

Actions & Reactions

The USCA Department of Chemistry & Physics Newsletter

Spring 2008 Vol. 1

A Message from the Chair...

Dr. Monty Fetterolf



It has been a while since a newsletter has been published by our department, and there are many new and exciting things to mention. Carol Cutsinger has taken on the responsibilities of department administrative assistant along with her ongoing duties in the Department of Biology and Geology. She is doing an amazing job for us, and we really appreciate her efforts. One benefit is that Carol is coordinating this publication and doing a good bit of the writing, editing and interviewing as well. So our thanks go out to Carol for sparking this newsletter.

Dr. Ann Willbrand retired from her position as organic chemist after 22 years of service to the department and university. As a founding department member, she helped do the initial studies and paperwork to establish the chemistry degree. Later she helped guide the department through its early years and served as department chair from 1990 – 1996. Recently, she was awarded a grant from the Dreyfus Foundation to upgrade and modernize the department NMR instrument which has been a real benefit not only to the organic classes but to the inorganic and instrumental analysis labs. Ann is keeping very busy with local and state political events and still has made herself available to the department for consulting work. We wish her well.

Picking up the duties of organic chemist in the department is Dr. Nandeo Choony, who began here last fall. Dr. Choony is originally from the island of Mauritius off the coast of Madagascar in the Indian Ocean. He

earned his BS in chemistry from the University of Poona in India and after several masters degrees took his Ph.D. in organic synthesis from the University of Surrey outside of London, England. He has been in this country for several years now most recently at Mount Marty College in South Dakota. Nandeo, his wife and their two middle-school aged children are enjoying the change in climate. He has jumped right into one of the largest organic classes we have had and survived his first semester in good fashion.

The department has expanded once more by adding a new chemistry instructor. Dr. Susan Glenn joined the faculty full time this last fall after several years with us as a part time faculty member primarily working with the *Chemistry in Society* general education courses. Dr. Glenn holds a doctorate in analytical chemistry from the University of South Carolina at Columbia and earned her BS in chemistry from Iowa State University. Dr. Glenn adds to the growing list of instructors in the department who serve full time. That list includes Dr. Ron Ruzszyk, instructor and lab manager, Dr. Ralph Steinhaus, an instructor who joined us after a long career as a professor at Western Michigan University, and Mr. Neil Miller, who is a physics instructor with several years of experience including five years at Lander University in Greenwood, SC.

The department web page has gone through some changes and it would be worth a quick look. You may want to view the pictures of all of us on the *Faculty Directory*. You will see the seven full time chemists and the two full time physicists who presently make up the department. Just a little more than four years ago, there were only four full time chemists and a half-time lab manager. Now we have nine full time faculty members including the physicists who joined the department within the last four years. Wow, things have really changed! Changes will continue as we move through more faculty retirements, an increasing number of graduates per year, growth in the general education curriculum and increasing external funding for research projects.

We have also had additions to our lab and instrument facilities such as a rejuvenated Raman spectrometer, several new FTIR spectrometers, new UV-Vis and Atomic Absorption spectrometers as well as the upgraded FTNMR that I have already mentioned. Please read on and enjoy.

New Organic Chemist Joins Faculty - Dr. Nandeo Choony



There's a new organic chemist in the department, following the retirement of Dr. Ann Willbrand at the end of the Spring 2007 term. Dr. Nandeo Choony joined the faculty of the Chemistry & Physics Department in August and was immediately immersed in three sections of Organic Chemistry. Dr. Choony comes to us from five years of teaching at Mount Marty College in Yankton, South Dakota, but it was a long and circuitous path that led him from his home country of Mauritius to Aiken, South Carolina.

Mauritius is a small island nation off the east coast of Madagascar in the Indian Ocean. Dr. Choony pointed out that one of the claims to fame for Mauritius is that it was home to the now extinct Dodo bird. His ancestors were brought by the British from India to Mauritius to work on the sugar cane plantations. Roughly 80% of the population is of Indian ancestry. Sugar cane is the largest crop, and Dr. Choony's father was a laborer in the cane fields. He attended high school

in Mauritius, then went to India to the University of Poona where he earned his undergraduate degree in Chemistry, 1st class honors with distinction. He returned to Mauritius to care for his aging parents and taught high school there for ten years. After the passing of his parents, he returned to India for a master's degree in organic chemistry at the Indian Institute of Technology (IIT) in Bombay with a scholarship sponsored by the Indo-Mauritian Cultural Exchange Program. Returning again to Mauritius, he taught at the top-ranking Queen Elizabeth College for three years. The British consul then offered him a Commonwealth scholarship for a second master's degree at Brunel University in West London in Synthetic Organic Chemistry. During this time he made a compound by a special technique of pharmaceutical importance that was published and noticed by Smith Kline Beecham, who then offered Choony a scholarship to complete a Ph.D., which he finished at the University of Surrey in 1999.

Then came North America. Dr. Choony was invited to do post-doctoral research at Baylor University in Waco, Texas on anti-tumor cancer drugs, funded by Oxygene. He made another successful compound, but he wanted the opportunity to teach as well as do research. He obtained a one-year appointment at Grinnell College in Iowa and had accepted a subsequent appointment at Illinois College. Awaiting his visa in London, 9/11 happened, and his visa never came through. He was eventually able to get a visa for Canada, where he did research at the National Institute of Scientific Research in Montreal on ovarian and breast cancer taxol derivatives. But he was determined to obtain a teaching position and landed at Mount Marty College in South Dakota.

This long and winding road has finally led Dr. Choony and his family to USCA and Aiken. His two children, Sheetal and Komal, were born in England and have seen much more of the world than most of us can claim. Dr. Choony calls Aiken a "more multicultural society" than they found in South Dakota, and it is also much warmer, which is to their liking! Dr. Choony has been very busy with his large organic chemistry class this year. Organic chemistry is, as all chemistry and biology majors know, a dreaded course because of its difficulty. When asked how he approaches teaching this course, he replied, "I have the experience and knowledge, and I know what students need to learn this subject successfully. We take time in the beginning to make sure they understand everything, and then we can go faster because they know what to do." He has his research up and running, too, and hopes to have funding from the University's Research Opportunities Program for a project involving treatment for epilepsy using synthetically created kainic acid. We welcome Dr. Choony to the department and to the University!



Dr. Chad L. Leverette

Dr. Chad Leverette joined the department as an Assistant Professor of Chemistry in the Fall of 2004. Dr. Leverette is an analytical chemist with expertise in vibrational spectroscopy. His teaching duties include General Chemistry, Quantitative Analysis, Introduction to Chemical Instrumentation, and Instrumental Analysis. His current research efforts focus on the development of various aspects of nanotechnology. In particular, Dr. Leverette's currently funded projects focus on the fabrication of novel nanostructures, characterization of nanofilms assembled onto these nanostructures, developing surface-enhanced vibrational spectroscopy (SEVS) techniques, as well as low level radionuclide detection using SEVS sensors.

After completing his Ph.D. in Analytical Chemistry from the University of Georgia in 2000, where Dr. Leverette received both the Kenneth W. Whitten Excellent Teaching Assistant Award as well as the Outstanding Chemistry Graduate Student Assistantship Award, Dr. Leverette was immediately employed as a Senior Research Scientist in Global Research and Development for Cargill, Incorporated, the world's largest food-ag company with over 150,000 employees in over 60 countries. At Cargill, Dr. Leverette was promoted from Senior Research Scientist I to Senior Research Scientist II in only three years of employment and was nominated for both the Chairman's Innovation Award in 2001 as well as the Achiever's Circle award in 2004, which are Cargill's premier awards for research excellence. In the Fall of 2004, Dr. Leverette decided to pursue his passion for teaching and his own research interests and was the successful candidate for the position here at USCA. Dr. Leverette was nominated for the Excellence in Teaching Award after only his third year of teaching. Dr. Leverette's research has also enjoyed early success. Out of the seven senior students he has advised, five of these students have been co-authors with Dr. Leverette on published manuscripts. One advisee, Ms. Melissa Warren, won both the "Undergraduate Research Award" for her research presentation, "Chemical Characterization of

Pigmented Sclerites from Diseased Coral Sea Fans" at the SC Academy of Science Annual Meeting in the spring of 2006. Ms. Warren also was selected as the "Best Undergraduate Female Scientist" by the American Association for the Advancement of Science at the same conference. Since arriving at USCA in 2004, he has been awarded over \$173,000 for his research. Currently, his research efforts are funded by the American Chemical Society, the Dept. of Energy (through the Savannah River National Laboratory), and the University of South Carolina Research Foundation. Dr. Leverette is also a member of USC's NanoCenter, which is the premier center for nanotechnology research in South Carolina. Dr. Leverette's most recent accolade includes being selected as a "Prominent Young Spectroscopist" by the international journal *Vibrational Spectroscopy*, which highlights talented scientists under the age of 38. This journal is devoting a special issue to the research of the recipients of this prestigious award. Dr. Leverette resides in Aiken with his wife Cara, and his two sons, Caleb and Micah.

2007 Graduates

Congratulations to our 2007 Graduates:

Chad Durden
Russell Gray
Andrew Perkins
Michelle Williams

All of these graduates are gainfully employed, Chad and Michelle with Savannah River National Labs and Russell and Andrew with AmbioPharm, Inc., a chemical company in North Augusta.

New Chemistry Instructor, Familiar Face -

Dr. Susan Glenn



Dr. Susan Glenn

Susan Glenn was the successful candidate filling a search for a new instructor of chemistry beginning Fall 2007, but Susan was no newcomer to the department. She has been teaching part-time since finishing her PhD at USC in Columbia in 2001. Susan grew up in Cedar Rapids, Iowa and attended Iowa State University in Ames, earning a B.S. in chemistry as well as secondary education certification. She was inspired to study chemistry by an excellent high school teacher, so it was a natural progression for her to

follow in the footsteps of her mentor and become a teacher herself. Moving to Maryland after college, she then taught high school for five years in a Washington D.C. area high school. She also worked as a lab technician for the National Museum of Natural History at the Smithsonian for a year before she began teaching and continued that work during the summers. She most enjoyed teaching the AP chemistry classes at her high school, so the next step in her career was to further her education in order to teach on the college level.

Susan earned her Ph.D. in analytical chemistry at USC under Dr. S. Michael Angel in December 2001. Her thesis was entitled *Development of Lifetime-Based, Imaging, Fiber-Optic Sensors*. Having moved to Aiken in 1998 and with her first son, Cory, born in June 2001, Susan fit perfectly into our department as a part-time instructor teaching Chemistry in Society (ACHM 105) to non-majors. She was also willing to help out when other needs arose and taught Quantitative Analysis one semester and Instrumental Analysis one semester, as well as Chemistry 101 and Physics 101 labs. Another son,

Brandon, joined the family in 2004.

Susan really enjoys interacting with her students. "I enjoy seeing them learn chemistry—Chemistry in Society focuses on chemistry that matters to everyday people." Her classes concentrate on the environmental issues so often talked about in the media today: ozone depletion, global warming, pollution. When her boys are older she expects to get back into doing research again, but for now, two little boys and classrooms full of college students are keeping her very busy!



Independent Study Projects

A senior research project is required of all chemistry majors as a capstone experience. Listed below are the research projects engaged in by our seniors this year:

Arlina Adriano, *Steric acceleration of Diels Alder reaction*, Advisor, Dr. Nandeo Choony
Benjamin Josey, *Designing Nanostructures using glancing angle vapor deposition*, Advisor, Dr. Chad Leverette
Stephanie King, *Coordination compounds of molybdenum (VI)*, Advisor, Dr. Kutty Pariyadath
David Kruzner, *Raman Studies of Mixed Solvents Using Selected Solute Molecules*, Advisor, Dr. Monty Fetterolf
Pierre Negri, *Synthesis of kainic acid*, Dr. Nandeo Choony
Kristina Prosser, *Raman Studies of Mixed Solvents Using Selected Solute Molecules*, Advisor, Dr. Monty Fetterolf
Kelley Shaffer, *The Role of Percent Carbon Black in Tire Processing*, Advisor, Dr. Monty Fetterolf
Whitney Thomas, *Crystal Identification Using Polarized Light Microscopy*, Advisor, Dr. Monty Fetterolf
Timothy Vincent, *Differentiation of uranyl ion cast films using surface-enhanced vibrational spectroscopy*, Advisor, Dr. Chad Leverette

Annual Alumni Reception

by Dr. Kutty Pariyadath

The Department of Chemistry and Physics held its annual reception for its alumni and current students on October 20, 2007 at USCA. The event was jointly hosted by the chemistry faculty and the alumni office. Jamie Raynor, Director of Alumni Affairs, organized the reception, and her office provided the dinner. The event was a blast with 10 chemistry alumni and their families in attendance. Many of the current students and their families were there too. Almost all of the department faculty came with their families and enjoyed pizza and sandwiches made by Acropolis in Aiken. Dessert was provided by the faculty. Altogether there were more than seventy in attendance, including many children, having a good time. You may want to mark this one on your calendar for next year.



From top: Faculty & Alumni group; Pierre Negri, Chad Durden & son; Samantha & Katie Miller, Stephanie & Mike Rogers; Tim & Lindsay Whisnant, Sharese Addison, Tiffany Mims, Kutty Pariyadath; Bhanu Pariyadath with future scholar

Please update your alumni record at: <http://www.usca.edu/alumni/update.html>



Alumni Focus

Amelia Taylor-Perry graduated from USCA *magna cum laude* as the Chemistry Student of the Year in 2004. And now, as a graduate student in analytical chemistry at USC Columbia, we welcome her back as a part-time instructor in the department.

Originally from Lexington, SC, Amy attended Midlands Technical College in Columbia for two years before moving with her family to New Ellenton. With three young children, Christian, Mackenzie, and Alana, she realized she was going to need a better education to support them. She came to USCA in 2001 with the intention of going into medicine. As she got into her coursework, she discovered her favorite classes were her chemistry classes, and it also became clear to her that she couldn't be the mother she wanted to be in a busy medical profession, so she decided to pursue a career in chemistry. She was a student lab assistant helping with ACHM 101



labs and really enjoyed the teaching. Her senior research, conducted under the supervision of Dr. Monty Fetterolf, investigated the adsorption of dyes by titanium dioxide. During her last year as an undergraduate, she also held a SCUREF internship at SRS where she worked for the Aiken County Technology Lab/Savannah River National Lab setting up an analytical lab and developing a database of glass composition and properties for vitrification processes. She was accepted to both law school and

graduate school at USC, and again made her decision for chemistry. At USC, she is working in the lab of Dr. Scott Goode on laser induced breakdown spectroscopy (LIBS), a technique that allows identification and quantification of elements in a sample. She expects to earn her Ph.D. in the Spring of 2009.

Amy has been a teaching assistant at USC every semester in graduate school, teaching labs in the introductory chemistry sequence (111 and 112) as well as in quantitative analysis (321). When USC Aiken was looking for some part-time teaching help last fall, Dr. Goode encouraged Amy to apply. Teaching an evening section of ACHM 111 was Amy's first experience with teaching both lecture and lab for a course, and Spring semester she is teaching two sections of ACHM 101. She is greatly enjoying the teaching and plans to pursue an academic position upon completion of her degree. We are proud of Amy's success and are happy to have her back on campus as a colleague.

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