



SUMMER 2011

*Alumni & Friends Newsletter*

DEPARTMENT OF  
**CHEMISTRY**

UNIVERSITY OF NEBRASKA-LINCOLN



Dear Alumni and Friends,

A big thank you to everyone who attended the 2011 Chemistry Alumni and Friends Reunion! It was a wonderful weekend of activities with lots of “catching up” among alums and the chance to renew acquaintances with old friends and to meet some of you for the first time. Please take a minute to read about the reunion experience in our Reunion Recap section and for those of you attending the event, please return the survey so we have the appropriate feedback. Plans for the 2016 Reunion are already in the works! We’ll be celebrating the 100 year anniversary of the first chemistry Ph.D. with a focus on the notable accomplishments of women in our graduate program. Here’s one highlight: Dr. Lila Sands was the first woman to earn a Ph.D. in our department for her studies on the decomposition of amines in the vapor phase with Professor Upson. Afterward, she joined the chemistry department at the University of Arizona, where she studied the gums from mesquite and cacti, rising through the academic ranks to professor.

I am pleased to announce that our departmental faculty searches were successful and four new faculty members will join the department for the 2011-2012 academic year. We welcome Marilyne Stains, Cliff Stains, Alexander Sinitskii and Jian Zhang to the department this Fall. These four new faculty members respectively bring expertise in the areas of chemical education, chemical biology, nanomaterials related to energy science and nanohybrid materials chemistry. Our new faculty members will be featured in New Faces stories in the Fall 2011 newsletter. I am confident that you will find them to be very impressive young scholars.

If you haven’t been to Hamilton Hall for a while, I encourage you to stop in to see the exciting changes that are taking place as we continue to renovate parts of it. Four undergraduate labs on 2nd floor are receiving a much needed update (an understatement indeed, read more inside) as are faculty lab spaces on the 4th and 6th floors. Even the most casual visitor to Hamilton Hall will be pleased to see we are in the process of installing two new elevators! The first replacement is already up and running, bringing you from the entry lobby to the 8th floor in under 8 seconds! Read more about our renovation projects throughout this newsletter. For those of you attending the Fall ACS meeting in Denver, we expect to once again co-sponsor a hospitality suite with other Big Ten schools. Check the departmental Website for details.

As the 2010-2011 academic year comes to an end, I am proud of the many accomplishments of our students, faculty and staff. Hard work and good ideas still pay off even in challenging times. To all of the inhabitants of Hamilton Hall and to our alumni and friends, have a great summer!

All the best,

A handwritten signature in black ink that reads "Jim Takacs". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

Jim Takacs  
Bessey Professor and Chair of Chemistry

## *In this issue*

- Page 2:** Letter from the Chair
- Page 3:** Contents and Credits
- Page 4:** **New Dean of Graduate Studies**  
Patrick Dussault, Charles Bessey professor of chemistry at the University of Nebraska–Lincoln, has been selected the new dean of Graduate Studies at UNL.
- Departmental History Mystery**  
Who brought the “Alkaloids” set to the department?
- Page 6:** **2011 Chemistry Reunion Recap**  
Guests traveled from near and far to be part of the department’s 2011 reunion.
- Page 7:** Alumni Focus, Dr. Jim Lohr
- Page 8:** Faculty and Student Awards
- Page 10:** Staff Awards
- Page 11:** Graduates
- Page 12:** **Undergrad Lab Renovation**  
Undergraduate chemistry labs get \$1.6M upgrade.
- Page 13:** **Faculty Lab Renovation**  
Faculty lab spaces on 6th floor of Hamilton Hall are currently being upgraded.
- Page 14:** **Reconnect**  
Reconnect on our Chemistry Alumni Web Page or via Facebook, Twitter and LinkedIn.



# DEPARTMENT OF CHEMISTRY

Story ideas, activities and achievements can be submitted by sending an email to [kengel3@unl.edu](mailto:kengel3@unl.edu). Receipt does not guarantee publication and the editor reserves the right to edit for space, clarity, grammar and style.

### **Editor and Writer**

Kate A. Engel

### **Contributing Writers**

Mark A. Griep, Dodie Eveleth, Jeff Bunker, Kim Hachiya, Kelly Bartling and HDR

### **Designer**

Stephanie Severin

### **Editorial Correspondence email**

[kengel3@unl.edu](mailto:kengel3@unl.edu)  
or write Kate A. Engel  
University of Nebraska–Lincoln  
515A Hamilton Hall  
Lincoln, NE 68588-0304  
Phone: (402) 472.4453

### **Updates**

Alumni members, now you can update your contact information by visiting <http://chem.unl.edu/dept/alumnreg.shtml>.

## *Support the Chemistry Department*

If you would like more information about specific needs of the department, such as graduate and undergraduate fellowships/scholarships, award lectureships, or research instrumentation, please contact:

### **Director of Development**

Amber Antholz  
(402) 458.1182 direct  
(800) 432.3216 toll free  
[aantholz@nufoundation.org](mailto:aantholz@nufoundation.org)

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# Professor Patrick Dussault selected as dean of Graduate Studies

Kelly Bartling, University Communications



**Patrick Dussault**

Photo courtesy University Communications

professor (1988-94), associate professor (1994-2001) and full professor. He was chair of the Department of Chemistry from 2001 to 2007.

Dussault earned his named professorship in 2009. He has received numerous awards and honors for his teaching. He has supervised 16 doctoral dissertations, 10 masters' theses, and has an extensive record research-training undergraduates and postdoctoral fellows. He also serves as the director of the Center for Nanohybrid Functional Materials, part of a National Science Foundation-EPSCoR-funded grant.

*"Dr. Dussault is well-suited to the graduate dean role," Weissinger said. "He is an experienced academic administrator who appreciates the unique circumstances of graduate education*

Patrick Dussault, Charles Bessey Professor of Chemistry at the University of Nebraska-Lincoln, has been selected the new dean of Graduate Studies at the university. Senior vice chancellor for academic affairs Ellen Weissinger announced the appointment on Thursday, May 5. Dussault assumed duties as graduate dean on June 1, after approval by the University of Nebraska Board of Regents.

Dussault has been at UNL since 1988, as assistant

*across the scholarly disciplines. He's been a very successful mentor of graduate students and post-doctoral scholars. Pat has built a positive reputation as a collaborative leader and is respected by his colleagues in academic affairs and in the Institute of Agriculture and Natural Resources. I'm very pleased he accepted our offer to become the new graduate dean."*

Dussault earned a bachelors degree in chemistry from the University of California, Irvine, and a Ph.D. in organic chemistry from the California Institute of Technology. His research interests are peroxide synthesis, oxidations in organic chemistry, chemical biology and nanostructured materials. He was a postdoctoral fellow for the National Cancer Institute at Duke University.

The selection comes after a search process. Kimberly Andrews Espy had served as acting dean since January 2010 while Weissinger, the former graduate dean, served as interim senior vice chancellor. Espy left UNL June 1 for a position as vice president for research and innovation and dean of the graduate school at University of Oregon.

While taking on his new role as dean of Graduate Studies, Dr. Dussault will remain a familiar face around the Department of Chemistry. Dr. Dussault will continue to conduct research in the department and will split his time between the Office of Graduate Studies and the Department of Chemistry.

The Department of Chemistry wishes Dr. Dussault only the best on his new venture as dean of Graduate Studies!

## Departmental History Mystery: Who brought the "Alkaloids" set to the Department?

Mark A. Griep



In 2005, Patrick Dussault brought me an item for the Departmental Archives. It was a red leather case, badly in need of repair, that opened to reveal a set of 72 Alkaloids. Each bottle is about 22 mm tall, hand blown, and stoppered with a small cork attached to a cap of ivory or celluloid. A square piece of paper with a printed number is glued to each bottle.

The printed numbers are the only hint there may be more than one of these sets. A list of the numbered alkaloids, written in pen, is attached to the inner cover with four small nails that have rusted.

The case itself consists of hard cardboard over which some leather has been shaped and stretched. The alkaloids include: 6. Atropin; 12. Caffein; 18. Cocain; 23. Coniin; 27. Curarin; 39. Helleborein; 49. Morphin; 58. Physostigmin; and 70. Strychnin. Half the powders are colored brown, yellow, orange, or blue, possibly due to oxidation. The unlabeled "i" in many of the names indicates this set was produced in Germany many years ago.

Dr. Dussault said he had received it from Desmond Wheeler before he retired in 1993. It is possible that Dr. Wheeler brought

*'Alkaloids' continued on page 5*

the set with him when he joined the department in 1961. It seems more likely that Dr. Wheeler received it from another UNL faculty member who was retiring sometime between 1961 and 1993. If I had to guess who that was, I'd say Norman Cromwell gave it to him. Dr. Cromwell had been the Department of Chemistry chair during that time period and such a precious object is likely to have been in the chair's office for decades. If it had been passed from chair to chair, then Cromwell received it from Cliff Hamilton, who received it from Fred Upson, who received it from Samuel Avery. This line of chairs consists of all organic chemists. Even though this provenance is wildly speculative, it is consistent with the set having been in the department for a long time. My burning questions were: Who brought the set of alkaloids into the department, and when?

To estimate its age, I decided to determine the dates when each alkaloid was first isolated. This would tell me the earliest it could have been assembled. I had learned years ago that alkaloids are nitrogen-containing molecules (isolated from plants in the earliest days) that often have physiological properties. From Wikipedia, I learned that German chemist Wilhelm Sertürner isolated the first alkaloid in 1804. It was named "morphine" after *Morpheus*, the Greek God of Sleep, and had an -ine suffix because it contained an amine, or nitrogen. His method of isolating morphine from opium became known in 1815 and was very simple: squeeze and filter the liquid from a plant, warm it slightly, add ammonia as a base to deprotonate the alkaloid to make it less soluble, cool down fast, and collect the white precipitate.

It was a bit more difficult to track down the isolation dates of the next alkaloids, but here is a summary based on a variety of unverified online sources: xanthine 1817, strychnine 1818, atropine 1819, caffeine 1819, quinine 1820, coniine 1827, nicotine 1828, colchicine 1833, sparteine 1851, and cocaine 1860. Of these, xanthine and quinine are not part of our alkaloid set. Although we can still conclude that our alkaloids were isolated after 1860, the Internet wasn't particularly useful in tracking down the others. One thing I learned was that narceine, narcotine (now called noscapine because it isn't very narcotic), thebaine, and veratrine are all isolated from opium but I wasn't able to determine when they were first isolated.

My current hypothesis is that most of the alkaloids in this set were isolated expressly for our alkaloid set. It appears that many of the alkaloid names in our set are plant names plus an "-in" suffix. For instance, our helleborein is probably from *Helleborus niger*, a poisonous plant commonly called a Christmas Rose or black hellebore. It was used in ancient times to treat paralysis, gout, and insanity. At higher doses, it was known to cause nausea, slowing of the pulse, and death by cardiac arrest. I haven't done the work to determine when pure alkaloids were isolated from *Helleborus niger* but I'll bet it didn't happen until the 1960s or 1970s. That is, the helleborein and many other alkaloids in our set are probably mixtures of compounds.

In the absence of any solid evidence about the date and person who brought the alkaloid set into the department, I'm going to speculate rather wildly. My initial hypothesis was that Samuel Avery obtained the set during his time as a graduate student at the University of Heidelberg in the 1890s. The problem with that idea is Avery never did any research on alkaloids. On the other hand, our first masters graduate George Bell Frankforter was the first person to isolate narceine (in 1893), one of the alkaloids in our set, during his Ph.D. research for August Hofmann at the University of Berlin. Hofmann was well known for studying alkaloids and determined the structure of coniine, another alkaloid in our set. When Frankforter began his own research program at the University of Minnesota, his students worked on the alkaloids narceine, narcotine, and veratrine, all of which are in our set. All of this suggests that Frankforter brought this set back to Nebraska when he completed his Ph.D. in 1893. If that is true, however, then why did he leave it behind when he left for Minnesota?

The full list of alkaloids is published on our departmental Web page (<http://www.chem.unl.edu/alumni/>) so you can do your own research, but please let me know what you find. I'd also welcome other hypotheses. If you do have any information on this case of 72 alkaloids, please email me at [mgriep1@unl.edu](mailto:mgriep1@unl.edu). I look forward to hearing from you!



72 alkaloids in their case.

Photo courtesy Mark A. Griep



## 2011 Chemistry Reunion Recap



Front Row: Soohaeng Yoo, research assistant professor, Pohan University of Science & Technology (Korea)

Back Row (L to R): Kenichiro Koga, professor, Okayama University (Japan); Ruben D. Parra, associate professor, DePaul University (Chicago); Xiao Cheng Zeng, professor, University of Nebraska-Lincoln; Guangtu Gao, staff scientist, USDA; Nan Shao, Postdoc, Oak Ridge National Lab, 2010 UNL Ph.D. graduate

Over the weekend of April 15 and 16, 2011 UNL chemistry alums joined former and current UNL chemistry faculty for a fun-filled weekend of events and catching up with old friends and colleagues. Guests traveled from near and far to be part of the department's reunion. Professor Xiao Cheng Zeng had the most students in attendance *and* who traveled the farthest distance. Soohaeng Yoo, a research assistant professor at Pohan University of Science and Technology, traveled from Korea to take part in the reunion events. Kenichiro Koga, a professor at Okayama University, made the trip from Japan to Lincoln to reconnect with Dr. Zeng and other chemistry alums.

On Friday, April 15, reunion attendees helped the department's Outstanding Graduate Student award winners celebrate with

a reception held in room 548 of Hamilton Hall. Guests then headed to room 112 of Hamilton Hall for the formal presentation of the Graduate Student Awards and presentations by the three Outstanding Graduate Research Assistant awardees. The lobby of Hamilton Hall was filled with award winning posters from the "Research First" poster session. Guests were able to view posters created by current undergraduate and graduate students and post doctoral associates. Friday evening was capped off with a lovely banquet dinner held in Morrill Hall's Elephant Room.

On Saturday, April 16, reunion guests started their day with a light breakfast in the Faculty and Staff Lounge of Hamilton Hall and then headed off to see all of the exciting research projects going on in the labs of Drs. Dodds, Hage, and DiMagno. One of the final stops on the tour was to check out the renovation progress on the 2nd floor of Hamilton Hall where four undergraduate labs are getting a \$1.6M upgrade. After the building tours, guests enjoyed a presentation by Dr. Mark Griep telling of his favorite department artifacts. The department's reunion events concluded with a tailgate lunch in Hamilton Hall before many of the reunion guests headed to the Spring Red & White game.

*"The 2011 chemistry reunion was GREAT! I am always amazed at how perfectly comfortable and fun it is to meet again. Chemists don't usually fit in that easily with the rest of the world...even with other college disciplines...but when we walk into a room of fellow chemists, we suddenly all feel comfortable. It's not really important what we choose to wear or that our bodies don't look just like they did when we were here as students. It's just good to share time together again."* Dorothy Heidemann-Nelson, UNL class of 1968

Thank you to all of our alums for coming back to campus to help us celebrate 125 years of chemistry education at the University of Nebraska-Lincoln. Mark your calendars for the next UNL Department of Chemistry reunion in April 2016! Keep checking the department's alumni Web page (<http://www.chem.unl.edu/alumni/>) for more details on the 2016 reunion!

## 2011 Chemistry Reunion Photos



Rosalind and Dr. Jim Carr reconnect with Dr. Carr's former student, Dr. John Vasiliades, during the Friday evening Alumni Banquet.



A group of reunion attendees stop to pose for a photo at the 2011 Chemistry Reunion Alumni Banquet.

## Alumni Focus, Dr. James E. Lohr

Jeff Bunker



Dr. James E. Lohr

In this alumni focus, we are proud to feature Dr. James Lohr. Dr. Lohr earned his Ph.D. in physical chemistry from UNL in 1965. He contributed to research involving surface interactions and influences on surface molecules for many years as a graduate student, post-doctoral researcher, and in industry. Dr. Lohr is also a native Nebraskan.

*"I was born and raised in Columbus, NE, and attended Columbus public schools. I received a B.A. from*

*Northwestern University in Evanston, IL. I was a UNL graduate student in physical chemistry from 1961-1965. After obtaining a Ph.D., I was a post-doc on a Fulbright Grant for a year in Tuebingen, Germany. My father was a UNL alum and as a Nebraskan, I always sort of assumed I would also attend at some point—plus, my future wife just happened to be in Lincoln at that time."*

*"My time at UNL was pre-Hamilton Hall, back in Avery Laboratory days. Avery was a relatively small facility and, as such, all the professors and students rubbed shoulders with each other on an almost daily basis. The place was very congenial with lots of camaraderie and support. Many friendships were made which have lasted to this day. Along the way, I received an excellent education."*

After finishing his post-doctoral fellowship, Dr. Lohr accepted a position working in the industrial sector with DuPont:

*"The middle '60s were a fortunate time to be seeking employment and my UNL training made getting interviews and offers almost painless. My first job was with DuPont where I worked for about 30 years in a large variety of R&D and business management*

*positions. I was not the most gifted chemist and thus entered management relatively early in my career. After some years and a number of assignments, it turned out that what I was really good at was fixing things. Thus, when/wherever there was some particularly difficult situation, I would be sent there for a few years to try to get things right again. After retiring from DuPont, I was offered a position with the American Chemical Society where I worked for 6 years as Director of Editorial Operations in the Chemical Abstracts Service Division."*

*"One of my most satisfying experiences with DuPont was as director of the automotive laboratory in Troy, MI, in the 1980s. At the time of my assignment, DuPont's OEM automotive paint business was in considerable difficulty. This was completely reversed in less than 2 years, in large part through the extraordinary team efforts of personnel in the Troy Laboratory and the Marshall Laboratory in Philadelphia."*

Dr. Lohr is now retired and living in Walker, MN. He remains involved with the UNL Department of Chemistry by serving on the Industrial Advisory Board.

*"In retirement—and old age—I mostly read, write, socialize, travel some and engage in volunteer activities. I serve on several boards including the UNL Department of Chemistry Industrial Advisory Board. My wife and I live in a house we built for vacations in the '90s in the small community of Walker, MN. Walker has not historically had much organized philanthropy. One of my major activities for some years has been to start and lead the Walker Area Foundation which has grown wonderfully and is making a real contribution to the quality of life in our little community."*

*"At the moment, I am extremely optimistic about the trajectory of UNL chemistry. A number of seemingly intractable obstacles of recent years are now yielding to the efforts of departmental leadership, energetic professionals and staff, and a supportive administration. Being associated with the Big 10 will further encourage these promising trends."*



A group of reunion attendees stop to pose for a photo at the 2011 Chemistry Reunion Alumni Banquet.



Dr. and Mrs. Edward Chess enjoy the Friday evening Alumni Banquet meal with Dr. and Mrs. Jim Lohr.

## Graduate Student Awards

### Jennifer Gerasmiov

2011 Folsom Distinguished Masters Thesis Award Honorable Mention

### Jiliang Hang & Lili Lou

2011-2012 Milton E. Mohr Fellowship

### Rhitankar Pal

Graduate Research Assistant Award Honorable Mention

### Nan Shao

2011 Folsom Distinguished Dissertation Award

### Jaime Stark

Outstanding Graduate Teaching Assistant Award Honorable Mention

## Undergraduate Student Awards

### Daniel Boadwine & Elizabeth Needels

2011-2012 Milton E. Mohr Scholarship

Seven senior chemistry minors have been initiated as members of Phi Beta Kappa. **Congrats to Brian Coburn, Laila Gharzai, Matthew Kelly, Rory Keys, Daralyn Roberts, Anna Schreck, & Nicholas Wohlgemuth!**



(L to R): Dr. Xiao Cheng Zeng and Dr. Nan Shao after Dr. Shao received the 2011 Folsom Distinguished Dissertation Award

## 2010-2011

## Department of Chemistry Graduate Student Awards

The 2010-2011 Department of Chemistry Graduate Student Awards were held as part of the 2011 Chemistry Reunion activities on Friday, April 15. Congratulations to the 2010-2011 award winners!

### John J. Stezowski Graduate Teaching Assistant Award

Monica Kinde-Carson

### Outstanding Graduate Teaching Assistant Award

Brandon J. Burnett

Thomas J. Fisher

Rhitankar Pal

### Korean Alumni Research Award

Michelle Yoo Johnson

### Outstanding Graduate Research Assistant Award

Lili Lou

### Cromwell Graduate Research Assistant Award

Charles E. Schiaffo

### Fuerniss Fellowship Award

Jacob A. Friest

### T. Adrian George Undergraduate Research Award

Brian Kempf

The 2010-2011 Department of Chemistry Graduate Student Awards were sponsored by the UNL Department of Chemistry, the Korean Alumni Association, the UNL Chemistry Remembrance Fund, the Dr. Norman & Grace Cromwell Endowment Fund, and the Stephen J. Fuerniss Memorial Fellowship Fund. Thank you so much to all of our sponsors. We truly appreciate your generous support.





Monica Kinde-Carson



Brandon J. Burnett



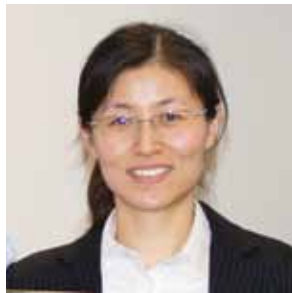
Thomas J. Fisher



Rhitankar Pal



Michelle Yoo Johnson



Lili Lou



Charles E. Schiaffo



Jacob A. Friest



(L to R): Brian Kempf with Tom George, son of Denise and the late T. Adrian George

## Faculty Awards

### Dr. David B. Berkowitz

Willa Cather Professorship

### Dr. Jiantao Guo

Received a 2011 NCESR Energy Grant for his energy project titled "Generation of Biomass-Derived Feedstocks for Biofuel and Bioenergy Production - Use of Molecular Scaffold in Highly Efficient Degradation of Plant Lignocellulosic Material"

### Dr. Eric Malina

Received funding for his Course Impact Project

### Dr. Andrzej Rajca

Received a 2011 NCESR Energy Grant for an energy project titled "Novel Supercapacitors Based on Nanostructured Materials"

### Dr. James Takacs

Charles J. Mach University Professorship

### Dr. Xiao Cheng Zeng

Received a 2011 NCESR Energy Grant for his energy project titled "Nanostructured Design of Catalysts for Converting Glycerol to Value-Added Chemicals"



# Applause Award Recipients

## DeNeice Steinmeyer and Lorrie Adams

The APPLAUSE Program recognizes consistently outstanding performance and service above and beyond the call of duty of managerial/professional and clerical/tech/service staff in the College of Arts and Sciences. Congratulations to our department winners!



**DeNeice Steinmeyer**

### DeNeice Steinmeyer

November 2010  
APPLAUSE Award Winner  
and 2010 Annual  
APPLAUSE Award Winner

#### DeNeice's nominators say:

*"As the person who runs our main office, DeNeice is the 'face' of the chemistry department for the majority of students and visitors.*

*We are lucky to have her in this role—she makes us a better department. As you might guess, DeNeice's position is associated with a lot of important deadlines and events, many of which come to her on very short notice. She handles everything with a smile and with tremendous professionalism. We are not the only ones who notice this. I can tell you, for example, that a noticeable fraction of our scientific visitors have taken the time to seek out and thank DeNeice for her help with travel schedules and local arrangements. Deneices' infectious giggle brightens the office on Monday mornings and speeds along those long Friday afternoons. I truly enjoy working with DeNeice and an Applause Award is a wonderful way to thank her for all of her hard work and dedication to the Department of Chemistry."*

*"DeNeice is a great asset to the Business Office in the Department of Chemistry. From her very first day in the position she hit the ground running. The office is a very busy place with the telephone ringing, faculty and students needing help, tests to run, payroll to enter, student workers to supervise, and much more. She does an excellent job arranging colloquia speakers and special events. Her understanding of the many requirements of her job, her outstanding ability to handle the varied and demanding tasks that she is responsible for, and her composure and good sense of humor while she is meeting these requirements are vital to the department. She is usually the first contact person in the department and always greets guests with a smile and patiently answers their questions; navigating these questions is a real skill. DeNeice's skill level and work style is such an important ability which enables her to deal with the constant interruptions throughout the day. She is dependable, cheerful, and more than a coworker, she is a true friend."*



**Lorrie Adams**

### Lorrie Adams

January 2011  
APPLAUSE Award Winner

#### Lorrie's nominators share:

*"Lorrie is such a vital person for the chair's office in the chemistry department it is hard to imagine what in the world we would do without her. She came in to the department in December of*

*2008 and in just a few short years has organized, streamlined, and whipped all of us into shape. If she doesn't know how to do something, she figures it out. Once she has done a process, then each and every time after that she is tweaking, improving and ultimately making it all seem effortless. We all know there is so much more to what she does than just what we see on a day to day basis. Lorrie exemplifies the type of person who would be honored with such a wonderful award."*

*"As the chair's assistant, Lorrie takes on each task and job responsibility with a smile and tons of enthusiasm. Recently, Lorrie has been working very hard to improve the faculty search process. Her goal has been to streamline the process and make sure the information is available to everyone in a timely and accurate manner. Not only does she make sure everyone in our department is aware of what is going on in regards to the faculty search, she also makes the faculty candidates feel very welcome when they visit our department. I work with Lorrie on a daily basis and am so glad I have the opportunity to do so. She is a terrific co-worker and a wonderful friend. She is always willing to answer questions and volunteers to help with whatever needs to be done. Lorrie is very deserving of the Applause Award as a thank you for all that she does for our department."*

## Ovation Award Recipient

### Laura Clouston

The OVATION Award is awarded subjectively and is 'The Perfect Thank You...for Student Employees.' Every currently-enrolled undergraduate student currently employed in the College of Arts and Sciences is eligible to receive an Ovation award. The program is sponsored by the Dean's Office, College of Arts and Sciences.



Laura Clouston

### Laura Clouston

Recipient of the January 2011 Ovation Award

Laura's nominators say:

*"Laura Clouston is very deserving of an Ovation award. She is a senior chemistry major working in the chemistry department, and she has worn many "hats" over the past three*

*years, including: Undergrad Research Assistant for three years, Undergraduate Instrumentation Center Teaching Assistant for two years, Undergraduate Lab Teaching Assistant for two semesters, and she has begun working as the Resource Center student worker this year. She has made our lives so much easier! She has streamlined the process of getting the Resource Center ready for school to begin, this includes preparing the boxes for lab, recitation and lecture sections, name tags and mailboxes for the Teaching Assistants, and preparing posters of TAs, so that students can be familiar with the TAs and will be more comfortable asking for help. She prepares the schedule explaining the Resource Center TA office hour schedule, TA information schedule, and daily TA sign-in sheets. She has acted as the Resource Center Receptionist, answering the phone and greeting students. She was extremely helpful with the preparation for Chemistry Day in the Fall and is now helping with preparations for the Big Red Road Show this Spring. Her chemistry knowledge, ability to brainstorm solutions to problems, and her willing attitude are her greatest assets and have made her a valuable asset to the department!"*

*"Laura is amazing! She has worked for me in the UIC for two semesters, and her enthusiasm and knowledge never cease to amaze me. She has a great rapport with the students, putting them at ease when they use the instrumentation. She is always ready to go above and beyond to help the students and answer their questions (and like any good teacher—she makes them THINK!). She is always happy to help me with special projects. Laura is a great person to work with, and I hope that she can use all that she has learned as a TA when she goes to graduate school next year!"*

## Congratulations to Graduates

### December 2010 Ph.D. Graduates \*

Paul Barron, Inorganic, Choe  
Harry Garcia Flores, Physical, Langell  
Matt Shortridge, Analytical/Biochem, Powers

### December 2010 Masters Graduates \*

LaTravia Dobson, Organic, Dussault  
Brad Johnson, Organic, Dussault

### May 2011 Ph.D. Graduates \*

Abby Jackson, Analytical/Biochem, Hage  
Michelle Yoo Johnson, Analytical/Biochem, Hage  
Raychelle Burks, Analytical/Biochem, Hage  
Troy Wiegand, Inorganic, Redepenning

### May 2011 Masters Graduates \*

Neil Lawrence, Physical, Cheung

\* Graduate names are followed by area of interest and adviser





# Undergraduate Chemistry Labs Get \$1.6M Upgrade

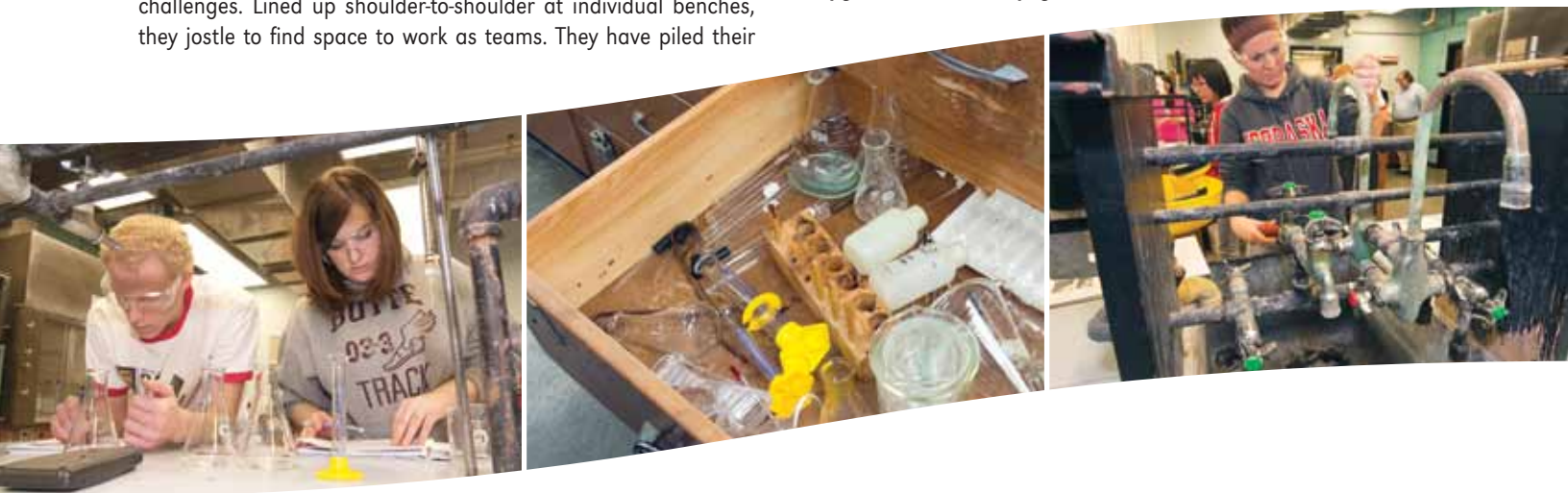
Kim Hachiya, University Communications

Two dozen undergrads strain to hear their chemistry 109 lab instructor, Xiwei “Emmi” Zheng, explain the day’s experiment. Zheng isn’t tall, and she has to yell above the din of the lab’s air-handling system. She’s written instructions on a white board that leans against a wall at her eye level, but fixed lab equipment means few can actually see the board. After her initial explanation, she darts from student to student to demonstrate a technique. She has no place to put her various props and materials, so she carries them.

Zheng’s challenges as an instructor are mirrored by her students’ challenges. Lined up shoulder-to-shoulder at individual benches, they jostle to find space to work as teams. They have piled their

backpacks in an adjacent room, and soon, students are trotting back and forth to retrieve pens, paper and other items. In other labs, students dump their bags on the floor next to their benches, creating potential trip-and-fall scenarios that could be particularly hazardous if one is holding chemicals. And chemical residue can drip on bags, damaging them or students’ clothing later. The lab design limits the number of classes that can be convened each week to six or seven, meaning that much of the week, the lab is empty even as demand for the room skyrockets.

*‘Upgrade’ continued on page 14*



Above left: Chemistry students work shoulder to shoulder in the cramped lab space in Hamilton Hall. Above middle: Dirty and scratched drawers hold supplies in a Hamilton Hall chemistry lab. Above right: A UNL student works in rundown chemistry lab space in Hamilton Hall.

Photos courtesy University Communications

## 6th Floor Faculty Lab Renovation

Faculty lab spaces on 6th floor are currently being upgraded. The project manager for the 6th floor construction project hopes the renovation will be complete by August 2011. The newly renovated space will create office and lab space for Drs. Jiantao Guo, Alexander

Sinitskii and Jian Zhang. For more information on current research going on in each of these groups please visit <http://www.chem.unl.edu/faculty/>.







A rendering done by HDR, the architect for the undergrad lab renovation, shows what the completed labs will look like.

Photo courtesy HDR

## *When the Undergrad Lab Renovation is Complete...*

Story courtesy HDR

The undergraduate general chemistry teaching labs currently under renovation are designed to improve the learning environment for tomorrow's freshman students. The goal is to create an innovative studio based laboratory concept that supports multiple pedagogies: individual inquiry-based modules, paired student projects and seminar sized team learning all in the same space. In turn, the laboratory furniture has been selected that best meets these needs.

The student will walk into a lab with the best quality of maple laboratory casework—designed to last another 40 years, the latest in A/V technology, and innovative storage for inquiry-based teaching assignments. The diamond shaped student benches have been designed to allow for easy partner work at a 90 degree angle which is intended to foster communication. The flooring is of a resilient rubberized epoxy which will reduce stress on students who are required to stand during the three hour labs. The flooring

is intended to be in the same style as the terrazzo flooring on the first level. There are five monitors placed around the lab which can display video, lecture material, lab demonstration and individual student presentations. The labs also feature wireless Internet. Backpack cubbies are sprinkled throughout the lab to clear the floor of dangerous tripping hazards.

Students no longer have their own lockable storage drawer for supplies and glassware, as the tall storage cabinets in between the windows house tote trays containing 16 weeks worth of experiments for each of the student partnerships. These department owned supplies allow for the TA to set the appropriate materials at each station at the beginning of the week, and replace with the new material the following week. Additional storage for burettes, hot plates and Vernier systems are provided around the perimeter of the labs.

*'Renovation' continued on page 15*



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### 'Upgrade' continued from page 12

Almost one-third of all UNL students end up in Chemistry 109 labs during their college careers, 80 percent of them as entering freshmen—that's about 1,700 students per year. These labs were state-of-the-art when Hamilton Hall opened in 1970; today, they are dreary, substandard, inefficient barriers to teaching and learning. Some students report their high school chemistry labs were more modern; chemistry faculty don't even show these labs to potential students.

But that will change as UNL is spending about \$1.6 million to renovate four of these labs. Demolition started during spring break, with the renovations being completed for the spring 2012 semester.

Chemistry is a foundational course for many disciplines, said Mark Griep, an associate professor of chemistry who heads the department's academic affairs. Enrollments have grown 25 percent over the past five years. That growth has only exacerbated the labs' state of "decrepitude and inefficiency," Griep said.

He and others from the department visited other chemistry departments to learn best practices in lab design, and they implemented their own ideas.

The new labs will change how the department teaches chemistry, and add flexibility to scheduling. Long-term, one goal is to reduce the number of rooms dedicated to undergraduate labs, currently 27, to 17 but use each lab up to 12 times per week. The space reclaimed by more efficient lab use can be used for other research operations, said Jim Takacs, department chair.

The biggest changes for the new labs will be reconfiguration of bench space from lines where students stand shoulder-to-shoulder to "islands" where students will face each other for group work. New ways to share and store equipment will make it easier to set up and clean up. Adding access for computers to each workstation, plus flat-screen monitors, cameras and microphones will allow students to easily see and hear instructors. The labs will be made more ADA-friendly. Hallways will include conversation nooks.

Eric Malina, an associate professor of practice, is developing a new curriculum for the undergraduate labs. He said current teaching trends focus on collaboration. The new lab experiments he is developing and the new "island" lab benches will be integrated to encourage that.

To refurbish all the labs will take another \$5 million. The university is using internal allocations for this upgrade, but will be seeking donations to complete the project.

Takacs is optimistic because the project is important.

"Right now, this is third-world class space and that's just not right," he said. "It really sends the wrong message to students that they are not important, but just the opposite is true. Most of this building is world-class. Now it's time to bring these labs up to the 2011 standards."

There are two lab stations in the newly renovated labs set up for accessibility for students with disabilities. There are also two sinks and fume hoods that can accommodate students in wheelchairs. A speech reinforcement system is included to assist students with need of hearing assistance.

The new lab will be twice as bright as the old labs, and will use less power. The lighting system is developed with an automatic dimming system that calibrates the amount of light needed at the bench based on the amount of daylight entering the space.

The new ventilation system will be noticeably quiet, with the majority of sound-producing elements concealed behind an acoustic bulkhead. The system has been designed to maximize air quality and minimize cost of operation. A hexagonal ceiling cloud system will also help to temper noise in the labs as well as adding a unique architectural element. The two 6' hoods in each lab are variable volume observation hoods with glass on all sides which allows the TA to observe what the students are doing.

The corridor outside the lab will be redesigned with better lighting, display cases, and seating nooks carved out of abandoned service chaises. This will present a more inviting front door to the labs, which will also have large glazed openings.

The architect for this renovation, HDR, continually emphasized the importance that properly designed and positioned furnishings in the laboratory will improve learning outcomes. It is the hope of all involved that this laboratory renovation will allow UNL to reinvent how chemistry is taught, strengthening learning capabilities for generations of scientists to come.

## Chemistry Faculty Remembrance Fund

The UNL Chemistry Faculty Remembrance Fund was created to establish an endowed fund for those wanting to honor professors who impacted their lives.

Each year, an award will be made in honor of a former faculty member to a deserving undergraduate or graduate student with the spendable income generated by this fund. Please consider making a donation today by visiting <https://nufoundation.org/SSLPage.aspx?pid=2078&chid=25>.

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Lincoln, NE 68588-0304

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*Please let us know of any significant events in your life and/or career since leaving the University of Nebraska-Lincoln. Also, please feel free to send any photos and/or recollections of your time here at UNL!*



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