Department of Chemistry
Hosted 2012 Research Open House

The last weekend of February was truly an exciting one for many faculty members, students, and staff of the Chemistry Department. 35 students from all around the nation (even world) participated in the 2012 Research Open House hosted by the Chemistry Department on Friday, Feb. 24 and Saturday, Feb. 25.

The two-day event started with a meet and greet reception at Four Points, and ended with a dinner banquet inside Neyland Stadium. The Department organized faculty poster session, student and alumni presentations, facility tour, program introduction, meetings with faculty, graduate students panel, and student organization social to introduce the Department as a whole to the prospective students.

Two Chemistry Students Won 2012 EURēCA Awards

The University of Tennessee’s sixteenth annual Exhibition of Undergraduate Research and Creative Achievement (EURēCA) was held March 28-29 at the Carolyn P. Brown Memorial University Center Ballroom. The event highlights research and creative projects completed by UT Knoxville students in collaboration with a faculty mentor.

Chemistry students Britta Johnson and Andrew Moss won two out of three awards given in the Physical and Earth Sciences division.

Andrew Moss’ winning project entitled “Ongoing Synthesis of Galactose Disaccharides for Binding Studies”, was guided by David Baker, Professor of Chemistry, and Irene Abia, faculty member at the Chemistry & Biochemistry Department of the University of Mississippi, and a recent graduate from Baker’s group.

Working on the project, Moss concentrated on the synthesis of galactose disaccharides for investigation into lectin binding using Atomic Force Microscopy and Förster resonance energy transfer.

Moss was excited for receiving this award. “I have put much effort into my research and enjoyed the opportunity to present it to peers and professors.” Moss was also very grateful for the help from Professor Baker. “Dr. Baker is always very helpful in guiding the synthesis and providing feedback on ideas and problems encountered.” Moss said.

Born and raised in Cookeville, TN, Moss attended Cookeville High School before he joined UT in the Fall of 2010. He has been working in Baker’s lab since the first week of his freshman year. Prior to this research presentation, he also participated in the poster presentation at the National Collegiate Research Conference at Harvard University in Jan. 2012 and gave an Oral presentation at the Annual Undergraduate Research Conference at the University of Memphis in Feb. 2012. Most recently, he gave a presentation at U.T. in the 3rd Annual Honors Symposium.

Another winner, Britta Johnson presented her project entitled “Dynamics of He Absorbates on Mgo(100) Surfaces”, guided by Robert Hinde, Professor of Chemistry.
Department Hosted 2011 Board of Visitors Annual Meeting

Eight BOV members participated in this year’s meeting and 19 students from all five divisions presented their posters during the Students Poster Competition. Heidi Bostic from Best group and Chris Bennett from Camden group won the poster awards with Nan Chen from Barnes group, Sneha Belapure from Campagna group, and Xiaojun Wang from Mays group as runner-ups.

Dr. Christiane Barnes Appointed Director of General Chemistry

Dr. Christiane Barnes, Lecturer of Chemistry, was appointed as the Director of General Chemistry effective January 1, 2012. Dr. Jeff Kovac stepped down as Director after 12 and one-half years of service.

As the new Director, Barnes will take over the responsibilities such as planning and conducting Graduate Teaching Associates (GTA) training, assigning GTA to courses, revising and updating the general chemistry program policies and procedures, managing the selection of annual general chemistry awards, and overseeing many other aspects related to teaching and the overall quality of the general chemistry program.

Having taught general chemistry for almost 20 years, Barnes is no stranger to the program. However, the new tasks still present some challenges for her. “I want to put my feelers out to faculty and see how they want to make the general chemistry program better than what it is now.” Barnes said.

Born in Germany, Barnes came to the University of Tennessee in 1986 and obtained her Master’s Degree in Chemistry in 1988. She went back to Germany and received her Ph.D. degree in 1991 from the University of Bonn. Barnes was then hired back as a post-doc working in Dr. Baker’s lab in 1992, and served as an Editorial Assistant for the journal, Carbohydrate Research during 2000-2011. She started her teaching career in the Department in 1993.

“In the past few years, she (Christiane Barnes) reinvigorated the Educational Advancement Program section of general chemistry, making it a popular and successful option for at risk students.” Dr. Charles Feigerle, Head of the Chemistry Department, is confident that Barnes will “bring the same energy and enthusiasm for chemical education to the position of Director of General Chemistry.”

Kovac, who just stepped down, is Director of Science Olympiad, Director of the Governor’s School for Math and Sciences, and Director of the College Scholars program.

James F. Green (better known as Jim) was born on July 7, 1954 in Pueblo, CO. He was born to Forrest and Sue Green. He is survived by his sister Jane. Jim attended the Massachusetts Institute of Technology where he received a B.S. in Life Sciences and a B.S. in Chemistry. He later received a Masters in Biochemistry. In 1985 he moved to Knoxville, TN where he began his Graduate Career at the University of Tennessee-Knoxville under the direction of George W. Kabalka. After the completion of his Ph.D., Jim stayed with UT where he became an Instructor. While Jim was creative researcher, it was no secret that teaching was his calling. He is most well known throughout the university for his service as an instructor. Jim stayed with U.T. until the summer of 2010, at which time he became a Professor of Chemistry at Lincoln Memorial University, in Harrogate Tennessee. Though his days there were short, he made no less of an impact on the student population at LMU than he had here at UT. After a short battle with pancreatic cancer, Jim passed away on December 23, 2011. A memorial fund has been created in his honor at Lincoln Memorial University.

Written by: Kelly Hall, Graduate Student, Kabalka Group

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Ben Xue, Professor of Chemistry was appointed Associate Editor of Science China Chemistry last year and recently edited the December issue on the International Year of Chemistry (IYC).

The December issue includes 29 papers from Australia, Brazil, Britain, Canada, Chile, China, France, Germany, India, Israel, Japan, Nepal, Pakistan, Saudi Arabia, Singapore, South Africa, and the USA. It also features an interview of Professor Robert Grubbs and and a Comments by Professor Ada Yonath, two Nobel Laureates.

David Jenkins, Assistant Professor of Chemistry helped draft questions for the interview of Grubbs.

Another issue that Xue helped organize is the November issue for the 80th birthday of Professor Ron Breslow of Columbia University. Xue wrote the preface for both issues.

Science China Chemistry is an academic journal co-sponsored by the Chinese Academy of Sciences and the National Natural Science Foundation of China, and published by Science China Press. The journal publishes high-quality, original results in both basic and applied research.

Jimmy Mays, Professor of Polymer Chemistry, was named a PMSE Fellow by the American Chemical Society (ACS), Division of Polymeric Materials Science and Engineering. The PMSE Fellows Program was established since 2000 to honor a small percentage of PMSE members who have made significant contributions to the science and engineering of polymeric materials.

Mays is internationally recognized as a leader in synthesis of polymers and copolymers having tailored architectures. He is presently involved in synthesis of tailored polymers for such diverse applications as new and improved rubbers, low cost fuel cell membranes, and improved polymer-based batteries.

Mays received his B.S. degree in polymer science from the University of Southern Mississippi and his Ph.D. degree in polymer science at the University of Akron. He then worked in industry for five years with Hercules, Inc., prior to joining the chemistry faculty at the University of Alabama at Birmingham. Dr. Mays moved to Tennessee in 2002 to accept a joint appointment at the University and Oak Ridge National Laboratory.

October last year, Mays was honored with the 2011 Outstanding Alumni Award for leadership in polymer research and development at the University of Akron.

The twelfth class of PMSE Fellows will be inducted at the San Diego ACS National Meeting during the PMSE/Poly Awards Reception on Wednesday night, March 28, 2012.

Jeff Kovac, Professor of Chemistry, was appointed the new Director of College Scholars Program in the College of Arts and Sciences.

Being a faculty member in the Chemistry Department since 1976, Kovac directs the department undergraduate programs, serves as the Director of the Tennessee Governor’s Schools for Science and Engineering and also directed the Tennessee Science Olympiad State Tournament in 2009. He recently received the Chancellor’s Honor for his excellent work in academic outreach.

Kovac also recently published a new book on science history with Michael Weisberg, Associate Professor of Philosophy at the University of Pennsylvania. In the book Roald Hoffmann on the Philosophy, Art, and Science of Chemistry, they gathered together chemist and Nobel laureate Roald Hoffmann's most significant contributions to the field of philosophy and included in the book some unpublished lectures to increase the value of the collection.
Alan Cramer Paper Accepted in JACS

Alan Cramer, a third year graduate student in Dr. Jenkins’ group, published a paper about synthesis of Aziridines in Journal of American Chemical Society (JACS).

Co-authored with Professor Jenkins, Cramer is the first author of this paper “Synthesis of Aziridines from Alkenes and Aryl Azides with a Reusable Macrocyclic Tetracarbene Iron Catalyst.”

In this paper, the two researchers expanded upon previous examples of catalytic aziridination, which utilize the more atom economical azide functional group as the nitrene transfer reagent. They demonstrated that their catalyst could perform the first ever examples of catalytic aziridination with tri- and tetra-substituted alkenes, as well as, electron donating aryl azides. “Our new iron tetra-NHC catalyst can perform these reactions not only at very low catalyst loading, but it can also be easily separated and recycled up to an additional three times.” Cramer said. Since the aziridine functional group is found in natural products and also used in pharmaceuticals, broadening the scope of the aziridination reaction is significant.

Born and raised in Powder Springs, GA, Cramer always wanted to be a chemist. He received Bachelor of Science degree in Chemistry from Kennesaw State University in 2008 and joined Jenkins Group a year later.

Working towards his Ph.D., Cramer’s research has been focused on organometallic synthesis with a special interest in structure and bonding and how these characteristics can be tuned from a molecular orbital standpoint. His current research involves trying to stabilize high energy metal ligand multiple bonds and performing oxidative group transfer reactions from them with various substrates.

Founded in 1879, JACS is the flagship journal of the American Chemical Society and the preeminent journal in the field. This periodical is devoted to the publication of fundamental research papers in all areas of chemistry and publishes approximately 16,000 pages of Articles, Communications, Book Reviews, and Computer Software Reviews a year. Published weekly, JACS provides research essential to the field of chemistry and is the most cited journal in chemistry field as reported in the 2010 Journal Citation Report© Thomson Reuters.

Last year, Cramer also co-authored a paper “18-Atom-Ringed Macroyclic Tetra-imidazoliums for Preparation of Monomeric Tetra-carbene Complexes” that was published in Organometallics, another American Chemical Society publication with a high Impact Factor of 3.888, ranked in the top ten in citations, impact factor, articles published and immediacy index in both categories.

Date: 12/06/2011

Stefanie Bragg Received SEAC Student Travel Award

Stefanie Bragg, a graduate student from Professor Xue’s Group received the Society for Electroanalytical Chemistry (SEAC) Student Travel Award to present her research at 2012 International Pittsburg Conference in Orlando, Florida on March 11th.

Bragg will deliver two oral presentations on “Highly Sensitive Detection of Aqueous Cr(VI) Using Flower-Like Surface Self-Assembly of Gold Nanoparticles” and “Electrochemical Detection of Chromium Based on a Novel Sol-Gel/Single-Walled Carbon Nanotube Hybrid Material.”

SEAC Graduate Student Travel Award was established to help “promising graduate students to offset the cost of travel to the Pittsburgh Conference to deliver an oral presentation in a Conference symposium.”

Born and raised in Glasgow, Kentucky, Bragg graduated from Barren County High School in 2003. She moved on to Western Kentucky University, where she received a full academic scholarship and completed a B.S. in Chemistry (ACS Certified) and Biology in 2007. In that time she researched with Dr. Les Pesterfield and Dr. Donald Slocum and participated in the NSF-REU program at the University of Cincinnati in 2006.

At the University of Tennessee, Bragg has worked with Professor Zi-Ling (Ben) Xue on novel approaches to electroanalysis of metals, and sample pretreatment of biological and environmental samples. She currently serves as the President of the Association of Chemistry Graduate Students (ACGS).

In 2011, Bragg co-authored a paper with Xue. “Optimization of Dry Ashing of Whole Blood Samples for Trace Metal Analysis” was published on American Journal of Analytical Chemistry.

Date: 02/08/2012
A Chemist in the Making

Someone who looks at Britta Johnson’s resume will find a number of impressive achievements, including several semesters of undergraduate research in the University of Tennessee’s Department of Chemistry.

In recognition of her research efforts, Johnson was awarded a Best Presentation prize during UT’s 2012 Exhibition of Undergraduate Research and Creative Achievement (EUReCA).

The project she presented, “Dynamics of He Adsorption on MgO(100) Surfaces,” focused on theoretical studies of the bound states of He atoms that are adsorbed on the surface of an MgO crystal.

Some of Johnson’s results were published in the Journal of Physical Chemistry in 2011, in an article titled “Pairwise Additive Model for the He-MgO(100) Interaction.” Johnson was the article’s first author.

Britta’s co-author, Professor Robert Hinde, has been Johnson’s undergraduate research mentor. The two have worked together since summer 2009. “Britta has been a great student and a great collaborator,” Hinde said. “Her research has taught us a lot about fundamental atom-surface interactions. A better understanding of these interactions can ultimately help scientists understand in more detail how chemical catalysts work.”

Graduate Student Shared Perspective on Plutonium

Second year graduate student John Auxier, from Professor Schweitzer’s group, participated in the 2010 Plutonium Futures Science Conference and shared his perspective on plutonium futures on Actinide Research Quarterly (ARQ).

Auxier was invited to the conference at Keystone, Colorado as a session chair and as a volunteer helping set up posters, process registration, and many other tasks that ensure the success of the conference.

Auxier also attended many of the conference invited talks and was inspired by the vast range of topics. How political environmental and science affect each other particularly broadened his mind.

After receiving his B.S. in Chemistry and Math from Adams State College in 2007, Auxier interned at Los Alamos National Laboratory in the Actinide Analytical Chemistry Group. He joined Professor Schweitzer’s research group in 2010 and is now working towards his doctorate in inorganic chemistry.

Photo (Courtesy of ARQ): John Auxier (right) and Jianwei Hu, a research assistant at Los Alamos National Laboratory, discuss Hu’s poster on “Quantifying Fissile Content in Spent Fuel Assemblies Using the 252Cf Interrogation Prompt Neutron (CIPN) Technique.”
Irene Abia Appointed Associate to YCC

Date: 01/03/2012

Having graduated with a Ph.D. in Chemistry last December, Irene Abia’s education in the Chemistry Department at the University of Tennessee, Knoxville is truly fruitful. After winning the ACS Young Chemistry Award last July, Abia has been recently appointed as an associate to the Committee on Younger Chemists (YCC).

YCC is a committee at the highest level of governance in ACS. It helps formulate policy that impacts, in particular, younger members of the society. Professor David Baker, Abia’s mentor, is very proud of her. “Such an important appointment is a testament to Irene’s qualities shown by participation and leadership at ACS and related meetings.” Baker said.

Abia was born in Buea, Cameroon. After graduating from Bilingual Grammar School Buea in 1997, she attended the University of Buea and earned a Bachelor’s degree in Chemistry. In 2003, she enrolled in the Medical University of Southern Africa, South Africa where she obtained an Honors Bachelor degree in Chemistry. From 2003 to 2006, she went on to study at the University of Pretoria, South Africa where she conducted research with Professor Kobus Eloff earning a Master’s degree in Medicinal Chemistry. In the fall of 2006, she moved to the United States and joined the research group of Professor David Baker at the University of Tennessee-Knoxville, where she was conducting research in the synthesis of carbohydrates.

After graduation, Abia did not waste her time. She’s expected to join the Chemistry Department at the University of Mississippi this month as Teaching Assistant Professor of Chemistry.

Prior to this award, Abia received the CIBA Young Scientist Award and was featured in the 2010 Fall department newsletter and YCC Leadership Development Award.

Xiaojun Wang Received ACS Travel Award

Date: 10/11/2011

Chemistry graduate student Xiaojun Wang in Professor Mays Group was selected as one of two recipients of American Chemical Society (ACS) Graduate Travel Award to attend 2012 ACS National Meeting in San Diego.

This Travel Award is sponsored by the ACS Division of Polymer Chemistry’s Membership Committee. Wang will be delivering a presentation entitled “Microstructure Effects on Self-assembly of Polystyrene-b-Sulfonated Poly(cyclohexadiene),” to address an unexplored issue regarding self-assembly behavior of strong electrolyte block copolymers derived from dienes.

Wang was very excited to receive this award. “I felt very excited and honored,” he said. “That means recognition of my research among all the applicants. And I am very grateful to my advisor, Professor Jimmy Mays, who has supervised my research, fully supported this travel award application and gave me a strong recommendation.”

Wang obtained his Bachelor of Engineering in Material Science and Engineering at East China University of Science and Technology and a Master degree in Macromolecular Chemistry and Physics at Fudan University. He joined Jimmy Mays’ group in 2007 to pursue his Ph.D. in Polymer Chemistry.

Wang’s research mainly focuses on synthesis of well-defined linear and branched polymers by anionic polymerization, post-modification, morphological study of sulfonated and fluorinated polymers, and self-assembly of amphiphilic block copolymers in aqueous system.

With full devotion to his research, Wang had first-authored and co-authored multiple publications in Soft Matter, Biomacromolecules and European Polymer Journal. Currently, he is working on an invited review for Soft Matter, collaborating with researchers at Center for Nanophase Materials Sciences in Oak Ridge National Laboratory (ORNL).

Wang was recently selected the Excellence in Graduate Polymer Research Symposium which will take place at the ACS San Diego meeting starting on Sunday, March 25, 2012.
**Professor Williams Recognized for 50 Years of Service**

**Date:**
01/06/2012

Not a lot of people can say that they have worked for half a century, let alone for one employer - the University of Tennessee. Professor T. Ffrancon Williams was proudly recognized for his 50 years of service to the University during the Service Awards Luncheon with UT President Joe DiPietro and UT Knoxville Chancellor Jimmy Cheek on Wednesday, Dec. 14, 2011.

Williams joined the Department in 1961 as an Assistant Professor. His tenure at the University and continuous funding from the Department of Energy for almost 40 years have allowed Williams the chance to do what he loves most - research. He has also been active in teaching; however, and was the recipient of the Student Associates of the American Chemical Society (SAACS) Outstanding Chemistry Professor Award in both 2009 and 2010.

Williams has been engaged in research on various aspects of radiation chemistry and intermediate species in chemical reactions for over 60 years. One of his most-proud-of research projects was conducted in the 1970’s. He was the first one to demonstrate quantum-mechanical tunneling and “all-or-nothing” deuterium isotope effects in hydrogen-transfer reactions at low temperatures. Williams has generated more than 200 journal articles, among which many are cited for more than 100 times.

During his 50 years at UT, Williams has directed 18 Ph.D. dissertations and 7 M.S. theses. He has received numerous awards and honors, including being a National Science Foundation Visiting Scientist, which allowed him to conduct research in Kyoto University, Japan; and a John Simon Guggenheim Memorial Foundation Fellow, a fellowship that nowadays seems “almost impossible to get” with 4,000 applications each year for some 200 awards. He has also chaired the Gordon Research Conferences on Radiation Chemistry (1971) and Radical Ions (1984).

UT Service Awards are given to those who have been part of the UT family for 25 years or more to honor their continued contributions and loyalty to the University of Tennessee.

**Darrell Lay Retired After 46 Years of Service**

**Date:**
12/13/2011

A retirement party was hosted for Darrell Lay in Buehler Hall 511 to honor his 46 years of service to the Department of Chemistry.

With food, flowers, gifts, laughter, tears, speeches, holiday spirit, and even a “money tree”, chemistry faculty, staff, and students joined each other to celebrate the coming holiday and Darrell Lay’s retirement.

“Darrell is an exemplary parachute packer.” Dr. George Schweitzer paused a little, then compared faculty members to parachuters. “All faculty members should remember, we could not do research just by ourselves. We depend on our graduate students and staff.” Dr. George Kabalka patted Darrell on his shoulder and said, “I probably could not have gotten that grant if it were not for him.”

Darrell joined the Department as a Storekeeper on Dec. 6, 1965. At the time, he was responsible to order supplies and dispensed items to labs, faculty, and graduate students, but on a much smaller scale than now. As the Department transformed over the years, Darrell’s job also went through the same process. Darrell joked that he had worked everywhere inside the Department except that he had never had to lecture.

In the past 46 years, Darrell has worked hard to earn everyone’s trust, love, and respect. “Darrell is the most honest person I have ever met.” Dr. William Bull, former Associate Department Head said while returning a key, he has kept for years, to Darrell. And that act stimulated a room full of laughter.

Darrell now lives with his wife Mary Ruth, who also retired from Oak Ridge National Lab, as a Senior Staff Administrator with the Holifield Radioactive Ion Beam Facility, after 39 years of service. They plan to “do a little travel” in Tennessee first and hope to have “a trip out West” in the near future. While taking care of his blueberries, apple, and fig trees, also part of the plan, Darrell said he would come back to visit the Department from time to time. “No one spends half of century working somewhere just because of the job,” Darrell said. “I stayed because of people here. I love all the faculty members, students, and staff I work with.”

Special thanks goes to staff members in the Business Office and Main Office who organized the party and came up with many brilliant ideas.
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Calendar

**Fall 2012**
- Classes Begin: Aug 22
- Labor Day: Sept 3
- Fall Break: Oct 11-12
- Thanksgiving: Nov 22-23
- Classes End: Dec 4
- Exams: Dec 6, 7, 10-13
- Graduate Hooding: Dec 14
- UT Commencement: Dec 15

**Spring 2013**
- Classes Begin: Jan 9
- MLK Holiday: Jan 21
- Spring Break: Mar 25-29
- Spring Recess: Mar 22
- Classes End: April 26
- Exams: April 30, May 1-3, 6, 7
- Commencement: May 8-10

Contact Information

**Senior Administration**
- Dr. Charles Feigerle, Department Head
- Dr. Frank Vogt, Associate Dept Head

**Program Divisions**
- Organic, Dr. David Baker: 974-1066
- Inorganic, Dr. Ziling (Ben) Xue: 974-3443
- Analytical, Dr. Michael Sepaniak: 974-8023
- Physical, Dr. T Francon Williams: 974-3468
- Polymer Dr. Jimmy Mays: 974-0747

**Research Centers**
- NMR Facilities: 974-3386
- PCL Lab: 974-2087
- Mass Spectrometry: 974-0763
- Raman Facilities: 974-3141
- X-ray Facilities: 974-3141

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