of academic life: research, teaching, and service. Her research program on nanomaterials and nanotechnology is well recognized at the University of Iowa, and has garnered her a high profile in the international science community. Prof. Larsen's study of novel material properties on the nanometer-size scale has enriched fundamental understanding in the field, and has implications for technological applications in areas such as biomedicine and industrial manufacturing. In acknowledgement of her standing in the science community, she has been named a co-director of the Nanoscience and Nanotechnology Institute at the University of Iowa (NNI@UI). Her fellow director is chemistry colleague and NNI@UI founder, **Professor Vicki H. Grassian**. The NNI@UI is an interdisciplinary research center focused on the emerging and exciting area of nanomaterials, and is the most significant UI research center with nanoscience as a focus.

In addition to her research activities, Prof. Larsen has long been active in educational outreach efforts through the NNI@UI. She has given many demonstrations related to nanoscience at local schools, TV stations, Kirkwood Community College, and the Science Center in Des Moines, amongst other venues. These presentations are meant to not only educate young students about the exciting aspects of cutting edge science, but also to inspire them to pursue a career in science, particularly young women. Her efforts have been well-received and popular. Prof. Larsen has also developed a traveling demonstration kit, christened the "Nano-to-Go" package, to help publicize these activities and facilitate presentations by others. In recognition of her success and zeal in these outreach efforts, Prof. Larsen received the University of Iowa, College of Liberal Arts and Sciences (CLAS) Outreach and Public Engagement Award at the 2012 Honors Celebration.

Prof. Larsen's research, teaching, and service activities have also caught the attention of the Technology Association of Iowa (TAI). The TAI is a state-wide organization dedicated to promoting the success of Iowa's industry and technology economy, representing a significant and growing fraction of Iowa's total economic activity. The TAI recently presented Prof. Larsen with their 2011 Women of Innovation Award for Academic Innovation and Leadership in Post-Secondary Education. The award metrics include innovation in curriculum development, academic awards, funding, student mentoring, and academic and scientific leadership. Prof. Larsen's stellar resume encompasses all of these aspects, and she is the first CLAS faculty member to ever receive this award. The TAI specifically noted her extensive research program on nanomaterials and their use in environmental protection, catalysis, drug delivery, and biomedical imaging.

Prof. Larsen represents the best the Department of Chemistry has to offer in terms of research accomplishments, teaching excellence, and outreach service efforts to the community and profession.

# New Faculty Step on Board

Professors Mishtu Dey and Renée Cole

Our successful 2010 new faculty searches resulted in the hiring of one Assistant Professor and one Associate professor for fall 2011.

Dr. Mishtu Dey has joined the faculty as an Assistant Professor. Dr. Dey received her M.S, and M. Phil. at Utkal University in 1998 and then went on to complete her doctoral degree in 2005 from the Indian Institute of Technology Bombay. After obtaining her degree, Dr. Dey held postdoctoral positions at the University of Nebraska-Lincoln and University of Michigan from 2005 to 2008. Later, Dr. Dey worked as a Howard Hughes Medical Institute Postdoctoral Research Associate at the Massachusetts Institute of Technology. Research in the Dey laboratory explores the interface of chemistry and biology to understand the molecular mechanisms of metalloenzymes, which perform challenging chemistry and are important for biological energy conversion, valuable in human health and disease, or environmentally important. Dey's group focuses on applying a combination of enzymology, microbiology, molecular biology, and X-ray crystallographic techniques to investigate the catalytic mechanisms of redox-active metalloenzymes. Their research is highly interdisciplinary, drawing from synthetic chemistry, protein biochemistry, biophysics, and microbial bioprocessing.

Dr. Renée Cole joined the faculty as an Associate Professor of Chemistry in Fall 2011. Dr. Cole earned a B.A. in chemistry from Hendrix College, and M.S. and Ph.D. degrees in physical chemistry from the University of Oklahoma. She transitioned to research in chemical education during her postdoctoral fellowship at the University of Wisconsin-Madison, working with John Moore. She moved to Iowa in August 2011, after teaching for eleven years at the University of Central Missouri. While at UCM, she was recognized for her teaching by receiving the UCM College of Science & Technology Award for Excellence in Teaching in 2010 and the Missouri Governor's Award for Excellence in Education in 2009. She is active in chemical education research, focusing on issues related to how students learn chemistry and how that guides the design of instructional materials and teaching strategies. Dr. Cole has an active record of publications and presentations in chemical education, including work related to the development of visualization skills in chemistry, development and assessment of guided inquiry materials in analytical chemistry, and analysis of student discourse in physical chemistry. Dr. Cole is co-editor of the ACS Symposium Series book *The Nuts and Bolts of Chemical Education Research,* and co-authored two chapters of the book. She is also actively involved in the POGIL (Process-Oriented Guided Inquiry Learning) project at a national and international level, serving on the steering committee and conducting workshops and seminars around the U.S. and in Australia. Dr. Cole aslo serves as an Associate Editor for the Journal of Chemical Education.

The Department of Chemistry welcomes Mishtu and Renée to our academic family and strongly supports their efforts to establish dynamic programs of teaching and research.

## Grassian and Wiemer Named ACS Fellows

Two of our faculty, **Professors Vicki Grassian** and **David Wiemer**, were named Fellows of the American Chemical Society in 2011. This honor recognizes outstanding contributions to the field of chemistry and important contributions to ACS. Grassian and Wiemer were formally recognized at the August 2011 national ACS meeting in Denver, and they join UI Professor Emeritus Donald Burton, who was named an ACS Fellow in 2010. Their accomplishments in research and in service to ACS are impressive indeed; some of them are highlighted below.

Vicki Grassian, F. Wendell Miller Professor of Chemistry and Director of the Nanoscience and Nanotechnology Institute at UI, explores research interests in the areas of atmospheric and environmental chemistry. A member of the UI faculty since 1990, Grassian has pioneered the study of environmental interface chemistry, focusing on chemical reactivity and speciation on the surface of naturally occurring mineral dust particles. More recently, her attention has shifted to interdisciplinary studies of the environmental and human health impacts of engineered nanoparticles. Grassian's work in these areas has led to over 175 publications. She is a member of several technical divisions of the ACS, including Physical Chemistry, Colloid and Surface Chemistry, Environmental Chemistry, and Geochemistry. She is chair-elect of Colloid and Surface Chemistry, and will chair the division in 2012, one of several leadership positions she has held in ACS. Additionally Grassian has contributed her insights to a number of ACS awards committees; she has selected recipients of named awards for graduate research in colloid and surface chemistry, worked to secure funding for the Arthur W. Adamson Award for distinguished service award for advancement of surface chemistry, and is currently co-chairing the ACS AWARDS Action Team, which is promoting greater recognition and increased award nominations of women and minorities in the chemical sciences. Grassian adds the title of ACS Fellow to a long list of honors, including Fellow of the American Association for the Advancement of Science (2005), Regents Award for Faculty Excellence (2006), UI Graduate College Outstanding Mentor Award (2008), and Fellow of the Royal Society of Chemistry (2010).

David Wiemer, F. Wendell Miller Professor of Chemistry, studies synthetic organic and medicinal chemistry. Wiemer joined the UI faculty in 1978 and has conducted research in isolation, characterization, and synthesis of biologically active natural products, as well as the development of new methods for carbon-phosphorus bond construction, publishing over 160 papers in these areas. In recent years, he has focused on inhibitors of isoprenoid biosynthesis, and has accomplished the synthesis of several members of a group of natural products known as the schweinfurthins, which are of importance in the area of cancer therapy. He is a founder of Terpenoid Therapeutics, Inc., an entrepreneurial drug discovery and development company focused on anti-cancer therapeutics which build upon UI discoveries. As Department Executive Officer (chair) of the Department of Chemistry from 2002 to 2010, Wiemer negotiated 12 faculty hires and led efforts to raise $50M for major expansion and renovation of instructional and research space in the department. He has served as an ACS Tour Speaker, providing approximately 150 presentations to ACS Local Sections in 25 lecture circuits in 33 states and representing the ACS in visits to nearby colleges and high schools and in media interviews. As a longtime member of the organizing committee for the International Conference on Phosphorus Chemistry, Wiemer has organized symposia for five of the last seven international meetings of this conference. His ACS Fellow distinction joins an array of honors for Wiemer, including the UI Collegiate Teaching Excellence Award (1993), the Regents Award for Faculty Excellence (2003), and Fellow of the American Association for the Advancement of Science (2006).

## Additional Faculty Awards

**Many of our Chemistry Faculty have been recognized throughout the year, and we are proud to highlight their achievements!**

**Dr. Sara Mason** was named an Emerging Investigator by the Journal of Environmental Monitoring.

**Dr. Vicki Grassian** received the prestigious ACS Award for Creative Advances in Environmental Science and Technology for her work in using laboratory techniques to understand particles and their impact on climate, the environment, and health.

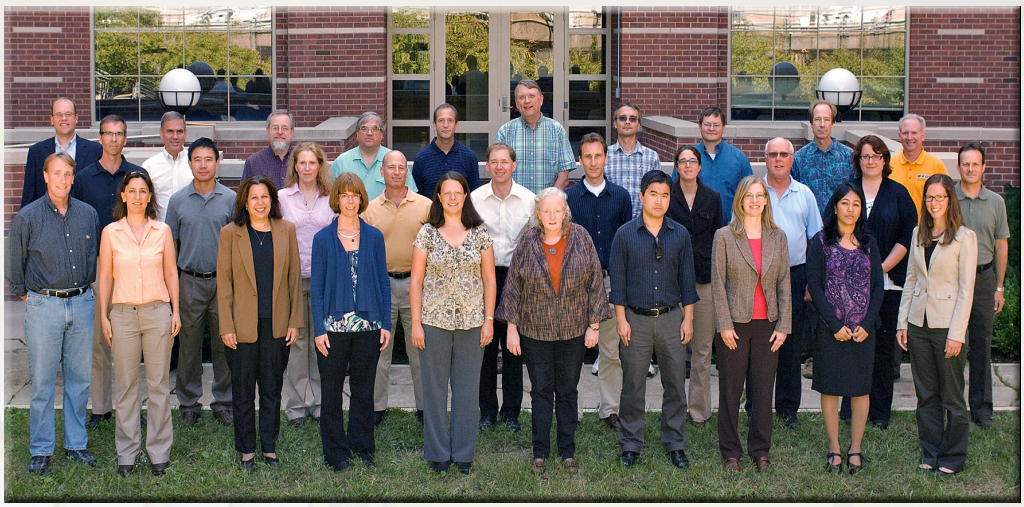
**Dr. Russell Larsen** received the University of Iowa College of Liberal Arts and Sciences Teaching Award. This very competitive award recognized Russell's dedication to teaching chemistry and the many innovations he has made to improve student success.

**Dr. Chris Cheatum** received an Honorable Mention at the CLAS Teaching Awards.

**Dr. Betsy Stone** was named a Transform, Interact, Learn, Engage (TILE) Faculty Fellow by the Center of Teaching at the University of Iowa.

**Dr. Hien Nguyen** was named an International Young Carbohydrate Investigator at the International Carbohydrate Symposium.

## Faculty Photograph in the North Courtyard



(Back row from left) Greg Friestad, Dave Wiemer, Norb Pienta, Lou Messerle, Jim Gloer, Gary Small, Alexei Tivanski, Ned Bowden, Mark Young, Mark Arnold (Middle row from left) Russell Larsen, Lei Geng, Amanda Haes, Amnon Kohen, Chris Cheatum, Jan-Uwe Rohde, Tori Forbes, Dan Quinn, Sara Mason, Ed Gillan. (Front row from left) Chris Pigge, Mouna Maalouf, Vicki Grassian, Sarah Larsen, Amy Strathman, Johna Leddy, Hien Nguyen, Renée Cole, Mishtu Dey, Betsy Stone. (not pictured: Len MacGillivray, Claudio Margulis)

# Department Highlights

## Wawzonek Lecture

Renée Cole, Amnon Kohen, Charles L. Perrin and Mark Arnold

This spring's colloquium schedule again included a special lecture endowed in honor of Stanley Wawzonek, UI Chemistry Professor from 1944-1988. This year's Wawzonek lecture, entitled "Symmetry of Hydrogen Bonds in Solution," was presented on Friday, April 27, 2012 by Professor Charles L. Perrin, Distinguished Professor of Chemistry at the University of California, San Diego, with a reception following in the Chemistry Building.

Professor Perrin received his A.B. in chemistry in 1959 and his Ph.D. in organic chemistry in 1963, both from Harvard University. After a brief postdoctoral appointment at the University of California, Berkeley, he began an appointment as an Assistant Professor of Chemistry in 1964 at the University of California, San Diego. He has spent his entire career there, becoming full Professor in 1980, and is currently holding a position as Distinguished Professor of Chemistry. Professor Perrin is internationally recognized for his work in physical organic and mechanistic chemistry. He has made seminal contributions to the understanding and application of kinetic isotope effects, anomeric effects, solvation and hydrogen bonding in solution, stereoelectronic control, acidity and basicity of organic compounds, conformational analysis, and proton exchange kinetics. He has earned a variety of awards for his research and teaching, and has served as a visiting professor at institutions around the world.

## Don Burton Recognized with Symposium at National ACS Meeting

**Professor Emeritus Don Burton** was honored at the Fall 2011 National Meeting of the American Chemical Society in Denver by the ACS Division of Fluorine Chemistry with a symposium entitled "Fluorine Chemistry the Iowa Way." The symposium extended through the entire week, with sessions filling each morning of the conference. A total of thirty-eight half-hour presentations were made by experts in fluorine chemistry from all over the world, including a veritable who's-who among prominent researchers in the field from both industry and academia, representing the U.S., Japan, France, Germany, Korea, China, Spain, Switzerland, and the U.K. Professor Burton attended every presentation, and was very appreciative of the honor accorded to him by so many colleagues and friends. Presenters included the Editors of the Journal of Fluorine Chemistry, and several former winners of the ACS Award for Creative Work in Fluorine Chemistry—an Award that Professor Burton received in 1984. The symposium concluded fittingly with a presentation by the man himself on some of his recent work. Clearly, Professor Burton's "Iowa Way" is much admired and appreciated worldwide.

## Careers Day

On Saturday, December 3, 2011, the Department of Chemistry hosted the first annual Chemistry Careers Day. This event offered undergraduate and graduate students an opportunity to learn about various chemistry career paths as well as develop their resume-building and interviewing skills. During the morning panel discussion, Dr. Daniel R. Wright of Monsanto; Dr. Catherine Radzewich of Skyworks Solutions; Dr. Robert J. Harris of Viksnins, Harris & Padys; and Dr. Carolyn E. Green of Drug Development Resources spoke with students and answered questions about their personal careers in chemistry. These presentations offered students a variety of insights into graduate school and industry positions from different perspectives. Students also had the opportunity to meet with representatives from the Careers Center, the BA/MA Combined Program, and local graduate schools that highlighted various chemistry career paths. In the afternoon, Dr. Richard Bretz, from the American Chemical Society held two workshops on interviewing skills and resume-building. Overall, the first annual Careers Day was very successful, and the Department of Chemistry plans to make this a reccurring event for students around Eastern Iowa.

Students visiting with Dr. Daniel R. Wright during Career Day.

# Graduate Student Achievements

## Graduate Degrees Awarded in 2011-2012

**A total of 24 Ph.D. degrees in Chemistry were awarded in the Summer 2011, Fall 2011, and Spring 2012 semesters. The names (degree year, advisor's name) of the recipients and their dissertation titles are:**

**Natalia Alexeeva** (2011, Arnold): Characterization of Skin Tissue Heterogeneity with Near-Infrared Microspectroscopy and Its Effects on Noninvasive Measurements of Glucose.

**Harsha Vardhan Reddy Annapureddy** (2011, Margulis): Theoretical Studies on the Structure and Dynamics of Room-Temperature Ionic Liquids.

**Manza Atkinson** (2011, MacGillivray): Fundamentals and Applications of Co-Crystal Methodologies: Reactivity, Structure Determination, and Mechanochemistry.

**Koushik Banerjee** (2011, Friestad): Investigation in Amine Chemistry: Mn-Mediated Radical Addition Approach Toward Gamma Amino Esters and Synthetic Studies of the Tubulysins.

**Ying-Hua Chung** (2011, Margulis): Water Behavior in Different Biological Environments.

**Chester Duda** (2012, Leddy): Thin Layer Sonoelectrochemistry.

**Kelly Gierlus** (2011, Grassian): Laboratory Studies of the Physicochemical Properties of Mixed Organic/Mineral Dust Atmospheric Aerosols: Hygroscopicity and Cloud Condensation Nuclei Activity.

**Sharavarthi Guddehalli** (2011, Pigge): Bifunctional Cyclooctynes in Copper-Free Click Chemistry for Applications in Radionuclide Chemistry and 4-Alkylphridine Derivatives in Intramolecular Dearomitizations and Heterocycle Synthesis.

**An Ji** (2011, Friestad): Mn-Mediated Radical Coupling Toward Synthesis of Alpha, Alpha-Distributed Alpha-Amino Esters and Formal Total Synthesis of Quinine.

**Annalisa Jordan** (2012, Gloer): Chemical Investigations of Endophytic and Fungicolous Fungi.

**Pradeep Kapadia** (2011, Pigge): Tetraphenylethylene: A Versatile Supramolecular Framework.

**Matthew Kelley** (2012, Rohde): Guanidinato and Amidinato Complexes of Iridium(I): Synthesis, $O_2$ and $S_8$ Reactivity, and (Alkene)peroxo- and (Alkene)persulfidoiridium(III) Intermediates.

**Garett Lee** (2012, Leddy): Magnetoelectrocatalysis - Enhanced Heterogeneous Electron Transfer Reactions at Modified Electrodes, Grätzel Cells, and $MnO_2$ Electrodes.

**Wei-Tsung Lee** (2011, Rohde): Tris (Guandidinato) Complexes of Iridium and Rhodium in the Oxidation States +III and +IV: Synthesis, Characterization, and Reactivity.

**Enoch Mensah** (2011, Nguyen): Palladium and Nickel Catalyzed Stereoselective Formation of Glycosides.

**Scott Neff** (2011, Gloer): Chemical Investigations of Secondary Metabolites from Selected Fungi and From Peanut Seeds Challenged by Aspergillus Caelatus.

**Timothy Paschkewitz** (2012, Leddy): Ammonia Production at Ambient Temperature and Pressure: An Electrochemical and Biological Approach.

**Kristina Rogers** (2011, Gloer): Chemical Investigations of Fungicolous and Endophytic Fungi.

**Gayan Rubasinghege** (2011, Grassian): Chemical Photochemical Reactions on Mineral Oxide Surfaces in Gaseous and Liquid Phases: Environmental Implications of Fate, Transport and Climatic Impacts of Mineral Dust Aerosol.

**Arundhuti Sen** (2011, Kohen): Explorations in Enzymology: Investigating Dynamics in Dihydrofolate Reductase.

**Jacqueline Smits** (2011, Wiemer): Synthesis and Evaluation of Novel Bis-and Trisphosphonates.

**Gopeekrishnan Sreenilayam** (2011, Friestad): Asymmetric 1,5-Polyol Synthesis: A Concise Configuration-Encoded Approach.

**Joseph Sumrak** (2011, MacGillivray): Organic Semiconductor Co-Crystals: Photoreactivity, Mobility, and Spectroscopy.

**Joseph Topczewski** (2011, Wiemer): Cascade Cyclizations and the Schweinfurthins.

**Nine M.S. degrees in Chemistry were awarded in the Summer 2011, Fall 2011, and Spring 2012 semesters. The names (degree year, advisor's name) of the recipients are:**

**Samangi Abeysinghe** (2012, Forbes); **Jessica Boucher** (2012, Bowden); **Andrew Cox** (2012, Friestad); **Xu Huang** (2012, Pigge); **Nirajkumar Pandya** (2011, Tivanski); **Jessica Reed** (2012, Leddy); **R-A-Thilini Rupasinghe** (2011, Grassian); **Alex Suihkonen** (2012, Nguyen); **A.K. Lahiru Wijenayaka** (2011, Cheatum);

**The Department is proud of this group of talented Chemistry practitioners and we wish them much success in their future career endeavors! Please keep in touch!**

SIF Fellows. From Left: Xiang Zhou, Sai Kumar Ramadugu, Marie Pierre, Vanja Stojkovic, Tatianna Mishanina, Matthew Kelley, Imali Mudunkotowa, Garett Lee, Ryan Smith, Charith Nanayakkara.

## Strategic Initiative Fund Fellows

The continued success of our graduate program was again recognized in 2011-12 by significant funding from the University of Iowa Graduate College Strategic Initiative Fund (SIF) Program. This is an important opportunity for the Department to provide tangible rewards to a significant number of our advanced graduate students in recognition of their hard work and successes. Recipients of SIF Fellowships this year were: **Ross Bemowski** (Messerle group), **Nathaniel Coleman** (Gillan group), **Jacob Frueh**(Quinn group), **Matthew Kelley** (Rohde group), **Tatiana Mishanina** (Kohen group), **Garett Lee** (Leddy group), **Marie Pierre** (Haes group), **Ryan Smith** (Arnold group), **Anna Volkert** (Haes group), **Vanja Stojkovic** (Kohen group), **Sai Kumar Ramadugu** (Margulis group), **Xiang Zhou** (Wiemer group), **Imali Mudunkotowa** (Grassian group), and **Charith Nanayakkara** (Grassian group).

## Presidential Graduate Research Fellows

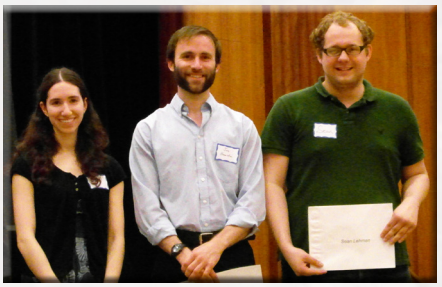
**Kallyn Buschkamp** and **Rachel Seurer** joined our Fall 2011 class as Presidential Graduate Research Fellows. Kallyn received a B.S. degree in Chemistry and Mathematics (Summa Cum Laude) from Briar Cliff University, Sioux City, IA. Rachel received a B.A. in Chemistry with a minor in English (Magna Cum Laude) from the College of Saint Benedict, St. Joseph, MN.

The Presidential Graduate Fellowship is an annual award offered by the UI Graduate College to 20-25 distinguished Ph.D. applicants through departmental nomination and is competitive across disciplines. Fellows receive substantial financial support from the Graduate College for five years including summers if they remain in good academic standing. A Fellow's first year and final year are free from departmental assignments, and the final fellowship year is for completion of the dissertation.

## Shriner Fellows

Shriner Fellowships were awarded to three graduate students joining our department in Fall 2011. **Jonathan Humston**, **Sean Lehman,** and **Emily Mrugacz** were selected by the Graduate Admissions Committee to receive the fellowship based on their strong undergraduate academic records and their previous honors and awards.

Shriner Fellowships are awarded to first-year graduate students in chemistry with preference given to U.S. citizens from the Midwest. The Shriner Fellowship was established in 2000 by Dr. Fred Raths and the late Mrs. Bonnie Raths in honor of Dr. Ralph Shriner, long-time professor and DEO in our department.



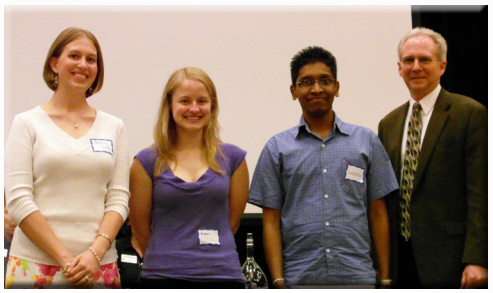
Shriner Fellows. Emily Mrugacz, Jonathan Humston, Sean Lehman.

## Lynn Anderson Awards

Vanja Stojkovic and Imali Mudunkotwa.

In honor of A. Lynn Anderson (1940-2008), Ph.D. in Chemistry in 1970, the Lynn Anderson Research Excellence Awards were awarded to **Imali Mudunkotuwa** (Grassian group) and **Vanja Stojkovic** (Kohen group). These recently initiated annual awards will be given to recognize the research of some of our most productive graduate students in the Department of Chemistry.

## University Outstanding Teaching Assistant Awards



Rebecca Laird, Rebekah Shippy, Lahiru Wijenayaka.

Outstanding Teaching Assistant Awards are conferred annually by the University of Iowa Council on Teaching to honor and recognize teaching assistants from across the entire University who have demonstrated outstanding ability as teachers at The University of Iowa. Recipients from our Department for 2011-2012 include **Rebecca Laird** (MacGillivray group), **Rebekah Shippy** (Wiemer group), and **Lahiru Wijenayaka** (Cheatum group).

## Departmental Outstanding Teaching Assistant Awards

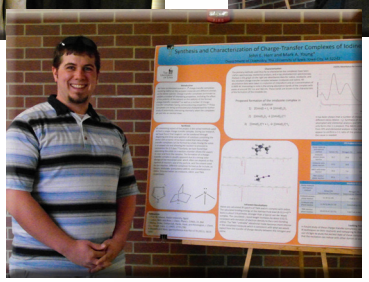
Chamathca Kuda Malwathumullage, Kristi Knoche, Jonathan Humston, Kevyn Gardner.

The Department also strives to recognize quality among our TAs with its own teaching awards. In Spring 2011, Departmental Outstanding Teaching Assistant Awards went to **Chamathca Kuda Mulwathumullage** (Small group), **Kristi Knoche** (Leddy group), **Jonathan Humston** (Cheatum group), and **Kevyn Gardner** (Wiemer group).

# Undergraduate Highlights

## 2012 Undergraduate Awards

Some of our undergraduate award recipients. (Back row from left) Nathan Oldenhuis, Greg Cizio, Alex Hjelmaas (Front row from left ) Zach Baker, Kathleen White, Drew Heitz, Melissa Fairley, Steven Mather, Sean Staudt.



Donald J. Burton & Margaret A. Burton Scholarship
Drew Heitz

Chemistry Alumni Award
Senior Recipient: Nathan Oldenhuis, Junior Recipient: Bradley Loren, Sophomore Recipient: Zach Baker

Viksnins, Harris & Padys, PLLP Award
Greg Cizio

CRC Freshman Chemistry Award
Alex Hjelmaas

Merck Index Award
Steven Mather

American Institute of Chemists Award
Melissa Fairley

Analytical Chemistry Award
Sean Staudt

Russell K. Simms Scholarships
John Corcoran, John Herr, John Stanley

Ken Sando Undergraduate Scholarship
Greg Cizio

E. David Cater Scholarship
Kathleen White

Outstanding Service Award
Victoria Calderon

## Shoemaker-Strickler Scholar

One outstanding high school senior who will major in chemistry at the University of Iowa was chosen to receive the prestigious Shoemaker-Strickler Memorial Scholarship. This scholarship was established by **Harold Whitmore Strickler** in memory of his wife, **Vernita Martha Ann Shoemaker Strickler**. The Shoemaker-Strickler Scholar who began his studies in the Department of Chemistry in the fall of 2010 is **Nate Peng Hua**, a graduate of Cedar Falls High School in Cedar Falls, Iowa. We welcome Nate and wish him good luck in his studies.

## E. David Cater Scholarship

On May 10th, the inaugural E. David Cater Scholarship was awarded to **Ms. Kathleen White,** an undergraduate student in Chemistry and Biochemistry.

The E. David Cater Scholarship was established in honor of **Dr. E. David Cater**, an emeritus professor of Chemistry at the University of Iowa. Dr. Cater served on the faculty for 35 years. His research areas included high temperature physical chemistry and electron microscopy. During his tenure, he served on the University's faculty senate, and enjoyed spending weekends on Lake MacBride with the Hawkeye Sailing Club. He was an active participant and chair of the Gordon Research Conference on High Temperature Chemistry. He is the co-author of a study guide to Oxtoby's Chemistry text, and continues to work as a consultant for American College Testing.

The Department of Chemistry is extremely grateful to Dr. Cater and his family for the establishment of this scholarship.

# Staff News

(From left) Shonda Monette, Brian Morrison, Janet Kugley, Terry Graham, Mark Arnold, and Sharon Robertson.

It was, as always, a busy year for the staff in the Department of Chemistry! While we said good-bye to several of our members, we also had several new additions. In the IT shop, we were joined by Jon Yates, Chris McGee and Brenna Faler. The NMR facility added Dr. Fu Chen to its staff, while the Instructional Services staff was joined by Dominic Hull.

Several members of our staff were also recognized this year. Shonda Monette and Jeff Miller were recognized for 10 years of service to the College, while Sharon Robertson and Janet Kugley were lauded for reaching 20 years of service. Shonda Monette also received the Mary Jo Small Fellowship, which provides funds for outstanding staff members to participate in professional development. Brian Morrison, and Terry Graham, a Research Assistant in Dr. Mark Arnold's lab, were two of the College's recipients of the Mary Louise Kelley Staff Excellence awards.

## Staff Photograph

Department of Chemistry Staff. (Back row from left) Mark Arnold, Jeff Miller, Brenna Goode, Brian Morrison, Benjamin Revis, Andrew Lynch, John Hawkins (Middle row from left) Bettie Baumert, David Sansbury, Frank Turner,Mike Estenson, Timothy Koon, Dale Swenson. (Front row from left ) Jennifer MacBain-Stephens, Earlene Erbe, Shonda Monette, Jessica Alberhasky, Janet Kugley, Sharon Robertson. (not pictured: Lindsay Elliott, Brenna Faler, Gene Hauge, Chris McGee, Jon Yates, Dominic Hull)

## Got Goals?


Dr. Nicholas Ndiege, former postdoctoral research scholar in Dr. Sarah Larsen's group, sent this photo from San Jose, CA, where he started a new position at Novellus Systems, Inc.

This photo is submitted by Dr. Adil Mohammad (2010, Messerle). Adil's daughter, Aaiza, was born in January, 2012. Adil recently accepted a postdoctoral position with the FDA in Silver Spring, Maryland.

Jeffrey Miller, Chemistry IT, provided this photo with his children, Anja and Soren, happily sporting their "got goals?" shirts.

## Making a Difference

Your generous contributions support people and scientific research that you read about in this newsletter. The University of Iowa Foundation is unable to provide us with a detailed listing of individual donors at this time, but the Department of Chemistry is profoundly grateful to all those who have donated to our Department this year. Your continued generosity is vital to our continued success and growth.

For ways to support the University of Iowa Chemistry Department, please visit our direct web-based giving page.

**www.uifoundation.org**

# Alumni Updates and Memories

**In Memoriam:**

**Lester G. Artherholt, 68,** passed away on March 14, 2010. He received his B.S. in Chemistry in 1963.

**Xiaohong Bei, 49,** passed away on August 24, 2011. She received her Ph.D. in Chemistry in 1997.

**Carold F. Bjork, 100,** passed away May, 2011. He received his Ph.D. in Chemistry in 1939.

**Manville I. Bro, 88,** passed away on August 3, 2011. He received his Ph.D. in Chemistry in 1951.

**B. Norman Brown, M.D., 66,** passed away on September 23, 2008. He received his B.S. in Chemistry in 1967.

**Richardson E. Clark, M.D., 99,** passed away on November 23, 2011. He received his B.A. in Chemistry in 1933 and his M.D. from UI College of Medicine in 1936.

**Robert F. Crose, 91,** passed away on February 24, 2012. He received his B.A. in Chemistry in 1940.

**Townley P. Culbertson, 82,** passed away on August 6, 2011. He received his Ph.D. in Chemistry in 1959.

**Joyce W. Fan, 92,** passed away June, 2011. She received her Ph.D. in Chemistry in 1946.

**William E. Franklin, 80,** passed away. He received his Ph.D. in Chemistry in 1960.

**Keith D. Grinstead, Jr. 42,** passed away on April 2, 2012. He received his B.S. in Chemistry in 1991.

**Russell D. Hanna, 94,** passed away on December 1, 2011. He received his B.S. in Chemistry in 1940.

**Jacob Heerema, 101,** passed away on October 25, 2011. He received his M.S. in Chemistry in 1936.

**Victor F. Hoffman III, 70,** passed away on November 1, 2011. He received his Ph.D. in Chemistry in 1981.

**Arthur E. Hougland, 76,** passed away on August 10, 2011. He received his B.A. in Chemistry in 1958.

**Donald N. Ingebrigtson, 91,** passed away on November 26, 2011. He received his M.S. in Chemistry in 1953.

**Charles E. Irwin, Jr., 95,** passed away on June 28, 2009. He received his B.A. in Chemistry in 1940.

**Ephraim H. Kaplan, 93,** passed away on September 2, 2008. He received his M.S. in Chemistry in 1940.

**Arunas V. Kavaliunas, 72,** passed away on August 15, 2007. He received his Ph.D. in Chemistry in 1975.

**Donald G. Kirby, 97,** passed away on April 15, 2002. He received his B.A. in Chemistry in 1939.

**William F. Luther, Jr., 97,** passed away on December 22, 2011. He received his Ph.D. in Chemistry in 1940.

**Priscilla M. Lyon, 90,** passed away on April 22, 2007. She received her M.S. in Chemistry in 1947.

**Edmund J. Manogue, 94,** passed away on April 26, 2004. He received his B.S. in Chemistry in 1948.

**Anton G. Ostroff, 86,** passed away on December 28, 2011. He received his Ph.D. in Chemistry in 1957.

**Thomas A. Robinson, 77,** passed away on October 2, 2009. He received his B.S. in Chemistry in 1957.

**Sara E. Schebler, 31,** passed away on August 29, 2011. She received her B.S. in Chemistry in 2002.

**Frederich T. Schulz, 66,** passed away on August 26, 2011. He received his B.S. in Chemistry in 1967.

**Robert L. Smith, 93,** passed away on January 30, 2012. He received his B.A. in Chemistry in 1941.

**Robert B. Stevenson, 73,** passed away on September 19, 2011. He received his Ph.D. in Chemistry in 1967.

**Francis D. Thomson, 81,** passed away on December 29, 2011. He received his M.S. in Chemistry in 1953.

**Milan W. Wehking, 71,** passed away on March 7, 2009. He received his Ph.D. in Chemistry in 1964.

**Lynn G. Wiedenmann, 83,** passed away on September 10, 2011. She received her Ph.D. in Chemistry in 1955.

**Alumni Notes (degrees and research advisor's name, if known, are in parentheses)**

**George Mahfouz (B.S. 1942)** retired as Manager, Engineering from Monsanto Company-Mound Lab in Miamisburg, Ohio in November 1986 after 40 years of service.

**Ryan Daboux (M.S. 1951, Smith)** spent three years at Dow Corning, then rejoined Dr. Smith at Kentucky, getting a Ph.D. in 1958. He then rejoined Dow Corning and specialized in silicones and silicon. He retired in 1988.

**Robert F. Wilkinson (B.S. (cum laude) 1954, Dr. Ralph Shriner)** recently retired as CEO of Grace Pacific Corp. in Honolulu, HI. Currently involved with electrolysis of tap water for a start-up. Process proven to generate 16 times more energy than used in producing water gas fuel. U of Iowa should investigate for worldwide fame. Is what I have boldfaced here a note added by someone?

**James A. Pearson (B.A. 1955, M.D. 1959)** practices orthopedic surgery in Dubuque, Iowa.

**Ronald J. Wingender (M.S. 1961, Person; Ph.D. 1969, University of Wisconsin, Madison)** is currently retired, having worked from 1969-99 in Pesticide & Environmental analyses, from 1989-99 as Manager, Analytical R&D, Packing Coatings, and from 1999-2006 as Senior Consultant, Computer programming.

**George Anderson (Ph.D. 1961, Person)** began his career with the Du Pont Company Central Research Department, in Delaware. After then teaching college chemistry for six years, he worked 17 years for the Pillsbury Company in Minneapolis. Currently, he is retired, and remains active in consulting and leading elder-learner class/subjects in science/humanities.

**Darryl E. Brown (B.S. 1964)** served for 41 years as an FDA chemist, section chief, lab director, and senior advisor to the Regional Director. He worked in Kansas City, New York City, and Minneapolis, and retired in January, 2005 in Dallas, TX. He is now very busy with volunteer work for his church, Crime Watch Patrol, Meals On Wheels, and more. He tells us he has never been happier!

**Donald H. (Don) Piehl (M.S. 1964 and Ph.D. 1966, Bennett)** taught a general chemistry course last year at his local Montgomery County Community College in North Carolina. It was a challenging experience after so many years, but he enjoyed the new texts. His daughter and family are now teaching in Beijing, China, and he gave several talks to science classes on a trip there in January.

**Doug Berge (Ph.D. 1965, Pflaum)** retired from the Department of Chemistry, UW-Oshkosh in 1997.

**Sam Paton (B.S. 1967)** lives in Grand Prairie, Texas, and is enjoying teaching Chemistry Lab as an adjunct at Tarrant County College (Southeast Campus). At a recent ACS meeting, he met one of the graduate assistants in a chemistry lab that he took at the University of Iowa (Dr. Jim Seago). Dr. Seago received his 50-year ACS award at the meeting. Sam thanked him for being generous in 1963 when he graded several of his lab reports as passing. In fact, he feels that he still owes Jim Seago a beer, maybe two!

**Ruta Rakutis (Ph.D. 1968, Stille)** is employed part-time by Neo Solutions, Inc. (headquartered in Beaver, PA) as a Technical Manager for specialty chemicals. Most of his career has

been in technical marketing of water-soluble polymers for various companies (American Cyanamid, American Can, Garratt-Callahan) and in consulting at SRI International. He still resides in California, where he has spent most of his working life.

**Duane Kruse (B.S. 1970)** is currently working for Federal ITC as the hazardous materials specialist at the Misawa Air Base in Misawa, Japan. He is the base administrator for the Air Force hazardous materials procurement and tracking program. He also inspects the shops' hazardous materials program for compliance with Japanese and Air Force Regulations.

**David E. Ramaker (Ph.D. 1971, David Schrader)** is retiring after 36 years as Professor of Chemistry at George Washington University. He served as Chair of the Department from 1988-1996 and still is funded by the Navy and DOE for his work on fuel cells and batteries.

**Jim League (M.S. 1971, Davis)** was Dr. Davis' first graduate student.

**Kenneth E. Smith (Ph.D. 1971, Frank)** retired from MultiPure Corporation in February of 2010. He is enjoying his golf and woodworking hobbies, and remains active in the American Chemical Society as an Alternate Councilor for the Division of Environmental Chemistry after terms as Treasurer (2 terms), Chair Elect, Chair, and Immediate Past Chair.

**Bill Koppes (Ph.D. 1972, Burton)** did postdoctoral work with W. T. Miller at Cornell University. He then took a position at the Naval Surface Warfare Center conducting research in synthesis of energetic materials, retiring in February 2008 after 31 years of service. He is currently the chair of the Northeastern U. ALERT safety review board.

**Mike Soboroff (Ph.D. 1973, Bennett)** is currently a Program Manager for Power Electronics at the Department of Energy.

**Gary L. Asleson (Ph.D. 1975, Frank)** is a Professor Emeritus of Chemistry at the College of Charleston, having retired there in January 2009, and continues to teach one six-hour Quantitative Analysis Laboratory each semester.

**Rick White (Ph.D. 1977, Buckles)** In addition to teaching at Sam Houston State University, he has been a Research Ambassador for the German Academic Exchange Service (DAAD) and has been appointed to the DAAD Alumni Board of Directors, meeting twice a year in New York at the German Consulate or in Washington, DC.

**Debra Simoff (B.A. Chemistry; B.S. Chemical Engineering 1977)** has been developing optical fiber coatings and other polymers for telecommunication for 30 years with "the same company," though the company's name has changed from AT&T Bell Laboratories to Lucent Technologies, to (now) OFS.

**Timothy J. Lafond (B.S. 1978)** is currently the Executive Director of Environmental Engineering for John Controls in Milwaukee. His oldest daughter, a sophomore at the University of Minnesota, has her hands full with Organic Chemistry this year. He has very little sympathy, since her lectures do not meet at 7:30 AM!! (Thanks to Professors Buckles and Burton, he reports that he is still an early riser…)

**Solomon W. Leung (B.A. Chemistry 1979, M.A. 1982 Chemical Engineering, and Ph.D. 1989 Civil & Environmental Engineering)** currently Professor of Civil & Environmental Engineering at Idaho State University.

**Lee-Na Tsai (M.S. Chemistry 1984)** is currently Assistant Manager for Production Engineering, Environmental & Safety Engineering (PE-ESE) with Toyota Motor Engineering & Manufacturing Inc. (Toyota) His roles include Corporate Environmental and Safety Lead Auditor and Trainer, RABQSA certified lead auditor & SMS, and QMS certified trainer and auditor.

**Brad L. Rinderknecht (B.S. 1989, Gloer)** employed by ExxonMobil since 1989 in a variety of managerial roles. He is currently an Executive with Sales & Marketing responsibilities for ExxonMobil Chemical.

**Heidi Gauthier (Zimmerman) M.S. 1992, Wiemer)** is currently a Chemist at the Kewaunee Power Station in Wisconsin.

**Kaixu Yuan (Ph.D. 1992, William J. Scott)** did postdoctoral work at Princeton University, then worked for BASF Corp. for two years. After that, he started his own specialty organic chemical manufacturing company, Tyger Scientific Inc., www.tygersci.com. He would love to collaborate with UI alumni to commercialize business ideas.

**Scott Groth (B.S. 1992, Wiemer)** is currently working as the Environmental, Health, and Safety Manager for Red Star Yeast Co. in Cedar Rapids, Iowa.

**Andrew Schmitz (Ph.D. 1993, Eyman)** has been at Scientific Design Co. in NJ for 13 years. He is continuing his research on silver catalysts for ethylene epoxidation. He is also active in his church and the church's Christian school.

**R. Brian Hamilton (M.S. 1994)** is a Senior Program Development Associate in science at ACT, Inc. in Iowa City, where he has worked for over 18 years. He manages a staff of 14 and oversees the development of several large-scale science tests (such as the ACT). His wife is Dr. Monali Sawai (Ph.D., 1998, Quinn).

**Courtney R. Usher (Ph.D. 2003, Grassian)** just passed the 5-year mark at Ashland, Inc.. In 2010, she was promoted to Senior Staff Scientist, managing workflow and developing imaging methods for Ashland's polymer materials in the microscopy and image analysis laboratory. In 2012, she took on management of the optical spectroscopy laboratory as well, and recently was made the group leader for the entire Microscopy and Spectroscopy cluster. Things are going well for her there in Delaware!

**Jennifer J. Winkenwerder (Ph.D. 2003, Arnold)** is currently the Science Officer working on Minnesota's Civil Support Team (CST). The 55th CST assesses suspected Weapons of Mass Destruction (WMD) attacks, advises civilian responders on appropriate actions through on-site testing and expert consultation, and facilitates the arrival of additional state and federal military forces.

**Edward Clemmons (B.S. 2005)** graduated from Des Moines University with his D.O. in June and moved back to Iowa City and started residency in Neurology at the University of Iowa Hospital and Clinics. He married Theresa Duarte in June, who is a Psychiatry resident at the UIHC.

**Addison Killean Stark (B.S. 2007, Leddy)** is currently working on his Ph.D. in Mechanical Engineering at MIT developing predictive chemical kinetic mechanisms for biomass pyrolysis and gasification, and will spend this summer working at ARPA-E, part of the DOE in Washington, DC.

**Zhonghan Hu (Ph.D. 2007, Margulis)** took a faculty position in Jilin University, China in August 2010 after a three-year postdoctoral experience at the University of Maryland and Columbia University. Research in his group currently focuses on chemical self-assembly, and is supported by two NSFC grants.

**Michael A Lee Jr. (B.A. Chemistry, 2008; B.S. Biochemistry, 2011, B.S.E. Chemical Engineering 2011)** will complete his Masters in Chemical Engineering in May 2012 and begin work for Exelon Nuclear at the LaSalle Country Generation Station.

**Christopher Dunlay (B.S. 2009, Leddy)** is in graduate school at the University of Iowa working in Dr. Gloer's group, and will be graduating in July with his M.S. degree.

**Kristina Rogers-Szuma (Ph.D. 2011, Gloer)** is currently working as an Associate Scientist II in the Human Nutrition and Health Division at Kemin Industries in Des Moines, Iowa.

**Koushik Banerjee (Ph.D. 2011, Friestad)** accepted a tenure track faculty position at a four year college, Georgia College and State University. He started his research laboratory and is currently pursuing synthetic methodology and total synthesis research with undergraduate students under an umbrella of green organic chemistry.

## Alumni Updates for 2013 Chemistry Newsletter

An alumni update is a great way to reconnect with your former classmates and professors. Now you can reconnect through e-mail, mail, and Facebook! If you would like to be included in next year's newsletter, send your replies by mail to: Department of Chemistry, c/o Chemistry Newsletter, University of Iowa, Iowa City, Iowa 52242-1294 or email us at: chem-alumni@uiowa.edu

Please include:

- Name
- Degree Information (years at UI, type of degree, year earned, and UI faculty advisor (if relevant)
- Contact information
- Details about your current or past careers
- Any additional information

**From the Editor:**
The Department of Chemistry continues to change and grow in exciting directions. We especially want to thank all of the individuals (Mark Arnold, Brenna Goode, Mark Young, Greg Friestad, Jim Gloer, Earlene Erbe, Janet Kugley, Sharon Robertson, Lindsay Elliott, and Jessica Alberhasky) and wonderful alumni and friends who gave of their time to produce and submit content to the newsletter – without your articles and photographs, the newsletter simply would not exist.

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