



CHEMISTRY DEPARTMENT ALUMNI NEWSLETTER

A note from the editor:

It's early April, and it's time for the spring edition of the Alumni Newsletter. I thought if I linked the newsletter to the tax deadline, it would get out on time. A lot has happened this year, so I hope you take a look at the activities associated with the department and the achievements of our faculty, students and alumni. I would like to remind all alumni that we appreciate hearing from you and are happy to share your news.Now I better take care of those taxes.

Your editor,

D. L. Batema

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DR. KRISTY MILLER RECEIVES MERCK GRANT

The Merck Institute for Science Education and the American Association for the Advancement of Science Undergraduate Research Program has awarded Dr. Kristy Miller a \$60,000 grant for the promotion of collaborative student research in the UE departments of Chemistry and Biology. Dr. Miller authored the proposal and spearheaded efforts to organize the two departments. Each department's faculty submitted summaries for their area of study, possible research projects, and expenses needed.

"Funding will support research stipends for undergraduate students and ancillary programs which foster interaction between the departments, encouraging students to pursue graduate education in chemistry and the life sciences," says Dr. Miller. Summer research is vital for science students because it offers an experience not often found in the classroom. Dr. Ray Lutgring has indicated that six students from chemistry and biology will be chosen to receive the stipends covering living and working expenses. "This greatly increases the amount of science research opportunities our departments will be able to offer students," says Dr. Lutgring.

With this grant, the existing collaboration between the disciplines will be increased, enhancing undergraduate education through research experiences emphasizing the interrelationship between chemistry and biology. The grant will also foster undergraduate

programs and activities which bridge the two disciplines, such as monthly chemistry-biology forums where faculty would present innovative research within the two fields. Also planned will be collaborative undergraduate workshops, student/faculty research presentation meetings, and an annual Chemistry and Biology Research Forum.

Although the two departments have worked together in the past, this grant will strengthen their bond. Dr. Lutgring says, "There is naturally a lot of crossover material between the two areas, and this grant will help students while helping both departments further their research." Additionally, Dr. Mark Davis, associate professor of biology, feels the expanded research will form a foundation for the departments to build on. "This grant is the first step that will enable us to do some preliminary research in certain areas of ours, and hopefully, in the end, expand on our findings by applying [for] and receiving future grants."

This is not the first time that a UE faculty member has applied for the Merck grant, but Dr. Miller is the first from UE to receive one. We congratulate Dr. Miller on her efforts and accomplishment.

*(Parts of this article and quotes are from Daniel Robison, staff writer of the **Crescent** and from a news release appearing in the **Acenotes**.)*

ALUMNI NEWSLETTER EDITOR OFF TO HARLAXTON

Yes, it's true. I will be heading to Grantham, England in the fall to teach at Harlaxton College for the semester. I will be teaching four classes: Chem 100 Fundamentals of Chemistry, ES 103 Environmental Science, Biol 214 Field Zoology, and an independent

study. Although I will be busy with classes, I hope to travel some. Most of my travel will involve birding in places like the Wash, the Broads and a pelagic trip or two. But do not fear, the alumni newsletter will be in the capable editorial hands of Dr. Arlen Kaufman.

DR. LYNCH ENJOYS SABBATICAL LEAVE AT MIT

Dr. Bryan Lynch recently spent a well-deserved sabbatical in Massachusetts pursuing his interests in lasers. The following summary of his time away from UE engaged in research (and some fun) are in his own words:

During the spring and summer semesters I spent my sabbatical in the research labs at the Massachusetts Institute of Technology (MIT). My visit was supported by a curriculum development grant through the Lilly Endowment and a Summer Research Fellowship granted by the Petroleum Research Fund and the American Chemical Society. I worked in the laser laboratories of Professor Bob Field, and most of my time was spent working with isocyanogen, CNCN. You might think that this molecule is unstable and will decompose to cyanide and you are right; I always had a cyanide detector with me when in the lab. CNCN easily isomerizes to cyanogen (NCCN), and our goal was to study the transition state of this isomerization process. But first, we needed to observe and determine the structure of its first electronically excited state, something that had never been done before.

I spent much of my time learning how to make CNCN by vacuum pyrolysis of a rather large precursor (N-cyano-2,3-diphenylcyclopropeneimine), which I also had to make. Not an easy task for a physical chemist, but I found lots of help from a very able graduate student, John Curley, in Professor Christopher Cummins' group. Once we had made CNCN, we used a technique called PHOFEX, or

photofragment fluorescence excitation spectroscopy, to study its excited state. PHOFEX is a two-laser experiment. The first laser, whose frequency is swept, excites CNCN to the excited state. Once in this state, CNCN dissociates into two cyanide groups. The second laser excites the cyanide groups (the photofragments) to their excited state from which they fluoresce. When fluorescence is detected from the CN groups, we know that the frequency of the first laser is resonant with an energy level in the CNCN excited state. In this way we were able to map out the energy levels of the CNCN excited state. We were successful in observing the excited state, and we are now finishing a paper to be submitted to the *Journal of Chemical Physics*.

Not all of my time was spent in the research lab. I stayed in the small town of Waltham, which is within biking distance of historic Lexington and Concord, which I visited often. On April 15 Massachusetts celebrated Patriot's Day, and I attended the reenactment of the Battle of Lexington and Concord. People were dressed up in colonial dress, and everywhere there were Red Coats and Patriots (see picture below). I took many walks around the Charles River and through downtown Boston, and I spent lots of time at the Museum of Fine Arts and the Isabella Stewart Gardner Museum. On the 4th of July, I celebrated with the Boston Pops and 250,000 other people; other than the science, this was definitely one of the highlights of my visit to MIT!



MaLauren Building on the campus of MIT overlooking the courtyard along the Charles River.

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“...I attended the reenactment of the Battle of Lexington and Concord. People were dressed up in colonial dress, and everywhere there were Red Coats and Patriots.”

DR. MILLER VISITS GERMANY

Dr. Kristy Miller visited Germany on December 3-9, 2006. She was selected by the Deutscher Akademischer Austausch Dienst (German Academic Exchange Service), or DADD, to participate in "Science in Germany: New Developments in Higher Education, Interdisciplinary Cooperation and Industrial Application." The purpose of the program was threefold: To inform U. S. faculty about science in Germany and provide insights into higher education in that country, to foster exchange between U.S and German institutions and enhance collaboration among scientists and industry, and to promote undergraduate opportunities for U. S. students in Germany.

Dr. Miller, along with 19 other faculty members from across the U.S. participated. This visit originated in Bonn and continued to Aachen, Jülich, Düsseldorf,

Mainz, and Heidelberg. The tour included visits to: University of Bonn, Fraunhofer Institute for Molecular Biology and Applied Ecology, University of Aachen, Research Center Jülich, Henkel, Max-Planck Institute for Chemistry, University of Heidelberg, and the European Molecular Biology Laboratory.

"The experience in Germany was amazing. I learned a great deal about Germany and also about German internships and research opportunities that would benefit our students," says Dr. Miller. Apparently, the rewards of the trip are paying off, as two of our students will be studying in Germany. Kim Fessel has accepted a RISE Professional Internship with DADD in Frankfurt, and Kelly Vore will participate in the RISE 2007 Internship Program in Leipzig.

Of her experience in Germany, Dr. Miller says, "I learned a great deal about science in Germany, and also about German internships and research opportunities that would benefit our students."



Dr. Miller standing by the Neckar River in Heidelberg on her visit to the University of Heidelberg and the nearby BASF manufacturing plant.

DEPARTMENT CHANGES

As many of you know, Dr. Beckman has been the Dean of the College of Arts and Sciences at UE for the past six years. At the end of this academic year, Dr. Beckman will be stepping down as Dean and return to teaching full time. She is excited about returning to the chemistry department as a faculty member and teaching organic chemistry.

The new Dean of the College of Arts and Sciences will be Dr. Susan Calovini, who is currently the interim dean of the College of Sciences and Mathematics at Austin Peay State University in Clarksville, TN.

In other developments within the department, Dr. Ray Lutgring has accepted a new position as the Director of the Honors Program starting in the fall of 2007. Accepting this new position will require a change in leadership for the chemistry department. Beginning on June 1, 2007 Dr. Bryan Lynch will become the new chair of the chemistry department.

Although it appears that a lot of changes are happening in a short period of time, we expect the transitions to be smooth because these are not new faces, but old friends assuming new or different roles than they have been accustomed to lately.

Reflecting on his tenure as department chair, Dr. Lutgring says, "I have enjoyed the four years that I have been chair. It has been very rewarding trying to help such a talented department move forward."

STUDENTS TRAVEL TO PITTCON

In order to provide his students with a more realistic perspective on modern analytical chemistry, Dr.

Arlen Kaufman took his Instrumental Analysis class (Chem 461) to the Pittsburg Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon). At the end of February, Dr. Kaufman and students Dorothy Ahlf, Kim Fessel, Megan Gootee, Emily Maurer, and Kevin Ruble loaded up a van and headed to Pittcon, which was held in Chicago, Illinois this year. The trip was funded by the Lilly Endowment's Initiative to "Promote Opportunity through Educational Collaborations" and UE's Honors Program.

In preparation for the conference, Dr. Kaufman summarized the background information for the techniques that would be highlighted at the conference before leaving for Chicago. While at the conference, students attended seminars by leaders in the fields of separation science, electrochemistry, optical spectroscopy, and mass spectroscopy. After returning to UE, the material covered at the conference seminars was reviewed in class, supplemented with primary literature references, and tied into the curriculum for the semester.

Although attendance at certain seminars was required, students did have time to go to other semi-

nars and poster presentations of their own choosing. Of course one of the main attractions of Pittcon is the exhibition floor. Students also spent a fair amount of time on the exhibition floor looking at instrumentation and talking to vendors. Apparently, there were a lot of very attractive free items available at the various exhibition booths because the van ride back to UE was much more cramped than the trip to Pittcon.

While a lot of serious work was required at Pittcon, there was some time for fun as well. Every evening the students were able to participate in some of Chicago's fine dining and night life. One of the non-conference highlights was an afternoon spent at the Museum of Science and Industry.

In addition to students from the Instrumental class, Dr. Kaufman was able to have a research student join the group. Hsiang-Jui (Ray) Yeh attended the conference to present results of a collaborative research project. Ray, Dr. Kaufman, and colleagues Jon Howell, Joseph Bougher, and Pete Kissinger from Bioanalytical Systems, Inc., of West Lafayette, IN, co-authored a poster entitled, "Using Glucose Test Strips to Teach Electrochemistry in an Undergraduate Laboratory."

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Students getting ready to head to Pittcon with their newly made "I'm with Arlen" T-shirts.

Pictured from left to right:

Ray Yeh, Kevin Ruble, Dorothy Ahlf, Emily Maurer, fearless leader Dr. Arlen Kaufman, Megan Gootee, and Kim Fessel.

PROJECT-BASED LEARNING IN ORGANIC CHEMISTRY

Funds from a curriculum development grant from the Lilly Foundation awarded to Dr. Batema have been used for the development of a lab that we hope is more effective than the traditional lab experience. For the last two years we have been using a project-based learning approach in the first semester organic chemistry labs.

The project-based learning approach employs three strategies: the use of a relevant real world problem, group or cooperative learning, and effective written and oral communication of results.

The project students have been working on the last two years involves assessing the amount of atrazine in the surface waters and sediments of wetlands. This is certainly a relevant environmental problem because atrazine is one of the most heavily used herbicides, especially in Indiana. Wetlands were chosen because of their ability to degrade and transform numerous pollutants. Samples collected were analyzed for atrazine with the idea of comparing two EPA approved analytical techniques: GC/MS and ELISA.

To carry out the atrazine project, students were organized into teams to work on specific tasks. Each team consisted of four students, who met once or twice outside of normal lab time to get organized for the next week's activities. A group leader was

charged with the responsibility to see that all members of the group contributed to achieving tasks and meeting goals.

Finally, we spent time to instruct students on how to communicate effectively. Written or oral presentations allowed students to think about and make sense of data collected. In addition to group reports, a final written presentation was required. Students opted to do a poster presentation and they worked up their data as if they were going to present at a conference or workshop.

The project lasted seven weeks with time spent on an overview of the project and goals, a trip to wetland sites to learn about wetlands and to obtain samples, running the ELISA assay, preparing samples for GC/MS using solid phase extraction methods, running the GC/MS, and a couple of weeks on writing, editing and preparing the final poster.

We feel that project-based learning will improve learning in the organic chemistry laboratory by generating interest in the work students do, and providing them skills in working cooperatively and communicating about science more effectively. Early assessment of this approach has been encouraging because students find the experience more engaging, relevant, and preferred over the traditional lab approach.

A typical response from students involved with project-based learning in the organic chemistry lab:

"I really enjoyed working on the atrazine project. I felt our class became a team and that we were doing something important. The project-based lab was in every way superior to a traditional lab experience."

ALUMNI NEWS

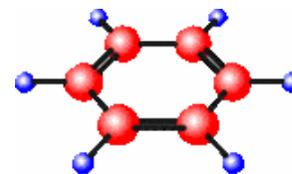
Jessica Frisz ('06). Jessica sent us an e-mail a while back to say hello as she was preparing to begin her studies in chemistry at the University of Illinois. She had completed orientation and TA school but had yet to start classes or begin her rotation through the labs.

Jessica is among friends as she is joined by a couple of UE biology graduates, Crystal Harmon and Bryan Hart who are now students at Illinois' School of Molecular and Cell Biology. Jessica says that they are all doing well, glad they chose the University of Illinois, and they are even learning to love the color orange.

Samantha Kirsch ('06). Sam took a break from her studies at the IU Med School in Bloomington to

visit the department recently. She tells us that the med school created a teaching assistant position for her for next year's first year biochemistry class. Besides a monthly stipend she will receive the perk of a coveted "A" parking pass.

Mandir Helms ('06). Mandir was in Evansville a few weeks ago visiting family and friends, and she stopped by to see some of the folks in the department. She came with her friend, a dog she has called Benzene. Mandir quickly brought us up-to-date on her activities and studies at Rosalind Franklin University School of Medicine and Science in Chicago.



We didn't have an opportunity to get a picture of Benzene, the dog, when Mandir paid us a visit, so here is a picture of benzene that is familiar to all of us.

CHEMISTRY CLUB ACTIVITIES/STUDENT AWARDS

The Chemistry Club started off the year with a welcome back picnic at Dr. Lutgring's house in September, where everyone relaxed and had a good time. During finals week of the fall semester, the club had a pizza party and played bingo for prizes.

In the spring, club members participated in the spring Sunset Concert by passing out "benzene" cookies and advertising Chemistry Club. Elections were held in April for new club officers. The officers for 2007-2008: President: Gollsheed Ouranos, Vice President: Sarah Schonaman, Secretary: Amanda Johnson, Treas-

urer: Kristiann Fry and Activities: Megan Gootee.

The club ended the year with the annual spring banquet at the Olive Garden. The annual awards for deserving majors in the chemistry department were presented at the spring banquet. The recipient of the Outstanding Senior Student of the Year Award, sponsored by ACS, was Dorothy Ahlf. Our Outstanding Sophomore Student of the Year award was presented to Joel Melby.

Dorothy Ahlf a senior and Joel Melby a sophomore are the outstanding chemistry award recipients this year.

GRADUATING CLASS OF 2007

Graduation is scheduled for Saturday, May 12, 2007 at Robert's Stadium. The chemistry department will have 11 seniors graduating this year. Our biochemistry majors graduating include: Sheena Donald, Dorothy Ahlf, Hsiang-Jui Yeh, Kevin Ruble, Jamie Smay, and Jessica Wojtas. Jesse Winkler and Emily Maurer will graduate as chemistry majors. Kim Fessel is graduating with a chemistry/business administration major. Brad Hubartt has a double major in basic chemistry and physics. Finally, Michelle Howard will be graduating with a major in chemistry education.

Some of our graduates have already secured a job or

will continue their education in graduate school:

Emily is headed to the Chemistry Department at Washington University in St. Louis. Brad will major in Biophysics at Drexel University in Philadelphia, PA. Michelle will begin her teaching career at North High School in Evansville, IN. Dorothy is headed to the University of Illinois in Champaign-Urbana, IL in chemical biology. Jessica will major in inorganic chemistry at Purdue University in West Lafayette, IN. Kim has accepted an internship with DAAD at Chemical GmbH in Frankfurt, Germany, and Jamie will be working for the Purdue Cooperative Extension.

Graduation is set for Saturday, May 12, 2007 at Robert's Stadium.

SUMMER RESEARCH

Several chemistry students from the department will be involved in research or internships during the summer of 2007. Five students will be doing their research in the chemistry department here at UE, thanks to support from the UExplore Research Program and the Merck/AAAS grant. Three will travel, two of them a great distance, to other institutions to carry out their research and will receive support from the NSF REU program and the RISE 2007 Internship Program.

Those students working on the UE campus this summer as Merck/AAAS Fellows are Anh Lee, Amanda Senechal, and Sarah Schonaman. Both Bryan Drury and Gollsheed Ouranos will also be working on cam-

pus as part of the UExplore Undergraduate Research Program.

The NSF REU program will be supporting Patrick Blandford and Joel Melby. Joel will be going to Kansas University in Lawrence, KS and Patrick will spend more than 24 hours in a plane to take him to Bangkok, Thailand to work at Mahidol University.

Kelly Vore was accepted into the RISE 2007 Internship Program and will be traveling to Leipzig, Germany to do her research at the Helmholtz Centre of Environmental Research. Meagan MacDonald will do an internship at Red Spot Paint in Evansville, IN.

An active summer research program has some of our students traveling as far away as Germany and Thailand this year.



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Current Position _____

Spring 2007

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Education Since Leaving the University:

Travel/Hobbies/Honors/Family News:

We're on the Web:

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For the second year in a row, Dr. Morrison was the Spotlight on Faculty crowd pleaser.

SPOTLIGHT ON FACULTY

On Friday, March 16, 2007 Wheeler Concert Hall was alive with music and song as faculty and staff from various departments on campus performed for the Spotlight on Faculty and Staff. The annual event is an important fundraising activity for the UEMTA Music Therapy Association (UEMTA). Each year Spotlight on Faculty helps UEMTA provide stipends for student travel to professional meetings and supports worthy charities.

This year our own Dr. William Morrison joined several other faculty and staff including; Mrs. Cindy Jones and Mrs. Eva Key, Music Department; Dr. William Hemminger, English; Dr. John Meredig and

Mr. Juan Del Valle, Foreign Languages; Mr. Chad Miller, Physical Plant; and Ms. Abigail Miley, Development Office. Their voice, piano, and guitar talents resulted in an enjoyable evening netting the UEMTA several hundred dollars.

This years Crowd Pleaser Award went to Dr. Morrison, who performed Gershwin's *Prelude (Melody #17)*, Eubie Blake's *Charleston Rag*, and a surprise Happy Birthday for his wife Susan. For the second year in a row, Dr. Morrison received the Crowd Pleaser Award. Congratulations to Dr. Morrison, UEMTA, and the recipients of this fundraising effort.