



# ChemNews



## GREETINGS FROM THE CHAIR



Jeff Roberts

Faculty News . . . . .	2
Alumni/IT . . . . .	4
Student News and Awards . . . . .	6
Donors . . . . .	8
Faculty Awards . . . . .	11
<b>Kolthoff Renovation. . . . .</b>	<b>12</b>
Staff News. . . . .	16
Degrees . . . . .	18
Outreach . . . . .	21
Research. . . . .	22



Dear Friends,

Greetings from the Twin Cities campus! It is hard to believe that another academic year has begun. The leaves are changing, the U's parking ramps are full, and the corridors of Smith and Kolthoff Halls are packed with newly arrived chemistry majors and graduate students.

This fall's newsletter is full of news. By the time you read this, the renovation of Kolthoff Hall will be complete. The department hired two new professors. Connie Lu, an inorganic chemist, will arrive on campus as a new assistant professor next September; and Laura Gagliardi, a computational chemist, will move to Minnesota from the University of Geneva in January. Lee Penn was tenured and promoted to associate professor, and Andreas Stein was appointed a Distinguished McKnight University Professor. As usual, the awards flowed in, including the ACS Award in Analytical Chemistry to Pete Carr, an NIH New Innovator Award to Christy Haynes, and an Astronaut Scholarship Foundation scholarship to chemistry major Andrew Jones. The past year was, by and large, a good one!

As you read this issue of the Chemistry newsletter, I hope you take the time to reflect on your days at the U: on the friendships you made, the faculty and staff members who assisted you, and the education you received. While the department continues to provide our students with the excellent opportunities and experiences that they deserve, your financial support will make it possible for us to do an even better job. If you are one of the many alumni and friends who have already contributed to the department, please accept my heartfelt thanks. If you'd like to discuss how you can help shape an even brighter future for the chemistry department, please give me a call. I'd love to hear from you.

Sincerely yours,

**Kolthoff Hall is remodeled! The decibels are down. See page 12**

**Don't forget the University of Minnesota Chemistry Alumni & Friends Breakfast at the 237th ACS National Meeting & Exposition, March 22-26, 2009, in Salt Lake City, UT. The breakfast will be held on Tuesday 24 at 7:30 A.M., location still to be determined.**

## Christy Haynes receives prestigious NIH Director's New Innovator Award



University of Minnesota chemistry assistant professor Christy Haynes is a recipient of the prestigious 2008 New Innovator Award. She is the first U of M faculty member to win this award, which will provide \$1.5 million over five years to build a cell-by-cell

human immune system to identify potential therapeutic approaches for treating allergic reactions and asthma. Haynes and her team of researchers plan to use the University of Minnesota's state-of-the-art Nanofabrication Center to build a model of a human immune system from the bottom up, one cell at a time, in the lab and then carefully measure how the cells communicate with each other when exposed to allergens or other factors.

The NIH Director's New Innovator Award was created in 2007 to support a small number of new investigators of exceptional creativity who propose bold and highly innovative new research approaches that have the potential to produce a major impact on broad, important problems in biomedical and behavioral research. The New Innovator Awards complement ongoing efforts by NIH and its institutes and centers to fund new investigators. Thirty New Innovator Awards were made in 2007. This is the second year of the NIH Innovator Award and it is anticipated that up to 24 awards will be made in 2008.

## University of Minnesota Materials Research Science and Engineering Center awarded NSF grant

The Materials Research Science and Engineering Center (MRSEC) at the University of Minnesota (UMN) has been renewed, the National Science Foundation announced in September. The MRSEC, directed by Professor Tim Lodge, unites established senior and promising junior faculty from six departments and two other universities in a multidisciplinary program to address fundamental issues spanning a broad spectrum of materials research. The research mission of the Center is founded upon four Interdisciplinary Research Groups (IRGs): IRG-1: Engineered Multiblock Polymers; IRG-2: Organic Optoelectronic Interfaces; IRG-3: Magnetic Heterostructures; and IRG-4: Nanoparticle-based Materials.

The UMN MRSEC manages an extensive program in education and career development that targets Tribal Colleges, provides research programs that attract a significant population of female and underrepresented minority undergraduates, and participates in numerous K-12 outreach activities that include a program of

summer camps for high school students and working with the Science Museum of Minnesota. Tim Lodge hangs out with Goldy Gopher at a recent symposium.



### Tim Lodge delivers Dartmouth lectures

Distinguished McKnight University Professor and Lloyd H. Reerson Professor of Chemistry Tim Lodge delivered the 38th Annual Camille and Henry Dreyfus Lectures at Dartmouth in 2008, on April 16 and 17 last spring. The titles of his lectures were

- Block Copolymer Self-assembly:  
*The Flexible Route to Nanostructure Control*
- Block Copolymers in Ionic Liquids:  
*A New Class of Functional Nanocomposites*

### Larry Que accepts Alfred E. Bader Award

Alfred Bader Award in Bioinorganic or Bioorganic Chemistry 2008 recipient Lawrence Que, Jr. (center) is presented his award by sponsor representative Joe Porwoll (left) and ACS President Bruce E. Bursten (right) in New Orleans at the spring 2008 ACS meeting.





## Dr. Laura Gagliardi joins U of M Chemistry Department faculty

**Laura Gagliardi** will be joining the Chemistry Department faculty in January 2009 as a full professor. Laura is an Italian citizen, spending her childhood in Bologna, where she completed her undergraduate studies in 1992 with a major in Industrial Chemistry and later her doctoral degree in Theoretical Chemistry in 1996.

She then spent two years at Cambridge University as a post-doctoral associate in the group of Professor Nicholas Handy.

There she worked on the development of a new Density Functional Theory program, called MAGIC, designed for the study of systems containing heavy elements. It was at that time that she developed a real interest in uranium, plutonium, and other relativistic elements that she still maintains today.

After her post-doctoral work, she returned to Italy as a researcher at the University of Bologna, collaborating closely with groups at the University of Lund from 1999 to 2001. Beginning in 2002 she went to the University of Palermo as an assistant professor of Chemistry, and in 2005 she moved to Switzerland to take an associate professor position at the University of Geneva, where she rapidly built a very active research group.

In 2004 Laura received the annual award of the International Academy of Quantum Molecular Science carrying the citation, "for her innovative contributions to prediction and understanding of new inorganic molecules using quantum chemical methods." She is the author of some 90 publications in international journals. Her scientific interests include the development and application of quantum chemical methods for the study of molecular systems containing heavy elements and the prediction of novel inorganic species and chemical bonds. Laura can be reached at [Laura.Gagliardi@chiph.unige.ch](mailto:Laura.Gagliardi@chiph.unige.ch).



### Chemistry Promotions

Lee Penn: to Professor

### Pete Carr receives 2009 ACS Award in Analytical Chemistry

Pete Carr is to receive the 2009 ACS Award in Analytical Chemistry, a major national award recognizing leadership in the field, at the spring 2009 national meeting of the American Chemical Society next March in Salt Lake City.

This award has been sponsored by Battelle Memorial Institute since 2004 to recognize and encourage outstanding contributions to the science of analytical chemistry, pure or applied, carried out in the United States or Canada. Special consideration is given to independence of thought and originality, or to the importance of the work when applied to public welfare, economics, or the needs and desires of humanity.



### Campus Club Kitchen Chemistry Buffet a huge success

On February 29 Campus Club members were treated to a tasty dinner where the Chemistry Department's Joe Franek demonstrated many common chemical reactions that take place in our kitchens. The effort met with great success and is being replicated in Boston this October. At the University of Minnesota, next year's Kitchen Chemistry Buffet has already been scheduled for Thursday, February 19, 2009. Bring your family!



## Where are they now?

### Karen Schulz: Ph.D. 2006

In the nearly two years since I graduated, I've been working in the Convergence Products group at TransForm Pharmaceuticals, a Johnson & Johnson company located outside Boston, where I have been involved in the development of multiple types of products ranging from transdermal patches and controlled release oral tablets to new materials for contact lenses and antimicrobial coatings. The common denominator for this diverse set of projects is polymer chemistry, and although I have barely synthesized a polymer since I left grad school, my experience in the Hillmyer and Bates groups has proven very valuable, not only in terms of the science, but also with respect to building the relationships needed for such multidisciplinary and collaborative programs. I still miss Minnesota, but I really enjoy my work here and am settling into east coast life. My husband Todd and I recently bought a house, where we live with our two foster cats, and appreciate the opportunities the city offers. And the relatively warm winters aren't bad either!

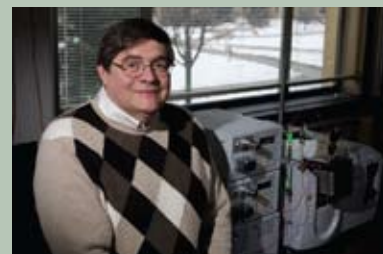


### Dwight Stoll: Ph.D. 2007

will start a tenure-track position as Assistant Professor of Analytical Chemistry at Gustavus Adolphus College in September. Dwight obtained Bachelor of Science degrees in Plant Science and Biochemistry from Minnesota State University, Mankato, and majored in Analytical Chemistry at the University of Minnesota studying with Peter Carr. He took a short leave from his Ph.D. work during the 2005-2006 academic year to teach at Saint Olaf College and also completed a short NIH post-doctoral fellowship in the Department of Medicine at the University of Minnesota studying with Dr. Christine Wendt, M.D., and Professor Gary Nelsestuen.

### Larry Potts: Ph.D. 1972

retired in June as Professor of Chemistry at Gustavus Adolphus College where he taught since 1972. Larry received his B.A. at Oberlin College and at the U of M he majored in analytical and inorganic chemistry, studying electrochemistry with Peter Lingane and Hal Swofford. Over the years Larry has sent dozens of Gustavus graduates on to the graduate chemistry program at Minnesota. To kick off his retirement, Larry is joining Pete Carr's lab this coming year as a "post-retirement postdoc," and will study 2-D chromatography. When asked about this back-to-school project at the back end of a career, Larry thought that it may be fairly unique; an innovative way to continue to learn and contribute after formal retirement.



## The place: Highland Park The event: Fall Departmental Picnic

The year:  
mid- to late-  
1970s

The dog:  
Jethro

Can you help  
identify  
the people?



Alumni: please send all  
your news to Debbie at  
[schoe030@umn.edu](mailto:schoe030@umn.edu)



And who is this  
and when???



## Alumni support is more important than ever

by Kathy Peters-Martell

**Now, more than ever:** it's a phrase used to encourage charitable giving during challenging times. And challenging times are upon us: the stock market is down; gas prices are up; and the economy is rocky. Even more troubling, cuts in state allocations and increasing costs of providing an excellent education mean that our students face tremendous financial pressures to obtain their degrees at a time when educating the next generation of engineers and scientists is crucial.

Charitable gifts are vital to the department. Your gift to the Department of Chemistry will benefit our students, faculty, and community now and into the future.

### Why should you make a gift?

- To ensure the future of the department:** outright gifts support the programs and daily activities of the Chemistry department, while endowment gifts ensure a strong and stable financial base in perpetuity.
- To support your passions and your priorities:** gifts to the Special Project Fund support the department and provide funding for scholarships. Gifts can also be designated to support particular projects and programs within the department.
- To transform lives:** private gifts help the department invest in people beyond the limits of state funding and help the college achieve extraordinary result.
- To give back:** donors give to Chemistry and IT to repay what they have gained - as alumni, citizens, and taxpayers and to inspire others to follow their example.
- To advocate for the U:** contributions send a strong message to the legislature of how much our graduates and friends value the University.

Please consider supporting the Department of Chemistry with gift to the Special Projects Fund or to a specific program. Your contribution will make a difference.

## Wayne Gladfelter named Institute of Technology Associate Dean for Academic Affairs



Wayne Gladfelter now, above in his office, and then! Can you guess what year?



Institute of Technology Dean Steven L. Crouch has appointed long-time University of Minnesota chemistry professor Wayne Gladfelter as the college's Associate Dean for Academic Affairs effective July 1, 2008. Gladfelter has served as interim associate dean for the past year.

Gladfelter has been a chemistry faculty member at the University of Minnesota since 1979 and served as the Department of Chemistry chair from 1999 to 2005.



## Kathy Peters-Martell takes position with IT as Senior Development Officer

Kathy Peters-Martell recently joined the Institute of Technology as a Senior Development Officer, specifically assigned to the departments of Chemistry and Aerospace Engineering and Mechanics. She is very excited to be a part of these interesting departments and looks forward to working with the faculty, staff, and alumni of these renowned programs.

Kathy has more than 20 years of experience in educational fundraising, most recently as the Director of Development for Mounds Park Academy, where she completed a \$13 million dollar capital campaign.

Prior to her position at Mounds Park Academy, Kathy served as a Major Gifts Officer for William Mitchell College of Law from 1995-2004. She was also the Director of Development for the Raptor Center at the University of Minnesota from 1990-1995.

## UNDERGRADUATE AWARDS

### Angela Holmberg wins 2008 Barry M. Goldwater Scholarship

The Goldwater Scholarship is awarded to outstanding Sophomores and Juniors who intend to pursue research-oriented careers in mathematics, science, or engineering. This program began in 1986, and at the University of Minnesota-Twin Cities, nominations are made by a faculty committee. To date, 38 University of Minnesota-Twin Cities students have won Goldwater Scholarships.

Goldwater Scholar Angela Holmberg is a Sophomore Honors student in the Institute of Technology majoring in Chemistry and Chemical Engineering. Her long-term goals include earning a Ph.D. and pursuing a career in polymer chemistry research and college teaching. Angela has been pursuing undergraduate research under the direction of Elmore H. Northey Professor of Chemistry Marc Hillmyer. Angela, a Minnesota resident, is the second person from her family to win a Goldwater Scholarship while pursuing an undergraduate degree at the University of Minnesota Twin Cities; her brother Vincent Holmberg was a 2004 Goldwater Scholar.

### U student Andrew Jones presented scholarship by Apollo 15 astronaut



Andrew Jones, a senior Honors student, has been awarded a \$10,000 scholarship from the Astronaut Scholarship Foundation (ASF). On September 8, 2008, he received a ceremonial check from Col. Al Worden, who served as command module pilot on the Apollo 15 mission, during which he orbited the moon with crewmates Dave Scott and Jim Irwin.

The Astronaut Scholarship is the largest monetary award given in the United States to science and engineering undergraduate students based solely on merit. Only 19 of the awards are disbursed each year to college students majoring in a science or engineering field.

Jones is pursuing a dual major in chemical engineering and chemistry and focuses his research on biofuels and renewable sources of energy. He also leads the U's Active Energy Club, which educates the campus and community about renewable energy. He plans to go to graduate school to study catalytic reaction engineering.



Judges for the event this year included alumni Drs. Joe Dooley and Dupont Durst and Profs. Angela Wilson and Sheila David.

Right to left: Chemistry Chair Jeff Roberts awards winners Erick Leggans, Anne Mohns, and Alexi Young.



### 7th Annual Graduate Student Research Symposium held in May

The seventh annual Chemistry Graduate Student Symposium was held May 20th, 2008 in the Electrical Engineering and Computer Science Building (EE/CSci) on the University of Minnesota's Minneapolis campus. The symposium consists of research presentations by (mostly) third-year graduate students in the Chemistry Ph.D. program. Three concurrent sessions of presentations 25 minutes in length filled the entire day.

All presentations were formally assessed by a committee of faculty members and distinguished UMN alumni guests, and travel awards of \$750 were presented to those individuals judged to have given the best seminar in each of the three sessions.

This year's winners were Erick Leggans, Anne Mohns, and Alexi Young.



This year's Research Symposium was facilitated by Chemistry Department Administrative Assistants Sheryl Frankl (left) and Susan Wrayge (right)



## GRADUATE AWARDS

2007-2008 Graduate School Doctoral  
Dissertation Fellowships

**Paul Boswell** (Buhlmann) ("*Receptor-  
Based Sensor Design with Fluorous  
Matrixes for Enhanced Robustness and  
Selectivity.*")

**Neeraj Rai** (Siepmann) ("*Molecular  
Simulations for Organic Solids: Force  
Field Development, Stability and  
Screening of Polymorphs and Hy-  
drates*")

**Zhiyong Wang** (Stein) ("*Porous Ma-  
terials for Energy Storage and Cataly-  
sis*")

2008-2009 Graduate School Doctoral  
Dissertation Fellowships

**Kelly Anderson** (Siepmann)

**Robert Jilek** (Ellis)

**Alicia Peterson** (McNeill)

**Jake Rafferty** (Siepmann)

**Yu Zhang** (Carr)

Wayland E. Noland Outstanding  
Graduate Teaching Award

**Susan Brown** (Hoye)

Honorable Mention: **Erik Goebel**

Honorable Mention: **Erick Leggans**

Robert L. Ferm Outstanding Graduate  
Teaching Award

**Yu-Shen Lin** (Haynes)

Honorable Mention: **Lucas Fiedler**

Honorable Mention: **Nicholas Frost**

Honorable Mention: **Bo Wang**

2008-2009 Frieda Martha Kunze  
Fellowship

**Melissa Fierke** (Stein)

2008-2009 Merck Research  
Laboratories Fellowship in Analytical/  
Physical Chemistry

**Yaohua Wang** (Arriaga)

2007-2008 Gleysteen Award

**Truong Giang Hoang** (Douglas)

**Eric Olson** (Buhlmann)

**Bo Wang** (Truhlar)

2008-2009 Graduate School  
Fellowships

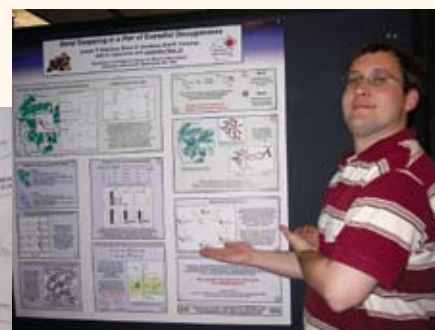
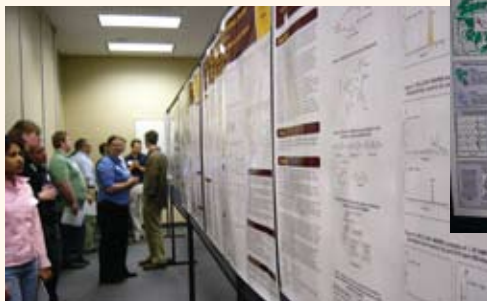
**Emily Pelton**

**Nicholas Petkovich**

**Patrick Willoughby**

## NIH Training Grant Symposium held on St. Paul campus in May

The University of Minnesota NIH Training Grant Symposium is a day-long event designed to highlight new advances at the interface of chemistry and biology. Under the direction of Larry Que, this is the sixth year that the symposium has been organized by students with the primary goal to facilitate interactions between graduate students and distinguished faculty. The 2008 Symposium was held May 28 on the University of Minnesota St. Paul campus. The keynote Speaker was Michael Marletta, University of California, Berkeley, whose lecture was titled "Gas Sensing in Biology: Fine Tuning the Chemistry." In addition, papers were presented by Jim Maher (Mayo Clinic); Edgar Arriaga (UMN); Lynn Pottenger (Dow Chemical-Toxicology); David Kingston (Virgia Tech); Kathlynn Brown (University of Texas, Southwestern); and UMN student Rachel Loeber. Posters were presented by UMN students from a variety of departments.



Above, Que student Erik Farquhar presented his poster.

2008-2009 3M Science and Technology  
Fellowship

**Audrey Guerard**

2008-2009 Dr. Venkateswarlu  
Pothapragada and Family Graduate  
Fellowship

**Kaustubh Mote**

**Naveen Rondla**

2008-2009 Wayland E. Noland  
Fellowship in Organic Chemistry

**Carly Andresen**

**Evgeny Beletskiy**

**Kyle Kalstabakken**

**Patrick Lang**

2008-2009 Lester C. and Joan M. Krogh  
Endowed Fellowship

**Lindsay Rymes**

**Joshua Speros**

**Bess Vlasisavljevic**

2008-2009 Kenneth E. and Marion S.  
Owens Endowed Fellowship in Chemistry

**Darren Ceckanowicz**

2008-2009 John Wertz Fellowship in  
Chemistry

**Kathleen Beutel**

**Brynna Jones**

2008-2009 Graham N. Gleysteen  
Fellowship in Chemistry

**Deanna Miller**

**Brian Radak**

NSF Graduate Research Fellowship  
**Melissa Maurer-Jones** (Haynes )

Pfizer Graduate Travel Award

**Kyle Bantz** (Haynes)

Mary Haga Travel Grant

**Sara Love** (Haynes)

ACS Travel Grant, Spring and  
Summer 2008

**Aaron May** (Hoye)

**Qing Li** (Wagner)

**Brooke Carlson** (Zhu)

**Nicole Settergren** (Buhlmann)

# Many Thanks to our Donors in 2007-2008

**Individual support** from alumni and friends is crucial to our department. Thanks to your generosity, we can offer fellowships and scholarships to our outstanding students, retain our best faculty, and implement projects to improve our facilities. The **Chemistry Special Projects Fund** is the department's main discretionary fund, which supports student fellowships and awards as well as the bulk of the other activities mentioned in this newsletter. With gratitude, we acknowledge our 2007-2008 donors.

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Mr Donald R Theissen  
Ms Tracy R Thompson  
Mr Brian R Thoreen  
Dr James R Throckmorton  
Mr Steven J Tinker  
Dr Christine Todd & Jon Todd  
Dr Wade J Tornquist  
Mr Charles A Triplett  
Erik & Adria Tyndall  
Susanne M Urban  
Dr Rebecca A Urbanek  
Mr Loc X Van  
Dr Gregg A Vandesteeg  
Dr James R Vyvyan  
Dr James J & Elizabeth R Wade  
Dr Terence C Wagenknecht

Dr Edward A Walters  
Bo Wang  
Dr Hsin-Fu Wang & Shu-Kuang  
Chen  
Dr Joseph & Carolyn Warden  
Dr Mark W Watson  
Dr A Fran Watson  
Gerald E Weineck  
Mr Edward O Welke  
Dr Edward L Wheeler  
Ms Dawn M Witherill  
Dr Nancy E Witowski  
Mr Wayne C & Mary L Morris  
Wolsey  
Dr Xinmin Xu  
Mr Thomas K Yue  
Dr Lee R Zehner  
Dr Hongyu Zhao  
Dr Yan Zhao & Bin Liaon

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## Chemistry Restricted Funds

Mrs Madolyn Youse Babcock  
Ann C Brey  
Mr Paul D Brey  
Dr Jonathan N Chasman  
John H Dygos  
Dr Charles M Hall  
Dr Yutaka Okinaka  
Dr Thomas B Reddy  
Abbott Laboratories  
Agilent Technologies Fdn  
Mr Bruce N Bastian

Ms Rebecca S Beilke  
Mr Robert D Berg  
Dr Newman M Bortnick  
Dr Murray W Brockman  
Dr Colleen M Byron  
Cameron Health Inc  
Mr Philip A Cartier  
Dr Miran K Chantooni Jr  
Philip J Chenier  
Dr Johannes F Coetzee  
Dr Kathleen A Davis

Rodney D Dekruif  
Mrs Gerda Ann Gassman  
Mr Lloyd W Goerke  
Dr Thomas G Goplen  
Hach Scientific Fdn  
Dr Francis J Haddy  
Dr Joseph B Hanson  
Dr George E Hartwell  
Dr Henry A Havel  
Dr Roberta M Humphreys  
Instrumentation Laboratory Inc  
Dr Roy A Johnson  
Dr Bruce D Johnson  
Dr Lester C Krogh  
Prof Timothy P Lodge  
Lian Luo  
Ms Patty L McNally  
Dr George J Meisters  
Monsanto Co  
Dr George W Parshall  
Willis B Person  
Dr Joseph P Porwoll  
Steven C Riemer  
Dr David J Schreck  
Dr Karen A Schultz  
Mr William J Shugard  
Mr Avery W Stephens  
Mr John A Wertz  
Mrs Florence C Wertz

### ChemNews Fall 2008

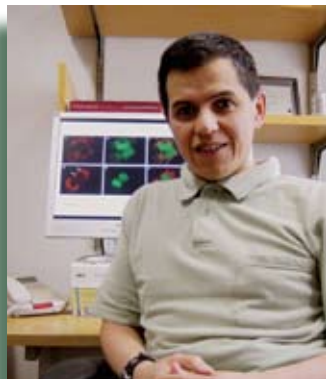
**Newsletter Committee: Jeff Roberts, Marc Hillmyer,  
Deborah Schoenholz**  
**Production: Deborah Schoenholz**

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by Chris Lundby

## Edgar Arriaga Fesler-Lampert Chair in Aging Studies (U of M) 2007-08



In 1999, the Chair was created by the Center on Aging with support from the University of Minnesota Graduate School and the generosity of David and Elizabeth Fesler. This endowed chair funds researchers and scholars who wish to obtain up to a year's release time or other support to pursue an aging related project. Arriaga credits the Scientists in Aging Research group with inspiring his present interests, applying his training in Analytical Chemistry and Electrophysiology with the realization that his research is developing the analytical tools to overcome several difficulties in investigating the role of mitochondria in aging. Arriaga is the first chemistry faculty to hold this chair.



## Dave Blank Charles E. Bowers Faculty Teaching Award (2008)

The Charles E. Bowers Faculty Teaching Award was established in 2000 by alumnus John Bowers (Physics '76) in honor of

his father, Professor Emeritus Charles E. Bowers, this award recognizes an outstanding IT professor who has demonstrated exceptional interest and commitment to teaching.

A former student of Professor Blank's wrote in her supporting nomination letter, "Professor Blank taught me that although concepts may be tough, just like life, through hard work and a conscious focused effort any obstacle may be overcome. I believe that this is what makes him such a motivational professor, and even more significant, an inspirational human

being. He encouraged his students to be passionate about their academic work, and challenged us to apply academic concepts to our surroundings, research, and academia. For all of the preceding accretions and many more that are not divulged in this letter, I believe that Professor David Blank rightly deserves this award for his excellence in teaching and outstanding reputation with his peers and students." Blank joins Wayland Noland (2006) in receiving the Bowers Award.

## Christy Haynes NSF Faculty Early Career Development Award (2007)



The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Other faculty receiving this award include Mark Distefano (1994), Andreas Stein (1997), Marc Hillmyer (2001), Kris McNeill (2003), and Lee Penn (2004).

## Ken Leopold Institute of Technology Taylor Distinguished Professorship



These Taylor Professorships, awarded by the Institute of Technology, were created to encourage and recognize the college's best and most dedicated undergraduate educators. Anyone who has worked with Ken knows that he is richly deserving of this recognition. Ken joins Gary Gray (2000) as a Chemistry recipient of this award.

*continued on page 14*



**By Stan Bonnema  
Facilities Administrator**

**Serendipity.** It isn't a word one would normally find in the same sentence as "laboratory renovation," but, when describing the Kolthoff renovation project, these words go together well. It's 1999 and several buildings located on the Mall, including Kolthoff Hall, have been evaluated for general building condition, code issues, and accessibility. A voluminous report was written and, like many of these studies, was destined to collect dust on University shelves. We know how these things work—it takes years for a project to move from desire to legislative dollars, the Smith Hall renovation of the mid-80s being a good example. Imagine our collective departmental surprise, then, when we received the following email from Orlyn Miller, University Planning, on June 23, 2003:

*"The preliminary capital request for 2004 includes the remodeling of...Kolthoff Hall.. as part of the HEAPR request. The project would address deficiencies in the HVAC system and other critical building systems, and remodeling of the space recently vacated by biology."*

I remember thinking, "Good grief—Kolthoff Hall isn't in that bad of shape. I helped move into the building when I started working here in 1970"! When I mentioned this to my wife, she replied, "Go look at yourself in a mirror and see if you are in the same shape as you were 35 years ago." Ouch. She was right, of course; a laboratory building, especially one used for chemical research, ages much more quickly than, say, an office or classroom building. Ventilation systems wear out by running 24/7, chemical spills over

the years destroy casework and flooring materials, and, most importantly, building codes and other safety guidelines change significantly over a 35- year period.

Prior to the actual start of a renovation project, much ground-work must be laid, including the bidding method and the selection of an architect and general contractor. The University's Capital Planning and Project Management (CPPM) is the department responsible for either making these decisions or initiating the process. For the Kolthoff renovation, CPPM decided on a bidding method known as "design-build," a contracting process that brings designers and contractors together early in the detail design portion of a project. The owner clearly defines the standards and general specifications expected from a project, and the designer-builder team works together to satisfy those requirements. Because the team works together, they are able to develop innovative and efficient solutions to meet the owner's expectations. The design-build process differs from the traditional method by overlapping design and construction, allowing construction to begin after a portion of the design has been completed. Because both design and construction are performed under the same contract, claims for design errors or construction delays owing to design errors are often greatly reduced. These disputes are resolved within the design-build team rather than among the owner, designer, and contractor.

Interestingly, for a project of this scope the University does not select an architectural firm on its own. Orlyn Miller, Director of Planning and Architecture, works with the Minnesota State Designer Selection Board to select architectural firms for large University projects. For the Kolthoff renovation, the architectural firm of RSP Architects was chosen. RSP Architects and the University then interviewed general contractors and selected Mortenson Construction who, in turn and with the University's input, selected Hunt Electric and Harris Mechanical as the electrical and mechanical subcontractors.

Another difficult problem that needed to be solved prior to the start of renovation was temporarily relocating Kolthoff occupants displaced during the renovation of their labs and offices. Originally, three floors of research and office space in 717 Delaware St. SE, a building recently vacated by the Minnesota Department of Health, was designated as "swing space" for this purpose. However, the University decided to allot 717 Delaware to the Academic Health Center and to give Chemistry a much-

*Many thanks to the many who served, top to bottom and left to right:*

- 1 - Barry Morgan, M.A. Mortenson
- 2 - Lane Schoening, M.A. Mortenson
- 3 - Doug Lucht, Sebesta Blomberg & Associates
- 4 - Roger Wegner, UofM Project Manager
- 5 - Blair McNeil, M.A. Mortenson
- 6 - Jim Magrew, Harris Companies
- 7 - Tom Young, Hunt Electric Corporation
- 8 - Greg Berger, UofM Facilities Management
- 9 - Dustin Bennis, RSP Architects
- 10 - Bob Kilgore, Sebesta Blomberg & Associates
- 11 - Bryan Gatzlaff, RSP Architects
- 12 - Tim Towberman, M.A. Mortenson





# Chemistry On The Mall

## Kolthoff Hall Renovation

### —Complete!—

reduced amount of swing space in the Bioscience Tower on the St. Paul campus. This decision increased the number of project “phases” from two to four and also added at least six months to the project. The prospect of holding undergraduate labs on the St. Paul campus was so unappealing that stockroom personnel and faculty put their heads together and devised a plan that allowed all undergraduate labs to remain in Kolthoff and Smith Halls. The Bioscience Tower was used to house Professor Ilja Siepmann’s research group from May of 2006 through June of 2007. All other Kolthoff research groups were moved either once or twice to swing space in both Kolthoff and Smith Halls.

So, in May of 2006 the renovation of Kolthoff Hall began and, as I write this in September of 2008, the project is nearly complete. Since there is neither time nor space to list everything that has been done over the past 2+ years, I will recap some of the major improvements that have been provided as a result of this renovation. This list, not in any particular order of importance, includes the installation and/or construction of the following:

- a sprinkling system in all labs and offices.
- seamless epoxy flooring instead of vinyl tile in all research and teaching labs.
- three “vector” exhaust fans to replace dozens of individual fume hood exhaust fans resulting in lower maintenance and energy costs.
- six-foot, efficient, low-flow fume hoods replaced old, dilapidated, fume hoods.
- a central computer network with many more ethernet connections.
- new casework in all research and teaching labs.
- a modern fire protection system providing more accurate alarm locations.
- a much larger emergency generator providing back-up power to fresh air fans, fume hood exhaust fans, and refrigerator outlets in each lab in addition to emergency lighting in all offices and labs.
- refurbishing the fresh air supply fans, along with cleaning and patching distribution ductwork, significantly increased the efficiency of the fresh air distribution system.
- use of ground fault interrupted (GFI) outlets in all labs.
- vacuum pump cabinets under fume hoods, providing easy access for maintenance and operation.
- dedicated ovens for drying glassware.

- storage rooms connected to research labs providing space for chemical storage, vented solvent cabinets, refrigerators, etc.
- research office space separate from laboratory space
- good quality furniture for all faculty, staff, and student offices.
- a digital control system to monitor the complex HVAC components.
- replacement of both east and west facades with new glass and entryway doors

The first floor, southwest corner of Smith Hall was also renovated as part of the Kolthoff project. This area now contains a well-equipped, upper-division computer lab, a large research area for computational faculty and their students, and a large conference room.

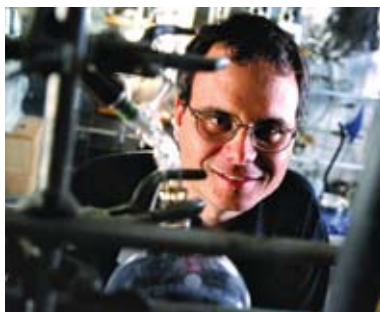
No project of this magnitude and complexity could be completed satisfactorily without the cooperation of everyone involved. The architects, engineers, and contractors worked very closely together throughout this project to provide the best possible outcome for the best possible price. A sincere thank-you to everyone involved with this project:

### Building occupants

Some research groups were fortunate in being able to move directly from existing labs into renovated space while other groups were required to move into swing space for a time prior to moving to their final location. In all cases, every research group, every graduate student, postdoc, and faculty member were very cooperative and understanding during these difficult and disruptive moves. Ted Tolaas and his teaching stockroom crew were also very helpful and resourceful in combining labs, rearranging schedules, boxing up desk equipment, etc., avoiding the necessity of moving teaching labs to the St. Paul campus and saving the project tens of thousands of dollars in the process. Also, a special thank-you to Bruce Moe and his staff for doing

continued on page 17





**Kris McNeill  
Horace T.  
Morse/University of Minnesota  
Alumni Award  
for Outstanding  
Contributions to  
Undergraduate Education**

Each year since 1965, the University of Minnesota has recognized a select group of faculty members for their outstanding contributions to undergraduate education. This honor is awarded to exceptional candidates nominated by colleges in their quest to identify excellence in undergraduate education. In addition to honoring individual faculty members, the award contributes to the improvement of undergraduate education at the University by publicizing their work to serve as a resource for the whole faculty. The award, named for a former dean of General College, is made possible through generous support of the University of Minnesota Alumni Association and the Office of the Senior Vice President for Academic Affairs and Provost.

A former student of Professor McNeill writes, "Kris was more than an amazing professor. He is rare to come by, especially in the science departments. Kris McNeill has massive knowledge about chemistry and yet somehow he was able to make it seem so simple to the new freshmen in 1011 that bonds, elements and reactions became second nature to me. Not only did I enjoy going to his class, I looked forward to it every week. The best way to learn is when you are having fun, and I was always smiling in his class; he made chemistry fun. Something that I will never forget is when I raised my hand to ask him a question in our 500 plus lecture and he called me out by first name. I had never sat in the front row and I had never introduced myself to him. This, I thought, is a genius; he knows an obscene amount about chemistry, but he also has amazing social skills." Seven other chemistry professors have received this award: Robert Brasted (1970) [deceased], Lou Pignolet (1990) [retired], Larry Miller (1993) [retired], Gary Gray (1996), Kent Mann (2003), Ken Leopold (2005), Mark Distefano (2006), and Tom Hoye (2007).

**R. Lee Penn  
Taylor Career  
Development  
Award**



This award recognizes exceptional contributions to teaching by a candidate for tenure and is presented by the University of Minnesota's Institute of Technology. Professor Penn joins Bill Tolman (1994), Marc Hillmyer (2002), and Kris McNeill (2006) in receiving this award.



**Jeff Roberts  
American  
Association for  
the Advance-  
ment of Science  
Fellow**

Election as a Fellow of AAAS is an honor bestowed upon members by their peers. Fellows are recognized for meritorious efforts to advance science or its applications. Newly elected Fellows were recognized for their contributions to science and technology at the Fellows Forum held on 17 February 2007 during the AAAS Annual Meeting in San Francisco. The new Fellows received a certificate and a blue and gold rosette as a symbol of their distinguished accomplishments. Other fellows include Wayland Noland (1987, Don Truhlar (1994), Larry Que (2001), Wayne Gladfelter (2007), and Bill Tolman (2007).

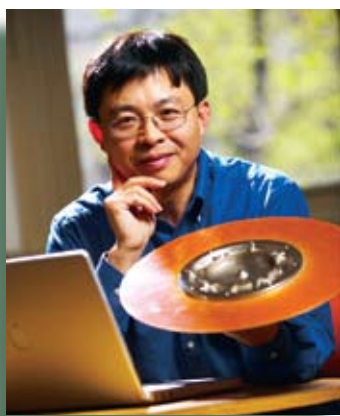
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to the  
Chemistry Department's  
Special Projects Fund**

by enclosing your gift in the envelope provided in this newsletter. Help support our faculty and students.



**Andreas Stein  
(2007) and  
Xiaoyang Zhu  
(2008)  
Merck Professor  
of Chemistry**

This professorship is awarded for outstanding contributions to teaching, research and service. The two Merck Professorships are funded through generous gift endowments to the Department and matching funds from permanent University fund resources. Kent Mann holds the other Merck Professorship. Professor Stein was subsequently awarded the Distinguished McKnight Professorship in 2008 (see below)! Other faculty who hold Departmental Professorships include Marc Hillmyer (Northey Chair), Tim Lodge (Ryerson Chair), Kent Mann (Merck Chair), Larry Que (3M Professorship), Bill Tolman (Smith Chair).



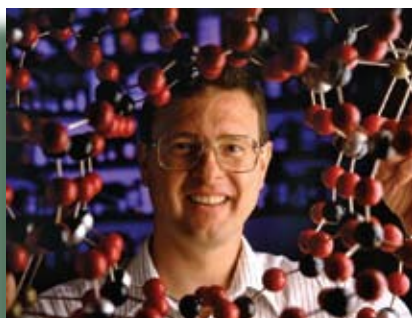
*Xiaoyang Zhu*

leading figures in the field of templated porous materials. To have had nearly 4,000 citations at this stage of one's career is exceptional. The number of invited talks that Andreas has given at national and international conferences, at universities, industrial laboratories and research institutes is very impressive and further indicates his high standing in the community." Stein joins Professors Barany (1997), Tolman (2000), Lodge (2001), Cramer (2003), Roberts (2005), and Siepmann (2006) in receiving this high distinction.

**Don Truhlar  
Dudley R.  
Herschbach  
Award for  
Excellence  
in Research in  
Collision  
Dynamics  
for 2009**



In 2007, Dynamics of Molecular Collisions inaugurated a pair of awards to commemorate outstanding contributions, experimental and theoretical. The award recognizes work that is "bold and architectural ... inspiring and empowering." Don will be presented with the award at the 2009 Dynamics of Molecular Collisions Meeting next summer at Snowbird. This will be the second presentation of the Herschbach Award.



*Andreas Stein*

**Andreas Stein  
Distinguished  
McKnight  
University  
Professorship**

These Professorships are made possible by an endowment gift from the McKnight Foundation to the University of Minnesota Graduate School for the purposes of supporting faculty development. The goal of the Distinguished McKnight University Professorship program is to honor and reward the University of Minnesota's highest-achieving faculty who recently attained full professor status—especially those whose careers have developed at the University, whose intellectual work and reputation are identified with Minnesota, and whose work has brought great renown and prestige to the University of Minnesota.

An excerpt from one of the supporting letter reads, "There is no question that Andreas is one of the

**Attention Alumni**

**Send us your update; let us know what you think.**

**We want this publication to reflect your interests. Send comments to**

**Debbie at:  
ChemNews**

**Department of Chemistry  
207 Pleasant Street S.E.  
Minneapolis, MN 55455  
schoe030@umn.edu**

## Staff Changes

### In Memoriam: William Johnson 1956 - 2008

Bill Johnson worked in the Chemistry Department's Research Stockroom from May 12, 1990 until shortly before his death on June 23, 2008.

When Bill was diagnosed with lung cancer, he researched as much as possible about the disease and was not afraid to try every possible avenue to beat it. Everyone who knew Bill was impressed by his courage and perseverance during the last two years.

He had a great love for his dog Shadow and many other pets over the years. Bill kept a 75-gallon aquarium in the stockroom and housed several different types of creatures, including tropical fish, horned toads, and desert iguanas (lizards). Food for the horned toads (fire ants and crickets) would occasionally get loose. The fire ants were often spotted near the stockroom and crickets could be found hopping all over the subbasement of Smith Hall for a few months following their escape.

He was well read in the politics of our country and the world. Bill enjoyed reading the New York Times as well as the Wall Street Journal and always had something to say about our government.

Bill's work history included very diverse occupations, including training as a chef at Saji Ya, a Japanese restaurant in St. Paul, and sharpening saw blades and repairing small engines at Twin City Saw. Bill also ran his own business clearing brush and logs out of clear-cut areas in Wisconsin. He had a great knowledge of Swagelok fittings and would help stockroom customers put these together for use in their labs. Bill's experience and knowledge in these areas in the stockroom will be greatly missed by all.

Memorials in memory of Bill and his dog Shadow are preferred to the Dodge Nature Center, 365 Marie Avenue West, West Saint Paul MN 55118.

**Patti Combs** has agreed to assume the responsibilities of Chief Financial Officer for the Department of Chemistry effective Monday, April 28. Patti has been with our department as a Principal Accountant since January of this year in the roll of grants management. She is a Certified Approver and has over 20 years of experience in both accounting and human resource functions at the U of M. She is taking the place of Roxanne Horkey, who left the Department of Chemistry to accept a new position in the S.O.U.P Administrative Center in the Medical School. Sophia Herrera has also accepted a new position and promotion within the S.O.U.P Administrative Center in the Medical School effective April 28, 2008.

**Jason Radde** began employment in the Chemistry Department as a Senior Lab Attendant in our Research Stockroom. Jason was born in St. Louis Park, MN and graduated from the Waconia High School. Jason lives in Minneapolis and enjoys watching movies, camping, and hunting.

**David Lauer** comes to the Chemistry Department as a Senior Lab Technician in our Departmental Stockroom, S17 Smith Hall. David was born just across the river at Fairview-Riverside and grew up in St. Paul. David and his wife, Elizabeth, were married on July 18 and currently reside in Minneapolis. He enjoys fishing, hunting, biking, reading, and traveling.

### Dale Randall retires

Dale Randall, longtime Senior Stores and Delivery Manager, retired this year after 42 years of service to the University of Minnesota. Thirty-eight of those years were spent here in Chemistry, and Dale's departure is sure to make a very big hole in our operations, which has been turned over to the familiar face of Vic Munsche to remedy. The Department threw Dale a little going-away party on March 7 of 2008, and we all sincerely send our best wishes as she moves on to pursue her many passions, including shitzhus, photography, gardening, and travel.





2008  
Civil Service  
Award Winners



Lynne Johnsrud  
Nancy Hagberg

**Sue Young** started working as a Principal Accountant in our Accounting Office on June 23rd., primarily as grants administrator. Sue was born in St. Paul and graduated from Kellogg High School. Sue lives in Woodbury with her son, Shayne, who just finished a 4-year tour of duty with the Army. In her spare time Sue likes to read, garden and is also active in Blue Star Moms, a support group of mothers who have children in the military.

**Steven Baldwin** began employment in our department on Tuesday, June 17, as a Senior Lab Technician in our organic and analytical stockrooms. Steve grew up in Spring Lake, Michigan where he graduated from high school before attending the University of Michigan, where he received a BS in Industrial Engineering. Steve is an avid biker who lives in the Whittier neighborhood of Minneapolis and is active in the Whittier Alliance Neighborhood Association., the Soo Line Community Garden, and the Lake Harriet Sailing Club.

**Kolthoff Renovation** continued from page 13

a great job in moving and re-connecting computers and in the delicate task of decommissioning hundreds of etherjack connections from our local area network and moving them to the University's network.

**University staff**

Owner's Representatives are assigned by CPPM and are the liaisons between the University and the architects, engineers, and contractors; responsible for all aspects of a project, from initial design to final close-out. The Kolthoff renovation project was very fortunate in having Roger Wegner as its Owner's Representative. Roger's knowledge of every facet of the construction industry is amazing and the fact that this project was completed on time and on budget is owing, in large part, to his overall management capability.

Jay Denny, Principal Engineer with the University's Energy Management Group, was instrumental in designing and trouble-shooting many complex energy-saving systems installed as part of this renovation. Not only that, he successfully obtained hundreds of thousands of dollars in additional University funding for these projects.

Greg Berger, Assistant District Director for Facilities Management, was very helpful in providing FM assistance throughout this project and in assimilating the renovated areas into FM's maintenance and repair programs

**Architects and engineers**

RSP Architects Brian Gatzlaff (lead), Dustin Bennis, John Merten and Melissa Jancourt were great to work with throughout this very complicated project. Bob Kilgore and Doug Lucht with Sebesta Blomberg & Associates were the primary engineers on this project and did a great job.

**Contractors**

Blair McNeil and Barry Morgan with Mortenson Construction provided the over-all leadership to this project from the construction side and did a great job. A big thank-you to Tim Towberman and Lane Schoening who were the lead Mortenson superintendents on this project. Their helpfulness and ability to solve problems quickly on a daily basis were key to the success of this renovation project.

Jim Magrew from Harris Companies, the mechanical sub-contractor, and Tom Young from Hunt Electric Corporation, the electrical sub-contractor were also great to work with and really did their part in making this a successful renovation project.

I had the privilege of working with the above individuals for the past 2+ years, meeting with them in "Progress Meetings" every Wednesday (a total of over 100 meetings!). A sincere thank-you to everyone involved in helping to make this renovation project a success!

Stan Bonnema for the Chemistry Renovation Committee:  
Larry Que, Chair; John Ellis; and Bill Tolman

# Chemistry Degrees Granted

July 1, 2007 to June 30, 2008

Ph.D. Degrees	Advisor	Thesis Title
Jessica Marie Allen	Ellis	<i>Synthesis of Novel Low-Valent Transition Metal Isocyanides.</i>
Dmitry Andreyev	Arriaga	<i>Development of Models and Analytical Approaches of Individual Mitochondria.</i>
Paul G Boswell	Buhlmann	<i>Receptor-Based Sensor Design with Fluorous Matrixes for Enhanced Robustness and Selectivity.</i>
Adam C Chamberlin	Truhlar and Cramer	<i>The Calculation of Bulk Solvation Phenomena.</i>
Ying Chen	Taton	<i>Photo-cross-linked Surfactant Shells Improve Stability and Bioconjugate Chemistry of Nanoparticle Biolabels.</i>
Chin Chu	Bates	<i>Synthesis, Characterization and Properties of Model PCHE/PE Block Copolymers.</i>
Erin E Dahlke	Truhlar	<i>Improved Methods for the Modeling of Water and Ice: I. Development and Assessment of Density Functional Methods. II. Development and Application of the Electrostatically Embedded Many-Body Expansion.</i>
Betsy Lin Edhlund	McNeill	<i>Natural Water Photochemistry: Singlet Oxygen Production and the Degradation of Dissolved Organic Nitrogen and Organic Pollutants.</i>
Bryan Ross Fonslow	Bowser	<i>Optimization of the Fabrication and Operation of a Micro Free Flow Electrophoresis Device.</i>
Andrew Healy	Lipsky and Blank	<i>Photoionization of Isooctane and N-Octane in Intense Laser Fields: The Effect of Irradiance on Ionization Rates and Electron Dynamics.</i>
Sara Lynn Isley	Penn	<i>Controlling Phase Content and Particle Size in Sol-Gel Synthesized Titanium Dioxide Nanoparticles.</i>
Teresa L Jentsch	Penn	<i>Reactivity of Aluminum-Doped Iron Oxide Nanoparticles.</i>
Chanda Marie Ciriacks Klinker	Bowser	<i>Instrument and Assay Development for In Vivo Amino Acid Analysis.</i>
Eric J Klinker	Que	<i>High-Valent Iron Compounds Supported by Pentadentate Ligands.</i>
Brandie Joy Kovaleski	Musier-Forsyth	<i>Characterization of the Interaction between HIV-1 Gag and Human Lysyl- tRNA Synthetase: Implications in the Priming of HIV-1 Reverse Transcription.</i>
John Leonard Lewin	Cramer	<i>Theoretical Characterization of C-H Bond Activation in Organometallic and Biomimetic Systems.</i>
Nathaniel Alexander Lynd	Hillmyer	<i>The Effects of Polydispersity on Block Copolymer Self-Assembly.</i>
Stephen R Miller	Leopold	<i>Vibrationally Resolved Anion Photoelectron Spectroscopy of Metal Clusters.</i>
Mithun Mitra	Musier-Forsyth	<i>Dissecting the Nucleic Acid Chaperone Properties of Retroviral Nucleocapsid Proteins.</i>
Jessica A Nielson	Forsyth	<i>Synthetic Studies Toward Nankakurine A.</i>
Paul David Oldenburg	Que	<i>Design of Bio-Inspired Nonheme Iron Oxidation Catalysts.</i>
Bobby Gene Poe III	Arriaga	<i>Analysis of Mitochondrial DNA in Individual Mitochondrial Particles.</i>
Anthony Stephen Ratkovich	Penn	<i>Controlling Zinc Oxide Particle Growth Using Various Solutions Conditions.</i>
Dwight Robert Stoll II	Carr	<i>Fast, Comprehensive Two-Dimensional High Performance Liquid Chromatography.</i>
Nathaniel Jonathan Traaseth	Veglia	<i>Structural and Dynamic Basis of Phospholamban and Sarcolipin Inhibition of Ca<sup>2+</sup>-ATPase (SERCA) by Nuclear Magnetic Resonance Spectroscopy.</i>
Nathan Pascale Wells	Blank	<i>Time-Resolved Exciton Dynamics in Conjugated Materials for Organic Photovoltaics.</i>
Keith William Wiitala	Cramer	<i>Modeling Proton and Carbon Chemical Shifts Using Density Functional Theory: Relevance to Determining Relative Configuration.</i>

## Masters Degrees

## Advisor

## Thesis Title

Erin Nicole Arndt	Hillmyer and Tolman	Plan B
Zhifeng Bai	Lodge	Plan B
Kyle Christine Bantz	Haynes	Plan B
Jonathan N Bohnsack	Mann	Plan B
Steven Alexander Calder	Siepmann	Plan B
Juhee Cho	Taton	<i>Photo-Functionalization and Bioconjugation of Block Copolymer-Encapsulated Au Nanoparticles.</i>
Jin-Hwa Chung	Taton	<i>Selective Surface Chemistry of Micropatterned Cell Mimics.</i>
Leila S Dato	Wagner	<i>Azidothymidine Phosphoramidate Analogues as Potential Therapeutic Agents.</i>
Audrey Ann Eigner	Massari	Plan B
Susanna Jean Emond	Hoye	Plan B
Melissa Ann Fierke	Stein	Plan B
Aalo Kumar Gupta	Tolman	Plan B
Kim N Ha	Veglia	<i>Probing the Allosteric Mechanism of SR Calcium-ATPase Regulation by Phospholamban using Mutagenesis and NMR Spectroscopy.</i>
Jessica M Hilborn	Tolman	Plan B
Enver Cagri Izgu	Hoye	Plan B
Ashley Nicole Jay	Cramer	Plan B
Sally Melissa Kessler	Kass	<i>The Investigation of Aryl and Biaryl Pyridinium Zwitterions.</i>
Stephanie Lin Koester	Penn	Plan B
Secil Koseoglu	Buhlmann	Plan B
Benjamin E Kucera	Ellis, John Emmett	Plan B
Kelly Joanne Kyro	Distefano	<i>Structural and Functional Studies of the Protease, Ras Converting Enzyme I</i>
Feifei Li	Que	Plan B
Jingyi Li	Zhu	Plan B
Sara Love	Haynes	Plan B
Elodie Eleonore Marlier	McNeill	Plan B
Francesc Molins	Lipsky and Blank	Plan B
James F Neels	Hoye and Sturla	<i>Antitumor Acylfulvenes: Chemical and Biological Reactivity.</i>
James Mochoge Nyachwaya	Siepmann	Plan B
Chang-yub Paek	Carr and Mc Cormick	Plan B
Britt Marie Peterson	McNeill	Plan B
Jason David Peterson	Massari	Plan B
Louis Marcel Pitet	Hillmyer	Plan B
Huzaifa Saifee Rangwala	Hoye	<i>Efforts Towards Partial Peptidomimetics of Anginex: A Scalable Synthesis of Kelly's B-turn Mimic.</i>
William R Sanow	Arriaga and Bowser	Plan B
Kyle R Schwartz	Mann	Plan B
Hajime Seki	Georg	Plan B
Brent Speetzen	Kass	<i>Utilizing a Thermodynamic Cycle to Find the C-H Bond Dissociation Energy of Ferrocene and Its Implications in the Ionic vs. Covalent Bonding in Metallocenes.</i>
Brandon James Winters	Roberts	Plan B
Chen Xing	Wagner	Plan B
Chao Zuo	Taton	<i>Crosslinked, Block-Copolymer Shells Preserve Nanoparticle Morphology.</i>



## Bachelor's Degrees and Home Town

Hidayati Abdullah	Shah Alam, Malaysia	Danny Liu	Woodbury, MN
Pinky Naresh Anandani	Mankato, MN	Rebecca M Loper	Niceville, FL
Mark Robert Anderson	Minneapolis, MN	Maxwell Mason	Chesterfield, MO
Jeremy Lynn Bachman	Cottage Grove, MN	Michael Robert Miller	Inver Grove Heights, MN
Jennifer E Barnes	Columbus, IN	Ryan Dale Miller	Cedar Rapids, IA
Vnay Bedi	Plymouth, MN	Mohd Azraai Mohd Miswan	Bandar Baru Bangi, Malaysia
Benjamin James Bending	Woodbury, MN	Patrick James Moran	Little Canada, MN
Carlton James Bienert	Great Barrington, MA	Joshua D Morlock	Crystal, MN
Jennifer Bohler	Andover, MN	Lindsey Marie Musselman	Richfield, MN
Emily Jane Marie Brand	Alexandria, MN	Ryan Joseph Nelson	Shoreview, MN
Melissa J Buescher	Nashwauk, MN	Vinh Thai Ngo	Richfield, MN
Ronald Scott Camp	Oakdale, MN	Tuong Vi Thi Nguyen	Spring Park, MN
Cristina Lee Curtis	Champlin, MN	Susan Njeri Njoroge	Nairobi, Kenya
Jane Curtis	Minneapolis, MN	Leslie Oleary	Ramsey, MN
Tommy Vy Dang	Minneapolis, MN	Alister R Olson	Welcome, MN
Anish Das	Dickinson, ND	Natalie Elizabeth Olvera	Minneapolis, MN
Michael Andrew De Meuse	Minnetonka, MN	Jennifer Louise Orth	Sleepy Eye, MN
David A Degenhardt	Saint Paul, MN	Hee-Yun Ellie Park	Edina, MN
Aaron T Denk	Burnsville, MN	Michaela Jean Perske	Sartell, MN
Jonathan Ross Dietrich	Sioux Falls, SD	Kelle M Peterson	Oregon, WI
Chansouk Duangapai	Worthington, MN	Jacqueline Jean Pierson	New Hope, MN
Kyle Robert Dullinger	Deerwood, MN	Amanda Morgan Prose	Maple Grove, MN
Maria McRae Dykstra	Richfield, MN	Hassan Samatar	Shillington, PA
Natalie A Elmasry	St. Paul, MN	Alex Samuel	Minneapolis, MN
David R Erola	Duluth, MN	Rita Marie Silbernagel	Cedar, MN
Christopher M Evans	Eden Prairie, MN	Malgorzata Maria Siorek	Sioux Falls, SD
Midhasso Hama Foge	Brooklyn Park, MN	Jeffry Verne Sorensen	Vadnais Heights, MN
Kristin Elise Frederick	Minneapolis, MN	Derek Straka	Owatonna, MN
Matthew Larry German	Lakeville, MN	Shawn Patrick Sullivan	Brooklyn Park, MN
Dennis John Gerold Jr	Minneapolis, MN	Trista M Talbot	Minneapolis, MN
Ladd Kim Gorman	Winona, MN	Nirwan Juanda Tan	Surabaya, East Java, Indonesia
Alexander Hafner Diaz	Wayzata, MN	Asmeret Tesfahun	Minneapolis, MN
Josiah I Hakala	Farmington, MN	Brian D Tomich	Hudson, OH
Cary Hayner	Blaine, MN	Florence T Tran	Lake Elmo, MN
Paul Houang	Eden Prairie, MN	Nhan Thanh Trinh	Columbia Heights, MN
Marisa Lee Hovlid	Minneapolis, MN	Philip Uhrich	Fairfield, CT
Janey Hsu	Mendota Heights, MN	Nicholas Lee Untiedt	Marshall, MN
Todd K Hyster	Apple Valley, MN	Youa Vang	Minneapolis, MN
Nathan A Jackson	Minneapolis, MN	William Darius Varian	Minneapolis, MN
Ariel Raina Larson Johnson	Duluth, MN	Kevin Joseph Voss	Anoka, MN
Blake William Johnson	Rosemount, MN	Lindsey R Walstrom	Weston, WI
Bradley M Johnson	Lakeland, MN	Truman C Wambach	Superior, WI
Jesse C Jones	Woodbury, MN	Nicole M Wanty	Butternut, WI
David Steven Jordan	Roseville, MN	Erik Asphaug Warg	Hastings, MN
Aaron Jon Kangas	Lakeville, MN	Ellis J Warner	Zimmerman, MN
Aneesha Dionne Kelly	Maplewood, MN	Eleni K Wiley-Schaber	Roseville, MN
Sharif X Koep	New Brighton, MN	Jason K Wong	Hopkins, MN
Patrick E Konold	Minneota, MN	Yia Yang	Brooklyn Center, MN
Matthew Marcus Lagerquist	Champlin, MN	Sara Yohe	Fargo, ND
Katie Nadine Lee	Bloomington, MN	John R Zhang	Plymouth, MN

## WISE women present Cool Chemistry once again

by Letitia Yao

WISE: <http://nmr.chem.umn.edu/wise/wise.html>



Fifty-four girls from metro area schools just went shopping. In Smith 249. They found lip gloss, lotion, and soap. These items were not from Sephora; they were made by their very hands and are just a part of what the girls were able to take from their Cool Chemistry experience.

Cool Chemistry is the annual outreach event hosted by the Chemistry Chapter of the Women in Science and Engineering (WISE). This year's

event took place on April 26th, where girls, grades 7th-9th, spent the day learning how cool chemistry can be. The day consists of a rotation of three workshops (chosen by the girls upon registration), as well as lunch provided by Papa John's Pizza and a plethora of demonstrations. This year WISE members were joined by two area teachers and an Aldrich sales representative, making Cool Chemistry 2008 the most diverse and far-reaching ever.

Cool Chemistry is a girls-only event supported by WISE funds from the Office of University Women and the Department of Chemistry, as well as Ecolab and area partners. Other University departments contributed

take home items for the event. Ecolab

donated tote bags, Sigma-Aldrich provided

stopwatches and other gift items for all

participants, and Corning Glass donated

glassware for the event. Seasoned

WISE members and Letitia Yao, the

WISE staff advisor, have watched Cool

Chem progress from its infant years to

a highly successful area event, sponsored

by the Institute of Technology.



## Chemistry Students work at the State Fair

Once again the Chemistry Department held down a booth at the Minnesota State Fair this summer, where all kinds of household secrets were explored. Secil Koseoglu of the Buhlmann group assists a young girl with determining the pH of common household items in the picture to the right.



## Haynes Lab hosts children for Chemistry Day

This year, the Haynes lab hosted their 3rd annual Chemistry Day as part the "Summer in the City" program at the West 7th Community Center in St. Paul. 13 members of the Haynes lab (and friends) spent the afternoon of July 8, 2008 getting 80 kids, ranging in age from 6-13, excited about science. The event begins with dramatic demonstrations - group members discuss supersaturated solutions while starting lifesaver-initiated soda fountains, reaction rates while heating

and cooling the chemiluminescent contents of glowsticks, and catalytic reactions while making foamy "elephant toothpaste." Then, the kids split up into groups and rotate through four tables of hands-on activities including making polymer slime, doing candy coating chromatography, writing acid/base invisible ink messages, and exploring phases of matter with dry ice and liquid nitrogen. The day ends with freshly made liquid nitrogen ice cream sundaes... and hopefully, a few more future scientists.



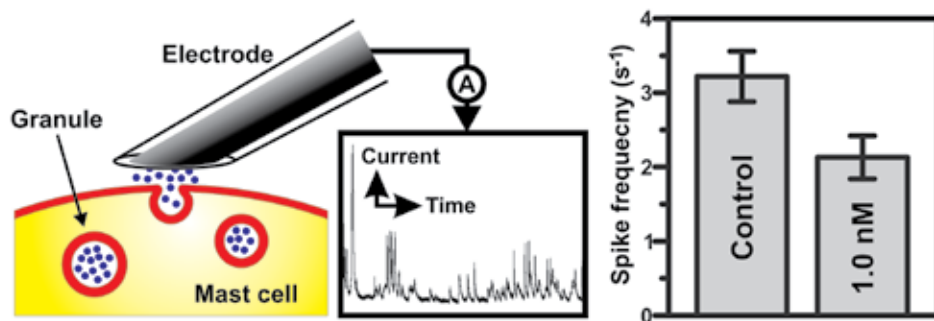
# Interaction of nanoparticles with biological cells

Recent research from the group of Professor Christy Haynes

Nanoscale materials are facilitating novel biomedical applications in the areas of therapeutics and assay development. Characterizing the basic interaction of these nanoparticles with biological cells is critical for data interpretation and further technological development. This characterization of nanoparticle-cell interaction suffers from a paucity of analytical chemistry studies and presents interesting measurement challenges based on the complex biological environment, the dynamic nature of the nanoparticle-cell interaction, and the high sensitivities required for single cell assays.

The Haynes group has recently demonstrated that carbon-fiber micro-electrode amperometry can be used to assess critical cellular function of primary culture immune system cells after nanoparticle exposure. Gold nanoparticles are the focus of Haynes group studies to date based on their wide application in the areas of DNA and drug

delivery, direct inhibition of cancer cell proliferation, photodynamic therapy, and as both intra- and extracellular biomarker probes. The group's electron microscopy and amperometry studies reveal that mast cells, a critical immune system effector cell, take up gold nanoparticles, these gold nanoparticles interrupt the granular matrix, and the disrupted matrix triggers abnormal chemical messenger secretion. Understanding the mechanistic interaction of the nanoparticle and the intracellular environment will facilitate future design and fabrication of non-cytotoxic nanoscale materials.

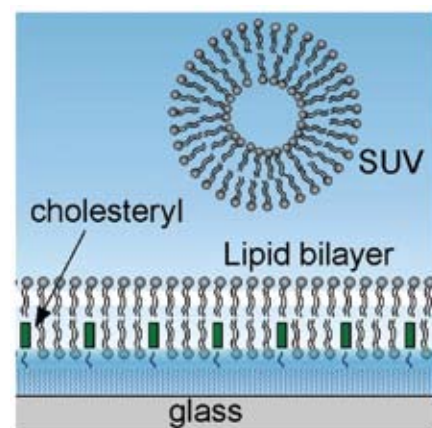


# Fluidic and air-stable supported lipid bilayer and cell-mimicking microarrays

Recent research from the group of Professor Xiaoyang Zhu

An academic-industrial research team led by Professor Xiaoyang Zhu of UMN and Dr. Athena Guo of MicroSurfaces, Inc. reported a ground-breaking discovery on biomaterials and biotechnology in the latest issue of the Journal of the American Chemical Society (DOI:10.1021/ja800049f). The first author on the paper was chemistry graduate student Yang Deng. As drug delivery, therapy, and medical imaging are becoming increasingly cell-specific, there is a critical need for high fidelity and high-throughput screening methods for cell surface interactions. Cell membrane-mimicking surfaces, i.e., supported lipid bilayers (SLBs), were not sufficiently robust to meet this need.

Learning from nature, particular biophysics of the magic molecule cholesterol, this research team designed and developed a novel surface with tethered and dispersed cholesterol groups. They discovered that SLBs formed on such a designer surface became air-stable due to the cooperative stabilizing effect of the tethered cholesterol groups incorporated into the bottom leaflet. Achieving air-stability allowed the team to easily fabricate SLB microarrays from direct robotic spotting of vesicle solutions. They further demonstrated the application of the SLBs as cell membrane-mimicking microarrays by reconstituting peripheral as well as integral membrane components that can be recognized by their respective targets. These demonstrations established the viability of the fluidic and air-stable SLB platform for generating content microarrays in high throughput studies, e.g., the screening of drugs and nanomedicine targeting cell surface receptors.



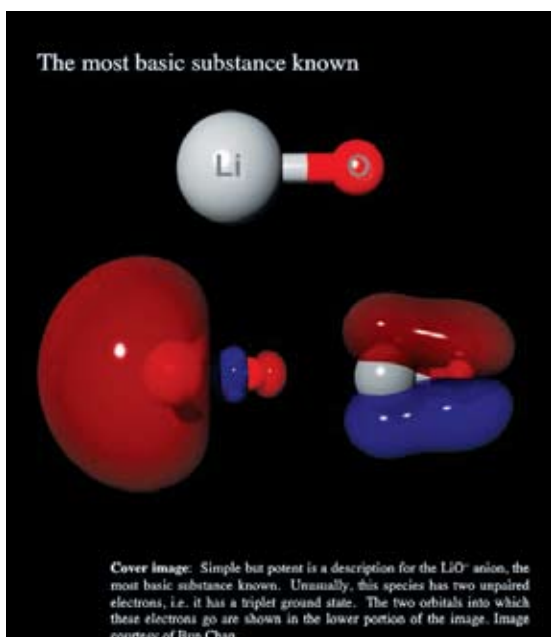
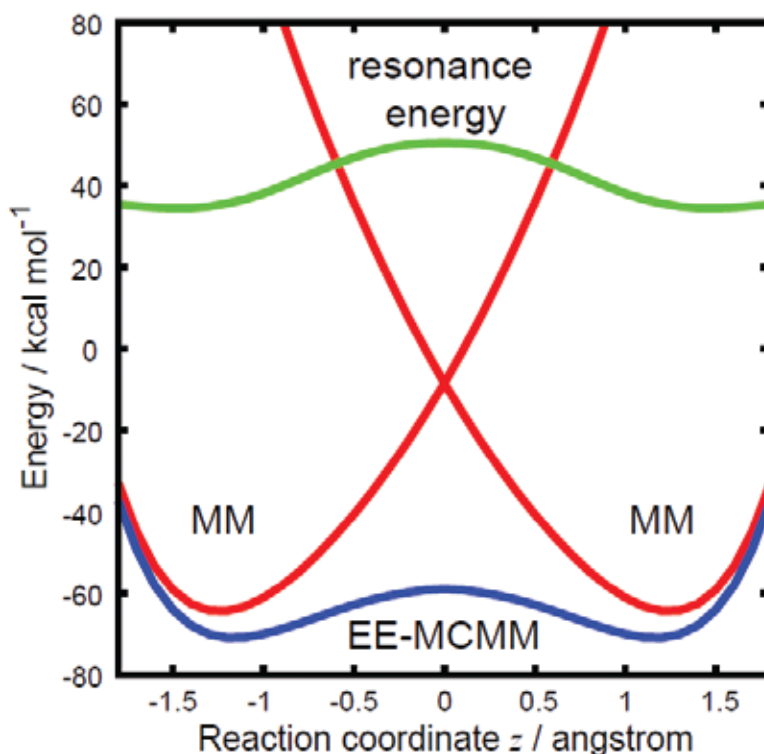


# Force fields for complex reactions

Recent research from the group of Professor Don Truhlar

Combined quantum mechanical and molecular mechanical (QM/MM) methods have provided powerful means for studying chemical reactions in condensed phases such as liquids, enzymes, and solids. In these approaches, the reaction center is described quantum mechanically, while the surroundings are treated by using a molecular mechanics force field. However, the high computational cost of quantum mechanical (QM) calculations prevents carrying out QM/MM molecular dynamics simulations with reliable accuracy and adequate sampling.

In order to reduce the computational cost of the QM calculation, postdoctoral research associate Masahiro Higashi and Regents Professor Donald G. Truhlar\* have developed a new method called electrostatically embedded multi-configuration molecular mechanics (EE-MCMM) for generating global potential energy surfaces (PESs) in the presence of an electrostatic potential. MCMM describes the global PES of a condensed-phase reaction with electronic structure information, in particular energies and partial charge distributions, obtained in the gas phase at selected geometries. Because this new method is efficient, high-level QM calculations can be used in QM/MM methods. The result is a key step toward studying chemical reactions in condensed phases with high accuracy.



## Methyl anion dethroned as the most basic species

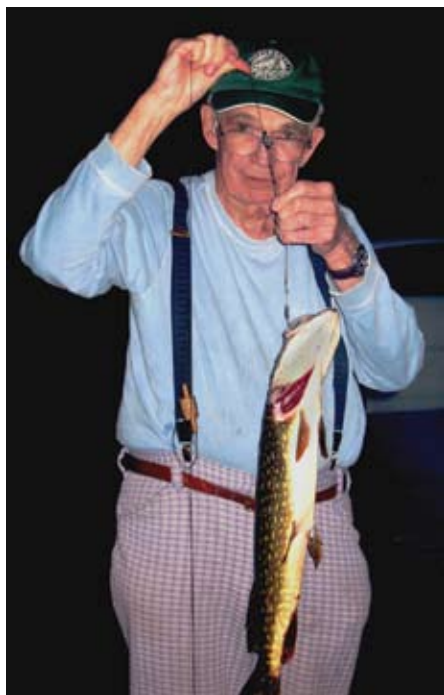
Recent research from the group of Professor Steven Kass

After decades as the champion of proton acceptors, the methyl anion is finally playing second fiddle to the gas-phase lithium monoxide anion. In a joint effort between University of Minnesota researchers Zhixin Tian and Prof. Steven R. Kass and collaborators at the University of Sydney, the  $\text{LiO}^-$  species was prepared and its acid-base properties were measured to verify calculations that predicted its chemical prowess. Their work was reported in *The Proceedings of the National Academy of Sciences* (Proc. Natl. Acad. Sci. USA 2008, 105, 7647) and highlighted in *Chemical and Engineering News* (C&EN June 9, 2008).

# Another big fish story for Way Noland

by Rodney D. DeKruif (1982)

The 2008 Indole Invitational was held August 1-3 at The Love Shack on Big Sand Lake, Phelps, Wisconsin. As a forum for insightful, provocative commentary and debate, a wide range of current political, technical, legal and financial issues were addressed, if not finally resolved.



Even so, the weekend offered angling opportunities, especially for those ascribing to a "catch and eat" philosophy. Professor Wayland E. Noland, holder of most event fishing records, once again raised the standard by setting marks in three categories:

(1) northern pike (25 in., 3lb., 12 oz.); (2) on a cane pole, pre-Carter administration; and (3) unassisted, just net.

Pictured with the trophy fish (above), from left: the ubiquitous Dave Rolf (Ph.D., 1983); Way Noland; Tom Gill (Ph.D. 1983); and Eric Zilley (M.S., 1982). Behind the camera and out of slime range were Mike DiPierro (Ph.D., 1984) and Rod DeKruif (M.S., 1982; J.D., 1986).

This year's Invitational marked the 30th anniversary of a perchance, fateful gathering in Room 101 Smith Hall. The occasion was suitably toasted and will be, again, in 2009. Past participant Jim Kilgore (Ph.D., 1983) will return to headline the opening session.



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