

# CHEMISTRY

FALL 2012  
www.chem.uga.edu

## at UGA

### Welcome from the Head

Greetings from the Department of Chemistry! It has been a very good year for our department, in terms of faculty recruitment, research accomplishments, and faculty recognition. As I have stated in the past, first and foremost in our plans for the future of the department is recruitment of faculty. I am pleased to report that we have successfully recruited a new Director of General Chemistry Instruction, Professor Norbert Pienta, who comes to us from the University of Iowa. In addition to excelling at instruction, Norb is also a leading authority in Chemical Education. He is the Editor-in-Chief of the *Journal of Chemical Education*, and is moving the journal office to the University of Georgia. This will certainly put Georgia on the map with regards to Chemical Education. You can read more about Norb in the newsletter. There will be more changes in our faculty over the coming years. After 12 years of distinguished service in our department, Professor Tim Dore is leaving to accept a position with New York University's portal campus in Abu Dhabi. Tim will be building a chemistry department and graduate program at this new campus. We wish him the best in this exciting endeavor. We are beginning a search for a junior organic chemist, and expect to receive permission to search also for a senior organic chemist in the coming year. To help with the large teaching load in Organic Chemistry, we have hired a Temporary Assistant Professor in Organic Chemistry, Dr. Lucas Beagle, who comes to us from the University of Florida. Lucas will help us maintain our excellence in instruction in this high-demand set of courses.



Jon Amster

Our faculty continues to receive national recognition for their research programs. This year, two of our assistant professors, Tina Salguero and Gary Doublerly, have received Young Investigator Awards from the Department of Energy. These awards are made annually to young faculty in a variety of disciplines, and only six were made to chemists last year. It is an enormous honor for our department that two of our faculty members have received this award in the same year. Both Gary and Tina have built up very strong research programs in their short time at Georgia, and the substantial grant that comes with this award will provide the means for them to take their programs to the next level. Another success among our assistant professor rank is the selection of Shanta Dhar for a Department of Defense Prostate Cancer Idea Award. Our senior colleagues have done equally well. Greg Robinson and Fritz Schaefer received Alexander von Humboldt Senior Fellowships. Fritz was also selected as a Southeast Universities Research Association (SURA) Distinguished Scientist. Geert-Jan Boons received the 2012 Creative Research Award from the University of Georgia, in recognition of his work in synthetic organic chemistry of carbohydrates. His group has recently produced a carbohydrate-linked peptide that has great promise as a cancer vaccine.

On other fronts, research funding in the department has increased dramatically in the last year, jumping by 50% compared to the previous fiscal year. All of our assistant professors hold federal grants, and some have multiple grants, which is a good sign for the future. Despite difficult times for funding, over 90% of our faculty hold federal grants, and the total departmental funding is \$5.5M this year, making us the second best funded department in the College

CONTINUED ON PAGE 2

### Attend the 2012 Alumni Appreciation Lecture and Dinner!

The next Chemistry Alumni Appreciation Lecture and Dinner will take place on Friday October 12, 2012. The lecture will be in the Chemistry Building at 4:00 pm, followed by drinks (6:00) and dinner that evening (7:00) at the Georgia Center for Continuing Education. Because of the large number of Chemistry Alumni, individual invitations will not be mailed. This is your invitation! We will also send out an email reminder about this in the early fall. Please plan to join us. To make a reservation, contact Ms. Oksana Korolchuk at 706-542-1919 or head@chem.uga.edu.

The speaker for the 2012 lecture will be Prof. Nate Lewis, from Cal Tech. His lecture topic will be "Sunlight-Driven Hydrogen Formation by Membrane-Supported Photoelectrochemical Water Splitting." Dr. Lewis, the George L. Argyros Professor of Chemistry, has been on the faculty at the California Institute of Technology since 1988 and has served as Professor since 1991. He has also served as the Principal Investigator of the Beckman Institute Molecular Materials Resource Center at Caltech since 1992, and is the Principal Investigator of the Joint Center for Artificial Photosynthesis, the Energy Innovation Hub in Fuels from Sunlight. From 1981 to 1988, he was on the faculty at Stanford, as an assistant professor from 1981 to 1985 and as a tenured Associate Professor from 1986 to 1988. Dr. Lewis received his Ph.D. in Chemistry from the Massachusetts Institute of Technology.



Prof. Nate Lewis

Dr. Lewis has been an Alfred P. Sloan Fellow, a Camille and Henry Dreyfus Teacher-Scholar, and a Presidential Young Investigator. He received the Fresenius Award in 1990, the ACS Award in Pure Chemistry in 1991, the Orton Memorial Lecture award in 2003, the Princeton Environmental Award of Electrochemistry in 2008. He is currently the Editor-in-Chief of the Royal Society of Chemistry journal, *Energy & Environmental Science*.

His research interests include artificial photosynthesis and electronic noses. Technical details of these research topics focus on light-induced electron transfer reactions, both at surfaces and in transition metal complexes, surface chemistry and photochemistry of semiconductor/liquid interfaces, novel uses of conducting organic polymers and polymer/conductor composites, and development of sensor arrays that use pattern recognition algorithms to identify odorants, mimicking the mammalian olfaction process. ●

of Arts and Sciences. We received over \$1M this year to purchase a new mass spectrometer for our Proteomics and Mass Spectrometry Facility and some new NMR instrumentation for our departmental facility. Collectively, we have done very well in the business of garnering support for our research activities.

Our graduate program is doing well – we greeted 33 new students this fall. We will continue to grow the size of our graduate program (currently 160 students) as we grow our faculty. Professor Jeff Urbauer is now our Graduate Coordinator, and he is doing an excellent job of recruiting highly qualified students to our program. As you can see below, several of these graduate students have won local, national and even international awards this year. As I have stated before, maintaining our forward momentum takes money. We are grateful for the continued financial support of our alumni. Through generous contributions this year, we have been able to sustain the Philbrook graduate fellowship which we use to attract the best and brightest candidates to our graduate program. This year's entering graduate class will have three Philbrook scholars. Please consider making a contribution that can be used to enhance student life in the Department of Chemistry.

Please feel free to drop in and visit the Department of Chemistry whenever you are in Athens. I hope that you will consider visiting us for the Alumni Lecture & Banquet this October 12, for the Homecoming Open House on November 3, or for the Allinger or Schleyer lectures in the spring. ●



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Dr. William Klemperer and Distinguished Alumnus Dr. Richard Ridgill at the Alumni Appreciation Banquet.

## 2011 Alumni Appreciation Lecture and Banquet

**O**n Friday, October 7, 2011, the Chemistry Department hosted its annual Alumni Appreciation Lecture and Dinner, sponsored by the Thomas Whitehead Memorial Fund. The day's events included the lecture in the afternoon in the Chemistry Building, followed by drinks and the evening banquet at the Georgia Center for Continuing Education. About 85 faculty, retired faculty and alumni were in attendance. The speaker this year was Dr. William Klemperer, from Harvard University. His topic was "The Chemistry of the Universe."

Klemperer's distinguished career in molecular beam research and spectroscopy have resulted in many honors and awards, including election to the American Academy of Arts and Sciences (1963) and the National Academy of Sciences (1969). He received the Irving Langmuir Award from the American Chemical Society (1980), the Earle K. Plyler Prize for Molecular Spectroscopy from the American Physical Society (1983), the Peter Debye Award in Physical Chemistry from the American Chemical Society (1994), the Faraday Medal and Lectureship from the Royal Society of Chemistry (England, 1995) and the E. Bright Wilson Award in Spectroscopy from the American Chemical Society (2001).

The featured event of the evening banquet was the presentation of our Distinguished Alumnus Award, which this year was presented to Dr. Richard Ridgill. Dick was born in Vidalia, GA, and completed high school there, after which he served in the army (81st infantry division) in the South Pacific. After service, he attended UGA on the GI Bill, and finished with his degree in Chemistry in 1951. After graduation, Dick re-entered the army and was selected to attend the Army Comptrollership Course at Syracuse University. He used his chemical training in nerve agent research and defoliation chemicals, supervising the application of the latter on the Ho Chi Ming Trail in Vietnam. In 1967 he was appointed by The Secretary of State to be the US Representative to NATO for a project undertaken on the island of Crete, Greece, involving planning, construction, and utilization of a facility for the Annual Service Practice firings of HAWK, AJAX, NIKE, and various other anti-aircraft missiles used by NATO forces. Concurrently he was assigned as Chief, Training Division, DCSOPS, HQUSAREUR & SEVENTH ARMY. In 1969 Dick was assigned as Program Director, Operations and Maintenance, Army for the HQUSAREUR operational command, overseeing the budget for USAREUR and the Seventh Army. After retiring from the military in 1972, Dick taught various courses, including Chemistry, for Daytona State College, the University of Central Florida, and Florida Institute of Technology. In 1980 he enrolled at the University of Florida graduate program and received his Ph.D. from there in 1984 in Public Administration. After completing school, he founded J. R. Ridgill and Assoc., Inc., a consulting firm specializing in land use planning and resource management, which is still operational. Dick and his wife Juanette live in New Smyrna Beach, FL. ●



# New Faculty



**Norbert Pienta, Professor**

## **Professor Norbert J.**

**Pienta** joined the faculty in Chemistry in August as the new Director of the General Chemistry Program. Pienta comes to us from the University of Iowa where he was Professor and Director of Undergraduate Studies. Pienta earned his B.S. at the University of Rochester (1974), his Ph.D. at UNC-Chapel Hill (1978) and did postdoctoral work at the University of Pittsburgh (1978-80). He

started his academic career at the University of Arkansas working in physical organic chemistry using photochemistry and photophysics to study organic reactive intermediates (i.e., carbocations and radical ions) and the effects of solvents, including the use of organic molten salts. He was tenured and promoted to Associate Professor in 1985. In 1989, he returned to UNC-CH and subsequently switched his focus to chemical education, developing laboratory curricula for chemistry majors and software for general and organic chemistry students. Pienta expanded his scholarship to include research in Chemical Education in a subsequent move to the University of Iowa in 1999, where he was promoted to full professor. His efforts included redesign of the two semester general chemistry curriculum, serving as co-author for the ACS textbook, *Chemistry in Context*, serving as an editor for two monographs (*The Chemists' Guide to Effective Teaching*, Vol. I-II), and serving as the Editor-in-Chief of the *Journal of Chemical Education* since 2009. At Iowa, he won both the College of Liberal Arts and Sciences Teaching Award and the President' and Provost's Teaching Award.

Pienta's research interests include the use of computer based instruction, student problem solving in word problems,

and students' understanding of molecular representations and spectral data. To study student approaches to problems, Pienta, his students and his research associates have designed, created and collected data with browser-based software. These have included a tool to draw Lewis structures using drag-and-drop components and another tool where spheres represent atoms in molecules. They have been used to examine students' understanding of the particulate nature of matter. In addition, they have examined sets of variables (e.g., format of numbers, unit conversions, and extraneous information) in gas law and stoichiometry word problems. In the latter questions, several thousands of attempts, coupled with an appropriate statistical analysis (i.e., logistic regression) enables one to examine multiple variables simultaneously, and these studies demonstrated that question complexity can exceed a student's memory load (i.e., cognitive load), shifting them from simple exercises to much more difficult problems.

Besides his administrative and teaching duties, Pienta expects to develop a set of computer-based assessment and self-assessment tools. Building on the recent history of computer-based testing, future plans include the development of an integrated system for exams and quizzes, homework and practice, and delivery of course content to include multimedia materials (i.e., interactive tables and figures, animations and simulations). The project, currently in planning and development by Pienta, other faculty and academic staff, would expand the scope of student activities beyond that provided by the JExam system currently in place, while updating and modernizing the delivery tools. Pienta hopes to build a state-of-the-art, integrated delivery system for assessments (i.e., testing), self-assessment (i.e., practice) and discovery (i.e., independent learning of content) that provides faculty instructors with analytical information to understand the student learning process. His expectation is to provide the students with a system to help them learn while providing those teaching with a way to study and improve instruction, both with the goal of improving student success. ●

# Faculty Awards

## **Dhar Wins DoD Prostate Cancer Idea Award**

**Assistant Professor Shanta Dhar** has been granted a three-year Idea Development Award from the Department of Defense Congressionally Directed Prostate Cancer Research Program (DoD-PCRP) for her grant entitled, "Combined Chemotherapy and Anti-Inflammatory Therapy for Metastatic Castration-Resistant Prostate Cancer (CRPC) using a Nanoparticle Platform." This study aims to develop a targeted combination therapeutic approach for the treatment for metastatic prostate cancer using a highly engineered nanoparticle. The project, which focuses on prostate cancer, can be applied to other cancers as well. Successful completion of these studies will open up new treatment options for patients with prostate cancer. The Department of Defense awarded \$28.8 million in grants through the PCRP Idea award this year. UGA joined other leading institutes receiving one such grant. Shanta Dhar is one of only 59 scientists to win the DoD Idea award from 519 applications this year. ●



## Boons Wins 2012 Creative Research Award



**Geert-Jan Boons**, Franklin Professor of Chemistry and a researcher in the UGA Cancer Center and its Complex Carbohydrate Research Center, was awarded the Inventor's Award at the 2012 Creative Research Awards Banquet in April. The award recognizes an inventor for a unique and innovative discovery that has made an impact on the community.

Dr. Boons is known for his many contributions to the field of carbohydrate and glycoconjugate research. His group has studied extensively the development of new and better methods for synthesizing complex molecules, the use of new methods in the synthesis and study of complex carbohydrates, the development of synthetic cancer and bacterial vaccines, and the use of synthetic compounds for the study of innate immunity.

In his most recent work, Boons and his group from UGA and collaborators at the Mayo Clinic in Arizona have developed a vaccine that dramatically reduces tumors in a mouse model that mimics 90 percent of human breast and pancreatic cancer cases—including those resistant to common treatments. The vaccine, described in the *Proceedings of the National Academy of Sciences*, reveals a promising new strategy for treating cancers that share the same distinct carbohydrate signature, including ovarian and colo-rectal cancers.

"This vaccine elicits a very strong immune response," said Boons. "It activates all three components of the immune system to reduce tumor size by an average of 80 percent."

When cells become cancerous, the sugars on their surface proteins undergo distinct changes that set them apart from healthy cells. For decades, scientists have tried to enable the immune system to recognize those differences to destroy cancer cells rather than normal cells. But since cancer cells originate within the body, the immune system generally doesn't recognize them as foreign and therefore doesn't mount an attack. The researchers used unique mice developed for cancer research at the Mayo Clinic. Like humans, the mice

develop tumors that overexpress a protein known as MUC1 on the surface of their cells. The tumor-associated MUC1 protein is adorned with a distinctive, shorter set of carbohydrates that set it apart from healthy cells. Boons noted that MUC1 also is overexpressed in 90 percent of the subset of patients who are not responsive to hormonal therapy, such as Tamoxifen or aromatase inhibitors, or the drug Herceptin. These so-called "triple-negative" tumors are extremely aggressive and difficult to treat, Boons said, and a new treatment option is urgently needed. "In the U.S. alone, there are 35,000 patients diagnosed every year whose tumors are triple-negative," Boons said. "So we might have a therapy for a large group of patients for which there is currently no drug therapy aside from chemotherapy."

Therapeutic vaccines received renewed attention last year when the Food and Drug Administration approved the first cancer treatment vaccine, a drug known as Provenge that is used to treat metastatic prostate cancer. Treatment with Provenge, which is manufactured in Georgia, requires clinicians to isolate immune cells from the patient and then to send the cells to a lab, where they are linked to a protein that stimulates the immune system. The cells are returned to the patient's treating physician, who then infuses the drug over three treatments, usually two weeks apart. Boons' vaccine, on the other hand, is much simpler. It is fully synthetic, meaning that its components can be manufactured in a lab with assembly-line precision. The vaccine consists of three components—an immune system booster known as an adjuvant, a component that triggers the production of the immune system's T-helper cells, and a carbohydrate-linked peptide molecule that directs the immune response to cells bearing MUC1 proteins with truncated carbohydrates.

Biotechnology is a key industry in Georgia, and this year Boons founded Athens-based company Viamune to help develop and commercialize the vaccine and the technologies used to create it. The company is one of nearly 30 that are affiliated with the University's BioBusiness Center, which is an incubator for life sciences start-up companies associated with UGA.

"Companies like these have the potential to create stable, high-paying jobs that have a significant social and economic impact," said Stefan Schulze, associate director of the Georgia BioBusiness Center. He noted that Viamune was one of four finalists selected from 40 companies at an investor's forum hosted this year by the non-profit organization Southeast BIO. Boons and his colleagues are currently testing the vaccine's effectiveness against human cancer cells in culture and are planning to assess its toxicity. If all goes well, they anticipate that phase I clinical trials to test the safety of the vaccine could begin by late 2013.

The National Cancer Institute, the Mayo Breast Specialized Program of Research Excellence Grant and the Mayo Pancreas SPOR Grant funded the research. ●



## Salguero and Douberly Win DOE Young Investigator Awards

Assistant Professors **Tina Salguero** and **Gary Douberly** have been selected to receive the highly competitive Young Investigator Award from the U. S. Department of Energy. Each will receive \$750,000 for five years from the DOE's Office of Science Early Career Research Program for energy-related projects.

"This is tremendous news that continues the very strong performance of the Chemistry faculty in recent years," said UGA President Michael F. Adams. "At a time when this country faces serious questions about the future of its energy supply, research focused on energy efficiency is a national priority. I am proud that Drs. Salguero and Douberly are being supported by the Department of Energy in their groundbreaking research." Salguero will focus on increasing the energy capacity for compact electrical devices while Douberly looks to new technologies to improve fuel efficiency.



**Asst. Prof. Tina Salguero**

Salguero will tackle obstacles to creating smaller, more powerful electronic devices with materials at the ultimate thinness limit. She thinks the solution may be to replace commonly used electronic components with ceramic nanosheets—sheets just one atom thick—made of metal oxide materials. In some cases, she believes, the shape and surface area of the nanosheets can increase the amount of charge that can be stored, which is known as the energy density. "Our efforts will develop the first synthetic methods for creating these types of nanosheets, and the characterization studies will show whether they retain their important dielectric properties," she said. Salguero plans to develop methodologies for preparing ceramics in nanosheet form and to gauge their properties. She will also test two ways to process the nanosheets—first via inkjet printing of liquid crystalline nanosheets and second by mechanically assembling alternating layers of conducting and non-conducting materials to build up dense, hybrid nanosheet structures capable of greater energy storage. "Devices using this technology would have an energy density far exceeding anything possible today," Salguero said. "Ceramic nanosheets could enable technological wonders like handheld high-power lasers and mobile electromagnetic launchers."



**Asst. Prof. Gary Douberly**

Douberly will use his funding to capture short-lived molecules and free radicals that arise during engine ignition. He will use a method called helium nanodroplet isolation (HENDI) to capture and isolate small hydrocarbon or oxygen-containing radicals, as well as their weakly bound complexes with oxygen, which represent the initial molecular encounter in the process of combustion. Douberly will capture the molecules inside droplets of super-cooled (0.4 K) liquid helium and subject them to infrared laser spectroscopy to determine their molecular structure and their unique spectroscopic signatures.

"Once the spectroscopy of these species is known, new experiments can be designed to characterize how they will react in different situations," Douberly said. By 2016, new fuel efficiency standards will require U.S. cars and light-duty trucks to travel an average of 35.5 miles per gallon, a rate slated to increase to 54.5 miles per gallon by 2025. Douberly's work may help car manufacturers achieve these standards by enabling researchers

to optimize the ignition rates of fuels from sources such as oil sands, oil shale, coal and bio-feedstocks based on renewable resources such as corn and switchgrass. "Ultimately, a better understanding of the combustion chemistry will lead to design and characterization of emerging combustion engine technologies that are cleaner and more efficient," Douberly said.

Salguero and Douberly are among a very small group of researchers nationwide to receive funding through the DOE's Early Career Research Program. Only 68 researchers—8 percent of all applicants who passed the pre-proposal phase—were accepted for funding this year. Of those, only 14 worked in Chemistry Departments.

"This is the first time since the inception of the program in 2010 that these prestigious and highly competitive awards have been given to faculty researchers in the state of Georgia, so we're enormously proud of Tina and Gary," said David Lee, Vice President for Research at UGA. "The fact that two awards were given to UGA Chemistry faculty in the same year is an unambiguous indication of the strength and upward trajectory of the department." While several institutions received more than one ECRP award, UGA's Chemistry Department was the only department nationwide to win two awards in the field of Chemistry and the only research unit in Georgia to receive the award.

"These are very competitive awards," said Jonathan Amster, professor and head of the Chemistry Department in the Franklin College, "and the likelihood of two awards going to the same chemistry department is very small." ●

### The 2011 R. B. King Lecture

The third annual R. B. King Lecture took place on Tuesday November 8, 2011 in the Chemistry Building. This lecture is in honor of Prof. King, who retired from UGA Chemistry after many years of impressive research in Inorganic and Organometallic Chemistry. Although officially retired, Bruce continues to work on computational studies of unusual bonding, in collaboration with the Center for Computational Chemistry.

Professor Crabtree is Whitehead Professor of Chemistry at Yale University. His distinguished career in Inorganic and Organometallic Chemistry has resulted in over 500 scientific papers. His many awards include the American Chemical Society Award for Organometallic Chemistry and the Royal Society of Chemistry Award in Organometallic Chemistry. His lecture title was "Organometallic Iridium Precatalysts for Water splitting and Hydrogen Storage." He is perhaps best known for his textbook on *The Organometallic Chemistry of the Transition Metals*, which is now in its fifth edition.

A dinner in honor of Professor Crabtree was held at the Athens Country Club in the evening following the event. ●



**Robert Crabtree and Bruce King**

## Kutal Among the Nation's Best Professors

**Dr. Charles Kutal**, Chemistry professor and associate dean of the UGA Franklin College of Arts and Sciences, has been named one of the best undergraduate teachers in the nation by the Princeton Review and RateMyProfessors.com. Kutal was included among The Best 300 Professors which was released in April 2012. Two other UGA faculty were also included on this list: Dr. John Knox, from Geography and Dr. Audrey Haynes, from Political Science.

The Best 300 Professors is the first comprehensive guidebook to America's top undergraduate professors, and is unusual in that it uses data collected from undergraduate students. It relies heavily on the opinions they give about their professors. The Princeton Review, one of the nation's best-known education services companies, teamed up with RateMyProfessors.com, the highest-trafficked college professor ratings site in the U.S., to collect both qualitative and quantitative data from surveys and ratings.

Knox, Haynes and Kutal started out as three names among 42,000. From there, the Princeton Review culled the list to 1,000. After gaining input from school administrators, students and surveys of professors under consideration, editors cut the list down to their final 300, which represent 122 colleges and universities.

"We developed this project as a tribute to the extraordinary dedication of America's undergraduate college professors and the vitally important role they play in our culture," said Robert Franek, Princeton Review's senior vice president. "One cannot page through this book without feeling tremendous respect for the powerful ways these teachers are enriching their students' lives, their colleges and, ultimately, our future as a society."

Chemistry majors and honors students have populated Kutal's general chemistry course for the past 11 years. At UGA, he has been helping students master the fundamental concepts, experimental techniques and critical-thinking skills needed to understand chemistry for more than 38 years. As one student



said, Kutal's class "may seem impossible at first, but it's not. You will learn a lot from Dr. Kutal, and he makes class pretty interesting." Another added, "He knows what he's talking about and wants that for his students. He is helpful and fair."

Kutal sees it as part of his job to prepare pre-med, pre-dental and pre-pharmacy students for

the rigorous education they have ahead of them, and many of them appreciate him for it. "Their youthful enthusiasm energizes me and their questions keep me on my toes," Kutal said. "It is especially gratifying when, some years after finishing my course, they stop by to share news of their success in winning a scholarship or being admitted to postgraduate study in their chosen profession. While they deserve most of the credit for these achievements, I take pride in helping them along the way." ●

## Fritz Schaefer Named SURA Distinguished Scientist

The Southeastern Universities Research Association announced **Henry F. Schaefer III**, Graham Perdue Professor of Chemistry at the University of Georgia, as its 2012 SURA Distinguished Scientist. This annual honor goes to a research scientist whose extraordinary work fulfills the SURA mission of "fostering excellence in scientific research." The award and its \$20,000 honorarium were presented to Schaefer on March 29 in conjunction with the SURA Board of Trustees meeting being held at the University of South Florida in Tampa.



In more than 30 years of academic service, Schaefer has used theoretical and computational methods to better understand the movement and function of electrons in molecules and the application of insights gained to areas of broad chemical interest, including atmospheric chemistry, combustion and organic chemistry. His publications number over 1,300 with the vast majority in the field's highest quality journals. In their nomination, UGA President Michael F. Adams and Vice President for Research David Lee noted, "Collectively, his publications have been cited more than 50,000 times, making him one of the most highly cited chemists (as well as scientists) in the world." He has also given plenary lectures at more than 240 scientific conferences and named/endowed lectures at more than 50 universities worldwide.

A native of Michigan, Schaefer received his bachelor's degree in Chemical Physics from the Massachusetts Institute of Technology and doctorate in the same field from Stanford University. He served as Professor of Chemistry at UC-Berkeley from 1969 to 1987. In 1987, he was appointed Graham Perdue Professor of Chemistry and director of the Center for Computational Quantum Chemistry at UGA. Through his career, he has accepted numerous honorary appointments at institutions including the University of Paris, the Eidgenössische Technische Hochschule in Zürich and the Australian National University. In 2004, 300 scientists from 35 countries gathered in Gyeongju, Korea, for a six-day conference on "Theory and Applications of Computational Chemistry: A Celebration of 1000 Papers of Professor Henry F. Schaefer III." And in 2010, UC Berkeley honored Schaefer with an international conference titled "Molecular Quantum Mechanics: From Methylenes to DNA and Beyond."

Among his many awards and honors, Schaefer has been recognized by the American Chemical Society with its Award in Pure Chemistry (1979), the Leo Hendrik Baekeland Award (1983), the Award in Theoretical Chemistry and the annual Ira Remsen Award (2003). He received the Schrödinger Medal (1990), the Centenary Medal of the Royal Society of Chemistry (1992), the prestigious Joseph O. Hirschfelder Prize from the University of Wisconsin (2005) and the Ide P. Trotter Prize of Texas A&M University (2011). The *Journal of Physical Chemistry* published a special issue in honor of Schaefer in 2004. He was elected a Fellow of the American Academy of Arts and Sciences (2004), the Royal Society of Chemistry in London (2005) and was among the inaugural class of Fellows of the American Chemical Society (2009).

The SURA Distinguished Scientist Award was established in 2007 commemorating the organization's 25th anniversary. SURA's development and relations committee manages the solicitation, screening and selection of the recipient from a SURA member institution. The president of each of SURA's 62 member research universities is eligible to make one nomination for the Distinguished Scientist Award. ●



## Prof. Greg Robinson Wins Alexander von Humboldt Fellowship and ACS F. Albert Cotton Award

**Prof. Greg Robinson** has been selected to receive an Alexander von Humboldt Senior Fellowship. This fellowship provides funding for him to collaborate with colleagues in Germany, and he plans to work with chemists at the Carl von Ossietzky University of Oldenburg and the Technical University of Berlin. The award, which is presented to up to 100 scientists worldwide annually, is granted in recognition of a researcher's entire achievements to date and is presented to academics whose fundamental discoveries, new theories or insights have had a significant impact on their own discipline and who are expected to continue producing cutting-edge achievements in the future.

Robinson is internationally known for his work synthesizing chemical compounds that other scientists had dismissed as impossible. In a landmark 1995 paper, he demonstrated that metals can display electronic behavior that was previously only thought possible with carbon-based ring systems such as benzene. These chemical compounds, known as aromatics, are particularly stable, and Robinson's innovations have the potential to improve the performance of semiconductors and electronics. His research team subsequently installed a triple bond between two gallium atoms and later prepared a compound containing an iron-gallium triple bond. In another landmark paper published in 2008, Robinson's team stabilized a new form, or allotrope, of silicon and developed a technique to stabilize highly reactive molecules that otherwise would be fleeting.

"Greg has won several awards for his innovative research in recent years, and he brings great credit to our department and university," said Jon Amster, Professor and Head of the Chemistry Department. "He joins Professors Fritz Schaefer, Mike Duncan and Rich Dluhy as recent Humboldt Fellows from UGA's Department of Chemistry."

In another recent recognition of his research program, Robinson has also been selected to receive the 2013 F. Albert Cotton Award in Synthetic Inorganic Chemistry. This is a national award sponsored by the American Chemical Society and supported by the F. Albert Cotton Endowment Fund. The purpose of this award is "To recognize distinguished work in synthetic inorganic chemistry, with a particular emphasis on creativity and imagination." Greg will receive the award at the Spring 2013 National ACS Meeting in New Orleans. ●



## Other Awards & Promotions

Professor **Jason Locklin** was promoted to Associate Professor with tenure.

Professor **Wesley Allen** was granted tenure.

## Staff Awards

At the Franklin College Staff Appreciation Luncheon in May, **Mamie Watson** (14 years) and **Jan Chandler** (25 years) were recognized for their years of continuous service to the college. Mamie is Assistant for the *Journal of Physical Chemistry* editorial office operated by Prof. Michael Duncan, and Jan is in the Chemistry Accounting Office, handling state monies for the department. ●



Mamie Watson and Jan Chandler at the Staff Recognition Luncheon

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on upcoming events, visit

[www.chem.uga.edu](http://www.chem.uga.edu)

## Staff Awards

### Regina Zuck Receives Peggy Norman Award



**Regina (Davis) Zuck** was selected by the faculty and staff to receive this year's Peggy Norman Award for the outstanding staff member in Chemistry. Regina is a native of Oconee County, growing up on a family-owned dairy farm south of Watkinsville, GA, where she currently resides. She began working at UGA in February 1998 at the Agricultural Business Office. She joined the Department

of Chemistry in February of 2005 as Grants Accountant, where she handles budgets for federal and other non-state-funded grants. She began to work on her bachelor's degree upon joining our department, taking 1-2 classes per semester (while working full-time) until she completed her Bachelor of Science in Consumer Economics in August 2011. She enjoys singing in her church choir, cheering on the Bulldogs football team, spending time with friends and family, and jogging. She along with other Chemistry staff members recently completed the UGA Alumni Dawg Trot 5K in March 2012. Her name recently changed when she married Jonathan Zuck on June 9, 2012.

The award is given in honor of Ms. Peggy Norman, who worked in various capacities for 35 years in the department before her retirement in 2004. She was one of the most hard-working and well-liked staff members that we have ever had. Her colleagues and friends in the department were saddened when she suffered an untimely death from cancer in September 2007, just a short time after her retirement.

Congratulations Regina for an outstanding job! ●

## Outstanding Teaching Assistants

Five graduate students in the Department of Chemistry have been awarded the 2012 Outstanding Teaching Award. These awards are conferred annually by the UGA Center for Teaching and Learning. The recipients, Daniel Sexton, Matthew Davidson, Timothy Pope, Robert Gilliard and Christopher Nealon, are recognized for their outstanding contributions to instruction by students serving as teaching assistants in the classroom or laboratory.

Robert Gilliard and Christopher Nealon were nominated because they exemplify the best qualities of organic chemistry teaching assistants. Both have been dependable teachers, graders and proctors for their time at UGA. They have been recognized as head TAs for the majority of their tenure in the Chemistry Department. They are exceedingly knowledgeable of both theoretical and experimental organic chemistry and they bring that expertise to bear in their weekly interactions with their students. They are dedicated to giving their students the best possible laboratory experience/education during their time in the department. Both Chris and Robert have high expectations of their students and do not except low quality work/reasoning in their weekly laboratory assignments. They are tough, but fair, graders and their students understand and respect this as it always benefits them in the end. Their students routinely perform at the highest levels on the cumulative laboratory final exam each semester.

Matthew Davidson, Tim Pope and Daniel Sexton were nominated for their efforts "above and beyond the call of duty" in developing a successful, widely accessed blog for their general chemistry laboratory sections. In the fall of 2011, these students, along with a fourth student, Darrah Johnson-McDaniel (a first year graduate student, and not eligible for the award), approached their Ph.D. thesis advisor, Dr. Tina Salguero, assistant professor of chemistry, with an idea to develop and maintain a blog to engage general chemistry students in their laboratory sections and augment their learning experience. "I told them to go ahead with it", Dr. Salguero relates, "and I was extremely impressed with the results!" The blog (<http://genchemlabs.blogspot.com>) is comprised of short essays composed by Matthew, Timothy, Daniel and Darrah that offer plenty of helpful advice (topics include "What glassware should you use?" and "How to please the gods of significant figures and units"), doses of wisdom ("Also, and this is very important, you should take the mass of your remaining amount of metal after EACH addition you make to the acid"), and additional explanations of chemical principles ("Le Chatelier's principle is, in its most basic form, a description of how chemical systems in equilibrium react to stresses placed on said equilibrium"). "I am impressed by their interest in helping their undergraduate students have a better educational experience, as well as the creativity and teamwork of their effort", said Salguero. The blog became very popular with the undergraduates in the 12 laboratory sections taught by these students. It was viewed more than 3000 times between August and December of 2011. ●



Daniel Sexton, Matthew Davidson, Tim Pope, Robert Gilliard and Chris Nealon



## Franklin Leach Wins Graduate Student Excellence-in-Research Award and Robert C. Anderson Memorial Award



**Franklin Leach**, recent Ph.D. graduate in Analytical Chemistry, won this year's Graduate Student Excellence-in-Research Award and the Robert C. Anderson Memorial Award, both given by the UGA Graduate School. The Excellence-in-Research Award was initiated in 1999 to recognize the quality and significance of graduate student scholarship. The Anderson Award is given to recent Ph.D.s for outstanding research at the University or immediately after graduating. It is named for the late Robert C. Anderson, who served as UGA's Vice President for Research and President of the University of Georgia Research Foundation, Inc.

In his graduate work with Prof. Jon Amster, Franklin developed and refined new mass spectrometry methods for the structural characterization of glycosaminoglycan (GAG)

carbohydrates, a particularly difficult target for such analysis. These biomolecule chains exist on the surfaces of most cells, and the pattern contained within each chain, in particular that of sulfation, determines how individual cells interact with each other and the outside world. One of Leach's papers reports the first ever complete sequencing of intact glycosaminoglycan chains derived from a proteoglycan, and the unexpected finding of a well-defined pattern of sulfation within the glycan chains, which supports the existence of a sulfation code for cellular communication. He is author or co-author of 15 papers and two book chapters. Franklin is currently a staff scientist at Pacific Northwest National Laboratory, where he is working on the design and construction of a 21 tesla Fourier transform mass spectrometer. ●

## Emmanuel Obi Wins 2012 SREB Doctoral Scholars Fellowship

**Emmanuel Obi**, first-year graduate student in Physical Chemistry, has been selected to receive the State Doctoral Scholars Fellowship awarded by the Southern Regional Education Board (SREB). SREB is a 16-state conglomerate of southeastern states spanning Texas to Maryland. They write and evaluate education policy that works to improve pre-K-12



education for all students. SREB was founded in 1948 and was the first interstate compact on education. The Doctoral Scholars Program was founded in 1993 and has since supported more than 1,100 scholars at 83 institutions in 29 states. More than one third of America's college students are people of color, but the percentage of college and university

faculty who are members of racial/ethnic minority groups is unfortunately quite low. Nationwide, only about 5 percent of faculty are African-American, about 3 percent are Hispanic and about 1 percent are Native American. The SREB-State Doctoral Scholars Program is working to change that. The program is part of a nationwide initiative, the Compact for Faculty Diversity, to produce more minority Ph.D.s and encourage them to seek faculty positions.

Obi will receive \$20,000/year for three years with tuition assistance for five years. He will use this funding to support himself while he works with Professor Gary Douberly on infrared laser spectroscopy in helium nanodroplets. ●



## Judy Wu Wins IUPAC Dissertation Award

The International Union of Pure and Applied Chemistry (IUPAC) announced the winners of the 2012 IUPAC Prizes for Young Chemists awarded for the best Ph.D. thesis in the chemical sciences as described in 1000-word essays. Recent UGA graduate **Judy I-Chia Wu** was one of six winners world-wide. The winners will each receive a cash prize of \$1000 and travel expenses to the 44th IUPAC World Chemistry Congress, which will take place in August 2013, in Istanbul, Turkey. Each prizewinner will also be invited to present a poster at the IUPAC Congress describing their work and to submit a short critical review about it to be published in *Pure and Applied Chemistry*. The awards will be presented to the winners of the 2012 and 2013 prizes during the Opening Ceremony of the Congress. There were 41 applications from 19 different countries.

The essays describing the 2012 Winners' theses may be found on the IUPAC web site at [www.iupac.org](http://www.iupac.org). Judy's thesis title is "Quantification of Virtual Chemical Properties: Strain, Hyperconjugation, Conjugation, and Aromaticity. ●



## Spring Departmental and Northeast Georgia ACS Awards

The UGA Chemistry Department and the Northeast Georgia Section of the ACS had their combined awards day on April 26. Undergrad students were recognized at a luncheon in the Chemistry Building, and the official Awards Banquet took place that evening at George's Lowcountry Table restaurant. Awards were presented to undergraduate and graduate students, as well as to various faculty members in the department and from the surrounding Northeast Georgia area.

### NEGS/ACS Awards (Presenter: Prof. Fritz Schaefer)

**50-Year ACS Membership:** Robert H. Johnson, William Lee Alworth, Ronald C. Bond, Filmore I. Meredith.

**Northeast Georgia ACS Chemist of the Year for Research:** John W. Washington, U.S. Environmental Protection Agency, Athens, GA. For research addressing the high priority questions regarding sources of perfluorooctanoic acid in the environment.

**Northeast Georgia ACS Chemist of the Year for Service:** Henry F. Schaefer III, Department of Chemistry, UGA, for distinguished service to the section as past chair.

**Northeast Georgia ACS Outstanding Postdoctoral Chemist of the Year for Research:** Frédéric Friscourt, Complex Carbohydrate Research Center, UGA. For research on the development of new cycloadditions for the facile modification of materials, glycoproteins and living cells.

**The George Philbrook Award for Outstanding Undergraduate Teaching:** Richard Morrison, Department of Chemistry, UGA. For excellence in teaching and service as Director of Organic Instruction and interim Director of General Chemistry Instruction.

**Northeast Georgia ACS Award for Outstanding High School Chemistry Teacher of the Year:** Jennifer Hope Meredith, Jefferson High School, Jefferson, GA. For her outstanding instruction in Chemistry and being named Teacher of the Year at Jefferson High School.

**Northeast Georgia ACS Outstanding Graduate Students of the Year:** Eric M. Gale and Patrick Lawson, Department of Chemistry, UGA.

**Northeast Georgia ACS Outstanding Undergraduate Students of the Year:** Cameron Brown, Katie Davis, and Melissa Lassig, all from the Department of Chemistry, UGA, and Kevin Richard Gmernicki, Department of Chemistry, NGCSU.



NEGS-ACS Outstanding Graduate Students of the Year: Eric M. Gale and Patrick Lawson



Cameron Brown, Melissa Lassig and Katie Davis, "Outstanding Undergraduates," at the local section awards night.

### UGA Department of Chemistry Awards (Richard Morrison, presenter)

**Pamela Ann Henkel Award:** Meredith Beck, UGA. For the most outstanding undergraduate student in Organic Chemistry.

**Alfred W. Scott, Sr. Award:** Nathan Usselman, UGA. For the most outstanding rising senior ACS certified Chemistry major student.

**L.B. "Buck" Rogers Award:** Melissa Lassig, UGA. For the undergraduate student that performs the most outstanding research in Chemistry over the last year.

**Martin Reynolds Smith Award:** Lindsay Renbaum, UGA. For the graduate student who published the best research paper in a refereed journal in 2011.

**Ken W. Whitten Awards (Outstanding TAs):** Ellen Broering, David Benson, Jay Patel, Dewey Sutton, Chris McNitt, Rupa Gokal, Tom Irvin, Daniel Gebregziabihier, all from UGA. For the best Graduate Laboratory Assistants for this academic year.



## Spring Reception Honors Graduates

49 seniors graduated with degrees in Chemistry at the end of spring semester 2012. The Chemistry Department honored these graduating seniors with a reception on graduation day last May in the Miller Learning Center Rotunda. Faculty, staff, seniors and their families attended. Prof. Amster recognized each of the seniors present, noting their various activities and accomplishments throughout their undergrad careers. He also outlined the future employment or educational plans for each student. All were encouraged to return to UGA often for visits and to send money to Chemistry regularly! ●



**Christian Gruta, De Angelo McKinley, Shannon Giddens, Joshua Godshaw, Branson Simmons, Melissa Lassig, Cameron Brown, Chinyere Ndukwe, Todd Roper, Kofi Amanquah, Cory Goldsmith, Alec Johnson, Jared Smith, Jacob Perlow, Emily Mann, Haydon Evans, Daniel Morrison, and Sean Young at the Chemistry Graduation Reception**

## 2012 Philbrook Scholars



Three students in the incoming graduate class for the 2012-2013 academic year, Elizabeth Day, Donald Fischer and Ramsey Steiner, have been designated Philbrook Scholars. The Philbrook Scholarship recognizes academic and research excellence in Chemistry at the undergraduate level, and the potential for outstanding contributions at the graduate level and beyond. Founded in 2010, the Philbrook Scholarship program is funded by a generous gift from alumnus Dr. Ernest Drew, in the name of George E. Philbrook, Professor of Chemistry at UGA from 1946 to 1974. Dr. Drew earned his B.S. degree in Chemistry from UGA in 1958, and he went on to earn his Ph.D. in Chemistry from the University of Illinois in 1962.

**Elizabeth Day** (pictured top) earned her B.S. in Chemistry from the University of South Dakota, where she performed research with both Professors Mary Berry and Z. Rick Wang. She worked in a variety of areas including selective carbon dioxide gas separations by metal-organic frameworks, lanthanide-doped lanthanum fluoride nanoparticle synthesis, and mechanisms of laser-assisted metal-organic chemical vapor deposition. She is co-author of a manuscript published in *Chemistry of Materials*. Elizabeth presented the results of her research at both regional and national meetings of the American Chemical Society.

**Donald "Al" Fischer** (pictured center) earned his B.S. degree in Chemistry and Biology from Evergreen College in Olympia, WA. Al has a broad research background in areas such as Ecology and Engineering, in addition to Chemistry. For example, he's studied antimicrobial effects of acids extracted from lichens, he's developed analytical methods to correlate insect infestation levels with terpenoid composition in hemlock trees, and he's used cross-correlative microscopy to study bacterial invasion into eukaryotic cells. Notably, Al developed a coupled electroantennographic/GS-MS detector system to study allomone olfaction in insects, a project he received independent funding for. He's presented research results at scientific conferences, including the local American Chemical Society research symposium. Most recently, as an engineering technician with Hummingbird Scientific, Al is designing and developing products for electron microscopy.

**Ramsey Steiner** (pictured bottom) earned her B.S. in Chemistry and French (Mathematics minor) from Union College in Schenectady, NY. At Union College, Ramsey performed research under Professors Janet Anderson and Laurie Tyler. For her first project, Ramsey designed a quantum computational laboratory exercise for investigating aromatic stabilization. She then embarked on a project, for which she received a research grant, studying structure function relationships of Cu(II) thiazole complexes in DNA binding, which included synthesis and characterization of the compounds, as well as measurements of DNA binding and cleavage. The results of her research were presented recently at the spring American Chemical Society national meeting. ●



## Amster Team Defines First Sequence of Biologically Important Carbohydrate

If genes provide the blueprint for life and proteins are the machines that do much of the work for cells, then carbohydrates

linked to proteins are among the tools that enable cells to communicate with the outside world and each other. But until now, scientists have been unable to determine the structure of a biologically important so-called GAG proteoglycan—or even to agree whether these remarkably complex molecules have well-defined structures. In a paper published in the journal *Nature Chemical Biology*, however, a team of scientists from UGA and Rensselaer Polytechnic Institute announced that it has, for the first time, determined the sequence and structure of a glycosaminoglycan, or GAG, proteoglycan.

“The fact that a structure even exists is surprising, because people had the sense that the complexity of these molecules pointed to a randomness,” said study co-author Jonathan Amster, Professor and Head of the Department of Chemistry. “There are many different areas in medicine that will be enabled by understanding carbohydrates at this fundamental level.” Modifications to the GAG, or carbohydrate biopolymer, portion of proteoglycans have been associated with the presence and malignancy of certain cancers, for example, and the researchers noted that the identification of carbohydrates that are involved in disease opens the door to the development of drugs that can block their action.

The field of glycobiology is still in its infancy, largely because attempts to sequence proteoglycans have, until now, ended in frustration and failure. A small sample of DNA can be amplified many times, and its sequence, or arrangement of molecules, can be determined quickly with modern tools. DNA is simply a set of instructions for making proteins, so a sample of DNA also can allow scientists to produce copious quantities of protein for study. Carbohydrates, however, are a bit messier. Scientists don’t fully understand how cells create them, and a given proteoglycan exists in multiple forms that are similar but not quite the same.

The researchers chose the simplest known GAG proteoglycan, a compound known as bikunin that is used in Japan for the treatment of acute pancreatitis, for their study. Of course, simplicity is a relative term: the sugar is composed of up to 55 distinct carbohydrate rings, which means that there are 210 billion different sequence possibilities. Previous studies performed over the past five years by the researchers that identified common sequences within the carbohydrate decreased the expected number of sequences to a mere 43 million. Past attempts to sequence proteoglycans have relied on the so-called “bottom up” approach in which scientists use enzymes to chop a molecule into its component parts and then try to put it back together, like a puzzle. Using an alternative approach known as the “top down” method, the scientists placed the compound into high-powered mass spectrometers in both the Amster and Linhardt labs that allowed them to break the compound in predictable places. With larger puzzle pieces to work with, the scientists were able to deduce the structure of bikunin.

“Now that we have demonstrated that bikunin, a small chondroitin sulfate proteoglycan, has sequence, we are moving on to larger, more structurally complex dermatan sulfate and heparan sulfate proteoglycans,” said study co-author Robert Linhardt, professor at Rensselaer Polytechnic Institute. “These show important biological activities in development and in cancer, and we are optimistic that our sequencing approach will work here as well.”

Like all groundbreaking discoveries, the finding raises more questions than it answers. Amster notes that the addition of sulfate to the sugar, for example, could in principle occur anywhere along the carbohydrate chain.

What the researchers found, however, was that the sites of sulfation occur only in particular rings.

“That was the unexpected finding,” Amster said, “because based on the current understanding of biology, there is no known mechanism for controlling that type of specificity.”

As they work to determine the structure of more complex proteoglycans, the scientists hope that their findings will encourage other researchers to consider the role that they play in health.

“We know that carbohydrates are how cells communicate with each other and their environment, but they’re also likely to play many roles that we can’t even envision yet,” Amster said. “And in order to understand them, we need to be able to study them at this molecular level.”

The study was funded by the Institute of General Medical Sciences of the National Institutes of Health. ●

## NIH Awards UGA \$1.2 Million for Biomedical Research Instrumentation

The National Institutes of Health has awarded UGA Chemistry two grants totaling \$1.2 million for instrumentation to advance chemical analytical capabilities of biomedical researchers across campus. The new equipment will allow researchers to accurately measure, characterize and test individual molecules, advancing researchers’ understanding of human diseases, ranging from insect vectors of infectious diseases to discovery of cancer biomarkers.

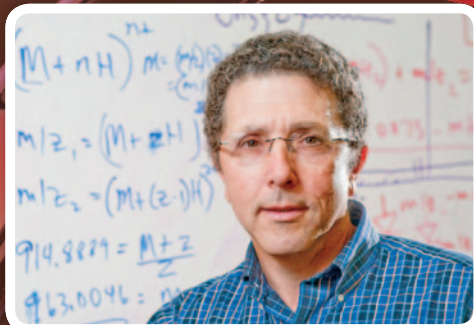
UGA received a highly competitive High-End Instrumentation award in the amount of \$832,030 to purchase a Thermo Fisher Orbitrap Elite mass spectrometer. The new instrument will be used principally for the study of the structures and functions of proteins, and will be housed in the Proteomic and Mass Spectrometry facility in the Chemistry building. It also will be available to researchers across campus and from neighboring academic institutions and industries.

“Having a facility on campus so that researchers can walk just a few minutes from their lab to talk to the person who’s running their sample, and then be able to look at results and decide what they ought to do differently—that will make a tremendous difference,” said Jon Amster, principal investigator on the NIH High-End Instrumentation grant and head of UGA’s Chemistry Department.

NIH also awarded UGA a \$363,700 grant for a new electronics console for the 800 MHz nuclear magnetic resonance spectrometer housed in the Fred C. Davison Life Sciences Complex. The more reliable console will further research in protein chemistry, cellular communication, medical imaging and other areas. Like mass spectrometry, NMR spectroscopy gives researchers insight into the physical and chemical properties of samples. While mass spectrometers sort molecules based on their mass, NMR spectrometers measure their magnetic properties.

“Not only is it replacing an existing instrument, but its capabilities are significantly enhanced,” said Jeffrey Urbauer, associate professor of Chemistry and principal investigator on the grant.

Urbauer’s research group uses the 800 MHz NMR to examine the structure and stability of protein molecules. He is particularly interested in studying the estrogen receptor, the primary chemotherapeutic target for breast cancer. ●



Jeff Urbauer



- 1974 Roper, Jerry M.**, Richmond, VA. B.S. After graduating from UGA, Jerry got his Ph.D. in Organic Chemistry in 1979 at LSU under Dr. George Newkome, who was a former post-doc of R. K. Hill when he was at Princeton; then Hill came to UGA and was on the faculty in the early 1970s. Jerry is currently VP of Health, Safety, Environment & Security at Afton Chemical Corporation, where he has been for about 1.5 years.
- 1978 Profeta, Salvatore, Jr.**, Tallahassee, FL. Ph.D. Sal is Coordinator of Upper-Level Undergraduate laboratories at Florida State University.
- 1996 Crawford, Daniel**, Blacksburg, VA. Ph.D. (w/ H. Schaefer) Daniel is Professor of Chemistry at Virginia Tech. He was just appointed as one of the Senior Editors of the *Journal of Physical Chemistry* and is presently serving as Secretary of the ACS Division of Physical Chemistry.
- 1996 Grigorean, Gabriela**, Thousand Oaks, CA. M.S. (w/ J. Amster) Gabriela was just hired by the biotech firm Amgen.
- 1996 Scurlock, Christopher**, Harford County, MD. PostDoc (w/ M. Duncan) Chris works for Battelle Eastern Science & Technology Center in the DC area. He and wife Andrea have two sons, Jonah (14 years old) and Ethan (7 years old).
- 1999 Reddic, John**, Columbia, SC. Ph.D. (w/ M. Duncan). John was recently promoted to Director of Chemistry, Bureau of Laboratories, S. C. Department of Health and Environmental Control. He was married May 21, 2011 to Molly Bame, who is Assoc. Minister at Trenum Rd. United Methodist Church in Columbia.
- 2000 Watkins, Blake**, Jackson, TN. Ph.D. (w/ R. Phillips) is Associate Professor of Pharmacy and the Chair of the Department of Pharmaceutical Sciences at Union University in Jackson, TN.
- 2000 Al-Hashimi, Hashim**, Ann Arbor, MI. Ph.D. (w/ Prestegard). While Hashim (Hash) officially received his Ph.D. from Yale in 2000, he carried out most of his work here at the CCRC in the Prestegard group. After a short postdoc at Memorial Sloan-Kettering Cancer Center, he accepted an Assistant Professor position at the University of Michigan in 2002. He is currently Robert L. Kuczkowski Professor of Chemistry and Professor of Biophysics at the University of Michigan. He is also Co-Founder and Platform Architect of Nymirum Inc., a drug discovery company focused on small molecules that target RNA. This year he will be receiving the Founder's Medal from the International Conference on Magnetic Resonance in Biological Systems at their meeting in Lyon, France.
- 2001 Shubert, Alvin**, Hamburg, Germany. B.S. (w/ R. Dluhy) Alvin completed his Ph.D. in Physical chemistry at Purdue University, working with Prof. Tim Zwier, and has recently taken a postdoc in Hamburg at the Max Planck Institute. His work there with Prof. Melanie Schnell includes Fourier transform microwave spectroscopy of clusters in molecular beams.
- 2002 Osborne, Andrew**, Barnesville, GA. Ph.D. (w/ R. Phillips) Andy is now an Associate Professor of Chemistry at Gordon College in Barnesville, GA.
- 2003 Sedgwick, Myles**, Fort Collins, CO. B.S. Myles is now in graduate school at Colorado State University working on his Ph.D. with Prof. Nancy E. Levinger.
- 2003 Walker, Nicholas**, Tyne and Wear, U.K. PostDoc (w/ M. Duncan) Nick recently moved from his position of EPSRC Fellow at the University of Bristol to a permanent position at Newcastle University. Nick will move the instrumentation he has developed at Bristol for FT microwave spectroscopy of metal clusters. He has recently received a large grant to continue this work in Newcastle. Nick visited with the Duncan group at the Ohio State Spectroscopy Symposium in June.
- 2004 Jaeger, Todd**, Boulder, CO. Ph.D. (w/ M. Duncan) Todd moved on from CVI-Melles Griot to a new position at Schott Glass as the advanced development sales manager. He is now working closely with R & D and sales to establish new products and technologies in the optics, lasers, astronomy and materials markets.
- 2005 Anfuso, Chantelle**, Tucker, GA. B.S. Chantelle just finished her Ph.D. at Emory working with Prof. Tim Lian, and then got a job teaching at Gwinnet Perimeter College.
- 2007 Ham, Ben**, Augusta, GA. B.S./M.S. (w/ M. Duncan) Ben graduated from Medical School at MCG last May with a 4.0 GPA and was voted by his classmates to receive the Humanism in Medicine award for compassionate care. In September of last year, he did a rotation in Orthopedic Surgery at the Mayo Clinic in Minneapolis, which he really enjoyed. Ben and wife Hope had a baby boy, Jediah Ham on December 14, 2011. Jediah was diagnosed with a severe and very rare case of Hirschprung's disease within a few weeks of his birth, mainly due to Ben's recognizing the symptoms. After being involved in the subsequent treatments and surgery, Ben has decided to specialize in Pediatric Surgery. He will remain at MCG for a General Surgery residency and then do a pediatric surgery fellowship. Jediah is doing well now, but will require follow-up surgery in the future.
- 2007 Kostikov, Alexey**, Montreal, Canada. Ph.D. (w/ V. Popik) After finishing his Ph.D., Alexey did a postdoc at Syracuse with Prof. John Baldwin. In 2009, he moved to McGill University, where he is now Research Scientist at the Center for Nuclear Medicine. He recently initiated a collaboration with Prof. Popik at UGA using click chemistry for the preparation of F-18 labeled proteins. These are employed in Positron Emission Tomography (PET) scans.
- 2007 Pillai, E. Dinesh**, Singapore. Ph.D. 2007 (w/ M. Duncan). Dinesh is Southeast Asia sales representative for IDEX Optics and Photonics (formerly CVI-Melles Griot) located in Singapore. He and his wife Soo Chin recently bought their own home, where son Joshua is learning to walk. Soo Chin recently accepted a position as Applications Scientist, FT-IR and UV-Vis Spectroscopy, with Agilent.
- 2008 Carnegie, Prosser**, Charlotte, NC. Ph.D. (w/ M. Duncan). After three years in Hannover, Germany, Prosser and his wife Currie are now back in the U.S. near his home in Davidson, NC. He works for Continental Tire Co. as Manager for Retread and Bias Tire Technology.
- 2008 Dibble, Collin**, Athens, GA. B.S. Collin is now is a graduate student with Prof. Mike Duncan at UGA. He and his wife Lisa just had a second child, a daughter, Elsie, born July 8, 2012. They also have a son, Nolan, two and half years old.
- 2008 Evangelista, Francesco**, Atlanta, GA. Ph.D. (w/ H. Schaefer) Francesco becomes Assistant Professor of Chemistry at Emory on July 1 of next year
- 2009 Akin, Scott Thomas**, Athens, GA. B.S. Scott is a graduate student at UGA with Prof. Mike Duncan. He married Laura Wilcox in Athens on June 30, 2012.
- 2009 Dale, Adam**, New York, NY. B.S. Adam just started a Master's program at Pace University.
- 2009 Pandithavidana, Dinesh**, Sri Lanka. Ph.D. (w/ V. Popik) After completing his Ph.D., Dinesh spent a year as a postdoc at N. C. State with Prof. Jon Lindsey. In early 2011, he moved back to Sri Lanka, where he accepted a position of Senior Lecturer at the University of Kelaniya. Dinesh was married in June 2011.
- 2009 Reed, Zach**, Gaithersburg, MD. Ph.D. (w/ M. Duncan) Zach is now



working as an NRC Postdoctoral Fellowship at NIST. He has two projects going right now. In one, he is setting up a frequency stabilized cavity ringdown spectroscopy experiment. In another, he is working on getting an automated photoacoustic setup for measuring carbon dioxide. He is learning LabVIEW and how to implement some automated fitting routines so the system can respond to changes in temperature etc. Both are good projects to be on, with lots of good people to work with. Zach's wife Sara (Ph.D. 2008, with Locklin) is also working in the DC area as a postdoc at NIST.

- 2010 Hoffman, Lisabeth**, Rochester, NY. Ph.D. (w/ J. Amster) Liz was just hired as a Product Developer for Biology, Chemistry, Environmental Science, Physics and Technology at VWR Education.
- 2010 Mathews, Dalila (Fondren)**, Montevallo, AL. Ph.D. (w/ N. Adams); postdoc (w/ G. Smith). Dalila is now an Assistant Professor of Chemistry at the University of Montevallo in Montevallo, AL. She and her husband Charles had a baby daughter Ava Kathleen on March 19, 2012.
- 2010 Quingui Zhan**, China. Ph.D. (w/ M. Lay) is currently at the China National Space Administration.
- 2010 Ricks, Allen**, Sarasota, FL. Ph.D. (w/ M. Duncan) Allen just completed his postdoc at Emory University with Tim Lian and started work at Ultrafast Systems. He will be designing and developing new femtosecond laser instrumentation.
- 2010 Shim, Jihye**, South Korea. Ph.D. (w/ M. Lay) is currently at Merck Advanced Tech.
- 2010 Winter, James**, Baton Rouge, LA. B.S. James is currently a graduate student in Chemistry at LSU.
- 2011 Ard, Shaun**, Albuquerque, NM. PostDoc (w/ M. Duncan) Shaun is now an NRC Postdoctoral Fellow at the Air Force Research Labs at Kirtland AFB working with Dr. Al Viggiano.
- 2011 Bhatt, Nidhi**, Athens, GA. B.S. Nidhi is currently a first year graduate student at UGA working with Prof. Marcus Lay and is first author on a recent JACS paper.
- 2011 Cauble, Meagan**, Ann Arbor, MI. B.S. Megan is currently a first year graduate student in Chemistry at the University of Michigan.
- 2011 Leach, Franklin**, Richland, WA. Ph.D. (w/ J. Amster) Franklin was promoted in 2012 to Research Scientist at Pacific Northwest National Laboratory. He and his wife Beth had a son, Wyatt Carlton Leach, born on June 21, 2012.
- 2011 Obi, Emmanuel**, Athens, GA. B.S. Emmanuel is currently a first year graduate student at UGA working with Prof. Gary Doubert.
- 2011 Wu, Judy**, Hsin-chu, Taiwan. Ph.D. (w/ P. Schleyer) Judy recently won one of the six international IUPAC Prizes for Young Chemists for her Ph.D. thesis work entitled "Quantification of Virtual Chemical Properties: Strain, Hyperconjugation, Conjugation, and Aromaticity."
- 2012 Bandyopadhyay, Biswajit**, Tuscaloosa, AL. Ph.D. (w/ Duncan) Biswajit graduated in May and is now working as a postdoctoral research scientist in Chemistry at the University of Alabama. His research with Dr. Daniel Goebbert will involve photoelectron spectroscopy of anions produced in molecular beams.
- 2012 Cheng, Tim**, Baltimore, MD. Ph.D. (w/ M. Duncan) Tim graduated in May and now works for Spectra Physics Lasers (a division of Newport Corporation) as a Field Service Engineer.
- 2012 Goldsmith, Cory**, Boulder, CO. B.S. Cory is now a graduate student in Physical Chemistry at the University of Colorado.
- 2012 Toole, Justin**, West Point, NY. M.S. (w/ G. Smith) Justin graduated in May and is now a Chemistry Instructor at the United States Military Academy at West Point, NY. ●



Martin Quack and Paul Schleyer

## The 2012 Schleyer Lecture

The 11th annual Paul v. R. Schleyer Lecture took place on Tuesday February 28, 2012 in the Chemistry Building, sponsored by the Chemistry Department, the Center for Computational Chemistry and John Wiley & Sons Publishers. The guest lecturer this year was Professor Martin Quack, from ETH-Zurich. His topic was "The Quantum Dynamics of Stereomutation and Electroweak Parity Violation in Chiral Molecules: Theory and Experiment."

Professor Quack is known internationally for his work in high resolution spectroscopy, infrared laser photochemistry and primary kinetic processes in polyatomic molecules. For his work in these areas, Professor Quack has received numerous honors, such as the Nernst-Haber-Bodenstein Prize (1982), Otto Klung Prize (1984), Otto Bayer Prize (1991), and the Paracelsus Prize (2002). Since 2011 he has been the President of Germany's Society for Physical Chemistry (DBG).

Following the morning lecture in Chemistry, a banquet was held in honor of Quack and Schleyer at the Taylor-Grady House. Professor Quack gave an after-dinner lecture on "Free Will." ●



Lou Allinger and Mike Johnson

## The 2012 Allinger Lecture

The fifth annual Norman L. Allinger Lecture took place on Tuesday April 10, 2012 in the Chemistry Building, sponsored by the Chemistry Department and the Center for Computational Chemistry. The speaker was Professor Michael Johnson, from the Department of Chemistry, University of Georgia. His topic was "Iron-Sulfur Clusters: How Aerobic Life Learned to Cope with these Highly Oxygen-Sensitive Cofactors."

At the banquet that evening, Johnson made an after-dinner presentation on "his life in science," which has become a tradition for speakers at this event.

Previous Allinger Lecturers included Allinger himself when the lecture was established in 2008, Prof. Josef Michl (University of Utah) in 2009, Prof. Gregory Robinson (UGA) in 2010, and Prof. Michael Duncan (UGA) in 2011. ●



## IN MEMORIAM

**Prof. Herman van Halbeek**, 59, a chemist and spectroscopy expert, died in Yorba Linda, CA, on March 23.

Born in Sittard, the Netherlands, Halbeek earned a B.S. in 1974 and an M.S. in 1978, both in bioorganic and clinical chemistry, before earning a Ph.D. in chemistry in 1982. All three degrees were from Utrecht University, in the Netherlands. He then served as a postdoctoral research associate in the university's bioorganic chemistry department. Moving to the U.S. in 1985, Halbeek joined the faculty of UGA as an assistant professor in the departments of Biochemistry and Chemistry. In 1989, he became an associate professor, remaining in that role until 1996, when he moved briefly to the Rega Institute for Medical Research at Catholic University of Leuven, in Belgium. Subsequently, Halbeek worked as a senior research scientist and director at the Glycobiology Research & Training Center of the University of California, San Diego, from 1997 until 2003. He then became a senior research chemist and codirector of nuclear magnetic resonance science and technology within the UC Berkeley College of Chemistry until 2007. He next served as a senior staff chemist and spectroscopy group leader at Exova's Health Sciences & Analytical Division, in Santa Fe Springs, CA.

He was a member of the Association of Managers of Magnetic Resonance Laboratories, the International Society for Magnetic Resonance, and ACS, which he joined in 1986.

**Mary Agnes Kaiser**, 63, a senior research fellow in the Corporate Center for Analytical Sciences at DuPont, Died on July 10 from metastatic cancer. Growing up in Exeter, Pa., Kaiser received a B.S. degree in chemistry from Wilkes College (now Wilkes University) in Wilkes-Barre, Pa.; in 1970, an M.S. degree from Saint Joseph's University in Philadelphia in 1972; and Ph.D. degree in chemistry from Villanova University, in Pennsylvania, in 1976.

After working as a Graham Perdue fellow at the University of Georgia, she joined DuPont in 1977. She was the first woman at the company to become a senior research fellow. An internationally respected analytical chemist, Kaiser was author or coauthor of more than 60 publications, including the book "Environmental Problem Solving Using Gas and Liquid Chromatography," written with R.L. Grob. Her research focused on the analysis of fluorinated materials in the environment. She was a visiting professor at the University of Delaware, a Fellow of the American Institute of Chemists, and a member of various scientific honorary societies. She joined ACS in 1969, and in 1987 she became the second woman to serve as chair of the society's Division of Analytical Chemistry. She was also a founding member of the Subdivision of Chromatography. Kaiser received Villanova University's 1997 Founder's Award, the 2004 ACS Division of Analytical Chemistry's Award for Distinguished Service in the Advancement of Analytical Chemistry, and 2008 ACS Delaware Section Award.

Kaiser is survived by her husband, Cecil Dybowski, and daughter, Marta Dybowski.



**Martin Newcomb and John Garst**

University of Illinois-Chicago gave the morning lecture. The evening dinner at the Georgia Center included John's wife Edna, their daughter Jennifer, several of John's former students (Woody Barton, Joe Pacifici, Brian Swift, John Hines), former Organic division secretaries (Jane Roth, Barbara Cherry, Vicki Bauer) as well as many former chemistry colleagues. Many old stories were told, and some of them were true (!). ●

## John Garst 80th Birthday

The department celebrated the 80th birthday of Professor John Garst with a special lecture and evening dinner on March 8, 2012. Professor Martin Newcomb from the

## Kenneth Whitten 80th Birthday

The department celebrated the 80th birthday (actual date Feb. 4) of Professor Kenneth Whitten with a special lecture and evening dinner on February 7, 2012. Professor Raymond Davis from the University of Texas-Austin gave the morning lecture. Ray was one of Ken's co-authors on their General Chemistry textbook, which is

presently up to its 10th edition (due out in January 2013). Ray and other Chemistry colleagues recounted many old stories after the evening dinner at the Georgia Center, which included Ken's daughter Kathryn Whitten Bohmer, his son Andy, his grandson Oscar, his assistant for many years Martha Dove, and many retired chemistry faculty. ●



**Ken Whitten and Ray Davis**

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## Calendar of Events 2012-2013

(see departmental web site for more details)

- October 9, 2012 **Robert S. Mulliken Lecture**  
Prof. Christian Ochsenfeld  
University of Munich, Germany
- October 12, 2012 **Whitehead Alumni Appreciation Lecture**  
Dr. Nate Lewis  
California Institute of Technology  
Evening Banquet: Georgia Center for Continuing Education
- November 5, 2012 **R. B. King Lecture**  
Prof. Robert Grubbs  
California Institute of Technology
- November 27, 2012 **Charles A. Coulson Lecture**  
Prof. Joe Francisco  
Purdue University
- December 5 2012 **Holiday Party:** Hotel Indigo
- February 15, 2013 **Charles A. Coulson Lecture**  
Prof. Joachim Sauer  
Humboldt University, Berlin, Germany
- February 26, 2013 **Schleyer Lecture**  
Prof. Tim Clark  
University of Erlangen, Germany
- March 22, 2013 **Charles A. Coulson Lecture**  
Prof. Anna Krylov  
University of Southern California
- March 26, 2013 **Robert S. Mulliken Lecture**  
Prof. Jesse L. Beauchamp  
California Institute of Technology
- April 23, 2013 **Allinger Lecture**  
Prof. James Prestegard  
University of Georgia



Mike Duncan, David Ladner, Tad Whiteside and Richard Walters, winners of the 2012 Chemistry Golf Scramble

## Chemistry/Life Sciences Golf Scramble

The Chemistry/Life Sciences Golf Scramble was held at the extremely challenging (!!!) UGA golf course on Saturday April 21, 2012. The event was sponsored by CVI Melles Griot, Thermo-Fisher, the Franklin College of Arts and Sciences, and the Chemistry Department. 11 teams of faculty, students, alumni and staff competed for prizes and bragging rights. After the golf, we enjoyed a barbecue sponsored by CVI Melles Griot, arranged by alumnus Todd Jaeger (Ph.D. 2004), who until recently was their national manager of research marketing. Drawings for random prizes followed this. Two teams finished tied at a score of 63, and the winner was decided in a put-off on the practice green. The winner for the overall putting contest was Bob Scott; Derek Eberhart won the longest drive competition; and Richard Hubbard III won the closest-to-the-pin competition. The scramble will take place again in April of 2013, so watch for announcements and plan to join us next year!

Alumni players included Tad Whiteside (Ph.D. 2004), Richard Walters (Ph.D. 2005), Jonathan Anderson (B.S. 2000), and David Ladner (Ph.D. 1974). ●

**Send us your updates on new jobs, marriages, children, retirements, special trips, etc. to Oksana Korolchuk at [head@chem.uga.edu](mailto:head@chem.uga.edu), or call 706-542-1919. We are especially interested in receiving your email addresses, so that we can send out reminders about upcoming events.**