

Welcome from the Head

Greetings from the Department of Chemistry!

It has been two years since our last newsletter was published, and a great deal of change has occurred since then, which you can read about in this issue. First, I would like to report two significant building projects. The Science Learning Center (SciLC) opened in the Fall semester of 2016, and is home to the General Chemistry and Organic Chemistry instructional programs. This building serves a number of science departments on campus, but Chemistry has the largest footprint in terms of laboratory space, occupying two of the three floors of the building. In addition to brand new laboratory space, the SciLC also features two 280-seat lecture halls, and two 72-seat "SCALE-UP" classrooms for active learning pedagogy. The SciLC offers state-of-the-art instructional facilities to our students, and one can tell as they come and go from classes and labs that they are pleased with this upgrade to our campus. Another exciting item of news regarding construction projects is the plan to erect two new buildings that will house the experimental programs of all Chemistry researchers. These buildings will be called STEM-I and STEM-II, to reflect the interdisciplinary nature of research that they will house. Chemistry will be a 60% occupant of each building, and engineering will occupy the other 40%. STEM-I is currently in the design phase, and pending approval of funds, construction will begin this summer, with occupancy in 2020. STEM-II construction is planned to commence shortly after STEM-I has been completed. Each building will be 100,000 square feet in size, and will be located north of the Davison Life Sciences Building.

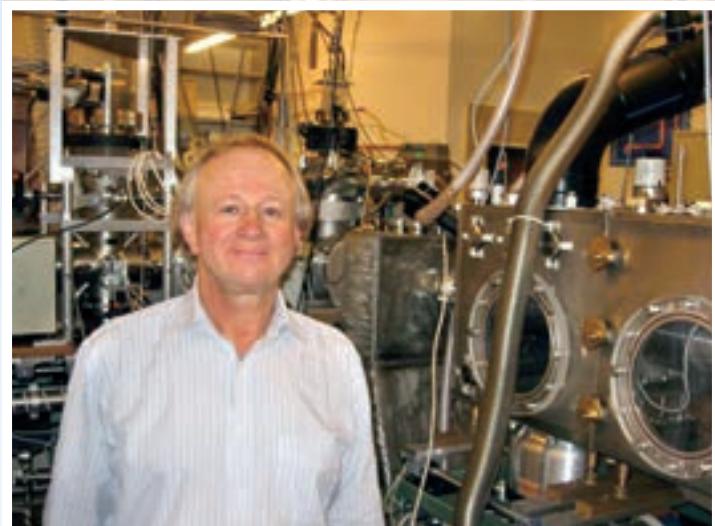


Prof. Jon Amster

We have hired three new tenured/tenure-track faculty in the last two years. Melanie Reber, an Assistant Professor, arrived in the summer of 2016, and is building a research program in ultra-fast laser spectroscopy. In January 2017, we recruited Steven Wheeler, an Associate Professor from Texas A&M University, where he had built a successful and well-funded research program in computational chemistry. Steven has had considerable success already, including being the recipient of a prestigious NSF Career Award. Our most recent tenure-track hire is Amanda Frossard, an Assistant Professor, who arrived in the summer of 2017. Amanda is an environmental/atmospheric chemist and is the newest member of our analytical division. You can read more about these new faculty members in this issue of the newsletter. In addition to tenure-track faculty, we have also hired a number of lecturers recently to help with our large undergraduate enrollments. Sue Ellenberger, Ana West, Sarah Blankenship, and Wenjian "Vince" Du all participate in the General Chemistry instructional program. Dr. Ellenberger comes to us with considerable experience, including several years as an instructor at Clemson University. Dr. West most recently was an instructor at Florida International University. Dr. Blankenship is a recent graduate of the University of Virginia, and Dr. Du is a recent graduate of Drexel

Please Join us for the 2018 Alumni Weekend!

Alumni Lecture on Friday, April 27th
Golf Scramble on Saturday, April 28th



Prof. John P. Maier

The Chemistry Department's alumni Weekend will be April 27 and 28, 2018. The weekend begins with tours of the department during the day on the 27th, followed by the Alumni Lecture that afternoon at 4:00 and then the dinner in the evening (drinks at 6:00; food at 7:00; awards at 7:45). The Chemistry Golf Scramble will be at 1:30 on Saturday the 28th at the UGA Golf Course. Please add these events to your calendar, and additional details will come later. You can contact Ms. Hannah David (Hannah.David@uga.edu; 706-542-1919) for more information or to reserve a place.

The 2018 Alumni lecture will be presented by Prof. John P. Maier from the University of Basel in Switzerland. Professor Maier is an internationally known expert in the spectroscopy of radicals, ions, carbon clusters, and interstellar molecules. Prof. Maier has held the position of Chair of Physical Chemistry at the University of Basel since 1992. He has won many international honors and awards for his work, and was elected Fellow of the Royal Society, London in 1999. He and his research group garnered international acclaim in July 2015 when they measured the laboratory UV-VIS spectrum of the C₆₀ ("Buckyball") cation at high-resolution for the first time and demonstrated that it matches two previously unassigned interstellar lines (Nature 523, 322(2015)). This confirmed the long-held belief that fullerenes are present in interstellar space. John is also an avid golfer, and will join us in the Chemistry Scramble on Saturday. ●

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University. In addition, Ted Reber has joined our faculty as a lecturer, and assists with upper level undergraduate courses and our graduate course on electronics. We have also had two faculty departures over the same time period. Ryan Hili has returned to his native Canada and is on the faculty at York University (Toronto). Shanta Dhar moved her research program to the University of Miami School of Medicine. Both had developed successful research programs at UGA, and we know they will do well in their new positions.

It is my sad duty to report the passing of two faculty members, Dr. Nigel Adams and Dr. Peter Albersheim. Peter came in 1985 from the University of Colorado-Boulder to found the Complex Carbohydrate Research Center, which is the most successful and best funded research center at UGA. Nigel arrived in 1990 from the University of Birmingham (UK) to build a program in gas-phase ion chemistry and atmospheric science. Both had long and productive careers at UGA, and will be missed.

The major capital investments that have and will be made into the Department of Chemistry reflect the important contribution we make to the university both in research and instruction. Our department is a "dual-threat", being the only one in the College of Arts & Sciences that

is consistently ranked in the top five for both external funding received and for credit hours produced. The quality of research is frequently recognized by major national and international awards. Most recently, Profs. Greg Robinson and Michael Johnson were named as Fellows of the Royal Society of Chemistry, which you can read about in this issue of the Newsletter. Our graduate program continues to thrive, with over 150 doctoral students enrolled. Our junior faculty excel at research, and quickly obtain federal funding, and in many cases, have multiple grants as assistant professors. We hope to hire several more assistant professors in the next few years to fill all the new laboratory space that we will enjoy in the new STEM buildings! There is a substantial cost to recruiting excellent faculty and graduate students and providing resources that attract the most qualified. We are grateful for the generous donations from our alumni that support these activities. Please consider making a contribution that can be used to enhance the instructional or research missions of 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 on Friday, April 27th, the annual golf tournament on Saturday, April 28th, or for the Allinger Lecture this coming fall. •



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Alumni Award winner Brad Crocker and Lecturer Prof. Mildred Dresselhaus

2016 Alumni Lecture and Banquet

The UGA Chemistry Department held its annual Alumni lecture and Awards Banquet on Friday, April 29, 2016, at the Tate Student Center. The Alumni Lecture was presented by Prof. Mildred Dresselhaus of Massachusetts Institute of Technology, on the topic of "Nanoscience in Our Future."



Professor Mildred Dresselhaus unfortunately passed away in February of 2017 at the age of 86. She was an Institute Professor and Professor of Physics and Electrical Engineering (emerita) at the Massachusetts Institute of Technology. She was a native of the Bronx, NY, where she attended public schools through junior high school, completing her high school education at Hunter College High School in New York. She began her higher education at Hunter College in New York and received a Fulbright Fellowship to attend the Cavendish Laboratory, Cambridge University (1951-52). Dresselhaus received her master's degree at Radcliffe College (1953) and her Ph.D. at the University of Chicago (1958). She then spent two years at Cornell University as a postdoc before moving to Lincoln Lab as a staff member. She became a visiting professor of Electrical Engineering at MIT in 1967, a tenured faculty member in 1968, and Professor of Physics in 1983. In 1985, she was promoted to Institute Professor – the first female to hold this title at MIT. Dresselhaus is particularly noted for her work on graphite, graphite intercalation compounds, fullerenes, carbon nanotubes, and low-dimensional thermoelectrics.

Dresselhaus was awarded the National Medal of Science in 1990 for her work on electronic properties of materials as well as expanding the opportunities of women in science. In 2000–2001, she was the director of the Office of Science at the U.S. Department of Energy. She also served as president of the American Physical Society and president of the American Association for the Advancement of Science. Dresselhaus was known widely for her efforts to promote increased participation of women in science. As a result of this, in 2010 she won the American Chemical Society Award for Encouraging Women into Careers in the Chemical Sciences. In 2012, she was co-recipient of the Enrico Fermi Award with Burton Richter, and that same year was awarded the Kavli Prize “for her pioneering contributions to the study of phonons, electron-phonon interactions, and thermal transport in nanostructures.” In 2014, she was awarded the Presidential Medal of Freedom. She was married to Gene Dresselhaus, a well-known theorist, and had four children and several grandchildren.

The winner of the Distinguished Alumnus award for 2016 was Brad Crocker. Brad graduated from the University of Georgia in 1987, earning a BS in Chemistry. After graduation he worked for the University System of Georgia collecting and properly disposing of expired and unwanted chemicals and hazardous materials from various labs, research facilities, and warehouses throughout the state. Having participated in ROTC while at UGA, Brad entered active duty in September 1987 as a 2nd Lieutenant in the U.S. Army. He served in various roles within the 10th Mountain Division and 18th Airborne Corps until he finished his commitment in 1990.

Brad started his career in the chemical industry with Nalco Chemical Co. where he sold water treatment chemicals to light industry throughout South Carolina and Georgia. In 1992 he transitioned to the specialty chemical industry when he joined Union Camp's Chemical Products Division. This was Brad's first exposure to the “Pine Chemical” industry. This was a small but interesting segment of the specialty chemical market that uses by-products from the paper making process to produce high value products used in other industries. Union Camp

was acquired by International Paper in 1998 and soon after Brad became a Global Business Director at Arizona Chemical, a subsidiary of International Paper, living in Amsterdam, The Netherlands.

In 2003, Brad joined Resolution Performance Products, the world's largest producer of epoxy. Resolution Performance Products was one of several chemical holdings combined by Apollo Management, a NYC based Private Equity firm, to form Hexion Specialty Chemicals in 2006. Brad held various management positions within Hexion until leading the divestiture of his division to Harima Chemicals in 2011, forming Lawter, Inc., a global leader in resins and additives used by the graphic arts, adhesives, specialty coatings, and rubber industries. He served as Executive Vice President and Chief Operating Officer at Lawter until assuming the role of President and Chief Executive Officer at Americas Styrenics LLC in 2012. Americas Styrenics is one of the largest producers of styrene and polystyrene resins in the Americas. With revenues of \$1.8 Billion, AmSty supplies roughly 1/3 of all the polystyrene used in North America for applications like food service, packaging, medical, and refrigerated appliances.

Brad lives in the Woodlands, TX with his wife Erin, daughters Kathleen (19), Caroline (17), Alexandria (16), and son Maximillian (14). ●

2017 Alumni Lecture and Banquet

The UGA Chemistry Department held its annual Alumni lecture and Awards Banquet on Friday, April 21, 2017, at the new Science Learning Center. The Alumni Lecture was presented by Prof. Henry F. “Fritz” Schaefer from UGA, on the topic of “Density Cumulant Theory: Methods, Benchmarks, and New Directions.”

Henry F. Schaefer III received his B.S. degree in Chemical Physics from MIT and his Ph.D. degree in Chemical Physics from Stanford. He served as Professor of Chemistry at the University of California, Berkeley for 18 years before moving to UGA in 1988. Schaefer is presently Graham Perdue Professor of Chemistry and Director of the Center for Computational Quantum Chemistry at UGA. He is the author of more than 1500 scientific publications, with a large majority appearing in the Journal of Chemical Physics, Journal of the American Chemical Society or the Journal of Physical Chemistry. He has given 80 named or endowed lectures, received 30 honorary degrees, and is a Fellow of twelve learned societies. His major awards include five from the American Chemical Society: Pure Chemistry, Leo Hendrik Baekeland, Theoretical Chemistry, Ira Remsen, and the Peter Debye Award in Physical Chemistry. The Science Citation Index reports that his research had been cited more than 64,000 times. His research involves the use of state-of-the-art computational hardware and theoretical methods to solve important problems in molecular quantum mechanics.

The winner of the Distinguished Alumni Award for 2017 was Prof. Mary Nakhleh, recently retired from Purdue University. Mary earned her B.S. degree from Georgia in 1961, pursued graduate

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Profs. Michael Duncan and Mary Nakhleh

work here, and then taught high school science in Conyers, Georgia. In 1964 she moved to Falls Church, Virginia to work as a field research chemist at Melpar Co.

In 1967, Nakhleh moved to Maryland where she taught freshman chemistry at Mount St. Mary's College in Emmitsburg for three years. From 1970-1990 she was a science, mathematics, and computer science teacher in Frederick County, Maryland, while also pursuing graduate work at the University of Maryland. She earned a M.A. in Chemistry Education in 1985 and a Ph.D. in Science Education there in 1990. That same year, she moved to Purdue University.

Professor Nakhleh's position was interdisciplinary by nature,

and she functioned as a bridge between the science community and the science education community both at Purdue University and on the national and international levels. At Purdue she served on several committees in both the College of Science and the College of Education, carrying primary responsibility for the various certifying and accrediting agencies of Education and Chemistry.

On the national level, she was active in both the American Chemical Society and the National Association for Research in Science Teaching. On the international level, she worked with education projects in Puerto Rico and Honduras and participated in several international Gordon Research Conferences on Chemical Education. She worked with the American University of Beirut in Lebanon to assess its undergraduate chemistry program.

While at Purdue, she received several awards and honors for her research and teaching and is an internationally known authority on students' understanding of the particle nature of matter, with many publications and presentations to her credit. Nakhleh has had numerous Ph.D. and M.S. students and has also trained many secondary science teachers in the fields of Chemistry, Earth Science & Physics.

After more than 20 years of service at Purdue, Nakhleh retired in May 2012. She maintains her residence in West Lafayette and looks forward to traveling around the country to visit her three grandchildren. She is also happy to have more time to pursue her many hobbies including genealogy and collecting clocks, jewelry, gems, and minerals. ●

New Faculty Hires



Melanie Reber

Dr. Melanie Reber joined the faculty as an Assistant Professor in July 2016. Reber received her B.A. in Chemistry at Macalester College where she was fortunate enough to carry out high-resolution spectroscopy research with Prof. Thomas Varberg. She continued high-resolution spectroscopy research in graduate school at the University of Colorado, Boulder under the advisement of Prof. David

Nesbitt. There she studied the structure and dynamics of combustion radicals with high-resolution infrared spectroscopy. Upon obtaining a Ph.D., she began work as a postdoctoral associate with Prof. Thomas Allison at Stony Brook University. There, she developed the technique of cavity-enhanced transient absorption spectroscopy (CETAS). In July of 2016, she began as an Assistant Professor here at UGA.

Research in the Reber lab focuses on the dynamics of molecules that occur on an ultrafast (picosecond to femtosecond) timescale. By using the new cavity-enhanced transient absorption technique, she

is able to do transient absorption spectroscopy in the UV, visible, and infrared regions of the spectrum, on species produced in molecular beams, for the first time. Transient absorption spectroscopy is a form of pump-probe spectroscopy where the probe is an absorption experiment, and is commonly used in condensed-phase systems. However, traditional transient absorption lacks the sensitivity to study the low densities found in the gas-phase and in molecular beams. By coupling both the pump and probe lasers to enhancement cavities, the sensitivity of transient absorption increases by over four orders of magnitude, thus opening up the possibility of studies in molecular beams. The Reber lab is building a new cavity-enhanced transient absorption spectrometer and molecular beam source. In addition, the Reber lab builds and develops ultrafast fiber laser frequency combs and amplifiers specially tailored for coupling into external enhancement cavities.

The molecular beam provides a cold source of molecules and the ability to make clusters, radicals, and other designer molecules. One research direction will study the fundamentals of light-harvesting molecules, with a focus on the process of singlet fission, in which one absorbed photon becomes two excited electrons. Singlet fission is already starting to be used to increase the efficiency of solar cells,

even though it is not well understood. Taking a physical chemistry approach, the Reber lab will look at model systems to understand the fundamental mechanisms of singlet ssion. A big advantage of studying these molecules in the gas phase is the lack of solvent interference. This will simplify the interpretation of the results and more easily compare to theory. A second direction of research will be to study ultrafast dynamics of combustion radicals. During combustion, short-lived transients are produced that have an unpaired electron and are highly reactive, called radicals. The high reactivity of these radical intermediates makes them both difficult to study and important for understanding combustion chemistry. CETAS provides a way to study the ultrafast dynamics of these radical intermediates. The CETAS technique is widely applicable and there are many other interesting molecules to explore.



Steven Wheeler

was promoted to Associate Professor in 2015 and named Davidson Professor of Science in 2016.

The Wheeler Group does research in computational physical organic chemistry, focusing on the role of non-covalent interactions in organic chemistry, drug design, and organic electronic materials. His group uses a wide range of computational methods to understand the nature of π -stacking and other non-covalent interactions and to apply this understanding to the solution of diverse problems in organic chemistry. For instance, in work supported by an NSF CAREER grant, the Wheeler Group is using density functional theory (DFT) and molecular dynamics simulations to study the supramolecular assembly of curved and planar polycyclic aromatic species. Such systems can be used to develop organic electronic materials with applications in organic field effect transistors, photovoltaics, and light-emitting diodes. Central to the properties of these materials is controlling the packing of the constituent molecules in the solid state. The Wheeler Group is developing conceptual and computational tools to predict the packing of these materials, which can aid the design of new materials with carefully tuned properties.

Another major research focus of the Wheeler Group, also supported by the National Science Foundation, is the use of computational quantum chemistry to design more effective asymmetric catalysts. A particular aim is the development of computational tools for the automated quantum mechanical prediction of stereoselectivities of reactions catalyzed by transition metals and metal-free catalysts. Using these tools, potential new catalyst designs can be screened computationally, allowing synthetic chemists to focus on making and testing only the most promising new catalysts. Such catalysts can be used in the synthesis of complex chiral molecules, including pharmaceuticals.



Amanda Frossard

Dr. Amanda Frossard joined the chemistry faculty at UGA in August 2017 as Assistant Professor of Analytical Chemistry. Her work uses analytical chemistry to improve the understanding of the atmosphere. The influence of aerosol particles remains one of the largest uncertainties in predicting the Earth's energy balance in a changing climate system. Aerosol particles can affect the climate directly by scattering or

absorbing solar radiation, or indirectly by acting as nuclei onto which water vapor condenses to form cloud droplets. These effects depend on the size and chemistry of the particles. One important aspect of aerosol chemistry is the presence of surface-active compounds (surfactants), which may influence the ability of a particle to uptake water. The Frossard Lab works to identify the sources of surfactants in aerosol particles, measuring their chemical compositions, and determining their role in the atmosphere.

The Frossard Lab combines laboratory analysis, instrument design and development, and field work to characterize the chemistry of aerosol particles. The first direction of this work is determination of the role of surfactants in aerosol production. This work utilizes an in-lab marine aerosol generator together with ship-board field measurements to investigate the control of surfactants on bubble-bursting at the ocean surface, the sources, composition, and concentrations of surfactants in seawater and their regional and seasonal variations, and the effect of the bubble bursting on the surfactant properties of the aerosol particles.

In a second area, the Frossard Lab uses mass spectrometry and other analytical techniques to probe the composition of surfactants in marine aerosol particles, both laboratory generated and atmospheric. They measure the fraction of the surfactants that partition from seawater to the aerosol particles, comparing the composition and properties in each. Further work looks at the photochemical transformation of surfactants in these aerosol particles as they age in the atmosphere. The third direction of research involves building a laser-based aerosol optical trap, combined with Raman spectroscopy, to measure the effect of surfactants on cloud droplet formation, growth, and lifetime. The goal is understanding the influence of surfactants in the ability of particles to uptake water and their effect on the lifetime of individual aerosol particles to evaporation, as well as the influence of surfactants on both hygroscopicity and surface tension of aerosol particles.

Dr. Frossard received her B.S. in Chemistry from UC-Berkeley, where she worked with Prof. Allen Goldstein on measurements of secondary organic aerosol particles and contributed to method development for the Thermal Desorption Aerosol GC-MS (TAG) instrument. She completed her Ph.D. at the Scripps Institution of Oceanography at UC-San Diego with Prof. Lynn Russell. During her Ph.D. work, she characterized marine aerosols during multiple ship-based projects using analytical techniques including FTIR spectroscopy, mass spectrometry, and X-ray microscopy. This work contributed to the understanding of the sources, composition, and transformations of marine aerosol particles in the atmosphere and has implications for their representation in atmospheric models. Frossard returned to UC-Berkeley for her postdoctoral work with Prof. Ronald Cohen where she designed and built an aerosol optical trap combined with Raman spectroscopy. She used this instrument to measure the water uptake and evaporation of single, micron-sized aerosol particles. ●

UGA Honors Student and Chemistry Major Named 2017 Goldwater Scholar



Morgan Gibbs

of the Honors Program. The scholarship recognizes exceptional sophomores and juniors across the nation. This year, awardees were

Honors Program student and Chemistry major Morgan Gibbs was among 240 students across the nation to be recognized as Barry Goldwater Scholars, earning the highest undergraduate award of its type for the fields of mathematics, natural sciences and engineering. Gibbs, from Peachtree City, is majoring in Chemistry and minoring in Pharmaceutical Sciences. Since 1995, 53 UGA students have received the Goldwater Scholarship, all of whom have been members

selected from a field of 1,286 undergraduates who were nominated by campus representatives from 2,000 colleges and universities nationwide. The awardees will receive up to \$7,500 toward the cost of tuition, fees, books, and room and board. Gibbs plans to obtain a doctorate in medicinal chemistry and intends to pursue a career in the interdisciplinary field of drug discovery and design. Her interests span a wide variety of drug design techniques, and she wants to use these techniques to combat chronic diseases such as cancer and Alzheimer's disease. She currently conducts research in Professor Arthur Roberts' laboratory in the UGA College of Pharmacy, where they study drug-protein interactions with the multidrug resistance transporter protein P-glycoprotein.

"Once again, multiple UGA students have received the prestigious Goldwater Scholarship—a clear signal of the strength of undergraduate education at this great institution," said UGA President Jere W. Morehead. "...I have no doubt their research discoveries will help to improve lives around the world. The University of Georgia is very proud of them." ●

Science Learning Center Opened in Fall 2016

The official opening of the Science Learning Center was celebrated during a dedication ceremony on August 17, 2016. Prof. Greg Robinson provided remarks on behalf of the Department of Chemistry:

"I am delighted to be with you this morning to commemorate the opening of this magnificent Science Learning Center at The University of Georgia. Frankly, I am quite fortunate because I am teaching Advanced General Chemistry to our Honor Students and Freshman Chemistry Majors in this awesome facility this very semester. Notably, this course has a record enrollment of 158 students this semester—representing a full 1/3 increase from last year! We simply could not have accommodated such an enrollment increase in our previous auditorium. The marvels of our modern society are directly derived from fundamental discoveries in science and engineering. I offer the following for your consideration:

The invention of the transistor ultimately led to the advanced computer chips of today.

Devastating diseases such as polio and smallpox, once running rampant, are now nearing eradication. Three decades ago we were all carrying hand-held calculators; now we carry smart-phones.

These monumental breakthroughs were all made possible by fundamental, curiosity-driven scientific discoveries using chemistry, biology, and physics. Of course, we, as a society, still face many significant challenges:

From the search for clean energy to pest-resistant crops;
From combating climate change to fighting infectious diseases;
From curing Alzheimer's Disease to treating traumatic brain injuries.

History suggests that these challenges will also be met by fundamental scientific discoveries beginning with chemistry, biology, and



physics. However, these discoveries will not be made without us recruiting, training, and educating brilliant young scientists. With this new facility, The University of Georgia, and indeed the State of Georgia, has thrown down the gauntlet and is sending a clear message: 'Not only do we accept this responsibility of science education, we fully embrace the challenges that are before us.'

The new Science Learning Center will allow us to introduce the wondrous, captivating, and amazing world of science to undergraduate students in a state-of-the-art, modern facility. The Science Learning Center is a welcomed addition to the many new facilities that have been added to campus over the past two decades. We thank Chancellor Huckaby and President Morehead for their vision and their determination to get the job done. As President Morehead said last week on the first day of classes, 'Let's get to work!' ●

Remarks about teaching in the new Science Learning Center

Members of the Chemistry Department shared their thoughts and experiences about teaching in the new Science Learning Center...

Prof. Chuck Katal: "I have been fortunate to teach second semester General Chemistry for Honors students and chemistry majors (CHEM 1312H/1412) for the past dozen years. My objective in this lecture course and the associated laboratory experience (CHEM 1312L/1412L) is to provide students with a comprehensive introduction to the fundamental concepts, experimental techniques, and critical thinking skills required to characterize complex chemical systems at both the molecular and macroscopic levels. Holding the lecture and lab in the new Science Learning Center has been a very positive experience. The physical layout of the lecture auditorium, with tiered and movable seating, allows students to work in small groups to answer questions that I pose during class. It also makes it easy for me to move among the students rather than standing at the lectern. The modern lab rooms are a real improvement over the functional, but outdated and, to be honest, gloomy lab rooms in the Chemistry Building. Capping the enrollments at 24 students per section facilitates more personalized interactions between the students and the graduate Teaching Assistant in charge of supervising the section. Finally, I sense from talking to students in the course that they appreciate the opportunity to learn science in this modern facility."

Prof. Richard Morrison: "There are some nice configurational elements in large lecture auditoria. It is easier to walk away from the lectern to engage the class in the present configuration compared

to the coliseum model. I also like a class size of 280 as opposed to 370... For the organic chemistry instructional program, we had input into the design and configuration of the laboratory rooms. They are a pleasure to teach in. The instrumentation we have in the organic labs is unparalleled. The labs are the best elements of the new SLC, in my opinion."

Dr. Wayne Suggs: "I found teaching in the new large lecture room more engaging with the students. They had room to turn around and work with the person behind them. There was more desk space for group work. The SCALEUP classroom had very effective technology: overhead projector, wall monitors and student desktops. It is most effective when you have a large portion of the course in an 'active' learning mode. It gave me the opportunity to develop an analytical course for chemistry majors using these methods. I look forward to continuing along those lines."

Prof. Norb Pienta: "I had the opportunity to use the new SCALEUP classrooms, rooms with round tables to facilitate discussions and group work, for the new introductory course CHEM 1210 Basics of Chemistry. The group work and the ability to have the students work on activities and worksheets helped them develop self-confidence while working on their problem solving skills. These classrooms enabled the teaching team to answer student questions and to provide help in real time, as they were trying to understand the ideas and apply it to questions. Although many students liked the venue, others were hesitant because they could not sit quietly or 'hide'. I look forward to developing the course content and my teaching skills with the new pedagogy." ●

New Company to Develop Improved Synthesis of Neurotransmitters

Spring 2011 was a groundbreaking semester in the research laboratory of Prof. Richard Morrison. Daniel Morrison, Richard's son, was completing his B.S. Chemistry degree prior to commencing graduate work at Georgia Tech. Douglas Jackson was in his second year of Ph.D. work under Dr. Morrison's direction. That spring, Daniel successfully accomplished the first reported microwave-promoted decarboxylation of an amino acid. The potential to generate important neurotransmitters such as histidine and serotonin, as well as other bioactive amines such as 2-methylbutylamine, from their corresponding amino acids via microwave promotion effected a major redirection in Dr. Jackson's research. Douglas' insightful research produced a major breakthrough in the rapid and clean generation of several bioactive amines from amino acids. The potential of this breakthrough was recognized by the University of Georgia Research Foundation (UGARF) which encouraged the innovators to bring this technology to the marketplace through UGA's Innovation Gateway. Douglas earned his Ph.D. degree at UGA in 2014 and joined the UGA Chemistry faculty as an instructor. Daniel completed his MS Degree at Georgia Tech in 2015 and returned to UGA as a Visiting Scholar. Reunited again in the laboratory, Richard, Douglas and Daniel formed a start-up company, MJM Chemical, which produces bioactive amines and also provides consulting and



Daniel Morrison, Richard Morrison, Douglas Jackson

synthetic services for specialty chemicals. MJM Chemical was invited to the BIO 2017 International Convention which represents more than 1,100 biotechnology companies, academic institutions and related organizations in more than 30 countries. Richard, Douglas and Daniel continue to develop their new technology at the MJM Chemical laboratory located on campus at the Innovation Gateway CAGT building on Riverbend Road.

Michael Johnson Named Fellow of the Royal Society of Chemistry

Michael K. Johnson, Regents' Professor of Chemistry, was named a Fellow of the Royal Society of Chemistry (FRSC) in October 2017. Based in the United Kingdom, the Royal Society of Chemistry is a non-for-profit organization with more than 54,000 members. It was founded in 1841 with a mission to advance excellence in the chemical sciences. Members of the Royal Society of Chemistry are required to have made an outstanding contribution to the advancement of chemical sciences. Achieving FRSC status denotes an exceptionally high level of accomplishments in the field of Chemistry. The names of recently elected Royal Society of Chemistry Fellows are periodically published in *The Times of London*.

Mike Johnson was born and educated in the UK, receiving B.A. and M.A. degrees from Cambridge University and M.Sc. and Ph.D. degrees from the University of East Anglia before coming to the US in 1980. Consequently, this international recognition of his accomplishments is particularly meaningful for him. Mike is a world renowned bioinorganic spectroscopist who has made seminal contributions in developing the use magnetic and natural circular dichroism, resonance Raman and EPR for



Michael Johnson

investigating biological metal centers and in understanding the assembly, repair, and functions of iron-sulfur clusters - one of Nature's most ancient, abundant and ubiquitous protein cofactors. He has brought great distinction to the University of Georgia and played a major role in establishing UGA as a center of excellence for interdisciplinary training and research in the role of biological metal centers. ●

Gregory H. Robinson Named Fellow of the Royal Society of Chemistry

Gregory H. Robinson, University of Georgia Foundation Distinguished Professor of Chemistry, was named a Fellow of the Royal Society of Chemistry in March 2017. The Royal Society of Chemistry is the United Kingdom's professional body for chemical scientists, spanning 175 years, and the largest organization in Europe for advancing the chemical sciences. The Royal Society of Chemistry brings together members of industry and academia, promotes innovation, advises the UK on policy, and promotes activities that lead to great advances in science.

Greg Robinson, an internationally recognized scholar, was acknowledged for his scientific achievements. Over the past 25 years, Robinson, his group and his collaborators have published a series of fundamental findings that have reshaped how scientists view chemical bonding in inorganic compounds. Robinson's research concerns the synthesis, structure and stabilization of compounds containing multiple bonds between heavier main group elements, such as gallium and lead.

Statements about and by Greg appeared in UGA Today, UGA's online summary of top news:

"This is a well-deserved honor for Dr. Robinson in recognition of his creative and pioneering work in inorganic synthetic chemistry," said Jonathan Amster, professor and head of the department of chemistry. "The number of American RSC Fellows is quite small, and so Greg has established himself as a member of an elite group. This brings honor not only to him, but to our department and the university."

"To be named a Fellow of the Royal Society of Chemistry is a tremendous honor, and to now be associated with some of the world's most notable chemists is equally humbling," Robinson said. "This international honor is a testament to the gifted students and creative colleagues that have been a part of our research team over the years." ●

Other News Items:

Prof. Charles Kutil stepped down from his position as Associate Dean of the Franklin College of Arts and Sciences and returned to the Chemistry Department. He will continue his activities with teaching General and Inorganic Chemistry and STEM Education.

Dr. Ted Reber was hired as Instructor of Chemistry. Ted has been working in the instrumental analysis and Advanced Instrumentation Lab ("mega-lab") courses, as well as the graduate level Electronics course.

Professor Robert Scott stepped down from his position as Associate Vice President for Research, where he served for nine years, and returned to the Chemistry Department, where he is teaching in the Inorganic Chemistry program and active in departmental operations.

Mr. Thomas Johnson was hired in October 2017 as the new Department Operating Officer (DOO) for the Chemistry Department. He comes to UGA from Hitachi Data Systems, where he was a Director of their technical consulting organization. In addition to his IT experience at EMC and Data General, Tom also has a degree in neurobiology from Cornell University and spent six years doing pharmaceutical research at Hoffmann-LaRoche. His focus will be on reengineering and streamlining the processes of the Department, and coordinating its non-scientific operations.

Ms. Laura Veatch, formerly the Assistant to the Department Head, left Chemistry to take a new position in the UGA Office of Public Service and Outreach. Ms. Hannah David was hired as the new Assistant for the Department Head.

Ms. Kistie Manders, formerly one of the business/accounting staff for the department left Chemistry for a position in the UGA Board of Regents' Office. Ms. Lori Wall was hired to replace her in Chemistry accounting.

Suzanne Ellenberger joined Chemistry as a lecturer in January 2017. Sue has taught chemistry for over 20 years and most recently was the chair of the science department at Tri-County Technical College and worked as a chemistry lecturer at Clemson University and has also worked as an industrial chemist. She is a synthetic organic chemist who teaches general, introductory and organic chemistry classes. Sue is interested in increasing student success by helping students develop a conceptual understanding of chemical principles and the ability to see relationships between concepts by utilizing many teaching methods to cover the topics in her classes.

Ana West joined Chemistry after completing a Ph.D. at Emory University and postdoctoral work at the University of Minnesota, followed by an instructor position at Florida International University. Ana is teaching in the general chemistry program, and although she has taught a variety of courses, she has a preference for the new CHEM 1210 course that is part of the departmental effort to increase student success. She is interested in developing case studies, videos and other multimedia tools to introduce early undergraduate students to molecular models for natural phenomena, and to grow their abilities to understand the chemistry perspective of complex scientific issues. She is joined in Athens by her husband, a Georgia native, and their two cats.



Vince Du, Sue Ellenberger, Sara Blankenship, Ana West

Wenjian (Vince) Du joined the Department of Chemistry at UGA as a lecturer in fall 2017 after completing a degree at Drexel University. He is a biochemist with a specialization and expertise on the enzyme cellulase and its interaction with cellulose. Vince has been teaching the CHEM 1212 and the new CHEM 1210 courses at UGA.

Sara Blankenship graduated from the University of Virginia in the summer of 2017 and joined UGA in August. She is a biophysical chemist who studied membrane protein structure and dynamics. Her interests in General Chemistry instruction include developing active learning activities to increase student engagement. She reports that she also really likes coffee (because that's important to the job!).

Professor Ryan Hill, Assistant Professor of Organic Chemistry, resigned his position at UGA and moved to the Department of Chemistry at York University in Toronto, Canada.

Professor Shanta Dhar, Assistant Professor of Organic Chemistry, moved to the University of Miami School of Medicine. ●

Spring 2016 Reception Honors Graduating Seniors



L-R: David Rink, Lorena Gomez, Samuel Kennedy, Lydia Claire (Meg) Babcock-Adams, William Michael Britt, Erin Blasberg, Jacob Rothbaum, John Latremoile, Kristopher Troy Rahn, Christopher Watkins, Dylan Orr, Joshua Fon.

Also graduating in 2016 but not shown: Paul Cray, Nicole Comancho, Andrew Hu, Zhao Lin, Sue Park, Rada Petrovic, Victoria Pham, James Sutton, Italia Tran, Charles Warnock, Conner Woods, Corbin Feit, Joshua Miller, Rodrigo Tapia, Dylan Duggan, Jonathan Stoll, Trenton Berding, Dixon Babb and Cathrina Nauth.

36 seniors graduated with degrees in Chemistry at the end of spring semester 2015. 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. Doublerly recognized each of the seniors present, noting their various activities and accomplishments throughout their undergraduate careers, including the impressive statistic that 14 of these seniors graduated with GPAs greater than 3.5. 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! ●

Spring 2017 Reception Honors Graduating Seniors



Front row (L-R): Elizabeth Abercrombie, Morgan James, Morrison Nolan, Bakti Patel, Sydney White.
Second row: Calvin Jung, Amanda Wachtel, Aleia Bellcross, Hannah Smith, Sang Lee, David Reehl.
Third row: Matthew Pearson, Alexander Winkles, John Chambers, Ryan Servas, Tyler Richardson.
Back row: Jose Carrillo, Tayon Williams, Michael Arthur, Peter Cieszewski, Maximilian Choo, Willis Copeland.

The Department of Chemistry hosted a commencement ceremony and reception for its graduating seniors on May 5, 2017 at the Science Learning Center and honored these graduates:

Elizabeth Eleanor Abercrombie
Michael Courage Arthur
Alexandra Claire Aspley
Aleia Dorothy Bellcross
Daniel Ryan Carlson
Jose Luis Carrillo
John Travis Chambers
Matthew David Chapman
Maximilian Choo
Peter Cieszewski
Michael James Clarkson
Willis J. Copeland
Morgan Elizabeth James
Calvin Youngho Jung
Nabeel Kalla
Sang Min Lee
Sooyeon Lee

Ethan Ian Li
Michael Anthony Marshall
Morrison Robert Nolan
Jae Ho Oh
Bhakti Bharat Patel
Matthew Charles Pearson
David Edward Reehl
Tyler James Richardson
Ryan Gunnar Servas
Grace Marie Smith
Hannah Michelle Smith
Elizabeth Caroline Snyder
Amanda Rose Wachtel
Sydney Helen White
Tayon Devontae Williams
Alexander Tierney Winkles
Jordan Leigh Youngs

UGA Chemistry and Northeast Georgia ACS Section Awards Night 2016

The UGA Chemistry Department presented its annual awards at the spring Alumni and Awards Banquet on Friday April 29, 2016 at the UGA Georgia Center. This banquet was held jointly between Chemistry and the Northeast Georgia Section of the ACS. Prof. Gary Doublerly presented the Chemistry Department awards to various students and faculty, as indicated below:

Pamela Ann Henkel Award – Awarded to the most outstanding undergraduate student in Organic Chemistry

Lilyan Mather

Alfred W. Scott, Sr. Award – Awarded to the most outstanding rising senior ACS certified Chemistry major student

Nicholas Szaro

L.B. "Buck" Rogers Award – Awarded to the undergraduate student who performed the most outstanding research over the last year

Emma Kate Meehan

Martin Reynolds Smith Award – Awarded to the graduate student who published the best research paper in a refereed journal between January 1, 2015 and December 31, 2015

Hunter Hickox

Kenneth W. Whitten Awards – Awarded to the graduate students who are judged to be our best Graduate Laboratory Assistants for this academic year

Brandon Rittgers, Roshini Ramachandran, and Weihong "Bryan" Zhang

The Northeast Georgia ACS Section presented its annual awards at the same Alumni and Awards Banquet. Prof. Gary Doublerly, president of the local section, presented these awards:

NEGS ACS Chemist of the Year for Service

Prof. Gregory Robinson
UGA

NEGS ACS Chemist of the Year for Research

Dr. Yuzhong Wang
UGA

George Philbrook Award for Outstanding Undergraduate Teaching

Prof. Ryan Hili
UGA

NEGS ACS Award for Outstanding High School Chemistry Teacher of the Year

Ms. Lisa Cole
Buford High School, Buford, GA

NEGS ACS Outstanding Graduate Students of the Year

Charles Stanton, III and Megha Anand
UGA

NEGS ACS Outstanding Undergraduate Students of the Year

Joshua Miller
UGA



Students at the 2016 spring banquet: Joshua Miller, Troy Rahn, Lilyan Mather, MacKenzie Smith, and Nicholas Szaro

UGA Chemistry and Northeast Georgia ACS Section Awards Night 2017

The UGA Chemistry Department presented its annual awards at the spring Alumni and Awards Banquet on Friday April 21, 2016 at the UGA Georgia Center. This banquet was held jointly between Chemistry and the Northeast Georgia Section of the ACS. Prof. Richard Morrison presented the awards for both the NEG-ACS and the Department of Chemistry.

UGA Chemistry Student Awards 2017

Pamela Ann Henkel Award – Awarded to the most outstanding undergraduate student in organic chemistry

Reza Kianian

Alfred W. Scott, Sr. Award – Awarded to the most outstanding rising senior ACS certified Chemistry major student

Ryan Bok

L.B. "Buck" Rogers Award – Awarded to the undergraduate student that performed the most outstanding research in Chemistry over the last year

Shaen Deimling

Martin Reynolds Smith Award – Awarded to the graduate student who published the best research paper in a refereed journal between January 1, 2016 and December 31, 2016

Melody Rhine-Walter

Kenneth W. Whitten Awards – Awarded to the graduate students who are judged to be our best Graduate Laboratory Assistants for this academic year

Matthew Bloodgood and Alex Reese

Outstanding Teaching Award Winners

Awarded by the UGA Center for Teaching and Learning

Matthew Bloodgood, Grant Crane, Kevin Murphy, Brandon Rittgers, Xue Wang, Kasey Yearty



Samantha Benevides and Kaitlin Luedcke,
Outstanding Undergraduate Students

Northeast Georgia Section of the American Chemical Society Awards 2017

NEGS-ACS Chemist of the Year for Service

Prof. Gary Doublerly

Department of Chemistry, UGA

NEG-ACS Chemist of the Year for Research

Dr. Joe B. Grubbs III

Danimer Scientific (UGA Laboratory), Athens, GA

George Philbrook Award for Outstanding Undergraduate Teaching

Dr. Douglas Jackson

Department of Chemistry, UGA

NEGS-ACS Award for Outstanding High School Teacher of the Year

Ms. Teena Garland

Lake Oconee Academy High School, Greensboro, GA

NEGS-ACS Outstanding Graduate Student of the Year

Karson Brooks

Department of Chemistry, UGA

NEGS-ACS Outstanding Undergraduate Student of the Year

Samantha Benevides and Kaitlin Luedcke

Department of Chemistry, UGA



Karson Brooks (Outstanding Graduate Student) and Prof. Richard Morrison



Nigel Graham Adams (1942-2016)

Nigel G. Adams, Professor Emeritus of Chemistry in the UGA Chemistry Department, died suddenly on 2 November 2016. Nigel was born in Birmingham, England and received his B.Sc. in Physics from the University of Birmingham in 1963, and an M.Sc. in the Physics of Solids in 1964. He was awarded a Ph.D. in Electron Physics in 1966, also from the University of Birmingham, for his studies of the surface interactions of electrons with insulator single crystals. He was an SRO/NASA International University Research Fellow at the University of Colorado in Boulder for the period 1968-1969, after which he returned to the UK and the University of Birmingham, moving through the ranks to Senior Research Fellow and Senior Lecturer in the Department of Space Research. In 1978 he was awarded a D.Sc. for his research in Space Physics. In 1990 he moved to UGA as Professor of Chemistry. In 1995 he became a University Research Professor, and in 2000 he became a Distinguished Research Professor. He was a visiting Erskine Fellow at the University of Canterbury, New Zealand in 1995, and for the period 1999-2000 he was a Program Director for Physical Chemistry at the National Science Foundation. He was elected to fellowships in the UK Institute of Physics (1984) and the American Physical Society (2004). Research in the Adams lab concentrated on the fundamentals of gas-phase ionic reaction processes and their application to natural plasmas, with relevance to the interstellar medium and to planetary atmospheres. To measure pertinent reactions in the laboratory, he was co-inventor of the powerful Selected Ion Flow Tube (SIFT) method for studying ion molecule reactions under conditions that simulate the low temperature, low pressure plasmas of the interstellar medium. Adams also developed and refined the Flowing Afterglow Langmuir Probe (FALP) apparatus, which is used to examine electron-ion recombination, a key process in the formation of many species of interest in Space Physics. His work was groundbreaking in the identification and quantification of the neutral products of ion-electron recombination reactions. During his career he published over 200 scientific papers, edited several

books, and was an invited speaker at numerous conferences and symposia. Adams retired on July 31, 2014 after almost 25 years in the Department of Chemistry at the University of Georgia. He is survived by his loving family: his wife Lucia; his children Liz, Robin, Ian, and Lydia (Meg); his sisters Beryl and Zena; and his grandson Jamie; as well as many nieces and nephews.

The Life and Times of Nigel G. Adams

by Meg Babcock-Adams (B.S. Chemistry, UGA 2016; B.S./M.S. Marine Sciences, UGA 2016; Currently Ph.D. student in Chemical Oceanography at MIT in the MIT/WHOI Joint Program)

I could tell you that my dad authored over 200 scientific papers and contributed to many texts, or I could tell you he was one of the two inventors of the Selected Ion Flow Tube (SIFT) method that is used to study ion molecule reactions under conditions that simulate the interstellar medium in laboratories across the globe. I could tell you that he used the SIFT method in conjunction with a Flowing Afterglow Langmuir Probe (FALP) instrument that he developed to study electron-ion recombination reactions, which he used to identify and quantify recombination products in order to provide fundamental data to aid in chemical modeling of the atmosphere of Titan – a planetary satellite of Saturn – which is thought to have an atmosphere similar to that of primordial earth, and thus of great importance to the question of how life started on Earth. My dad made so many contributions to the Space Physics community, but I think his greatest contribution was the influence he had on future generations of scientists, including my brother and me. Science was always a conversation in our household, whether it was an answer to a question about dark matter that turned in to a 30-minute seminar or that when my dad taught me how to do a cartwheel he also taught me about momentum. He always made science accessible and fun, and I think it was my early exposure to science greatly influenced my path in life. As I mentioned before, I wasn't the only one who my dad influenced – he mentored many graduate and undergraduate students. So I can think of no better tribute than to have his former students say, in their words, the effect my dad had on them. This is just a part of his legacy.

Charles Herd was a postdoctoral researcher in my dad's lab at the University of Birmingham, England. Charles is now the Director of Product Development at Birla Carbon. Dr. Herd writes, "The phrase 'a gentleman and a scholar' is the first thing that comes to mind when I remember Professor Nigel Adams. He was one of my mentors at an early age when I was fortunate enough to be able to work as a post-doctoral research fellow in his laboratory in the University of Birmingham in the United Kingdom. Nigel was a great teacher and loved talking about science for the benefit of others to learn and grow as scientists themselves, all the while doing so in the most professional, enthusiastic and polite manner. There is no doubt Nigel's dedication to teaching and research has spawned several generations of scientist for the betterment of the scientific world. One could not talk about Nigel without mentioning his family, wife Professor Lucia Babcock and children Ian and Meg. Lucia and Nigel are both wonderful teachers and human beings and both played an important role in educating and guiding me for my future. Nigel will be missed and may God Bless him and his family."

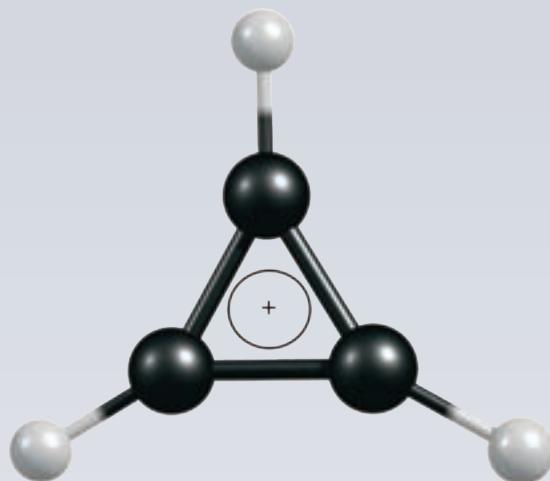
In Memoriam

Jason McLain, now a Research Scientist at UMPC/NASA Goddard Space Flight Center, was a Ph.D. student in my dad's lab at the University of Georgia. Dr. McLain writes, "Nigel G. Adams will always be more than my thesis advisor. He was a friend and role model that I will always strive to be more like. Nigel was nice, and believed in peace and science for the good of mankind. He made me excited about physical chemistry and research, he was a genius in the laboratory, and had a keen ability to multitask. I have never seen other scientists hand-draw instrumental designs, and make them so detailed and precise. Nigel was a master of mathematics, with the ability to derive nearly any formula. He also had a deep understanding of matter, physics and chemistry. I feel lucky that I crossed paths with Nigel. Nigel, you will be missed but never forgotten. One day Nigel and I were working on a new design to surface ionize neutral products from gas-phase reactions. We had gone to the mechanical designer at UGA to fabricate the design, and while both he and Nigel spoke perfect English, Nigel's was too English and his was too Southern. Since I am from the South and I worked with Nigel every day, I could understand both accents and had to translate English to English. There are hundreds of stories I could tell about Nigel, like the time I found out that he had lost his sense of smell, or the time we shut down UGA's radio station and started a whole conundrum with the press about the freedom of speech, all so that we could conduct our research; consequently, the incident was published in Science magazine, or like time we were sitting in the break room during Nine-Eleven listening to the radio, but none of those stories will ever encompass the man that is Nigel, and the impact he had on me."

Chris Molek, now a Research Chemist at the Air Force Research Laboratory, Munitions Directorate, Energetic Materials Branch was a Ph.D. student in my dad's lab at the University of Georgia. Dr. Molek writes, "I'd like to tell you how much your dad meant to me. Your dad motivated me to work hard by showing me that he cared about me. He taught me so much about being a great scientist. His guidance and teaching has propelled me to be a successful research scientist with Air Force Research Labs, where I currently lead a multi-PI team doing basic research. He taught me that I should always have an answer to a problem that I had prior to asking his advice. It didn't matter whether my answer was right or wrong, what mattered was that I became an independent thinker. I considered him a colleague and friend. I really appreciated all he did for me. I was honored to study under him, to be his friend and to know him."

Dalila Fondren Mathews, now an assistant professor of Chemistry at University of Montevallo, was a Ph.D. student in my dad's lab at the University of Georgia. Dr. Mathews writes, "There are so many things I could say if I only knew how to verbalize them. One thing is for certain: your father had a tremendous impact on my life. I wouldn't be where I am right now without his encouragement, wisdom, and understanding. My mom passed away during my second year in graduate school and I think if I had been in a different group I might have quit school. He was so understanding of the situation and completely removed any stress surrounding the time I spent with my family before and after her death. Your father was perhaps the smartest person I have ever met but he carried himself with such quietness and dignity. He was never boastful or condescending to those less intellectually gifted, a rare quality in the academic world. He had a great wealth of patience and during all those years I never saw him lose it, even when he had cause to. The world is a poorer place without him. I am encouraged though because he has given the world the gift of you and Ian. I remember thinking when

I first joined the group that there was no way anyone had kids that could do all of the things you two could do. Then I met you and Ian and watched videos of your performances and realized that my boss had two awesome "Superkids". I know that he was very proud of you guys and he loved you all so much. I am a better person because I had your father in my life and because I know you, Ian, and your mother. Your father was very sincere and resolute in his support of women in science. He was all too aware of the inequalities women faced and worked to keep all of us in the group informed and educated on the issues. He taught me much about chemistry and life in general. No amount of time takes away the emptiness left by your father's passing but please be comforted by knowing that he positively impacted so many that he came in contact with."



The cyclopropenyl cation, an interstellar ion studied by Nigel Adams

David Osborne, now a JD Student at Ohio Northern University in the Pettit School of Law, was a Ph.D. student in my dad's lab at the University of Georgia. Dr. Osborne writes, "Everyday Nigel came into the office he would ask me, "Are you running an experiment today?" Nigel always seemed to enjoy seeing the Flowing Afterglow working and his student taking measurements. Nigel was a great teacher to work with. He was always sympathetic and ready to listen to a student's problem. Only after listening to a problem and asking a question would he make a suggestion of something to try. His approach was designed to have a student think through all the steps of the problem. Oftentimes, by going back and examining each step of the problem individually, one was able to find the problem before they had finished explaining it. This was the process which Nigel had me repeat every time I had a research problem. It honed a skill that has served me well and continues to serve me to this day. Now, when faced with a problem where I am not sure what to do, it is easy to imagine Nigel instructing me to work through it one step at a time, so that what seemed impossible or insurmountable at first yielded easily when taking it one step at a time. He made my time at UGA purposeful and worthwhile."

Now that I myself am a Ph.D. student I know just how important and influential an advisor is on shaping you as a scientist. It is clear to me that my dad was one of the best and I aspire to be a scientist and mentor like him. I am proud to carry on my dad's legacy in science. ●

2016 Chemistry Golf Scramble



Peter Albersheim (1934-2017)

Peter Albersheim, Distinguished Professor Emeritus, passed away in July 2017 after a long battle with Parkinson's disease. He is survived by his wife Ivana, his first wife Joyce and their son James Walter, and daughters Renee and Stephi, his grandchildren Anthony Peter and Katie Lynn, and his sister Anne Gertrude.

Peter received his B.S. in Plant Pathology in 1956 from Cornell University and his Ph.D. in Biochemistry in 1959 from the California Institute of Technology. He and Dr. Alan Darvill founded the Complex Carbohydrate Research Center (CCRC) in September 1985. Albersheim spent 21 years as a Professor of Biochemistry in the Departments of Chemistry and Molecular, Cellular and Developmental Biology at the University of Colorado in Boulder, prior to coming to the University of Georgia, where he was a faculty member in both Biochemistry and Chemistry.

Dr. Darvill and Dr. Albersheim co-directed the CCRC as well as their combined research teams. Albersheim was also co-director of the Department of Energy-funded Center for Plant and Microbial Complex Carbohydrates. From 1990 to 2002, he was director of the National Institutes of Health-supported Resource Center for Biomedical Complex Carbohydrates. Albersheim was the 1973 recipient of the Charles A. Shull Award of the American Society of Plant Physiologists and in 1984 of the Kenneth A. Spencer Award of the American Chemical Society. He was a frequently invited speaker to special symposia, meetings of scientific societies, and to civic, commercial, and academic organizations in the U.S and around the world. ●



The winning team of Je Sherman, Richard Hubbard, and Jonathan Anderson

The 2016 Chemistry Golf Scramble took place at the UGA Golf Course on Saturday April 30. The afternoon golf was followed by a barbecue, sponsored by the Chemistry Department. The team of Je Sherman, Richard Hubbard, and Jonathan Anderson shot an impressive score of 60 for the win, followed closely by the team of Jon Amster, Mark Cooney, Ted Mayer and Rodney Latimer with a score of 61. Jonathan Anderson won the putting competition that took place on the putting green after the round. Rodney Latimer won both the longest drive competition on hole number 18 and Mike Terns won the closest-to-the-pin shot on hole number 13. Alumni players included Richard Walters, Tad Whiteside, Brad Crocker, Jonathan Mosley, Je Sherman and Jonathan Anderson.

2017 Chemistry Golf Scramble



The 2017 winning team of Kevin Liao, Carl Terns, Joe Monticello and Mike Terns

On Saturday April 22, 2017, the annual Chemistry Golf Scramble was held at the UGA Golf Course and Club House followed by barbecue and an awards presentation. The team of Carl Terns, Joe Monticello, Kevin Liao and Mike Terns won the event with an amazing score of 58. Two teams tied for second with a score of 62, but the team of Blake Smith, Charlton Torbett, Matt Skoglund and Mia Ji won the tiebreaker in a put-off. Kevin Liao won the closest-to-the-pin competition on hole number eight, Brandon Rittgers won the long drive competition on hole number 18, and Matt Skoglund won the putting competition on the practice green after the golf.

2018 Alumni Weekend and Golf Scramble

The annual alumni golf scramble will be held on April 28, 2018 at the UGA Course. Contact Mike Duncan (maduncan@uga.edu) to sign up as a four-person team or as a single.

CHEMISTRY *Alumni Updates*

1974 Spencer, Ken. Chatham, NJ. Ph.D. with Richard Hill.

After receiving his Ph.D., Ken spent 1975-76 as a post-doc at Penn with M. Cava. He worked in chemistry discovery research during 1976-81 at Sandoz (crop protection) in the US and in 1977 in Basel, Switzerland, in 1982 at Merck (biocides), and from 1983-89 at Anaquest (inhalational and iv anesthetics, and neuromuscular blocking agents). He worked in clinical research from 1989-2003 at Organon Inc. resulting in two drug approvals in the US and rest of the world: the neuromuscular blocking agent Zemuron (rocuronium bromide, Org 9426, known as Esmeron in Europe and rest of the world), and the antipsychotic agent Saphris (asenapine, Org 5222, known as Sycrest in Europe and the rest of the world). He has worked in regulatory compliance/quality assurance from 2003-07 at Organon Inc., 2008-09 at Schering-Plough Inc., 2010-11 at Merck Inc., 2012-14 at Sano Pharmaceuticals, and 2015-17 at Pearl Therapeutics Inc. Efforts in his current role at Pearl Therapeutics Inc. led in 2015 to FDA approval of Bevespi Aerosphere, a treatment of COPD including chronic bronchitis and/or emphysema. Ken recently assumed the position of Associate Director, Global Regulatory Affairs, Patient Safety and Quality Assurance (GRAPSQA) in AstraZeneca, which has headquarters in Cambridge, England and Gothenburg, Sweden. Ken and his wife Marjorie and their dog Charlotte live in northern New Jersey.

1978 Farr, James K. Seattle, WA. Ph.D. with Robert Lane.

James and his wife Ann returned to campus in October 2016, when he received one of the UGA Graduate School's "Alumni of Distinction" Awards. He recently retired from NOAA in Seattle, where he served as principal scientist in the Office of Response and Restoration, Environmental Response Division, National Ocean Service. He provided scientific expertise in responding to hundreds of chemical and oil accidents, including the Deepwater Horizon oil spill and the aftermath of Hurricane Katrina.

James also aided the FBI in the development of a national chemical precursors database, which identifies precursors to track and prevent the use of chemical substances in the illegal production of explosives, drugs and other dangerous materials. He authored many publications and continues to work on scientific aspects of chemical reactivity and industrial safety as a consultant to the Center for Chemical Process Safety/AIChe in New York.

In recognition of his work, James received the U.S. Department of Commerce Individual Silver Medal, the U.S. Department of Commerce Team Silver Medal, the NOAA National Technology Transfer Award, and the NOAA National Employee of the Month Award.

1981 Ambrose, Bruce. Atlanta, GA. B.S.

Bruce stopped by our tailgate at the department on homecoming in fall of 2016. He is working at MacLanta.

1999 Garrett, Timothy J. Gainesville, FL. B.S.

After undergraduate work at UGA, where Tim did research with Prof. Jon Amster, he went to the University of Florida for graduate work. He got his Ph.D. there working with Prof. Richard Yost in 2006. Tim then got a faculty position at Florida in the Department of Pathology, Immunology and Laboratory Medicine, where he is director of the General Clinical Research Center Core Laboratory. His research uses imaging mass spectrometry to attack a number of problems in clinical research. Tim was just tenured and promoted to Associate Professor.

2000 Patra, Apurba. Durgapur, India. Postdoc with Katal

Apurba is Associate Professor and Head of the Department of Chemistry at the National Institute of Technology Durgapur, West Bengal, India, where he has been on the faculty since 2006. One of his students recently submitted his Ph.D. thesis entitled "Modelling Biological Copper Sites Supported by N, S Donor Ligands."

2003 Grieves, Greg. Sandy Springs, GA. Ph.D. with Duncan.

After many years working at Georgia Tech in the Chemistry Department, Greg was recently married to wife Carla and is now working for HealthPort in Atlanta.

2004 Jaeger, Todd. Flowery Branch, GA. Ph.D. with Duncan.

Todd was married in September of 2016. He and new wife Heather had an extended work assignment in Mainz, Germany in fall of 2016. Until recently, Todd was working for SCHOTT North America, Inc., but in June of 2017 he moved to become Global Sales Director of Commercial Optics for Heraeus Tenevo, Inc. He recently relocated to Flowery Branch, Georgia, where Heraeus is setting up a quartz production facility, and bought a house there.

2004 Westlake, Brittany. Redwood City, CA. B.S.

Brittany Westlake is now an Engineer Scientist at the Electric Power Research Institute (EPRI) in Palo Alto, CA. At EPRI, she works in a group that focuses on energy storage and distributed generation technologies (grid scale batteries and electricity storage, electric vehicle batteries, renewable hydrogen production, fuel cells, etc...). She lives in Silicon Valley with her husband Paul East and their son Harrison, who is 2.5 years old.

2006 Ayers, Tim. Carrollton, GA. Ph.D. with Duncan.

Tim is working with RH2O Engineering, Inc. He and his wife Elizabeth just had a baby boy in the fall of 2017.

2006 Dreden, Erik, Atlanta, GA. B.S.

After completing his undergraduate work in Chemistry at UGA, where he did undergraduate research with John Stickney, Erik attended graduate school in the Department of Chemistry & Biochemistry at Georgia Tech. He worked with Mostafa El-Sayed and received his Ph.D. degree there in 2012. His Ph.D. training was application-directed, focusing on the development of multivalent and photo-activated targeted cancer therapies based on nanoscale colloids. He then received a Kirschstein Postdoctoral Fellowship at the Koch Institute for Integrative Cancer Research in the Chemical Engineering Department at MIT, where he worked with Prof. Paula T. Hammond for the period of 2012-2017. His work there sought to apply polymer engineering to improve the therapeutic potential of nucleic acid and rational combination and cancer therapies. Erik was appointed in 2017 in a joint position as Assistant Professor in the Department of Biomedical Engineering at Georgia Tech and at the Department of Pediatrics at the Emory School of Medicine. He is a faculty member in the AAC Center for Cancer and Blood Disorders and the Winship Cancer Institute.

Erik's research seeks to utilize molecular and nanoscale engineering as a means to impart augmented, amplified, and non-natural function to tumor therapies and immunotherapies. The overall goal of his research is to engineer molecular and nanoscale tools that can (i) improve our understanding of fundamental tumor biology and (ii) simultaneously serve as cancer therapies that are more tissue-exclusive and patient-personalized. The lab currently focuses on three main application areas: optically-triggered immunotherapies, combination therapies for pediatric cancers, and nanoscale cancer vaccines. His work aims to translate these technologies into the clinic and beyond.

2006 Barry, Hilda Hernandez. San Francisco, CA. M.S. with Jon Amster.

Hilda is a senior scientific researcher at Genentech working in the large molecule division of the Biochemical and Cellular Pharmacology department. She develops mass spectrometry assays for target and therapeutic quantitative analysis and at the moment is also learning SAMDI to apply this to binding and screening assays. She is still an avid runner.

2006 Scott, Angela (Carroll). Steamwood, IL. M.S. with Duncan.

Angela and husband Dax welcomed a new daughter, Elizabeth Hope Scott on November 16, 2016. Elizabeth joins sisters Addison and Madelyn. Angela is working for the US Patent Office in Chicago.

2007 Ham, Ben. Augusta, GA. B.S. and M.S. with Duncan.

Ben and Hope welcomed their third son, Malachi Luke Ham, on November 30, 2016. Malachi joins brothers Ian (2) and Jediah (5). Ben is now in his fourth of five years of general surgery residency at the Medical College of Georgia. In January 2016, he was selected as one of six finalists for resident of the year at MCG. In February, he was selected for a gold medal presentation at the Southeastern Surgical Conference for work he did to improve hospital systems, education and care through information technology. In July 2016, he was chief resident on pediatric surgery at MCG Children's Hospital of Georgia, and really enjoyed it. He also enjoyed a four-week pediatric surgery rotation at Children's Healthcare of Atlanta at Egleston. 2017-18 is his last year of general Surgery Residency. After applying for highly competitive fellowship positions to continue his goal of work in pediatric surgery, he secured a position at the University of Buffalo in New York, where he will begin work August 1, 2018.

2008 Kim, Jay. Yongin, South Korea. Ph.D. with Stickney.

Jay has been teaching general, analytical, and physical chemistry at Gyeonggi College of Science and Technology at Siheung, South Korea, for 3 years. He is also doing some research on perovskite solar cells with Hanyang University at Ansan, South Korea. His first son, Alex, is in the 3rd grade of an elementary school in Yongin, South Korea. His second son, John, 3 years old, will be going to a kindergarten next year. His family lives in Yongin, South Korea.

2009 Villanueva, Omar. Atlanta, GA. B.S.

Omar graduated from UGA in 2009 with a B.S. Chemistry degree and a B.S. Ed in Science Education. He then attended Emory University for graduate studies, where he obtained his Ph.D. in Inorganic Chemistry under the supervision of Dr. Cora E. MacBeth. His dissertation focused on the development of sustainable first-row transition metal catalysts capable of facilitating various types of chemical transformations. After graduate school, Omar took a faculty position as an Assistant Professor of Chemistry at Dalton State College where he was for about two years. He then moved to Georgia Gwinnett College in Lawrenceville where he has been working as an Assistant Professor of Chemistry since 2016. He currently teaches various undergraduate courses in chemistry and also conducts research with a team of undergraduates in the area of inorganic catalysis.

2012 Bandyopadhyay, Biswajit, Hillsboro, OR. Ph.D. with Duncan.

Biswajit just accepted a new job as laser engineer at Xerox Printhead R&D division. Xerox is in Wilsonville which is 20 miles from Hillsboro, where his wife Anandi works at Intel. Biswajit and Anandi spent the month of November 2016 back home in India, where they had their traditional marriage ceremony.

CHEMISTRY *AlumniUpdates*

2013 Brathwaite, Antonio, Atlanta, GA. Ph.D. with Duncan.

Antonio was Assistant Professor of Chemistry at the University of the Virgin Islands, where he received the campus-wide award for Faculty of the Year for 2016. He visited UGA to work with the Duncan group in the summers of 2016 and 2017. He recently accepted a job as Instructor of Chemistry at Emory University, where he began in the fall of 2017. He is teaching Physical Chemistry and renovating the Physical Chemistry labs. Antonio and Tamika just bought a house and are settling into life in the Atlanta area.

2014 Gilliard, Robert. Cleveland, OH. Ph.D. with Robinson.

Robert completed a UNCF Merck Postdoctoral Research Fellow and a Ford Foundation Fellow of the National Academies at Case Western Reserve University working with Prof. John Protasiewicz. Before this, he was a postdoc at the ETH in Zürich, Switzerland with Dr. Hansjörg Grützmacher. In 2016, Robert was named to the Forbes list of 30 under 30 in the sciences (see <http://thedaily.case.edu/news/cwru-student-postdoc-make-forbes-30-under-30-list/>). He began a position as Assistant Professor of Chemistry at the University of Virginia in Charlottesville, in June of 2017.

2014 Muchena, John. Beloit, WI. Ph.D. with Jon Amster.

John did a postdoc with Prof. Carlito Lebrilla at UC-Davis from 2015-2017, and recently became a RD&A Scientist at Kerry Ingredients and Flavor in Beloit, WI.

2014 Sokolov, Alexander. Columbus, OH. Ph.D. with Schaefer.

Alexander completed a postdoc at Cal Tech with Prof. Garnet Chan and started out as an Assistant Professor of Chemistry at Ohio State in August 2017.

2016 Akin, Scott, Santa Clara, CA. Ph.D. with Duncan.

Scott is working with Spectra Physics Lasers, a division of Newport Corporation. He is a Field Service Engineer, working on Nd:YAG lasers in the San Francisco Bay area.

2016 Rahn, Kristopher Troy, Eatonton, GA. B.S.

Troy is working for Aalto Scientific, which makes standards and calibrators for medical equipment which are used to assay certain analytes in blood, serum, and urine. His particular job is to make and test new calibrator formulations (testing in the sense of how stable they are) and to improve older formulations. The company is currently branching out into a few more assay types which he is also working with. There are some electrochemistry assays in the equipment, but for the most part it is enzyme induced color change that is either monitored throughout the reaction, or it is read at the end of the reaction.

2016 Servas, Ryan G., Greenville, SC. B.S.

Ryan has been working as a Chemistry lab technician with Bausch and Lomb in Greenville, SC. He is applying to graduate school in Analytical Chemistry this year.

2016 Sutton, Dewey, Augusta, GA. Ph.D. with V. Popik.

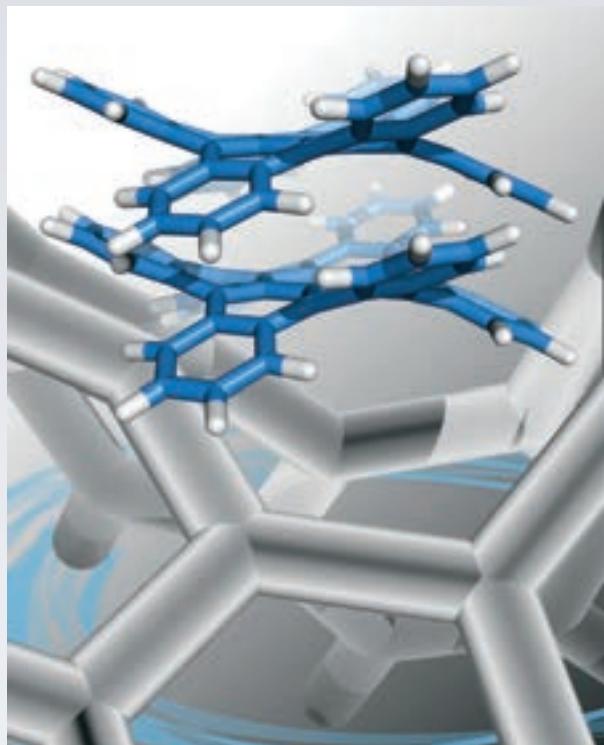
Dewey is now working as a Purification Chemist for Ambiopharm, Inc., a cGMP peptide manufacturer which provides solid phase synthesis of custom peptides to a variety of pharmaceutical and research clients.

2017 Maner, Jonathon, Portland, OR. Ph.D. with Duncan

Jonathon started a job as an engineer with Intel in Portland, OR in June 2017 and is enjoying spending lots of time in the mountains, hiking and kayaking.

2017 Phillips, Sabrina. Doraville, GA. Ph.D. with Geo Smith.

Sabrina started a job in November 2017 with Pura I, a company specializing in air filtration systems, where she is "Customer Solutions Applications Specialist." Also, she and Justin Czerniawski (Ph.D. 2011 with Stickney) were recently engaged. ●



Contorted polycyclic aromatics studied computationally by Prof. Steven Wheeler's group

Graduate Degrees Awarded 2016-2017

Name, Degree, Major Professor

Akin, Scott, Ph.D. 2016, M.A. Duncan
Anand, Megha, Ph.D. 2016, H.F. Schaefer
Ashby, Jarryd, M.S., R. Ramasamy
Bhatt, Nidhi, Ph.D. 2016, M. Lay
Cowger, Taku, Ph.D. 2016, J. Xie
Gao, Jing, Ph.D. 2016, J. Locklin
Huang, Wei, Ph.D. 2016, G.-J. Boons
Huang, Yining, Ph.D. 2016, R. Orlando
Johnson-McDaniel, Darrah, Ph.D. 2016, T. Salguero
Knight, Brian, Ph.D. 2016, E. Ferreira
McNitt, Christopher, Ph.D. 2016, V. Popik
Moradi, Chris, Ph.D. 2016, G. Douberly
Mullinax, Jimmy, Ph.D. 2016, H.F. Schaefer
Prudden, Anthony, Ph.D. 2016, G.-J. Boons
Roy, Anandi, Ph.D. 2016, J. Locklin
Stanley, Dovie, Ph.D. 2016, M. Lay
Stanton, Charles, Ph.D. 2016, G. Majetich
Stevenson, Susan, Ph.D. 2016, E. Ferreira
Supekar, Nitin, Ph.D. 2016, G.-J. Boons
Sutton, Dewey, Ph.D. 2016, V. Popik
Tang, Wei, Ph.D. 2016, J. Xie
Todd, Trevor, Ph.D. 2016, J. Xie
Vaccaro, Brian, Ph.D. 2016, M. Johnson & M. Adams
Walter, Melody, Ph.D. 2016, T. Harrop
Wang, Xiao, Ph.D. 2016, H.F. Schaefer
Wang, Yao, Ph.D. 2016, R. Phillips
Wilkes, Josette, Ph.D. 2016, G.-J. Boons
Xie, Boer, Ph.D. 2016, J. Sharp
Yatvin, Jeremy, Ph.D. 2016, J. Locklin
Zong, Chengli, Ph.D. 2016, G.-J. Boons

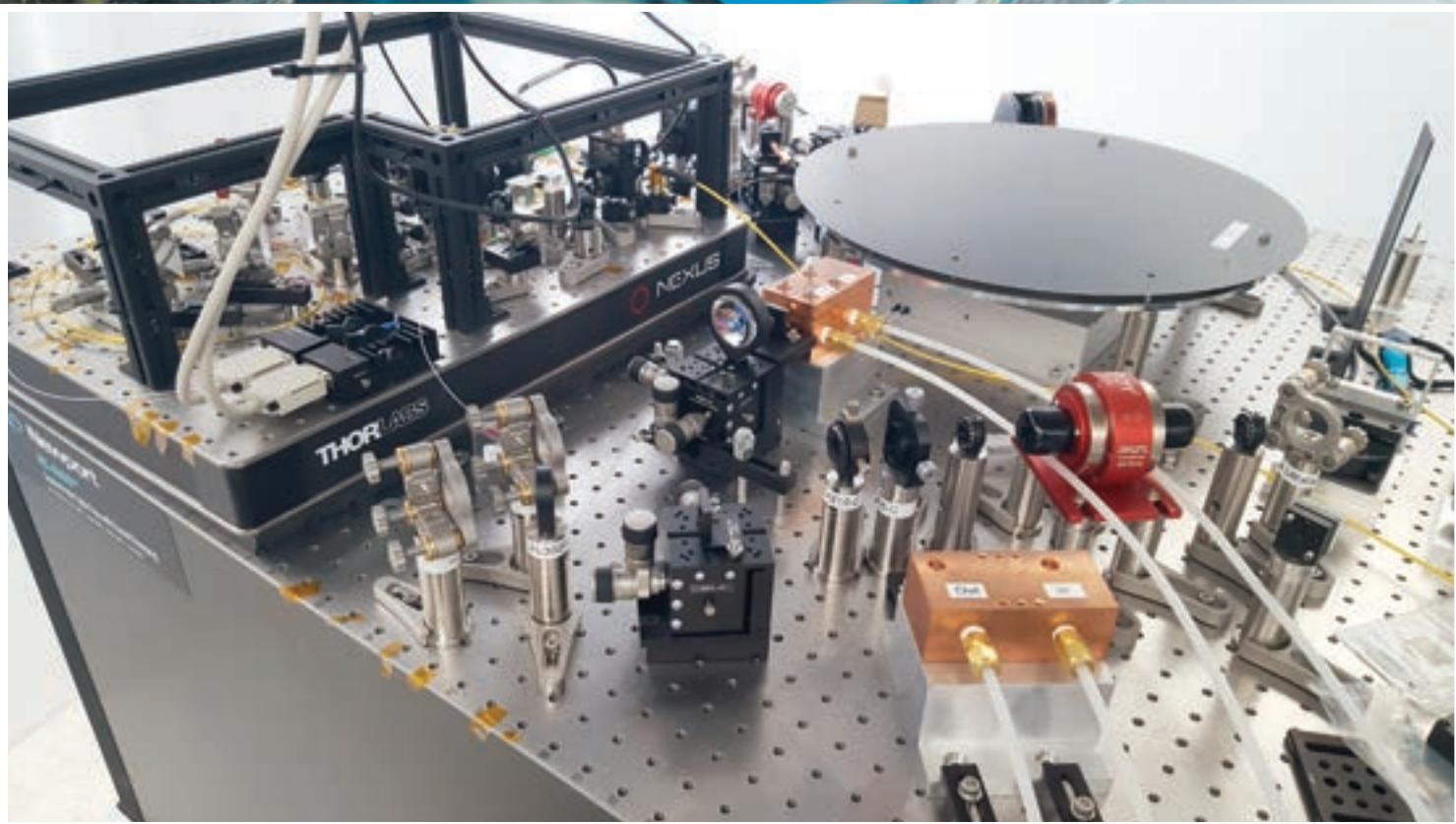
Agyekum, Isaac, Ph.D. 2017, J. Amster
Badgett, Majors, Ph.D. 2017, R. Orlando
Broering, Ellen, Ph.D. 2017, T. Harrop
Bui, Nhi, Ph.D. 2017, J. Stickney
Chapman, Robert, Ph.D. 2017, G.-J. Boons
Driver, Joshua, Ph.D. 2017, J. Amster
Gao, Qi, Ph.D. 2017, J. Prestegard & J. Sharp
Hudlikar, Manish, Ph.D. 2017, G.-J. Boons
Johnson, Natalie, M.S. 2017, M.A. Duncan
Lauder, Andrew, Ph.D. 2017, H.F. Schaefer
Maner, Jonathon, Ph.D. 2017, M.A. Duncan
Mauney, Daniel, Ph.D. 2017, M.A. Duncan

Name, Degree, Major Professor

Mize, Emily, Ph.D. 2017, R. Orlando
Newton, Sophia, M.S. 2017, N. Pienta
Niedermaier, Henry, Ph.D. 2017, J. Urbauer
Phillips, Sabrina, Ph.D. 2017, G. Smith
Ramachandran, Roshini, Ph.D. 2017, T. Salguero
Simmons, Kenneth, M.S. 2017, J. Locklin
Sun, Tiantian, Ph.D. 2017, G.-J. Boons
Turner, Walter, Ph.D. 2017, H.F. Schaefer
Valencia, Joshua, M.S. 2017, J. Locklin
Vandezande, Jonathon, Ph.D. 2017, H.F. Schaefer
Wang, Geo rey, Ph.D. 2017, J. Xie
Zhang, Tong, M.S. 2017, B. Xu
Zhao, Yuejie, Ph.D. 2017, J. Amster



Helium droplet molecular beam machine and mass spectrometer in Prof. Gary Douberly's lab



Ultrafast laser frequency comb spectrometer newly constructed in Prof. Melanie Reber's lab

Send us your updates on new jobs, marriages, children, retirements, special trips, etc. to Hannah David at 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.

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