



WINTER 2011

Alumni & Friends Newsletter

DEPARTMENT OF
CHEMISTRY

UNIVERSITY OF NEBRASKA-LINCOLN



Dear Alumni and Friends,

It has been a great fall semester for the department and university, and as I write this letter, I am looking out over the first snowfall of the winter. The blanket of snow befits a campus that has taken on the frenzied quiet of “dead week,” the week immediately preceding final exams.

In August, we welcomed four new faculty into the department: Professors Marilyn Stains, Cliff Stains, Jian Zhang and Alex Sinitskii. I am delighted by the energy and research capabilities these outstanding new faculty members bring to our department. I am pleased to report that, while all are in temporary research space pending lab renovations, each has attracted at least one graduate student, several more than one, and several among them have a postdoctoral student here or on the way; in short, each new faculty member has hit the ground running. You can read more

about these talented individuals elsewhere in this newsletter. With their arrival, nine of the department’s twenty-three tenured or tenure-track faculty hold the rank of assistant professor. With that in focus, the future of the department looks very, very bright; expect great things!



2nd floor undergraduate labs (December 2011)

Photo courtesy University Communications

In addition to ongoing research lab renovations, the renovation of the four 2nd floor undergraduate labs in Hamilton Hall is also proceeding at a frenzied pace. The recent photo to the left shows the state-of-affairs. We are eagerly awaiting the completion of the new labs in December and their occupancy by students at the beginning of spring semester on January 9th. Professor Mark Griep and Building Manager Dodie Eveleth deserve special thanks for their efforts to make this project successful; Dodie was recently given special recognition by the College of Arts & Sciences for her efforts in managing the multiple construction projects underway in Hamilton Hall.

Thank you to our alums who attended the Alumni Reception during the Fall National ACS meeting in Denver, Colorado. As always, it is great to catch up with our alumni and hear about all of the exciting things you are doing. Please keep an eye out for more of these alumni events in conjunction with future National meetings. Details will be posted on the department website (www.chem.unl.edu) and, if we have your email address, you will receive an email describing upcoming alumni events.

From all of us here, best wishes for a wonderful holiday season and a happy new year. I hope that our paths cross in 2012!

Best Wishes for the New Year,

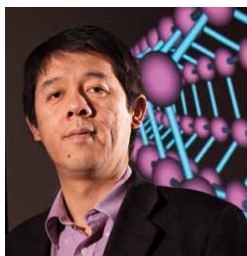
A handwritten signature in black ink that reads "Jim Takacs". The signature is written in a cursive, flowing style.

Jim Takacs

Charles J. Mach University Professor & Department Chair

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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. Receipt does not guarantee publication and the editor reserves the right to edit for space, clarity, grammar and style.

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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:

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DiMagno among first to earn NSF I-Corps grant

Jean Ortiz Jones, University Communications



Stephen DiMagno

Photo courtesy University Communications

A potentially life-saving innovation developed by a UNL chemist is among 21 concepts across the country selected to receive support through a new National Science Foundation program that aims to guide promising scientific discoveries toward commercialization.

Professor Stephen DiMagno and his entrepreneurial team are among the inaugural recipients of NSF's Innovation Corps award, also known as the I-Corps. Winners were announced Oct. 6.

"This award confirms the importance of the four years of work that went into helping to develop the technology," DiMagno said. "The selection process also helps validate the value of the technology for translation into clinically important medicines."

Each recipient team will receive \$50,000 to begin assessing the viability of the technology for a new start-up enterprise. They also will complete a specially designed training curriculum and present their products to venture capitalists at the end of the six-month program. NSF specifically sought out discoveries that offer near-term benefits to society or the economy.

With support from a previous NSF grant, DiMagno developed a new way to make imaging agents for staging and managing certain cancers, including pediatric cancers, cardiac disease, as well as various neurological disorders, like Alzheimer's disease and Parkinson's disease.

"Our research program allows us to create imaging agents that previously were very difficult to synthesize or were unknown," DiMagno said. "Such compounds will allow us to understand each person's specific disease process better and apply optimum therapies on a patient-by-patient basis."

He said he got the initial idea to pursue this research as he contemplated how to get back to the reason he chose to become a chemist: to have a positive impact on people's lives through science.

"It sounds trite, but it's true," he said.

DiMagno had the help of Kiel Neumann, a graduate student from O'Neill, NE, who is pursuing a doctorate in organic chemistry. Neumann has been involved with the project from its infancy and helped establish a collaboration with St. Jude Children's Research Hospital, an internationally recognized pediatric treatment and research facility based in Memphis, TN. It's there that he and DiMagno complete the final step in making the radioactive compounds. That's necessary because the compounds only have a half-life of 110 minutes, meaning to be effective they must be used immediately or they disappear.

Working to develop the technology has been rewarding to say the least, Neumann said.

"I think a lot of people see chemistry as this esoteric thing that nobody really knows about and it's all sort of voodoo magic," Neumann said. "But it's nice to see what you develop at the benchtop translate into impacting children's well-being."

With its team format, the I-Corps program is structured to train the next generation of entrepreneurs to look at all aspects of high-tech business development, DiMagno said.

"The goal is that the student eventually will lead a company or have the training necessary to start his own company in the future," he said.

Besides Neumann, DiMagno's team includes Allan Green, a physician, research scientist and lawyer with extensive experience in the pharmaceutical industry, including the launch of imaging products. Green will serve as a mentor.

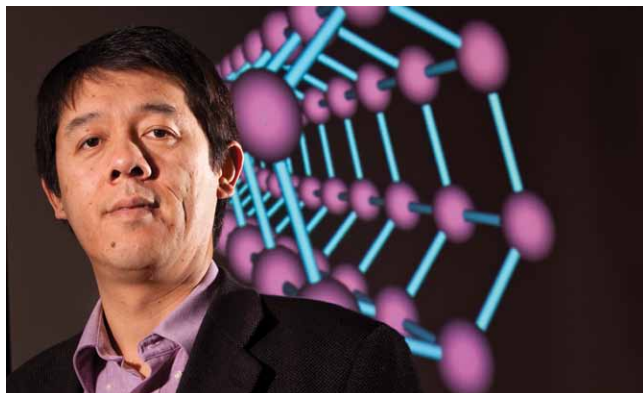
In his quest toward commercialization, DiMagno also has worked closely with NUtech Ventures, a nonprofit affiliate of the University of Nebraska that connects university researchers with the private sector. NUtech staff help manage the technology, file patents to protect the technology, and offer advice about how best to proceed with establishing a viable business enterprise around the technology.

DiMagno said he is happy about the amount of progress made to date and with the NSF grant in hand, is confident about the potential surrounding his discovery.

"I'd like to think we have arrived at the cutting edge of molecular imaging, starting from nothing, in four years," DiMagno said. "And that is really a testament to the amount of support we get from the people of Nebraska and the University of Nebraska-Lincoln."

Professor Zeng Named Recipient of Midwest Award for Achievements in Chemistry

Jean Ortiz Jones, University Communications



Xiao Cheng Zeng

Photo courtesy University Communications

University of Nebraska–Lincoln chemistry professor Xiao Cheng Zeng has been selected for an honor recognizing outstanding achievements in chemistry.

Zeng, Ameritas Distinguished University Professor of chemistry, was named the 2011 recipient of the Midwest Award from the American Chemical Society's St. Louis section. The honor, given annually, recognizes a scientist who has made "meritorious contributions to the advancement of pure or applied chemistry, chemical education, and the profession of chemistry."

Zeng is internationally known for his computational studies of new phases of ice, gold, and silicon clusters, and nanostructured materials. He is a fellow of the American Association for the Advancement of Science and the American Physical Society.

He has received numerous awards and honors over the years, including a John Simon Guggenheim Memorial Foundation Fellowship and a University of Nebraska Outstanding Research and Creative Activity Award.

Zeng's work also has been published in numerous major scientific journals and featured in mainstream media.

Zeng, who joined the UNL faculty in 1993, received his bachelors degree from Peking University in 1984 and his Ph.D. from The Ohio State University in 1989. He pursued postdoctoral research at the University of Chicago and UCLA from 1989 to 1993.

He received his award on October 20, 2011 during a banquet at the Midwest Regional ACS meeting in St. Louis, MO.

Zeng is the fourth chemist from UNL to receive the award since it was established in 1944. Reuben Rieke received the honor in 1997, and Norman Cromwell and Cliff Hamilton also were recipients in 1984 and 1955, respectively.

Chemistry Day 2011

Chemistry Day 2011 took place on Saturday, October 15 as over 90 participants from Nebraska, Iowa, Missouri, and Kansas visited Hamilton Hall. During Chemistry Day, students, parents, and teachers took part in research lab tours, hands-on science demonstrations, a Chemistry Quizbowl, a scavenger hunt, and a chromatography lab in which students were able to design their own T-shirts. Participants learned about scholarship opportunities, had the chance to ask current chemistry undergrad students about "life as a chemistry major," and enjoyed a free lunch. A new Careers in Chemistry session allowed participants to hear how a degree in chemistry helped launch careers for Joseph Brewer, a UNL alumnus, and Abbeyle Dodds, a forensic scientist.

At the conclusion of Chemistry Day, the following scholarships were awarded:

Carl Donaldson Scholarship

Pierce Dageforde, Millard South

Erin Brown, Millard South

UNL Chemistry Day Scholarship

Drew Bakenhus, Lincoln East

Alexandra Cook, Pius X

Megan Lee, West Platte R2

WW Norton Scholarship

Mitchell Groninger, Norfolk Senior High

The University of Nebraska–Lincoln Department of Chemistry gratefully acknowledges the generous support of Chemistry Day 2011 by the Carl A. Donaldson Fund in Chemistry. We would also like to thank Dr. John Donaldson, son of Carl A. Donaldson, for attending the event.



For more photos of Chemistry Day 2011 and details about Chemistry Day 2012, please visit www.chem.unl.edu/chemday.

Alumni Focus: Lawrence Albright, Charles H. Geisler and Helen James-Lundak

Jeff Bunker



Lawrence Albright

Lawrence Albright retired from Missouri Southern State University in 2006 after 37 years as a professor. Lawrence completed his Ph.D. at UNL from 1964-1969 under Professor Henry Holtzclaw. Lawrence came to UNL from Northwest Missouri State University:

"One of my instructors (Bob Henney) was teaching [at UNL] to make some money to finance returning to full time graduate study. He invited several of us to come up one weekend to look the department over and, incidentally, watch UNL whop up on OU 29-20 the day after Kennedy was shot. The result of the visit was my attending UNL and becoming a lifelong Husker fan. We watched the game from the window of a lab in Avery—that was the year before they made the south stadium."

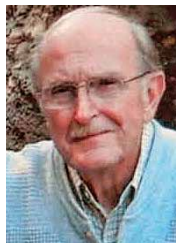
"[I fondly remember] the friendships made and the ways we found to relieve the tedium and stress of graduate school. Five years is a long way to go. The years in graduate school will never be remembered as the best years of one's life—times were hard on \$250 a month, but they were satisfying in many ways."

Lawrence took a position at Missouri Southern State University in Joplin, MO after graduation from UNL:

"I decided early on that I was more interested in teaching at a small college than pursuing research in industry or a university, which I was lucky enough to do. My field was electrochemistry and, by chance, I took a job one summer at Eagle-Picher Industries in Joplin. I took two years leave and worked for them full time doing everything from basic electrochemical research to environmental work. I was on retainer for 25 years with them and interfaced with NASA and many other governmental agencies."

"[I've enjoyed] seeing what my former students have accomplished. Three of our last four students who have gone on for a Ph.D. went into electrochemistry, which really pleased me. One of my students became an astronaut with three missions in space. The professional community in Joplin has many of my students working pulling teeth, giving shots and doing surgery. I was part of that."

After retiring in 2006, Lawrence took a year off and has since been serving as an adjunct professor. He ran bird dogs for 30 years and rode field trials. He enjoys fishing, hunting, and working in fraternal groups.



Charles H. Geisler

Charles Geisler completed his Ph.D. at UNL from 1956-1961 under Professor J.E. Taylor and was a Samuel Avery Memorial Fellow from 1959-1960. Charles studied the mechanisms of the hydrolysis of diazomalonate ion during his time at UNL. He remembers:

"I was one of the few graduate students who had windows down in the research labs of Avery Laboratory!"

Charles came to UNL after completing his undergraduate studies at UNO and serving in the U.S. Navy:

"I attended public schools in Omaha, NE and continued my education at the University of Omaha (with the help of a UNO Regents Scholarship). After two years of college, I enlisted in the U.S. Navy and spent my first year of training at the U.S. Naval Electronics School at Treasure Island, CA. Three years later, I completed my services and returned to UNO to complete my undergraduate studies in physics and chemistry (double major)."

While looking for jobs, Charles found the combination of chemistry and physics courses to be central to the requirements of the types of jobs he was seeking:

"In November of 1960, I joined the Physics and Physical Chemistry Laboratory in the Central Research Laboratories of 3M Company, St. Paul, MN, to undertake studies related to defining mechanisms of photoconductive decay in dye-sensitized ZnO, a common imaging substrate in the early days of photocopiers. This early research led to a long term career in the study of electronic and optical properties of wide band gap semiconductors for applications in various imaging and photosensitive electronic devices."

In 1989, Charles organized and directed the creation and operation of a Computational Science Center to provide the 3M research community with access to high speed Cray Supercomputers located in a standalone computer facility located off of the 3M campus.

Outside of his technical interests, Charles focused on K-12 education and related issues:

"Following the successful promotion of a school construction bond issue for a new high school in our district, I was elected to the School Board of District 832 and served for 13 years, 10 of which were in the role of Board Chairman."

Charles also served as board member or chairmen of three different church councils, board of directors with Minnesota Technology, Inc., an organization supported by NIST and the Minnesota legislature focused on upgrading technology in small businesses across the state of MN, and director of Stillwater Data Processing Systems, a for-profit company operated within the



Minnesota State Prison system. Charles served approximately four years as a director-at-large and member of the executive committee for the Minnesota Section of the American Electronics Association and as a member of the Chemical Industry Advisory Board of Digital Equipment Corporation. Charles has been an active member of the UNL Department of Chemistry Industrial Advisory Board since 1988.

Charles retired from 3M Company in 1992. However, Charles has remained very active in science during his retirement:

"Following my retirement in 1992, I was asked to serve on an advisory panel for the U.S. Office of Technology Assessment focusing on "Making Government Work: Electronic Delivery of Federal Services. For approximately two years before, and two years after my retirement, I served as a member [on the] Industrial Advisory Board [for the] Institute for Mathematics and Its Applications [at the] University of Minnesota. The focus of the institute is real life, industrial strength applied mathematics. My latest involvement with a science focus, extending from 2009-2010, was as a participant in a four-man effort to identify Twin City business support for a new Nanotechnology Center to be developed on the University of Minnesota campus. This effort has now grown to about 25 companies paying annual dues for support and access to the established Nanotechnology Center."

Charles has many fond memories of his time spent as a graduate student at UNL:

"[My fondest memories of UNL] include touch football games—chem guys vs. frat guys, frisbee on the mall in front of the old football stadium, and a final summer of golf. (My thesis adviser had accepted a position at Kent State University in Ohio early in the summer of 1960, so I had a lot of free time before my finals. Fortunately, Dr. Gordon Gallup agreed to chair my doctoral committee so everything worked out well!) [We watched] fall football games from the chemical engineering labs on the third floor of the old Avery building—a good time was had by all! My best memory of UNL, of course, was making it through the oral exam and receiving my Ph.D."



Helen James-Lundak

Helen James-Lundak comes from a family of UNL chemistry graduates:

"My mother graduated from the University of Nebraska in chemistry with a teaching certificate in 1932. Those were the depression years and she was unable to obtain a teaching position. However,

she taught her four children to love chemistry. Kitchen chemistry was her specialty. Every time she made homemade fudge—which

fortunately was often—we learned about supersaturated solutions and boiling point elevation. However, she didn't use those terms! She was a wonderful teacher and had a great influence on my future career."

Helen completed both her undergraduate and doctoral work at UNL between 1961 and 1970:

"My parents and two older sisters graduated from UNL. It was natural for me to attend the university starting in 1961. I was a math major for most of my undergraduate career. Professors Larson and Schultz convinced me to take a double major in chemistry. After one semester, I realized that I loved chemistry and I dropped my math major. After earning my B.S. in chemistry I continued at UNL to earn a Ph.D. in analytical chemistry in 1970."

"My memories center around the people at UNL. Professors Larson and Schultz greatly influenced my career choice. Professor Broman was my graduate adviser and encouraged me to teach college chemistry. The graduate students during that time were a close group of friends. It was wonderful to meet so many of them again at the chemistry reunion in the spring of 2011."

After graduating from UNL, Helen taught at Weber State University in Ogden, UT.

"While at UNL, I enjoyed my teaching assistant assignments and soon realized that I wanted to teach college chemistry. I wanted a college where I could teach mostly general chemistry and analytical chemistry as well as the laboratories. WSU fit those requirements. It is primarily an undergraduate institution where the professors have close interaction with the students."

"My initial interests were in analytical chemistry, particularly the use of ion selective electrodes. After teaching a few years at Weber State University, I concentrated most of my research in the area of chemical education."

"My former students have accomplished much in their own careers and I am proud of them. In addition to my teaching assignments, I served in various administrative assignments including department chair and interim dean of science. I was awarded a Presidential Distinguished Professor Award and also an Honorary Doctorate from Weber State University."

Helen retired from Weber State University in 2000 and married Joel Lundak in 2004. She loves to quilt, garden, read, knit, and is active in her church and a number of other organizations in Nebraska City.



New Faculty

Jeff Bunker



Jian Zhang

Professor Jian Zhang came to the United States in 2002 after finishing a masters degree at Lanzhou University, China. He received a Ph.D. from the University of Pittsburgh in 2008 under the guidance of Dr. Stéphane Petoud studying the design and synthesis of near-infrared emitting lanthanide complexes. Professor Zhang moved to Northwestern University in 2008 as a postdoctoral fellow working with Dr. Chad Mirkin where he developed several new methods to synthesize noble metal Au and Ag anisotropic nanocrystals with novel optical and catalytic properties. Professor Zhang joined the UNL Department of Chemistry faculty as an assistant professor in August 2011.

Professor Zhang's current research interests focus on the design and synthesis of functional molecular and nanoscale materials for energy conversion, production, and storage. The ultimate goal is to develop a fundamental understanding of molecular interactions at an atomic scale so that metal nanoparticles, inorganic clusters, and metal-organic frameworks can be rationally designed and synthesized to have desired electrocatalytic, photocatalytic, and gas sorption properties.

Cliff Stains

We are pleased to welcome Professor Cliff Stains as an assistant professor at the UNL Department of Chemistry. Professor Stains obtained a B.S. in chemistry with an emphasis in biochemistry from Millersville University in 2002 and then moved to the University of Arizona-Tucson to work in the laboratory of Dr. Indraneel Ghosh where he developed novel strategies for direct detection of nucleic acid sequences and protein-protein interactions. After obtaining a Ph.D. in chemistry in 2008, he took a position as an NIH postdoctoral fellow at MIT in the laboratory of Dr. Barbara Imperiali. During this time, he developed a direct activity assay for protein kinases that can generate individualized activity profiles for clinical cancer patients.

Professor Stains' laboratory conducts research at the interface of chemistry and biology. They are actively developing strategies for labeling proteins with fluorescent molecules as well as controlling biological processes with precise spatial and temporal resolution. These efforts utilize multidisciplinary approaches including protein evolution, organic synthesis, and molecular biology. The Stains lab is particularly interested in applications pertaining to cell motility and signaling with the goal of providing quantitative insight into these important biological processes.



Alexander Sinitskii

Professor Alexander Sinitskii joined the faculty at the UNL Department of Chemistry this fall. He earned his Ph.D. in materials science from Moscow State University in 2008 studying fabrication of photonic crystals by self-assembly of colloidal particles. As a postdoctoral associate at Rice University he studied carbon nanomaterials, such as graphene, carbon nanotubes and amorphous carbon.

Professor Sinitskii's group is developing new synthetic approaches to different graphene-based nanomaterials and employing the truly unique properties of these materials for applications in electronics and energy storage. One project is focused on fabrication of graphene-based supercapacitors, such as electrochemical capacitors, that have an unusually high energy density when compared to common capacitors. Virtually all commercial supercapacitors are based on activated carbon. They aim to demonstrate that graphene, a one-atom-thick sheet of carbon atoms, could potentially surpass activated carbon in performance, which would underscore the potential of graphene for green energy technologies. The goal of another project is a bottom-up synthesis of narrow graphene nanoribbons with atomically smooth edges. The electronic band gap of a ribbon could be precisely tuned by changing the ribbon's width and edge termination; the ability to tune the band gap could benefit electronic logics and solar cell applications.



Marilyne Stains

Professor Marilyne Stains recently joined the UNL Department of Chemistry faculty as an assistant professor of chemical education. She obtained a bachelors degree in chemistry from the Université des Sciences de Luminy in Marseille, France in 2001 and a masters degree in chemistry from Université Paul Sabatier in Toulouse, France in 2002. She earned her Ph.D. in 2007 from the Department of Chemistry at the University of Arizona, Tucson under Dr. Vicente Talanquer, exploring the reasoning strategies that chemistry students with various level of preparation used while classifying chemical entities (substances or reactions). She completed a postdoctoral fellowship at the University of Massachusetts-Boston under Dr. Hannah Sevia, focusing on developing and validating a survey exploring students' mental models of diffusion.

The goal of her research program is to utilize research in science education to enhance the learning environment in science at the college level. One project seeks to characterize the gap between research and practice in chemical education by exploring the extent to which chemical education research impacts instructional practices in entry chemistry courses at the college level. This knowledge is used to identify and develop strategies that will enhance the dissemination of chemical education research to instructors.

Professor Stains is also interested in exploring academic environments other than lectures and course laboratories that enhance learning. She will study undergraduate researchers working in chemistry research laboratories as well as chemistry tutors during tutoring sessions and analyze how activities and behaviors they use in these settings promote their conceptual development. The goal of this research is to 1) provide guidelines for best practices in tutoring and research programs, and 2) identify activities and behaviors promoting learning that can then be translated to classroom practices in entry-level chemistry courses.

The History of UNL's Department of Chemistry, Part 7

Mark A. Griep



Fred W. Upson on the steps of the Chemical Laboratory in 1938

Photo courtesy Nebraska Alumnus magazine

Dr. Fred Upson, Professor, Chair, Dean of the Graduate College, and Philanthropist

Dr. Fred Upson is still remembered in the department for the fellowship/scholarship that bears his name, the Fred W. Upson Grant-in-Aid. Currently at \$5,000, the entire sum is awarded to a student

“engaged in chemical research at the University of Nebraska–Lincoln” and who has resided in Nebraska for at least 10 years. As such, the award is often made to undergraduate or graduate students engaged in a chemical research project in chemistry, chemical engineering, or biochemistry even though the selection is

made by the Chemistry Scholarship Committee. Fred Upson was the fifth chair of the Department of Chemistry and, when you visit us, you will find his photo in the Cromwell Conference Room along with the other past chairs. He had a round face and a broad smile. He was hired as the chair of Nebraska’s Agricultural Chemistry Department in 1913 and served in that capacity until 1918, when Benton Dales, the chair of chemistry, left for an industrial position. The two departments were then merged with Upson becoming the chair of chemistry.

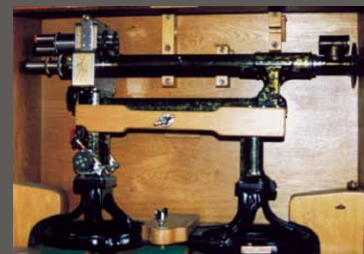
Fred Wilbert Upson was born in 1883 on an Illinois farm. Before he was even one year old, his parents pulled up stakes and moved to a farm in Odell, Nebraska, located 60 miles south of Lincoln. Soon his parents had two more sons but, when Fred was 14, his father died and the small family moved to Lincoln. He graduated from Lincoln High School in 1902 and then attended the University of Nebraska where he earned his 1907 B.A. and 1908 M.A. in chemistry. His masters thesis, under the guidance of chemistry chair Samuel Avery, was titled “The nitration of [beta]-p-tolyglutaric acid.” Upson obtained his 1910 Ph.D. at the University of Chicago working on carbohydrate chemistry.

Upson became chair of chemistry just as the new Chemical Laboratory was ready for occupation. During the building’s dedication ceremony on May 23, 1919, Upson gave a talk titled “The Future.” The department’s first Ph.D. had been awarded in 1916 so a new day was dawning. Also on the schedule, Chancellor Avery presided over the events, Hudson Nicholson talked about “The Early Years,” and Benton Dales returned to talk about “The Recent Period.” The building was renamed Avery Hall in about 1938 and served as the department’s home until Hamilton Hall was completed in 1970. Avery Hall was renovated in about 2005 and now houses the Departments of Mathematics and Computer Science.

As chair, Upson hired thirteen faculty and obviously concentrated on graduates from the Upper Midwest schools (Table 1). Most of his hires remained in the department for over 32 years showing he was astute at selecting loyal people (Table 1). Each of these ancestors deserves their own short history, but I will only mention that Horace Deming was author of the nation’s best-selling “General Chemistry” textbook during the 1920s to the 1950s.

Table 1: Faculty Hired by Fred Upson

Name	Time at UNL	#Years	Ph.D.
Brown, Denton J.	1918-1950	32	Univ. Chicago
Deming, Horace G.	1918-1950	32	Univ. Wisconsin
Hendricks, Bernard C.	1918-1952	34	Univ. Nebraska (under Deming)
Thompson, Theos J.	1918-1954	36	Univ. Nebraska (under Dales)
Anderson, Ernest	1920-1923	3	Univ. Texas
Hamilton, Clifford S.	1923-1957	34	Northwestern Univ.
Bren, Bozotech C.	1926-1928	2	Univ. Iowa
Washburn, E. Roger	1926-1967	41	Univ. Michigan
Adolph, William H.	1927-1929	2	Univ. Pennsylvania
Pagel, H. Armin	1927-1965	38	Univ. Minnesota
Morse, Mary L.	1929-1933	4	Univ. Minnesota
Miltzer, Walter E.	1936-1974	38	Univ. Wisconsin
Cromwell, Norman H.	1939-1984	45	Univ. Minnesota



Bates Polarimeter purchased by Fred Upson in 1934 from the National Bureau of Standards. It was made for NBS by Josef & Jan Fric of Czechoslovakia based on the design of Frederick Bates, a 1902 University of Nebraska physics masters graduate.

Photo courtesy Mark Griep

Even the Upson hires that didn't stick remained loyal to the department. Ernest Anderson left to found the Department of Chemistry at the University of Arizona, and Bozotech Bren was hired by Dupont to develop their resins and plastics department. Both of these fellows hired our graduates. In fact, Dr. Anderson hired Lila Sands, the first woman to earn a Ph.D. in our department (1924), to become the second chemistry professor at Arizona. One of Dr. Sands' first graduate students was Pauline Nutter, who was hired as a chemistry professor at Nebraska in 1941 under her married name Pauline Doryland. Dr. Doryland was in our department for 20 years.

Every faculty member taught an introductory course and either an advanced undergraduate or graduate course. In 1938, Upson summarized the progress during his 20 years as chair. He was clearly proud of their accomplishments and noted the strong spirit of cooperation and their high standards in teaching and research.

Also during this time, the number of graduate students grew 5-fold and 56 Ph.D. and 162 masters degrees were awarded. Upson's students wrote 42 of the theses, placing him among the top ten highest degree-producers in the department's history. Even so, he doesn't come close to Cliff Hamilton who mentored nearly 140 thesis-producing students. Some of Upson's most prominent graduates were: Dr. Lila Sands (1920 M.S., 1924 Ph.D.; University of Arizona), Marschelle Power (1921 M.S., 1923 Ph.D.; Mayo Foundation), Lawrence Brockway (1930 M.S.; University of Michigan), Mabel Donley (1930 M.S.; National Bureau of Standards), Edwin Fluevog (1928 M.S., 1930 Ph.D.; Dupont), and his only child Robert Upson (1938 M.S.; Dupont). This is a good place to mention that Fred Upson was married to Georgia Field, daughter of the leader of Nebraska's Republican Party and granddaughter of Edmund Fairfield who had been Chancellor of the University of Nebraska.

For the ten years from 1929 to 1937, Upson held a concurrent position as Dean of the Graduate College. He probably earned this position because he was a competent administrator but also because he produced so many graduate students. Several other chemistry faculty members have since been or are Dean of the Graduate School: Cliff Hamilton (1938, 1940), Norman Cromwell (1970-1975), Henry Holtzclaw (1976-1985), and Patrick Dussault (2011-present).

The last twelve of Upson's 25 journal articles were published in the *Journal of the American Chemical Society* (JACS). They deal with the synthesis and reactions of aldonic acids and their lactones, topics that still attract research interest. Many of his students characterized sugar decomposition reaction mechanisms. The department still has the Bates saccharimeter he described in a 1938 JACS article (Figure 1). The instrument with its roll-top case passed to Roger Washburn and then to Craig Eckhardt.

In summary, Fred Upson seems to have lived a charmed life. He was an excellent chair, graduate dean, and graduate mentor while carrying on a nationally prominent research program. Besides that, though, he is fondly remembered for the generous Grant-in-Aid that bears his name.

2011 Service Awards

(Faculty & Staff)

Darrel A. Kinnan, 35 years
Marjorie A. Langell, 30 years
Jody Redepenning, 20 years
Peggy L. Bergmeyer, 15 years
Leanna Klempa, 15 years
Rene E. Barfoot, 10 years
Liangcheng Du, 10 years
Evan P. Meade, 10 years
Robert H. Wilson, 10 years
Dodie Y. Eveleth, 5 years
Hui Li, 5 years
Deneice K. Steinmeyer, 5 years

Congratulations to Graduates

August 2011 Ph.D. Graduates *

Charles Schiaffo, Organic, Dussault
Zenghan Tong, Analytical/Biochem, Hage

August 2011 Masters Graduates *

Leah Thompson, Organic, Berkowitz
Sara Hitchcock, Organic, DiMagno
Cody Schaefer, Analytical/Biochem, Lai

* Graduate names are followed by area of interest and adviser



Applause Award Recipients

Dodie Eveleth and Kurt Wulser

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!



Dodie Eveleth

Dodie Eveleth
June 2011 APPLAUSE
Award Winner and August
2011 College of Arts and
Sciences Academic Star

Dodie's nominators say:

"Dodie has been a great addition to the department. As business manager, she has the job of overseeing building renovations and making sure

the building and its inhabitants are safe and that everything runs smoothly. She has to coordinate with several other departments which isn't always easy. She has approached the tough job of business manager with common sense and a high level of fair play. She has been consistent in her decision making and tries to look at all sides before planning a course of action for any situation. She has to stay apprised of human resource issues, building code issues, immigration issues, all the while dealing with the general day-to-day issues that may come up. Her job requires her to keep up on everything going on in the building while trying not to micro-manage, she does a great job of being a valuable resource but

also seeking other opinions and finding out options before going ahead with anything. Please recognize her accomplishments with an APPLAUSE!"

"It is always a pleasure to work with Dodie, she is easy to work with but firm in keeping us in tune with University guidelines and protocols. That is probably why I see so many different members of the staff, students, and faculty visiting her office to chat. They value her guidance on issues of importance to them. In many ways, she has raised the bar for professionalism in the department."

"Dodie is an excellent business manager. Her door is always open for problem solving, and there is no task too big for her to handle. Dodie deals with faculty and staff, and makes it appear effortless. She is always up for a challenge. She is there for us, and demonstrates that by being very supportive, positive and up-beat. She laughs a lot with us, making the chemistry department a great place to work. She will do her best to move mountains for you, or in this case offices and labs. She is also a friend. Dodie is very deserving of the Applause recognition!"

Dodie was also featured as a College of Arts and Sciences Academic Star. Please visit <http://cas.unl.edu/achievements/academicstars.asp> to find out how Dodie helps our department bring its 'A' game to the Big Ten.



Kurt Wulser

Kurt Wulser
October 2011
APPLAUSE Award Winner

Kurt's nominators share:

"Kurt has been a consistent presence in the chemistry department as an engineer for the Nebraska Center for Mass Spectrometry. He always has a smile on his face and takes the time to interact with everyone

on a professional and personal level. I would like to nominate Kurt for his innate ability to make everyone feel welcome and a part of the team. Please give him a round of Applause!"

"Kurt demonstrates the tri-ecta of virtues: he is cheerful, helpful and competent. He has saved UNL a lot of expense many times by finding solutions for problems by clever adaptations of existing equipment instead of buying new devices. I've enjoyed his humor and knowledge in staff meetings and at department functions. He always has a positive outlook and is just a fun guy to be around. His attitude is always above and beyond expectations, and he deserves special recognition!"

"Kurt is a great go-to person for the business office to get information about the mass spec department when needed. Kurt is very positive and because of his history with the department is invaluable. He also is very willing to meet with prospective grad students or speakers when the need arises. Kurt is very deserving of the applause award!"



UNL technology powers Nebraska solar panel startup

Jill Thayer, NUtech Ventures



Joseph Brewer



Allen Kruse

NUtech Ventures at the University of Nebraska–Lincoln and Rare Earth Solar, a new Nebraska company, have announced an exclusive license agreement expected to lead to the development of breakthrough solar panel technology made with rare earth elements. Rare Earth Solar will be the first solar panel manufacturer in Nebraska.

Chin Li “Barry” Cheung, assistant professor of chemistry at UNL, and his then-doctoral student Joseph Brewer developed the patent-pending technology, which replaces the typical semiconductor materials now used in solar cell manufacture with rare earth elements.

Despite their name, rare earth elements, used to make many high-tech goods, are more readily available and less expensive than competing commercial materials.

“Our technology will be competitive with current solar options,” said Brewer, founder and chief technology officer of Rare Earth Solar. “We expect our research and development efforts to result in commercial solar panels that will produce electricity near the efficiency level of current solar panel technology.”

Allen Kruse, Rare Earth Solar’s co-founder and CEO, said the company’s unique process utilizing rare earth elements is inexpensive and will produce panels that are more durable and cost-effective than the majority of thin film panels currently available on the market. “Our proprietary manufacturing method will utilize turnkey equipment along with material that no one else in the industry is using,” Kruse said. “We feel that will give us an edge on market entry and scaling our business. With economy of scale and continued efficiency gains on solar panels, Rare Earth Solar will be a serious player in the green energy industry in the very near future.”

“Matching entrepreneurs such as Allen with innovative UNL technologies that are developed by tomorrow’s scientists like Joseph is key to producing companies that can create high-wage jobs and grow Nebraska’s economy,” said David Conrad, executive director of NUtech Ventures, the organization responsible for building partnerships between the University of Nebraska and the

private sector. “It’s a model we hope we can replicate over and over by developing long-term relationships with the business and investor communities.”

“Partnerships like this confirm that there are great opportunities for us to leverage our research in order to create economic growth for Nebraska,” UNL Chancellor Harvey Perlman said.

“I am very pleased to learn that Rare Earth Solar has completed their technology licensing agreement with NUtech Ventures,” said Richard Baier, director of the Nebraska Department of Economic Development. “This partnership agreement helps to showcase cutting edge renewable energy technology developed by leading researchers at the University of Nebraska. Even more exciting is the opportunity for Rare Earth Solar to leverage this technology into new job opportunities in Nebraska.”

Kruse said he and Brewer, both from the Midwest, are excited to be headquartered in Nebraska, where they plan to begin manufacturing in the near future. Rare Earth Solar is securing a manufacturing site in Beatrice.

“The potential to have a positive effect on the regional and state economy as well as supporting the diversity of manufacturing in Nebraska and the Midwest is important to us and to our company,” Kruse said.

Rare Earth Solar is a Nebraska-based startup developing low-cost, thin film solar panels utilizing rare earth elements. The company’s patent-pending technology will enable mass production of solar panels at a low price that will make clean, affordable energy more accessible for consumers across the globe. Rare Earth Solar will be the first solar manufacturer to produce its products using exclusively American resources and labor. Visit www.rareearthsolar.com for more information.

NUtech Ventures is a nonprofit organization established in Lincoln, Nebraska, to form innovative partnerships between University of Nebraska researchers and the private sector. As R&D matchmakers, NUtech connects innovators with the people and resources they need to start companies, develop products, and create jobs. For additional information, visit www.NUtechVentures.org.



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Join the University of Nebraska-Lincoln Chemistry Alumni group on LinkedIn and reconnect with professors, colleagues, classmates, and friends! The Department of Chemistry Alumni group will help you expand and strengthen your professional networks while keeping you posted on all of the happenings in the department.



Chemistry Alumni Web Site:

<http://chem.unl.edu/alumni/index.shtml>

Offering:

Class Listings:

Current listings of Ph.D., M.A., and B.S./B.A. graduates.

Connections:

Career Networking Services provide links to job listings, help with chemistry job searches, and opportunities to use Chemistry Facebook Group and LinkedIn for social and professional networking. Update your contact information by sending to alumni@huskeralum.org.

Events/News:

Keep up with current events, past happenings, alumni newsletter, alumni stories.

Support the Department:

Learn how to support the UNL Department of Chemistry through a variety of ways.

Alumni Updates

Michelle Yoo Johnson ('11, Hage) received the Bioanalysis Young Investigators Award. Michelle is currently a postdoc at the University of Michigan working with Professor Robert Kennedy.

Nan Shao ('10, Zeng) is currently a postdoc at Brookhaven National Laboratory. Previously, Nan held a postdoc at Oak Ridge National Laboratory.

Omar Barnaby ('10, Hage) is currently a postdoctoral researcher at the University of Pennsylvania-School of Medicine.

Paul Barron ('10, Choe) is an assistant teaching professor at the University of Missouri-Kansas City.

Kelly Mericer ('08, Powers) made a major transition in her career, from being a trainee in the NIEHS Laboratory of Structural Biology (LSB) Nuclear Magnetic Resonance (NMR) Group, to a position as an applications scientist at the private-sector diagnostic company LipoScience (<http://www.liposcience.com/>).

Stan Manuela Cristina ('08, Takacs) is a research assistant at the National Institute for Research and Development of Isotopic and Molecular Technologies in Romania.

Robyn Hayes ('88, George) is currently an assistant professor of chemistry at New Mexico State University-Carlsbad. Robyn teaches Introductory Chemistry, General Chemistry I and II, and Introductory Organic Chemistry.

Miguel Tristani-Kendra ('84, Eckhardt) is a senior scientist for Eastman Kodak.

Edward Chess ('82, Gross) is a senior director of research at Baxter Healthcare.

Jerry Schulz ('75, George) is currently a technical director for Mid-American Research Chemical Corporation. Jerry has worked for Mid-American Research for about 35 years.

John Vasiliades ('71, Carr) is currently a board certified toxicologist/clinical chemist for Toxicology Labs, Inc. in Omaha, NE.

Helen James Lundack ('70, Broman) taught at Weber State University in Ogden, UT from 1971-2000. Helen retired in 2000.

George Malinski ('69, Brunning) is a R&D director for Hoechst Celanese.

Lawrence Albright ('69, Holtzclaw) is currently an adjunct professor at Missouri Southern State University.

'Alumni Updates' continued on page 15

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