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THE UNIVERSITY OF IOWA
COLLEGE OF LIBERAL ARTS & SCIENCES

Fall 2007

Department of Chemistry

Department web address: <http://www.chem.uiowa.edu/>

Breaking News: The Roy J. Carver Charitable Trust Awards Another \$1.86 Million for Northwest Wing Renovations!

The View From the Front Office

It has been another exciting year in the Department of Chemistry. Our attention is constantly drawn to the renovation of the Chemistry Building. The noise, dust, odors, and sometimes the confusion generated by this enormous project have an impact on everyone in the Department. But the rewards of this effort are becoming more apparent with each passing day. The new façade in the North Courtyard is now complete (check out our construction web cam at <http://info.chem.uiowa.edu/>) and the walls are in place for the new instructional labs behind this outer wall.

Thanks to support from the Roy J. Carver Charitable Trust, we opened the first renovated research space last fall to provide labs for Amanda Haes, our newest analytical chemist. More research space is slated to open in November in the NE wing, soon providing homes for four other recent faculty hires. At the end of July, we learned that the Roy J. Carver Charitable Trust had awarded another grant to the department to renovate the second, third, and fourth floors of the NW wing (see article on page 7).

While it may be easiest to see these physical renovations, the most profound changes in the Department involve the people. Professor Donald Burton retired

at the end of June after serving this Department for 45 years. Professors Sonya Franklin and Jason Telford left the department at the end of the academic year to pursue careers in Saint Louis in industry and teaching respectively. We've hired nine new faculty members over the past five years and seven staff (some to fill open lines, some to fill new lines), and virtually all of our graduate students and postdoctoral associates. Our graduate enrollment reached a record total of 141 in September, 2006, and should be near that number this fall. Our number of undergraduate majors increased by more than 30%, and enrollment in our mainstay courses continues to grow.

The College of Liberal Arts & Sciences has continued to support competitive TA stipends, the Graduate College has appointed seven of our current students as Presidential Graduate Fellows with an additional one starting this fall, and our GAANN grant from the Department of Education was recently renewed for an additional three years.

As stories within this Newsletter will illustrate, our individual faculty have won a number of prestigious awards, both within the UI and in the larger community of chemists, and our staff have also been recognized in a variety of ways.

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The financial support of our alumni and friends continues to grow, and the moral support they provide in ways such as referring us new students and helping to place our graduates is truly heartening. Thus it's an exciting time to be a part of the Department of Chemistry, and we hope to share some of that excitement with you through this newsletter.

David Wiemer

By the Numbers — Fall 2007 Teaching and Research in the Department of Chemistry

25	tenure/tenure-track faculty
3	visiting assistant professors
3	lecturers
139	graduate students
138	undergraduate majors/minors
13	postdoctoral associates
4	research scientists
23	professional staff

An Exciting New Addition to our Physical and Environmental Chemistry Division

We are very pleased to announce the newest addition to our chemistry faculty, Professor Alexei V. Tivanski, who joins our Physical and Environmental Chemistry Division. Professor Tivanski comes to us from Lawrence Berkeley National Laboratory where he was a Postdoctoral Research Associate. He received an M.S. from Moscow Institute of Physics and Technology in 2001 and a Ph.D. from the University of Pittsburgh in 2005.

Professor Tivanski's research interests are varied, ranging from atmospheric chemistry at the sub-micron particle level as well as the mechanical, optical and conductive properties of molecular films and junctions. In his research, he uses the atomic force microscope (AFM) and other techniques in order to probe the structure and properties of nanostructured materials. While at Iowa, he plans to enhance current capabilities to control and harness the potential of these materials as molecular devices. His atmospheric projects involve the *in situ* study of chemical kinetics of individual atmospheric particles. For this, he plans to use a combination of scanning transmission x-ray microscopy and near edge x-ray absorption fine structure spectroscopy. Target compounds are nitrogen and sulfur containing oxides and acids. Please join us in welcoming him aboard for a long and exciting research and teaching career at Iowa!



Many DoC Faculty Receive Honors and Awards

A significant number of Chemistry Faculty received awards this past year. National honors were received by Profs. Amanda Haes, Christopher Cheatum, and David Wiemer.

Amanda Haes, who joined the UI in 2006 after receiving her Ph.D. from Northwestern and conducting postdoctoral work at the Naval Research Labs, received a prestigious Young Investigator Award from the Office of Naval Research. This three-year award will support her research in plasmonic structures and their integration into high sensitivity biological sensors. Because she is engaged in the preparation of these novel nanostructures, she has the unique ability to tailor them to fit the precise requirements of the analytical methods that she employs in her sensors. Prof. **Chris Cheatum's** past accomplishments and future promise in experimental physical chemistry were recognized by a 2007 National Science Foundation CAREER Award for a research project entitled, "Identifying the Molecular Origins of Enzyme Dynamics." This five-year award will have a significant impact on his research program in vibrational spectroscopy, 2DIR, proton-transfer reactions and enzyme catalysis. Prof. Cheatum joined the Department of Chemistry in 2003, after a postdoctoral appointment at MIT and graduate work at the University of Wisconsin. Finally, Prof. **David Wiemer** was elected a Fellow of the American Association for the Advance-

ment of Science. Wiemer is well-known for his work in synthetic and bioorganic chemistry, using organophosphorus compounds as both synthetic intermediates and as probes of metabolic pathways.

Our faculty also received recognition from within the UI in a wide variety of ways. Both **Leonard MacGillivray** and **Amnon Kohen** were named as Faculty Scholars, a three-year award that grants them release time from teaching to pursue their research endeavors. Given that there were only six awards in this program this year, this represents an impressive sweep. Prof. **Norbert Pienta** was selected as a recipient of a Collegiate Teaching Award in recognition of his efforts in advancing the curriculum of our department and his effectiveness in undergraduate instruction. Prof. **Vicki Grassian** received a Regent's Award for Faculty Excellence in the fall of 2006, and was named as a Fellow of the College of Arts and Sciences this spring. Prof. **James Gloer** was announced as a 2007 recipient of the Regent's Award. Last, but certainly not least, **Jim Gloer** also was appointed as the Shriner-Carver Professor of Chemistry, in recognition of his distinguished academic career and many contributions in the area of fungal natural products.



(from left) Wiemer, MacGillivray, Kohen, Gloer, and Haes. Not Pictured: Chris Cheatum, Vicki Grassian, and Norb Pienta

Nanoscience and Nanotechnology Institute at the University of Iowa

**NANOSCIENCE &
NANOTECHNOLOGY
INSTITUTE @ UI**

In August 2006, Meredith Hay, the Vice President for Research, announced the formation of the Nanoscience and

Nanotechnology Institute at The University of Iowa (NNI@UI). NNI@UI focuses on both the fundamentals of nanoscience and nanotechnology and issues related to applications and implications of nanoscience and nanotechnology in environmental processes and human health. The goal of the institute is to enhance science and technology at the nanometer scale at UI with a research emphasis on the fundamental properties of the materials and the environment and human health aspects of nanoscience and nanotechnology. [NNI@UI](http://research.uiowa.edu/nniui/) coordinates the ongoing efforts at The University of Iowa to more effectively take advantage of opportunities afforded by the National Nanotechnology Initiative and builds on research strengths of The University of Iowa. The institute brings together a core group of faculty from the Colleges of Liberal Arts and Sciences, Engineering, Medicine, Pharmacy, and Public Health. The administrative support of NNI@UI is located in the

Iowa Advanced Technology Laboratories (IATL). The IATL is the home of several chemistry department faculty laboratories and is located across the street from the Chemistry Building. More information about NNI@UI is posted on the website <http://research.uiowa.edu/nniui/>.

Chemistry department faculty are playing a key role in the new institute. At the time of the announcement, Vice President Hay also named Vicki Grassian as the Director. Vicki along with Sarah Larsen (Associate Director) and Russell Larsen (Outreach Coordinator) have been working on developing and fostering a wide range of collaborations across campus. For example, Sarah and Russell have been working with the UI Museum of Natural History to develop hands-on learning activities and exhibits related to nanoscience and nanotechnology for school-aged children. Other collaborations involve new research initiatives in the applications and implications of nanoscience and nanotechnology in human health. Besides providing leadership to this new institute, many of the faculty in the Department of Chemistry are core members of NNI@UI. As a department we are very excited about the new collaborations that are being fostered and developed through NNI@UI.

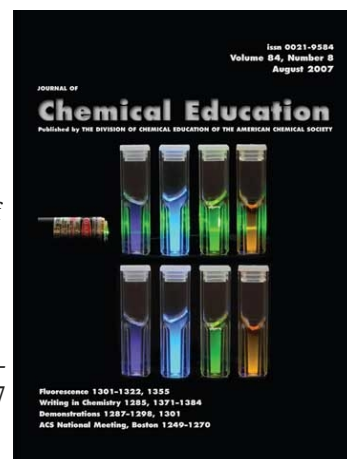
The NANO@IOWA logo combines graphic design and nanoscience. The colored "dots" represent the size-dependent fluorescence observed for CdSe nanoparticles (i.e., quantum dots) as a function of particle size. Magnets with the NANO@IOWA logo are available upon request (call 384-3292 or email nniui@uiowa.edu).



Nanoscience and Nanotechnology Institute faculty participating in outreach activities at local schools. From left: Russell Larsen, Vicki Grassian, and Sarah Larsen.



Results of a course development project in the Department of Chemistry at the University of Iowa were highlighted on the cover of the *Journal of Chemical Education* August 2007 issue.



Burton Retires After 45 Years at The University of Iowa

Professor Donald J. Burton, Shriner-Carver Professor of Chemistry, retired this year after an impressive 45 year career in the Department of Chemistry Organic Division. He arrived at the University of Iowa in 1962 after postdoctoral study at Purdue University with Prof. H. C. Brown. Don received his B.S. in Chemistry from Loyola College of Baltimore in 1956, and his Ph.D. in Organofluorine Chemistry from Cornell University while working with Dr. W. T. Miller. His research interests lie mainly in synthetic and mechanistic organic chemistry, particularly in the development of new reagents for introduction of fluorine into organic compounds. He is particularly well known for development of trifluoromethylcopper reagents, and other organometallic species that accomplish site-specific introduction of fluorine. Incorporation of one or two fluorine atoms into biologically important compounds can dramatically improve metabolic stability without loss of activity. Don's methodology has made introduction of those fluorine atoms facile.

Don's research program has been successful by any measure. More than 65 students have received their Ph.D degrees with Don as their mentor, and many others have studied with him as visiting faculty, postdoctoral associates, undergraduates in research, and high school students. Don has published more than 350 papers reporting the results of these studies, and continues to this day very actively writing past results for publication. Yet another remarkable attribute to Dr. Burton's career is the amount of research funding that he has secured. From 1967 to date, \$6.8 million was awarded to the Burton team.

Many honors have been bestowed on Don over his prestigious career. They started rolling in early in his career as a graduate student at Cornell when he received the Sage Foundation Fellowship, the DuPont Teaching Award, and the Standard Oil Foundation Fellowship in 1957, 1959, and 1960 respectively. He then went on to be named as a Fellow of the Japan Society for the Promotion of Sciences in 1979. He has received the Special Creativity Award of the National Science Foundation, the NATO Travel Fellowship Award, and the ACS Fluorine Division Award for Creative Work in Fluorine

Chemistry. One particularly remarkable honor Dr. Burton received was being awarded the Governor's Science Medal for Scientific Achievement in April of 1988. Following that mark of distinction, he was named the Shriner-Carver Professor of Chemistry in 1989. Don always has been a very visible faculty member. He has given over 330 seminars, and has been an invited lecturer all over the world during his career at the UI. Burton has been a key player in the American Chemical Society Fluorine Division for many years. He was an Executive Committee member from 1967-1970, again from 1977-1980, and again from 1983-present. His roles have included serving as chairman for several events, being a councilor, and a committee member. He was awarded the ACS Division of Fluorine Chemistry Distinguished Service Award in 2003 in recognition of his efforts.

Over 100 former students, friends, and colleagues assembled on June 2 at Hotel Vetro in downtown Iowa City to celebrate Professor Burton's long and productive career. This was a stellar celebration where people came from near and far to honor the Burtons and their contributions to science. Several people gave tributes to Dr. Burton and shared stories from the past. Photos and

a slide show from the event can be viewed at www.chem.uiowa.edu/BurtonRetirement/. In recognition of his career, the Burton children have begun efforts to establish the Donald J. and Margaret Burton Scholarship. This award will be used to encourage undergraduates to pursue degrees in Chemistry. If you are interested in making a contribution to this fund, donations can be sent to The University of Iowa Foundation, or please contact amber-seaton@uiowa.edu with questions.

The Department of Chemistry is very fortunate to have had Dr. Donald Burton in our midst for the past 45 years. He's been an active faculty member and served as mentor to many colleagues over the years. We are fortunate that Don is planning to continue into the next phase of his career by being an active emeritus faculty member. He plans to write and publish results for years to come. Please join us in sending best wishes to both Don and Marge as they embark on this new lifestyle. Don plans to continue with his Chemistry hobby and leave some time to hit the golf course from time to time.



Don and Marge Burton at Hotel Vetro on June 2



(from left) Vanlerberghe, Hill, Ulrich, Mente, and Kodet.
Not pictured: William Ames and Samantha Soebbing

Presidential Fellows Hit Record High

The Department welcomed 31 new graduate students in the Fall 2006 semester, increasing our total graduate student enrollment to 140. In addition to the growing number of enrolled graduate students, the academic strength of our incoming graduate students has grown. The Department has a record number of graduate students supported as Presidential Graduate Fellows. The Presidential Graduate Fellowship is a yearly award offered by the UI Graduate College to 20-25 distinguished Ph.D. applicants through departmental nomination and is competitive across disciplines. Fellows receive substantial financial support from the Graduate College for five years including summers if they remain in good academic standing. A Fellow's first year and final year are free from departmental assignments, and the final fellowship year is for completion of the dissertation. The Presidential Fellows in our program include William **Ames**, Sarah **Hill**, John **Kodet**, Nolan **Mente**, Samantha **Soebbing**, Natalie **Ulrich**, and Jason **Vanlerberghe**. The Department of Chemistry is extremely appreciative of the Presidential Graduate Fellowship support provided by the Graduate College.

Graduate Student Achievements Honored

University: Tim **Paschkewitz** (Cannon group) received a 2007 *Graduate Teaching Award* from the University's Council on Teaching. Natalie **Ulrich** (Wiemer group) and Kristina **Rogers** (Gloer group) also received nominations for this prestigious award. The Department of Chemistry also sponsored a Teaching Assistant Award this year. The recipients were Rocky **Barney** (Wiemer group), Suhash **Harwani** (Telford group), Travis **Owen** (Rohde group), Lee **Miller** (Bowden

group), Natalie **Ulrich** (Wiemer group), and Kristina **Rogers** (Gloer group). The Annual UI James F. Jakobsen Graduate Conference, sponsored by the UI Graduate Student Senate, gives students great experience describing their research projects to the university community. This year was a particularly successful year for Chemistry graduate students as the following students received honors for their presentations in the Math and Physical Sciences and Engineering section: Timothy **Paschkewitz**, (Cannon group, 2nd Place), Arindom **Saha** (Eyman group, 2nd Place), Murat **Unlu** (Leddy group, 3rd Place), Anamika **Mubayi** (Larsen group, Honorable Mention), Anatoliy **Sokolov** (MacGillivray group, Honorable Mention) and Ramasubramanian **Kanthasamy**, (Larsen group, Best Presentation). Several additional students received travel awards and other forms of support from the University of Iowa Graduate College, Student Government, and the Graduate Student Senate. We gratefully acknowledge these contributions to enhancing the educational experience of the Department of Chemistry's graduate students.

National: William **Ames** (Larsen group) received a *National High Magnetic Field Laboratory student travel award* to attend the 2007 International EPR Symposium of the Rocky Mountain Conference. Ping **Jiao** (Gloer group) received the *Lynn Brady Travel Award* and a *student poster competition award* at the



Graduate student award winners (from left): Unlu, Ulrich, Miller, Harwani, Sokolov, Rogers, and Paschkewitz

got goals? Our Department of Chemistry T-shirts are popping up all over! Perhaps you've seen one in your area. The shirts are part of a broad energizing publicity campaign. The familiar gold on black logo is on nearly every recruiting item we have these days! To get your very own t-shirt, contact Janet Kugley at janet-kugley@uiowa.edu. We also have children's sizes!

Chemistry Renovation Update: New Instructional Labs in Use by Spring 2008!

Progress on Phase 1b of the State Funded Renovation Project has been substantial since the printing of the last newsletter. We are still on target for the center core and NE wings to be completed and released to the department in November, 2007. The laboratory instructional team of Director and Lab Managers is already deep in planning the move to new instructional labs.

The third and fourth floors of the center core will house a total of 10 instructional labs, a large prep room (3rd floor), and a satellite prep room and instrument room (4th floor). The case-work and hoods will be installed in these spaces over the next two to three months. Two additional elevators will also be available after Phase 1b. A recent staff tour of the area by Facilities Management has heightened the excitement of our pending move. Earlene Erbe, Director of Undergraduate Laboratories is utilizing Microsoft Project to organize and prepare for this move. Fortunately, if we gain occupancy rights to the space on time, we will have a full two months to move into the instructional labs before spring classes begin.

The NE wing has enough research labs and office space (faculty, postdoc, graduate students, and conference room) to

house eight research groups. Six current faculty members and our new faculty member, Alexei Tivanski, have been assigned space in this wing. Three of the spaces will be ready for occupancy in November, 2007. The other four spaces will be completed during Phase 2 of the State Project. We are conducting a faculty search this fall for an inorganic professor and we anticipate that this person will also be housed in the NE wing leaving one lab (~850 s.f.) for future growth.

Phase 2 of the State Funded Renovation Project includes the remaining space funded by our first Carver Trust Renovation Grant, awarded in 2005. This renovation will create four wet chemistry research labs and offices plus adequate space to house two theoretical chemists and their research group members. These spaces will be completed between fall 2008 and fall 2009. Phase 2 also includes the renovation of the main administrative office suite, the Chemistry Center office suite, general assignment and Chemistry classrooms, a graduate student break room, a faculty/staff break room and new emeritus office, and numerous other spaces for TA office hours, conference rooms, tutoring and grading spaces, storage, etc.



Chemistry Renovation Gets Another Boost!

The department recently submitted a second proposal to the Roy J. Carver Charitable Trust seeking funding for the renovation of the second, third, and fourth floors of the NW wing. The \$1.8M grant from the Carver Trust, along with the \$1.8M in matching funds from the UI, will create space for five biomedical research groups and substantial shared instrumentation space for biomedical use. The resulting facility will provide high quality research space that will positively impact all of the biomedical research programs. We learned at the end of July that this proposal has been funded in full.

The UI made the decision to renovate this space in Phase 2 of the State Funded Project. This will delay the bid date for Phase 2 by a few months. However, it is anticipated that the start date of Phase 2 will be delayed only one month and we hope to begin actual construction in February 2008.

The Department of Chemistry is honored to receive this second Carver Trust grant for renovation. The positive impact to our building afforded by the Carver Trust simply can't be overstated. These funds greatly impact our ability to provide the highest quality space to more of our researchers and will help us attract top candidates in future faculty searches.

Department of Chemistry Receives GAANN award for 2007-2008

The Department of Chemistry has obtained a 3-year grant from the U.S. Department of Education for student financial aid funding through the Graduate Assistance in Areas of National Need (GAANN) program. Professor Darrell Eyman has spearheaded the department's effort to compete for these funds, and has been successful now for the third time since 1998. A key component of the department's GAANN program over the years has been recruitment and retention of students of underrepresented groups. In 2007-08, these eight students will be supported by GAANN fellowships: James Holst, Alex Lodge, Kristina Rogers, Nicholas Schoenfeldt, Jose Tormos, Brandon Walker, Deandrea Watkins, Jamesha Wills. GAANN is a federal financial aid program which assists graduate students with financial need through grants to departments in certain priority disciplines. The competitive application process in 2007 funded approximately 40 departments nationally in the fields of biology, chemistry, computer science, engineering, mathematics, nursing, and physics.

Did you know that Newsletters from recent years are available in electronic PDF format?
<http://www.chem.uiowa.edu/news/alumninews.html>

UI Chemical Research Production in 2007
published papers research expenditures
96 ~\$5.3 million (fiscal 06-07)

Undergraduate Awards and Degrees: 2007 Was a Terrific Year

The Undergraduate Awards and Poster Session was held in April of 2007 to honor the best and brightest students who wisely chose to major in chemistry. The criteria for selection of these awards was strict: students need an excellent GPA, to be active in research, and to be nominated by a faculty member. From this list, the awards committee selected our best students to be recognized with awards with monetary benefits from \$250 to \$500 with a chance to include other terrific rewards such as a Merck Index or a CRC. Alumni donations, including a new award this year by Bob Harris on behalf of Viksnins, Harris & Padys PLLP, were very helpful in keeping the award levels high and allowed us to give students something they typically need - money. Before the presentation, most of the awardees presented a poster on their research. The poster session was well attended by numerous faculty and students.

During the school year 2006-2007, 17 students graduated with a B.S. or B.A. in chemistry. Many of these students will continue their education in graduate school or a professional school such as medical or dental school. We are honored that they chose to major in chemistry and look forward to hearing about their future successes.

Chemistry Alumni Award
Senior Recipient: Julia Brimeyer
Junior Recipient: Kevin Hoak
Sophomore Recipient: Jason Chiu
CRC Freshman Chemistry Award
Minyuan Li



From left: Professor Don Cannon, Minyuan Li, Eric Koehn, Mark Riofski, Jason Chiu, Kevin Hoak, Julia Brimeyer, and Professor Ned Bowden

Merck Index Award
Anna Riessen
American Institute of Chemists Award
Julia Brimeyer
Analytical Chemistry Award
Christina Edwards
Ken Sando Undergraduate Scholarship
Mark Riofski
Russell K. Simms Scholarship
Eric Koehn
Mark Riofski

Imagine the Opportunities Waiting Ahead: Building a Graduate Program

The 2006-2007 academic year brought another great graduate class to the Department of Chemistry at UI. Over the past several years, the applicant pool has grown, is more diverse, and has become more qualified. The Graduate Admissions and Recruiting Committee has made important strides in graduate recruiting and developing a greater national presence. Outreach efforts and new marketing materials and strategies have helped with the Committee's mission.

Iowa Lectureship Series: Organized by Professor Darrell **Eyman**, many faculty volunteered their time to visit local colleges such as St. Louis Univ., Gustavus Adolphus College, UW-Platteville, Augustana College, Loras College, Central College, University of Minnesota-Duluth, University of Northern Iowa, Bradley University, and many other schools. The lectureship series provides our faculty with the opportunity to interact with faculty and students at nearby colleges, present their research, and give an overview of our graduate program and University environment. If your school would like to

arrange a visit, please contact darrell-eyman@uiowa.edu.

Working Weekends at Iowa: Advanced Measurements and Characterization was the topic of the eighth Working Weekends at Iowa (WW@IA) held October 20-21, 2006. Professors Lei **Geng** and Christopher **Cheatum** organized the workshop which was attended by 33 participants from six area colleges. Seven experiment stations were open for participation in ongoing experiments by Iowa faculty along with lectures introducing advanced methodologies in measurements and characterization. The purpose of the two-day event is to meet and develop collaborations with neighboring college chemistry professors as well as to showcase our department to students who may be interested in graduate school. These workshops are designed to give research-active groups access to facilities unavailable at the home institute, furthering the research and giving students exposure to techniques. Faculty and students are encouraged to bring samples for analysis, or they can participate in experiments in progress.

Shriner Tuition Scholarships Awarded to First Year Students

Two students joining the Chemistry graduate program in the Fall 2006 semester were awarded a Shriner Tuition Scholarship for their first semester. Scott **Neff** and Travis **Owen** were selected by the Admissions Committee to be recipients of these scholarships based on their strong undergraduate record and accomplishments. Neff received a Bachelor of Arts degree from St. Ambrose University and Owen received a Bachelor of Science degree from Missouri State University. These scholarships are awarded to a first-year graduate student in chemistry with preference to U.S. citizens from the Midwest. The Shriner Fellowship was established in 2000 by Dr. Fred W. and Mrs. Bonnie M. Rath in honor of Dr. Ralph Shriner. Dr. Shriner was a long-time professor in the UI Department of Chemistry and department chair from 1954 to 1963. Fred Rath received an M.S. degree in chemistry in 1952 and a Ph.D. degree in chemistry in 1954 from The University of Iowa. The scholarships are reflective of the Department's continued commitment to excellence, in the tradition of the late Professor Ralph Shriner.



Scott Neff

Travis Owen

Send us your alumni update today describing your adventures in science, business/industry, academics, life, and your favorite UI memories! (see info on page 16)

New Postdoctoral Associates Fuel the Research

Postdoctoral scientists play a key role in the research programs within the Department. These scholars provide both expertise and perspective to our research groups and help to fuel the ongoing research efforts. We attract scientists from the United States and around the world to further their scientific training in our department. Each year, as some of our postdocs move on to new positions elsewhere, a new group joins the Department. The new postdoctoral associates who have joined us in the past year are (research director, Ph.D. institution, and degree year in parentheses): Subbiah **Alwarappan** (Cannon, Macquarie University, New South Wales, Australia, 2006), Jong Lak **Choi** (Gillan, University of Iowa, 2006), Courtney **Hatch** (Grassian, University of Colorado- Boulder, 2006), Sunghyuk **Lim** (Franklin, University of Iowa, 2006, Maryuri **Roca** (Haes/Grassian, Baylor University 2006).

Graduate Degrees in Chemistry Awarded in 2006 - 2007

This successful group of recent graduates will miss out on the fruits of our new space, but they successfully utilized our existing facilities to charge forward and earn well-deserved degrees! We awarded 3 M.S. Chemistry degrees in the Fall 06 & Spring 07 semesters. Their names (degree year, advisor) are:

Yi **Gao** (2006, Geng); Wenjiao **Lin** (2006, Arnold); Ji Youn **Nam** (2007, Pigge).

We awarded 16 Ph.D. Chemistry degrees in the Fall 06 & Spring 07 semesters. Their names (degree year, advisor's name) and dissertation titles are:

Seung-II (David) **Cho** (2007, Arnold); *Selective Measurements of Alcohols with Near Infrared Spectroscopy and Robust On-Line Monitoring of Urea During Hemodialysis*; Jong Lak **Choi** (2006, Gillan); *Low Temperature Solvothermal Routes for Synthesis of Crystalline Group 13 and Transition Metal Nitrides Via Energetic Precursor Decomposition*; Stephen **Deyrup** (2006, Gloer); *Chemical Investigations of Endophytic and Fungicolous Fungi*; Elizabeth **Gibson**

(2007, Grassian); *Mineral Dust Aerosol Chemistry and Climate*; Kinesha **Har-ris** (2006, Franklin); *Probing The Fundamental Aspects of Protein-Based Drug Design: Structure and Kinetics of Novel De Novo Metallopeptides*; Ping **Jiao** (2006, Gloer); *Chemical Investigations of Freshwater and Fungicolous Fungi*; Nathan **Lien** (2007, Telford); *Cyclodextrins as Molecular Scaffolds for Anion and Cation Recognition*; Mouna **Maa-louf** (2006, Wiemer); *Synthesis of Isoprenoids Incorporating a Fluorescent Label and Evaluation of Their Effect on the Mevalonate Pathway*; Alex **Mathies** (2006, Friestad); *Radical Cyclizations to Imino Acceptors Directed Toward the Total Synthesis of Aminosugars*; Sanjay **Mudur** (2006, Gloer); *Bioactive Secondary Metabolites Obtained From Mycoparasitic, Fungicolous, and Freshwater Fungi*; Jayasooriya H. Sujith **Perera**; (2007, Gillan); *Solid-State and Solvothermal Metathesis Synthesis of Titanium Dioxide and Layered Metal Oxohalides*; Yusuf **Sulub** (2006, Small); *Spectral Simulation Methods for Enhancing Qualitative and Quantitative Analy-*

ses Based on Infrared Spectroscopy and Quantitative Calibration Methods for Passive Infrared Remote Sensing of Volatile Organic Compounds; Boyong **Wan** (2007, Small); *Multivariate Processing Strategies for Enhancing Qualitative and Quantitative Analysis Based on Infrared Spectroscopy*; Lin **Wang** (2006, Kohen); *Enzyme Dynamics and H-Tunneling in Dihydrofolate Reductase Catalyzed Reaction*; Siu Wah **Wong-Deyrup** (2007, Franklin); *The DNA Sequence Selectivity and Kinetic Properties of De Novo Designed Metalloprotein Dimers*; Zhenming **Zhong** (2007, Geng); *Exploring Molecular Behavior at Nanometer Dimensions in Silica Gel with Single Molecule Spectroscopy and Confocal Microscopy*.

These students' diligent efforts and struggles have prepared them for an ever-changing professional scientific community. The Department is proud of this group of talented Chemistry practitioners and we wish them much success in their future scientific career endeavors!



Professor Don Burton and Visiting Assistant Professor Peter Hansen at the 2007 Spring Party. Both retired at the end of the 2006-2007 Academic Year. Peter Hansen has been a Chemistry instructor at the UI since 2000.



Students, staff, and faculty unwind at the Spring 2007 Departmental party

Recognition and Evolution Among Department Staff

Janet Kugley, Graduate Student Recruiting and Admissions, was recently promoted from a Merit Clerk IV position to the Professional & Scientific classification of Project Assistant. Janet started in the Chemistry administrative office in 1992 as secretary to the DEO. When the department reorganized and upgraded its recruiting efforts, Janet was hired to manage this process in addition to immigration issues. She plays a major role in maintaining our successful recruiting standing.

Marsha Koehler was honored in September, 2006 for 45 years continuous service to the Department of Chemistry. Marsha's devotion and loyalty to this department are highly valued. Greg Wagner received a Mary Louise Kelley Professional Development Award to attend the Microchip Annual Summer Technical Exchange Review Conference in Phoenix, Arizona in August, 2007.

Mona Maalouf joins us this fall in our third Lecturer position. She will be offering teaching support for 4:011 and 4:012. Mona taught as a Visiting Assistant Professor in the Fall 2006, Spring 2007 and Summer 2007. semesters. The Lecturer position is a one-year position, renewable for an additional two years upon positive review. Drs. Russell Larsen and Amy Strathman hold the other two Lecturer positions.



From Left: Greg Wagner, Janet Kugley, Shonda Monette, and Brian Morrison

Departmental Administration was successful in reclassifying our Laboratory Coordinator positions from a pay grade 6 to a pay grade 8. We require a Master's Degree and the University agreed that the Laboratory Specialist II is a more appropriate classification for our employees. These positions will use the title "Lab Manager" within our department. We are pleased to be able to pay our Lab Managers, Shonda Monette and Brian Morrison, a more competitive salary with this reclassification.

Alumni Updates and Memories

Alumni Notes (degrees and research advisor's name, if known, are in parentheses)

Margaret Elizabeth Thomas Berhenke (B.A. 1931, Ph.D. 1935) writes to let us know that she is still in good health at age 96 and lives in Longmont, Colorado. That is great to hear and we wish her continued good health and happiness! Her husband, Luther Berhenke, also a Ph.D. chemistry alumnus (Ph.D. 1934), passed away in 1998 after 26 years of retirement from a long career at Dow Chemical where he worked as a research chemist

William (Bill) Doerres, Jr. (B.S. 1942) dropped by the good old Chemistry Building for a visit one weekend in late spring of this year. He ran into Prof. Greg Friestad who gave him a short tour of our new building renovation. Bill was quite surprised to see that 300 CB, the large lecture hall, is really *completely gone!* There is nothing recognizable left of it, however, 3 groups of 8 wooden chairs were refurnished and will be installed in the hallways near the general assignment classrooms. Bill noted that after graduating he went to Iowa State to work on soil analysis and some of his later projects involved studying soils that are under the foundations of several major buildings in the Chicago Loop area. We welcome any alumni who are visiting the area to drop by and say hello.

David Naffziger (M.S. 1972, Buckles) writes to answer a query we had in last year's newsletter about whether Tom McGee worked in Dr. Buckles' group, both of whom sadly passed away last year. Dave fondly recalled a time when Dr. McGee called up Dr. Buckles to see if anyone in the group would be interested in a job at Dow Chemical, where McGee was working. Buckles informed everyone in the group about this opportunity and explained that McGee had worked in his group years before on halogen research. Dave was working towards his Ph.D. at the time, but got the Dow job with Buckles' blessing. He met Tom McGee while he was at Dow and describes him as a wonderful person. After a little over 13 years at Dow, Dave took a job at a small company in St. Louis, Whitmire Research Laboratories. He has worked there for 21 years and is presently a Senior Research Scientist. We thank him for his Buckles/McGee memories and wish him the very best.

New this year. We made a concerted effort to solicit alumni updates from some of our newest graduates. While their life stories and adventures since leaving UI Chemistry are relatively short, it is great to hear how they fared since wandering the halls of CB. To all recent graduates, we and your former classmates would love to hear about your life after UI Chemistry. See the back page for ways to contact us!

Nathan Baker (B.S. 1997, Quinn) completed his Ph.D. in 2001 at the University of California at San Diego following his undergrad years at Iowa. He dropped us an email to say that after grad school he returned to the Midwest and is an Associate Professor of Biochemistry and Molecular Biophysics in the Center of Computational Biology at Washington University in St. Louis. One thing he remembers and misses from his time in Iowa were the beer and enzyme kinetics discussions (usually at the same time) with Quinn!

John MacMillan (B.S. 1999, Wiemer) headed west after leaving Iowa City and pursued graduate studies at the University of California-Davis working with Prof. Ted Molinski in the field of marine natural products. After earning his Ph.D. in 2004, he moved slightly south to Scripps Institution of Oceanography / UCSD for post-doctoral studies in Prof. William Fenical's lab studying microbial natural products. After all of that preparation, in February this year, John became an Assistant Professor at the University of Texas Southwestern Medical Center at Dallas in the Department of Biochemistry. His research focus is on marine microbial natural products and medicinal chemistry. While John notes that he misses Iowa City quite a bit (he's an Iowa City native and Regina High School graduate), his entire family is still in the area so he tries to make it back a few times a year.

Patrick Carl (Ph.D. 2000, Larsen) sends word of some pretty significant worldly adventures since leaving Iowa. A couple months after graduation, he started a postdoctoral research position at the Weizmann Institute of Science in Rehovot, Israel, with Daniella Goldfarb. Pat thinks most would agree that this qualifies as an adventure since he moved to the other side of the world to work in an unfamiliar land where he did not know anyone and everyone spoke a language that was a complete mystery to him. He spent two years in Israel discovering new places and meeting new people, and then readied himself for more adventures as he got a permanent position at Bruker-Biospin in their EPR division located in Karlsruhe, Germany. Pat has been at Bruker for five years now and describes Karlsruhe as a lovely town. He notes that the move to Germany was less of a culture shock than his first move to Israel, but it has been a fun experience nevertheless. One of the things he fondly remembers from his UI years was watching the seasons change from the front steps of the Chemistry Building.

Yongsheng Che (Ph.D. 2000, Gloer) writes that after graduating he became a Senior Research Scientist working on natural products discovery science at OSI Pharmaceuticals in Tarrytown, New York. After two years at OSI, he moved onto similar research directions at Givaudan Flavors Corporation in Cin-

cinnati, Ohio. He remained at Givaudan until early 2005, when he moved to the People's Republic of China as a Professor and Principal Investigator in the Institute of Microbiology at the Chinese Academy of Sciences in Beijing. His current research interests are in microbial natural products research. Yongsheng's residency in the Gloer group dates back to a time before they occupied the renovated 5th floor of CB. He sometimes misses the group's old 375 CB chemistry lab very much and appreciated the valuable guidance by chemistry faculty members, especially his research advisor, Dr. Gloer.

Sandra Lukaszewski-Rose (Ph.D. 2000, Burton) has been working as the Organic Lab Coordinator at Marquette University in Milwaukee, Wisconsin since 2001. She and her husband Ken had a baby girl, Cecelia Denali Rose, on February 13, 2007. Sandy heard that during our latest major remodeling, the old chem library was demolished. She will miss that, as it was like a second home in grad school, and the purple walls of room 300 lecture hall (don't worry, we have photos to preserve that little bit of "history"!).

Rihab Angawi (Ph.D. 2001, Gloer) tells us that after an enjoyable time teaching in the Chemistry Department at KAU in Saudi Arabia, she was "rewarded" by being promoted to the department head in 2006. As our current DEO may agree, Rihab notes that she enjoys teaching much more than administrative work! She has good memories of time spent at UI in the Gloer research group, with friends, and of peaceful moments. Understandable, given her current location, Rihab notes missing the SNOW of Iowa and, of course, the sweet corn.

Bruce Dumser (B.A. 2001, Gillan) - We found information on Bruce's recent exploits from a news brief by the Oregon Health and Science University in Portland, Oregon, announcing his medical residency in anesthesiology. He moved out west after completing undergraduate and M.D. degrees at The University of Iowa. Even though Bruce is a Midwesterner and grew up in Illinois, his Oregon bio notes that he now feels very much at home in the Northwest. We remember Bruce was an avid runner in Iowa and hope he is adjusting to Portland's much hillier running country!

Carolyn Green (Ph.D. 2001, Arnold) is currently a Senior Consultant at Drug Development Resources, Inc. in Massachusetts where she consults with pharmaceutical companies in the areas of Analytical Development and Regulatory Affairs. Carolyn's life seems pretty busy these days since she just bought a house in Weymouth, MA, right on the water (if anyone is in the area and wants a beach day let her know!) and she's finishing up an MBA in marketing at the University of Massachusetts Boston in December 2007. She's also getting married to Jerry Boudreault on April 19, 2008 in Kona, Hawaii. While there are certainly

advantages living near Boston with all of its many activities, Carolyn notes that she misses the excitement over college sports that she found in Iowa. She fondly remembers the tailgates at Kinnick Stadium on Saturday mornings and watching basketball games at the Sports Column.

Edward Treadwell (Ph.D. 2001, Wiemer) has been teaching organic chemistry at Eastern Illinois University since he left our department. He was recently granted tenure and promotion to Associate Professor in his department of 15 faculty members. He has good memories of frequent grad school coffee runs down Market Street to HandiMart. While he now conveniently gets his caffeine fix using a coffee pot in his office, he finds that it is not quite as much fun.

Alexander Saladino (Ph.D. 2002, Larsen) recently got married in Pittsburgh, Pennsylvania and has kept up his UI connections by becoming a member of the Pittsburgh Iowa Alumni association. He really misses the Hawkeye home football game weekends. Alex has good memories of the UI band making the rounds to all the downtown bars the night before the game and of all the good food and tailgating on game day!!!

Courtney Usher (Ph.D. 2003, Grassian) writes that after she graduated in summer 2003, she moved to Temple University in Philadelphia to conduct postdoctoral research with Prof. Dan Strongin. In summer of 2005, she returned to her native Iowa to spend a year and a half conducting research with Prof. Grassian and working at the UI Central Microscopy Research Facility. This past April, Courtney embarked on an industrial career as a Staff Scientist at Hercules Incorporated, a specialty chemicals company, at their research center in Wilmington, Delaware. She works in their Analytical and Engineering Sciences Division as a microscopist. While she loves her Iowa City hometown, she is glad to be living out East and is enjoying her new job.

Jennifer Winkenwerder (Ph.D. 2003, Arnold) joined the Federal Bureau of Investigation after graduating from UI and worked on Counterterrorism in Minneapolis until earlier this year. In February, she left the FBI and started working for the State of Minnesota as their Antiterrorism Force Protection Program Manager. One side note Jennifer told us is that “counterterrorism” is considered offensive and “antiterrorism” is considered defensive. She is also again affiliated with the Air National Guard; this time for the State of Minnesota. As far as good Iowa memories go, Jennifer remembers her enjoyable bike rides to the lab, which was a short ten minutes, ending with a beautiful view while crossing the river. She also fondly remembers the daily research breaks accompanied by a walk to the student union for coffee and misses the energy associated with a college campus. She closed her note to us with “Oh, those were the days.”

Jun Chen (Ph.D. 2004, Arnold) feels very fortunate to be able to study in UI and work in Dr. Arnold's research group. He says that what he learned in his five years at UI was invaluable for his career. Jun currently works as a principal scientist in R&D at GlaxoSmithKline in suburban Philadelphia. His group works in the chemical development division which develops processes to manufacture active pharmaceutical ingredients (API). They utilize several on-line analytical techniques for process understanding and optimization in both lab and pilot plant scale systems. He says that the two things he really misses about Iowa City are the farmer's market and the corn.

Kenneth Wiley, Jr. (Ph.D. Pharmacology 2004, Quinn) officially got his Ph.D. from Meharry Medical College, but he spent almost three years in Prof. Quinn's UI Chemistry laboratory working on his thesis projects. Upon completion of his doctorate, Ken accepted a postdoctoral position in the Department of Molecular and Cellular Biology at Harvard University, working under the direction of Professor William Gelbart. He is studying developmental genetics in *Drosophila* and determining behavioral and gene expression effects on *Drosophila melanogaster*. Ken is also working for the Department of Diversity and Community Support at Harvard Medical School writing case studies to promote interest in both chemistry and biomedical sciences to underrepresented populations in the Boston area. Ken has many wonderful memories from his time spent in the Chemistry Department and Iowa in general. He notes that his time in Iowa was both enriching and rewarding and he always felt supported and nurtured here. The UI Chemistry faculty, staff, and students were always willing to share their thoughts and freely gave their time to assist Ken in whatever endeavor he chose to undertake. He says that they “want you to succeed and work diligently to see that you do”. During his stay in our department, Ken says he felt treated more like a family member than a graduate student.

Hashim Ali Al-Hosney (Ph.D. 2005, Grassian) sends word that after finishing his doctorate in atmospheric chemistry, he is now a postdoc at the Pacific Northwest National Laboratory in Richland, Washington, and is continuing his studies on changes happening in global climate. Hashim misses the good times he had in Iowa City and he surprised us by saying he also misses cooler Iowa summers as compared to Washington...of course, he wrote this after enduring three 105° F days!

Gonghu Li (Ph.D. 2005, Grassian and Larsen) writes that after his 2005 graduation, he accepted a postdoctoral position at Northwestern University in Chicago. He continued to explore the potential of chemistry in achieving a sustainable future. Gonghu enjoys working on nanostructured catalysts for environmental and energy applications. When he is not working,

the beautiful Chicago views of Lake Michigan often take him back to his happy stay in the IATL/CB labs by the Iowa River and the wonderful moments with people at UI.

Zack Rhoades (B.S. 2005, Gillan) sends word that he is currently working in the clinical product development group at Genentech, a biotech company in South San Francisco, California. He is also pursuing a masters degree in education, focusing on training design and development. Some of his most distinct memories from his undergraduate chemistry days were from experiences in Prof. Gillan's Inorganic Chemistry Lab course. He specifically recalls a special unit on glassblowing at the end of the semester where Gillan explicitly stated that hot glass looks the same as cold glass. While the words registered, Zack says his hands did not seem to understand, and he still retains a few battle scars as a reminder of those days. With all of that, he says he'll never forget those weeks right before the Christmas holidays!

Valerie Van Zee (M.S. 2005, Arnold) is now working at the University of Iowa's University Hygienic Laboratory in the Iowa Neonatal Metabolic Screening Program located in Ankeny, Iowa. She is primarily responsible for mass spectrometric analyses and other quantitative clinical testing methods.

Ivy Grimm (B.S. 2006, Arnold) has been at the University of Maryland in Baltimore County for the past year and is working towards her masters degree in chemistry. She is planning to be done with her degree work by the end of next summer. While she really enjoys Baltimore, she also misses the friendly and laid back nature of Iowa City (and of course, football games!).

Ping Jiao (Ph.D. 2006, Gloer) dropped us a note from the great Northwest to say that she is settling into a new position at Unigen Pharmaceuticals in Lacey, Washington. Unigen is a natural products company and Ping is conducting research on the delivery of botanically derived dietary supplements and therapeutic drugs. She is finding it to be a pretty challenging follow-up to her graduate school days. Ping found Iowa City to be such a nice city for an international student and UI was a great school to study for her five years here. She is proud of calling herself a UI graduate and misses all her professors and friends back in Iowa City.

Sanjay Mudur (Ph.D. 2006, Gloer) is working in a new position as a Scientist at Cubist Pharmaceuticals Inc., located in historic Lexington, Massachusetts. At Cubist, he is part of the Drug Discovery team whose goal is to isolate new compounds with potent antibacterial properties from cultures of bacteria and fungi. Sanjay and his family remember Iowa City and UI as a special place, mainly because of all the wonderful people they met and who are now missed. Sanjay says working with Dr. Gloer was a privilege and all the memories of life in the

labs on fifth floor CB will always be treasured.

Alison Uhl (B.S., 2006, Bowden) sends word that after graduating with a chemistry degree from our department, she stayed at the University of Iowa to go to dental school, and she just finished her first year. One of the things she misses about our chemistry department is being a teaching assistant for the 4:012 lab course. She said that was a really valuable experience for her.

Jonas Baltrusaitis (Ph.D. 2007, Grassian - a newly minted degree!) gave his final defense only a few months ago and will be working as a postdoctoral associate with Prof. Grassian that will be combined with work at the UI Central Microscopy Facility. He is eagerly looking forward to his new postgraduate research adventures!

Alfred Wooten (Ph.D. 2003, Messerle) spent three years as a NIH postdoctoral fellow at the University of Pennsylvania, working with Prof. Patrick Walsh, and then earlier this year he moved to the southwest as a CINT (Center for Integrated Nanotechnologies) postdoctoral fellow at Los Alamos National Laboratory, working with Dr. Jennifer Hollingsworth. His current research challenges revolve around the synthesis of semiconducting metal chalcogenide and metal alloy nanoparticles. Alfred was one of our early GAANN fellowship awardees and one the most memorable things for him about Iowa is the willingness of the faculty to interact and advise students with respect to their career goals. He also appreciated and personally benefited from the one-on-one and group conversations about how to solve problems that students were having (chemical or not), regardless of whether they were related to lab research, proposal writing, or even book concepts from a class that they were taking.

Randy Pho (pre-B.S. to PharmD, Gillan) entered the competitive UI pharmacy degree program last year while he was an advanced undergraduate chemistry major in our department. He is currently inches away from completing his B.S. degree - only 2 semester hours to go! He has a summer internship at the Iowa City Veterans Affairs Hospital's patient pharmacy. In addition, he continues his work at the UI Pharmacy's Iowa Drug Information Division. One thing he misses about his undergraduate research days was looking forward each day to performing his energetic chemical reactions (safely, of course!) that involved combusting inorganic and organic compounds and converting them into new molecules or materials.

To our current alumni donors, from the notes above you can see how successful our recent graduates have become and know that your support aided in improving their UI graduate experience.

Your vital support works wonders all year long

Your financial support is as **vital** as ever for us to remain a vibrant and growing Chemistry program in an era of uncertain state and federal funding. Your generous and important annual donations provide crucial funds to support a variety of research and teaching ongoing and future endeavors by the Chemistry Department including:

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- **building infrastructure upgrades** to facilitate student interactions in the building (*e.g.*, break areas and reading rooms)

Attendance at national scientific meetings exposes our students to state-of-the-art research and publicizes our continuing research successes at the University of Iowa. Your generous financial support increasingly provides important funds to supplement and *bridge the gap* between university funding and the real costs of our research and teaching missions. They help us retain current

For more information about private support for the Department of Chemistry, contact Jeff Liebermann at The University of Iowa Foundation, Levitt Center for University Advancement, P.O. Box 4550, Iowa City, Iowa 52244-4550; (319) 335-3305 or (800) 648-6973; e-mail: jeff-liebermann@uiowa.edu @uiowa.edu.

For convenience, you may use our Chemistry Department's new direct web-based giving page to donate to several of our more popular funds including the **Department of Chemistry Development Fund**, the **Chemistry Education Fund** for undergraduate instruction, and the **Ralph Shriner Graduate Student Fellowship Fund**.

See our new Departmental giving site (www.givetoioowa.org/chemistry) for more info!

Notes from the Editors: This is the first year that staff members have taken over the Newsletter publishing and we hope you have found this edition to be enjoyable! We thank Ed Gillan for his advice and template as he worked to "perfect" this for many years. Thank you to Dave Wiemer, Claudio Margulis, Greg Friestad, Ed Gillan, Ned Bowden, Vicki Grassian, Sarah Larsen, Sharon Robertson, Janet Kugley, and Bettie Baumert for their contributions to these newsletter articles. Also, thanks to Janet Kugley, Tim Koon, and Lin Pierce for their help in the proofing and production of this year's edition.

Amber Seaton & Hazel Kerr

Alumni Updates for 2008 Chemistry Newsletter

An update is a great way to reconnect with your former classmates and professors!

Send your replies (**attach a separate sheet if needed**) by mail to : Department of Chemistry, c/o Chemistry Newsletter, University of Iowa, Iowa City, Iowa 52242-1294 or email us at: chem-alumni@uiowa.edu

Name:

Degree information (years at UI, type of degree and year earned, UI faculty advisor):

Address/phone number/e-mail:

Current and past career positions:

Tell us about the significant events in your life and career since leaving the University of Iowa. Feel free to include any recollections (and photos?) from your years in our Chemistry Department.