During Maymester 2009, Dr. Mark Mitchell and a group of five chemistry and biology students (Colin Blenis, Marcus Harrison, Judith Heitz, Amanda Stephens, and Alyse Thacker) participated in a study abroad trip to China. This was the first study abroad trip for the Chemistry Department, the title of it was “A Clean Environment: Technologies for Pollution Prevention and Remediation”. The group was privileged to accompany Dr. Jun Ji and the mathematics students on a trip to China. Since Dr. Ji had been on a previous study abroad trip to China, his enthusiastic support and encouragement was a welcome addition to our program. The following is Dr. Mitchell’s account of the study abroad trip.

The trip began with a 14-hour flight from Atlanta to Tokyo. We stayed overnight in Tokyo and then arrived in Shanghai the next day. We spent some time touring Shanghai seeing the Jin Mao Observatory, which is the 88th floor of the Grand Hyatt Hotel in central Shanghai. The Observatory windows line the perimeter of the floor providing an amazing view of the city of Shanghai. We also went to the Yuyuan Garden; a beautifully peaceful garden in old downtown Shanghai and the Shanghai Museum. After touring a local silk factory, the last event of the day was spent attending an outstanding performance of the Shanghai Acrobatic Troupe. The performance was an incredible spectacle: lots of juggling, stacked chairs, human towers, tumbling and contortionists. We stayed the night at East China Normal University.

The next day we flew to Changsha University in Changsha, Hunan province, the host university during our stay. Dr. Peter Liu, Vice President of Changsha University and the staff of Changsha University Study Abroad program treated the group to a wonderful banquet. The next seven days were spent at Changsha University. Our host, Dr. Jiangshe Zhang, Chair of the Department of Bioengineering and Environmental Studies, his staff and students were very gracious and eager to help. There were about fifty Chinese students, along with our five students, in classes each morning and afternoon. We had about a two hour break between classes for lunch. In addition to lectures on environmental chemistry, we were taught about Chinese culture and history by Changsha faculty members. Dr. Zhang, whose expertise is environmental chemistry,
presented one of the lectures. When not in class, we tried to learn as much as possible from the students and staff about the Chinese culture and food (although several of the KSU students gave in and ate at the Pizza Hut or McDonald’s in downtown Changsha). The KSU students were guests of honor at both Changsha University and Hunan Foreign Studies College.

While at Changsha University, we toured Shaoshan (birthplace of Mao Zedong), Hunan Normal University (one of the most respected normal, i.e. teacher education, universities in China), Changsha Kaifu Temple (a Buddhist temple more than 1000 years old), and Yuelu Academy, (an ancient site of learning in China, one of the four most prestigious learning academies in China, which was founded in 976 CE).

We left Changsha and flew to Xi’an, home of the Terra Cotta Soldiers. These ancient, life-sized statues were discovered buried underground in 1974, by a farmer drilling for water in his rice fields. It is now estimated that there are close to ten thousand clay soldiers, along with more than a hundred clay chariots, and several hundred clay horses buried in three large pits, and arrayed in columns. The next day we visited the old city of Xi’an, the Big Wild Goose Pagoda, and the Great Mosque, (spiritual home to approximately 60,000 Chinese Muslims living in the old city of Xi’an). We left Xi’an and rode the overnight train to Beijing. We met Dr. Daqiang Cang, the Director of the Department of Ecological Science and Engineering and Deputy Director of the Center of Environment and Energy. He provided us with a wonderful introduction to the university and the research it carries out, a tour of the campus, and a great luncheon.

Later, we toured the Forbidden City and Tiananmen Square followed by a rickshaw tour of one of the old sections of Beijing. We then went to the 2008 Summer Olympic Games site, including the Water Cube and a tour of the Bird’s Nest. On the last day of our stay in China we went to see a section of the Great Wall near Beijing, toured the Summer Palace, (not far from Beijing in the mountains) where the Chinese emperors and their families spend the summer months. We had opportunities in Beijing to visit different shopping districts. The shops were very small stalls, stuffed with merchandise, with salespeople who absolutely expected you to haggle on a price. Some of the students became pros.

The study abroad trip was a fantastic experience. The greatest part was the exposure to a culture that is so different from our own and meeting wonderful people who were more than happy to share their culture with us. I know that I had a great time on the study abroad trip and took a wealth of enlightening experiences away from it; I hope the students did too.
Three faculty members (Drs. Lewis, Koether and Powers) and two undergraduate research students (Judith Heitz and Vera Koganov) travelled to SERMACS in Puerto Rico in October 2009 to present four oral presentations and two poster presentations. Judith Heitz was travelling on a CETL Undergraduate Research Student Travel Award as well as CSM Mentor-Protégé Travel Funding. Both Dr. Koether and Vera Koganov were also travelling on CSM Mentor-Protégé Travel Funding. One of the symposiums (Current Trends in Environmental Chemistry) was sponsored by the ACS Division of Environmental Chemistry and was organized and presided over by Dr. Koether. In 2013, the Georgia Local Section of the ACS will be hosting SERMACS in Atlanta, GA.

On September 18th 2009, Kennesaw State University, Emory University, Georgia Gwinnett College, and Georgia State University, all participated in the 75th Herty Medal celebration organized by the Georgia Section of the American Chemical Society. That morning these institutions hosted the “Future Medalists’ Symposium” for area high school and middle school students. Students were also invited to enter their original 500-1200 word essays about “CHEMISTRY FOR LIFE IN THE SOUTHEAST” in the essay competition. Each symposium featured a speaker who was a recent recipient of the Herty Medal award. The keynote speaker at the Kennesaw State University Symposium was this year’s Herty medalist, Dr. Craig Hill, the Goodrich C. White Professor of Inorganic Chemistry at Emory University. Over 40 area high school students attended the symposium at KSU and were provided with an exciting day of learning about chemistry that featured Dr. Hill, current Kennesaw students, and the chemistry facilities at Kennesaw State University.

“Undergraduate research continues to be a focus of the Chemistry and Biochemistry department.”
Since 1995 the Department of Chemistry and Biochemistry has enjoyed a wonderful relationship with the KSU Annual Symposium of Student Scholars hosted each spring by the Center for Excellence in Teaching and Learning (CETL). At the 14th Annual Symposium held in April 2009 there were 29 oral and poster presentations from our department representing one third of the total submissions to the conference. However, as our department has grown, there has been a clear need to provide an additional outlet for student research presentations in the fall semester. To answer this call, Dr. Christopher Dockery (Assistant Professor – Forensic and Analytical Chemistry) organized the first “annual” Department of Chemistry and Biochemistry Fall Symposium of Undergraduate Research held on December 4, 2009. We had an opening reception with coffee, juice and snacks, and a pizza lunch provided by the KSU chapter of the Student Affiliates of the American Chemical Society (SAACS). Eighteen posters were presented representing 6 faculty and 25 student coauthors. The posters were judged by KSU faculty Drs. Chris Dockery, Greg Gabriel, Janet Shaw, and Daniela Tapu. Results from the judges were tabulated and the top posters in research and coursework are listed below.

**First Place - Research Category**
Sergey A. Isarov and Dr. Gregory J. Gabriel, “Synthesis and thermal analysis of phosphonate polymers for fire-resistant materials”.

**Second Place - Research Category**
Israel Scott, Lewis Kraft and Dr. Jonathan L. McMurry, “Development of a real time optical biosensor assay for amoxicillin in complex samples”.

**First Place - Coursework Category**
Jessica Rioux, Mark Segall, and Dr. Christopher R. Dockery, “Characterization and Differentiation of Trace Glass Fragments Using Laser-Induced Breakdown Spectroscopy”. CHEM 4300L.

**Second Place - Coursework Category**
Kelsey Uberto and Dr. Marina C. Koether, “Analysis of Table-top Sweeteners”. CHEM 3030L.

Congratulations to all of our faculty and students on a fantastic job!
On November 17, 2009 KSU’s Beta Upsilon Chapter of Phi Lambda Upsilon, the chemistry honor society with 111 years of tradition nationally, inducted 11 new members. The ceremony was presided over by president, Gerhard Kummerow, vice-president Michele Gouws, secretary Mark Segall and treasurer Judith Heidt. Numerous faculty members were in attendance as well as family and friends of the inductees to recognize the honor being bestowed upon the students. The society was pleased that both Dr. Mark Mitchell, chair of the Department of Chemistry and Biochemistry, and Dr. Larry Peterson, dean of the College of Science and Mathematics, were on hand to give welcoming remarks to guests and new members Sabrina Davila, Osamudiam Darkoud, Antoinette Duverneau, Julia Gran, Jonathan (JP) Parker, Michelle Pierre, Maria Quiroz, Roxanne Tetrault, Elizabeth Thompson, Emily Wysocki, and Michelle Razumov.

The Beta Upsilon chapter has continued its tradition of service by volunteering to welcome approximately 40 high school students to KSU as a part of the 75th Anniversary Herty Celebration on September 18, 2009. The students participated in a panel discussion and led tours of the science building. They will also be volunteering at the American Chemical Society Southeastern Regional Undergraduate Research Conference (SURC) which KSU is hosting in April. We hope some alumni will be in attendance and be able to meet some of the current talented KSU chemistry majors.

“Our mission is to provide our students with an outstanding education...”
February 25, 2010 - Dr. Ganesh Deka - Neenah Paper & Forest Products - "Neenah Paper Technical Products"

This presentation will begin with a brief overview of Neenah Paper Inc., then the focus will shift to the technology and processes used to manufacture polymer impregnated and coated papers engineered for highly technical applications such as medical packaging, t-shirt decorating, and automotive surface paint preparation. This will be followed by a discussion of attributes and performance needs associated with the end use applications of such products.”

March 4, 2010 - Dr. Craig Hill - Emory University - "Water oxidation catalysts (WOC) and artificial photosynthesis"

An analysis of current and projected global energy consumption strongly suggests that even with continued use of fossil fuels and all the alternative energy sources, the use of hydrogen fuel from the sunlight-driven splitting of water (H$_2$O $\rightarrow$ H$_2$ + ½ O$_2$) is ultimately unavoidable to fuel our civilization. The market value and the environmental price of fossil fuel consumption will continue to rise making alternative sources of energy, by contrast, more economically viable. However, great improvements in the science of solar water splitting (current popular phrase: "solar fuel production") are needed as soon as possible to confront the likely future need.

The features of both biological and synthetic devices to convert light into chemical energy will be outlined. Many advances are needed in (1) light collection systems, (2) catalysts for water reduction/hydrogen evolution and (3) catalysts for water oxidation/oxygen evolution as well as facile and controllable communication between these 3 units. No challenge in solar fuels research is technically harder or more generally pressing than realization of viable (robust, fast and selective) water oxidation catalysts (WOCs). We have sought viable WOC prototypes that are homogeneous (versus heterogeneous) for 3 reasons: (1) they can be interfaced with the widest range of photosensitizers and H2-evolving systems; (2) they can be studied and understood in far greater detail at the molecular level and thus consequently optimized far more effectively, and (3) they require less active metal (possibly a costly noble metal) than heterogeneous WOCs.

April 8, 2010 - Dr. Jason Locklin - University of Georgia

Surface-initiated polymerization reactions are rapidly developing as methods to prepare functional, high-tech coatings. This is a technique based on the growth of polymer molecules at the surface of a substrate (such as glass, metal, or plastic) in situ from a surface bound initiator, which results in the covalent attachment of polymer molecules to this substrate. Polymer layers in which the polymer chains are irreversibly immobilized to the substrate are especially attractive for a wide variety of applications, as these layers have excellent long-term stability, even in rather adverse environments. In addition to improved stability, the number of functional groups present at a surface can be greatly enhanced by connecting large polymer molecules with functional groups (present in each monomer repeat unit) to the surface instead of binding the functional group directly to the surface. This transition from a two-dimensional to a three-dimensional arrangement has been called the "skyscraper" approach, and allows for high densities of functional groups to be obtained in a limited area. We are currently developing new polymerization methodologies for the following applications: Light induced mechanical motion, sensors for biological arrays, antimicrobial coatings and enzymatic biofuel cells.


Kennesaw State University is pleased to announce that its new ATOMS (Advancing the Teaching of Math and Science) Center will host its first comprehensive Advanced Placement Summer Institute (APSI) for Science and Math this summer. The ATOMS Center will encourage ongoing support to and collaboration with APSI participants from the Atlanta metropolitan area and further continuing education in the future. This summer’s schedule will include the following courses:


The APSI for Science and Math at KSU was initiated last summer with AP Chemistry taught by Jim Cortez and Dr. Greg Rushton. Jim Cortez will be returning to teach the AP Chemistry course again this year.

For more information and registration materials, please contact Michael Petelle, mpetelle@kennesaw.edu.

In the next newsletter, we will be sharing information on new faculty, awards day, and our new lab science building.
Lewis Kraft - 2009 - Ph.D. student at Vanderbilt University.
Esha Patel - 2009 - Accepted into Union University School of Pharmacy
Julie Turner - 2009 - Analytical chemist with Air Quality Sciences in Marietta, GA.
Jennifer Yancey - 2009 - Accepted into Morehouse School of Medicine
Dustin French - 2008 - Accepted into Nova Southeastern Medical School in Ft. Lauderdale, FL.
Lindsay Harris - 2008 - Working in Forensic Toxicology with the GBI.
Sean Hipps - 2008 - Working for GBI.
Suk Kim - 2008 - Accepted into Medical College of Georgia, MD program.
Adam Kleg - 2008 - Working as a compliance officer at Medical Neurogenetics in Atlanta, GA.
Natalia Kyriacou - 2008 - Accepted into Mercer University MD Program.
Viet Nguyen - 2008 - MS student at Morehouse College.
Mary Rau - 2008 - Accepted into P.A. program at South University, Savannah, GA
Matthew Rosenberg - 2008 - Grad student at Western Carolina University.
Ken Staples - 2008 - Ph.D. student at University of Pittsburg.
Caroline Cushman - 2007 - Teaching school in Canton, GA.
Michael East - 2007 - Grad student at Emory University.
Laura Brooks - 2006 - Works in Pharmaceutical Sales at Takeda Pharmaceuticals.
Allen Stokes - 2006 - Medical student at Mercer University.
Ivan Stefanov - 2006 - PhD Research Assistant at Ghent University in Gent, Belgium.
April Stevens - 2006 - PhD student at Clark Atlanta University.
John Cagle - 2005 - Attending Medical School at GA-PCOM.
Kim Kellett Arrowood - 2005 - Working as a lab instructor at Kennesaw State University.
Tiffany Bryant - 2005 - Working as a Laboratory Analytical Chemist at Ajay North America LLC.
Angela Carmack - 2005 - Working at Deerland Enzymes.
Hazem Kanaan - 2005 - Received his D.O. from WV School of Osteopathic Medicine.
Ryan Moore - 2005 - Executive VP at ChemLink Laboratories LLC in Kennesaw, GA.
Nicholas Marshall - 2004 - Grad student at University of Georgia.
Ikenna Okpareke - 2004 - Resident in the Dept. of Anesthesiology and Critical Care, at the University of Chicago Hospitals.
Kathleen M. White - 1999 - Working as a Senior Scientist, Savannah River National Laboratory.
Guillermo Ramirez - 1984 - Working as a Facility Manager for Ashland, Inc.

Do you know of someone who is interested in receiving the newsletter or wants to get on our mailing list? Please email wsexton@kennesaw.edu including their name, street address, City, State, Zip and email address.