



GREETINGS FROM THE CHAIR

Wayne L. Gladfelter

I am happy to present the 2003 newsletter and update you on events from the past year and current activities within the Department and the University. Two long-planned events took place during this past year, the 34th Great Lakes

Regional ACS meeting (highlighted in a separate article) and the construction of the LeClaire Chemical Instrumentation Facility. Actually, construction of the facility began in October and the completion date is in early March of 2003. When completed the facility will occupy a total of 7,000 square feet and will house the departmental NMR, mass spec and X-ray diffraction laboratories. This first class facility will include many amenities for the users. All staff offices are located in the

facility so help will never be far away. Separate workstation space is set aside that will allow users access to software needed to process their spectroscopic data, and, despite much pressure to eliminate it, we have a break room that will help ease the pain of a particularly long data collection.

As with all renovations, we are experiencing some temporary inconveniences, especially in our NMR spectrometry center. Fortunately, Drs. Stephen Philson and Letitia Yao have worked closely with Stan Bonnema and the construction team to minimize problems. All of our magnets are surrounded by boxes to protect them from stray building materials. Although the completion date is in March, we decided to delay moving the X-ray diffraction and mass spec laboratories into the new space until another, unrelated project is finished. The chemical instrumentation facility is located directly beneath the plaza between Kolthoff and Smith Halls. For several years, water from heavy rains and thawing snow would find its

continued on page 2

The University of Minnesota Research Site for Educators in Chemistry

Chemistry isn't what it used to be! Over the past several years, whole new chemistry-dependent disciplines have been created or reinvented: genomics, nanomaterials, computer simulation and modeling... The list goes on and on. Anyone who is familiar with Minnesota's Chemistry Department knows that it's helping lead the charge into chemistry's brave new world. Primarily undergraduate institutions, however, face a difficult challenge to move in new directions in an era of such unprecedentedly rapid change.

That's where the Research Site for Educators in Chemistry (RSEC) comes in. The RSEC, which is directed by chemistry professor Jeff Roberts and funded by the National Science Foundation, aims to foster new



scientific interactions between faculty at the U and faculty at Upper Midwestern undergraduate institutions. Those institutions run the gamut from large public schools, like St. Cloud State University, to small private colleges, for instance Carleton. The RSEC is organized around four interdisciplinary clusters: chemical biology, computational chemistry, environmental chemistry, and materials chemistry. RSEC participants can apply for financial support- including summer stipends and sabbatical salary- for new research collaborations in those areas. Beginning in 2003, the RSEC will deliver to participating departments an Internet seminar series featuring presentations by internationally prominent scientists. Lastly, the RSEC provides participants with assistance in obtaining external research funding through feedback and advice on proposal. *continued on page 3*

U of MN Chemistry Alumni & Friends Breakfast Meeting at the 225th ACS National Meeting March 23-27, 2003 New Orleans, LA

The next Alumni & Friends Breakfast Meeting is scheduled for 7:30 on Tuesday March 25th at the 225th ACS Meeting in New Orleans, LA. PLEASE BE SURE TO REGISTER FOR EVENT #113 WHEN YOU FILL OUT THE ACS REGISTRATION FORM.

Chair's letter continued



Wayne L. Gladfelter

way through the surface and leak into the area below. The University has decided to replace the entire capping structure during the summer of 2003, so rather than disturb the instruments by the use of jackhammers overhead, we decided to move them after the construction is done. Ultimately, when the X-ray and mass spec labs move, we will convert their current locations into needed research laboratories.

Elsewhere around the mall, the renovation of Walter library was finished. If you have a chance to visit campus, you should put Walter library in the "must see" category. Coffman Memorial Union will reopen on January 21, 2003 after 3 years, and we are excited to see what improvements have been made.

As evidenced by the total grant income, which exceeded \$10,000,000 in fiscal year 2002, our research enterprise is continuing its pattern of success. One of the big contributors to this was the \$2MM NSF grant to Professor Jeff Roberts for a Research Site for Educators in Chemistry (RSEC). A summary of some of the first-year activities is described elsewhere in this newsletter.

Over the years several of our chemistry alumni have volunteered their time with the Institute of Technology Alumni Society (ITAS). This program is administered by Kris Kosek in the Dean's office, and the current president, Dr. Rich Newell (PhD, '75), and Tony Yapel (PhD, '67) have approached me about organizing activities that would be of interest to chemistry alumni. Recently, ITAS sponsored lectures by Professor Rick Smalley (Nobel laureate '96) of Rice University and Dr. Bob Gower (PhD, '63, recipient of an Outstanding Alumni Achievement award in 1996). These two have joined forces to form an exciting new company in Houston that is producing and marketing carbon nanotubes. Another ITAS-sponsored event that Rich and I are considering is a Chemistry alumni golf tournament.

Finally, I would like to encourage those of you attending the ACS meetings in New Orleans in the Spring and/or New York City in the Fall to keep breakfast time on Tuesday open to visit with us at the Alumni and Friends breakfast. Details for the New Orleans meeting are noted on the cover page of this newsletter.



continued from page 1

The Minnesota RSEC was inaugurated in September 2001, and so far it has been able to support fifteen new collaborations involving professors and students from nine undergraduate institutions. What have participants had to say about the RSEC?

Mark Vitha of Drake University spent six weeks with Ilja Siepmann in the summer of 2002 working on the application of computational chemistry methods to liquid chromatography. Mark writes, "I would certainly recommend the U of M RSEC to my colleagues. The flexibility built into the program in terms of the arrangements of the collaborations is a definite strong point, as it should allow for many faculty members to find some way to participate in and benefit from the program."

University of Wisconsin River Falls Professor David Rusterholtz and his students collaborated with Tom Hoyer in the winter of 2002. They worked on the synthesis of a fragment of the peloruside A structure. Dave is a big supporter of the RSEC. "I highly recommend this program to others. I see no way to keep up with the forefront of chemistry without the aid of others, i.e., the U of M Chem faculty."

For more information on the RSEC contact Jeff Roberts (tel. 612-625-2363, e-mail roberts@chem.umn.edu) or Vickie Woodcock (tel. 612-625-2901, e-mail woodcock@chem.umn.edu).

Two of this year's RSEC Participants



Prof. Mark Vitha,
Drake University



Prof. David Rusterholtz,
UW River Falls

Contents	Page
Chair's Letter	1-2
ACS Breakfast Meeting	1
RSEC	1-2
GLRM	3
Library News	3
Promotions	4
In Memoriam	4-5
Research Highlights	6-7
Alumni News	8-9
Degrees Granted	9-10
Alumni Honors	11
Faculty Awards	11
Staff & Student Awards ..	12-13
Donors	14-15

Attention Alumni

Send us your update. Send your update to either www.chem.umn.edu/alumni/contact.html or alumni@chem.umn.edu

Let us know what you think. We want this publication to reflect the interests of our readers. Send your comments to:

ChemNews
Department of Chemistry
207 Pleasant Street S.E.
Minneapolis, MN 55455
or
chemnews@chem.umn.edu

ChemNews Spring 2003

Newsletter Committee

Wayne Gladfelter
David Hoffman
Wayland Noland
Kathy Ross
Stephanie Stathopoulos
Donald Truhlar

This publication is available in alternative formats upon request. Please call 612-624-8008. The University of Minnesota is an equal opportunity educator and employer.

Printed on recycled paper.



Great Lakes Regional ACS meeting

On June 2 - 4, the University of Minnesota and the Minnesota section of the American Chemical Society hosted the 34th Great Lakes Regional ACS meeting. Thanks to the efforts of a lot of people this was a smashing success. The program included 349 technical presentations (talks and posters) organized into topics ranging from Nanostructured Materials to Applications of Organic Synthesis to Chemical Biology. All symposia fit into the general theme of the meeting, Chemistry at the Interface, which refers to the vital contributions chemistry makes to bordering fields such as biology, materials science and environment studies. Overall we had 718 attendees filling many of the meeting rooms in the Radisson Metrodome to capacity (and beyond in a few cases). The grand event was the poster session, which was held on Sunday evening in the McNamara Alumni Center adjacent to the hotel. Great food was mixed with great science in a wonderful setting.

In addition to the many technical presentations, a large number of attendees made use of the employment clearing house that was organized by the American Chemical Society. The luncheon hosted by the Women Chemists Committee sold out early, and their panel stimulated great discussion. At the awards banquet we honored Ann Levinson from Chicagoland Jewish High School with the ACS Regional High School Chemistry Teacher Award and Catherine Hurt Middlecamp from the Department of Chemistry, University of Wisconsin, Madison with the Women Chemists Committee Regional Award for Contributions to Diversity (presented at the Women Chemists luncheon). Two industrial research groups were honored with the Industrial Innovation Awards, Dr. Dharma Kodali and Mr. Scott Nivens from Cargill, Inc. and Dr. Eric J. Stoner and his research team Abbott Laboratories.

We were able to rely heavily on our alumni for playing a major role in making this meeting a success. Many alumni presented papers or sent students to participate. Several were successful at convincing their organizations to help sponsor the meeting. Special thanks goes to the organizing committee who worked hard for two years to put it all together. From the Department of Chemistry were Wayne Gladfelter, Bill Tolman, Marc Hillmyer, Kris McNeill, Nancy Hagberg and Letitia Yao (PhD, '95). From other locations we had invaluable help from Rebecca Cowen Hoyer (PhD, '81) from Macalester, David Boyd (PhD, '87) from St. Thomas, John Matachek (BA, '79) from Hamline, Richard Newmark from 3M and Randy Wedin from Wedin Communications.



Walter Library Remodeled

In the spring of 2002, the Supercomputing Institute and the Digital Technology Center (DTC) moved into their new home in the beautifully renovated Walter Library. The building, which originally opened in 1924, underwent a two-and-a-half year, \$63.4 million renovation that included the addition of fourth and fifth floors.

The renovation was a massive project that not only added the two floors, but also completely restored the beauty of the magnificent ceilings, woodwork, and light fixtures on the first two floors. This involved cleaning and repairing old plaster and paint when possible. In cases where the original work was too damaged to repair, the contractors re-created it.

University alumni and faculty may recall the old cage-like metal stacks that they once had to prowl through when using Walter Library. The new library areas are unrecognizable to those who remember the dark, dingy space that existed a few years ago. The transformed basement level houses the main circulation/reserve desk area and new library stacks and study areas. The subbasement and foundation levels also contain stacks and reading areas. The second floor contains three reading rooms that have been restored to their original beauty and updated for the needs of modern students. The North and Main Reading Rooms contain reference material and study areas; the South Reading Room is the new Learning Resources Center, where library patrons can access non-book materials.

The building's electrical, heating, and cooling systems were also completely modernized. The reading room tables now have electrical outlets and data ports so that students can use their laptop computers and access the Internet. The renovators had to bring Walter up to modern building codes and standards, which included adding such safety features as exit stairs and a sprinkler system, and providing disability access to the building.

Visitors to Walter enjoy trying to spot the owls scattered throughout the building. The ancient symbol of wisdom, the owl was used as a recurring motif in the original building, and this theme was extended during the renovation. There are realistic and stylized owls made of limestone, wood, marble, and metal hidden among the decorative elements of the building.

In an interesting juxtaposition of old and new, the 1920s Walter Library now houses some of the University's most modern technology. The DTC and Supercomputing Institute occupy the new fourth and fifth floors of Walter with supercomputers in the basement. The Commons Areas of

continued on page 16



Prof. Bill Tolman, Jim Burke, National ACS Director-At-Large, and Prof. Wayne Gladfelter at the awards ceremony of the GLRM.



Prof. Marc Hillmyer, Nancy Hagberg, Goldy Gopher and Prof. Wayne Gladfelter at the poster session of the GLRM.



Patton Fast (Ph.D. '00, Supercomputing Institute User Support staff) assists Tim Giese use the workstations in the Supercomputing Institute's Scientific Visualization and Development Laboratory (SDVL), located on Walter's fifth floor. Collin Wick looks on.

Promotions



Marc Hillmyer was promoted from Assistant Professor to Associate Professor with tenure in the Spring of 2002. With a Ph.D. in Chemistry from the California Institute of Technology, Professor Hillmyer started at the University of Minnesota in the Department of Chemical Engineering and Materials Science in a postdoctoral position (under the direction of Distinguished McKnight University Professor Frank Bates). In 1997 he moved to the Department of Chemistry as an Assistant Professor. Marc's current group consists of 17 graduate students, 5 postdoctoral researchers, and 2 undergraduate research assistants. Almost half of his students are co-advised. Research interests in Marc's group are in environmentally friendly polymers from renewable resources, fluorinated macromolecules, and nanostructured materials from ordered block copolymers. A father of three, Marc spends most of his "free" time with his family (Julie, Grace, Ruby and Frederic), but tries to squeeze in a round of golf now and then. Marc's office is 209 Smith Hall and can be reached at 612-625-7834 or by e-mail at: hillmyer@chem.umn.edu and internet at <http://www.chem.umn.edu/groups/hillmyer>



Xiaoyang Zhu was promoted from Associate Professor with tenure to full Professor in the Spring of 2002. He received a Ph.D. in Chemistry from the University of Texas, Austin. Zhu's research interest is in the general area of surface and interfacial sciences. There are two main directions in the group. The first research area focuses on electron transport at molecule-metal interfaces and uses state-of-the-art femtosecond laser techniques. This research is building a physical foundation for our understanding of molecular electronics. The second research area focuses on biotechnology, in particular, the development of a variety of

chemical routes for the covalent attachment/assembly of organic molecules on silicon, silicon oxide, and related surfaces and the applications of these monolayers for micro-contact printing, for micro electromechanic systems (MEMS), and for surface functionalization in bio-chips, particularly protein microarrays.

He enjoys and takes pride in teaching undergraduate and graduate students. His teaching interests have been in physical chemistry and physical chemistry laboratory. Currently, he is developing a new, freshmen seminar course entitled "What's inside that cool gadget?" This course will be offered for the first time in Spring 2003. He is looking forward to this new challenge.

During his leisure time, Zhu enjoys reading/writing poetry and playing the ancient game "GO" or "Wei-Qi".

In Memoriam

Richard T. Arnold
June 18, 1913 –
January 16, 2001



Richard Thomas Arnold was born on June 18, 1913 in Indianapolis, Indiana. His parents, Mr. and Mrs. Robert H. Arnold, were naturalized American citizens of English origin. He was educated at the Technical High School of Indianapolis through the first year of high school, and then at Collinsville High School in Collinsville, Illinois. He entered Southern Illinois Teachers College (now Southern Illinois University) in Carbondale (1930-34), from which he received a Bachelor of Education degree. He carried out his graduate work at the University of Illinois in Urbana (1934-37), where he received an M. S. degree in 1935 and a Ph.D. in 1937 under the supervision of the late Professor Reynold C. ("Bob") Fuson.

Arnold (who was known as "Dick" among his colleagues) joined the faculty of the University of Minnesota as an Instructor of Chemistry in the fall of 1937 at an academic year salary of \$2200, following the resignation of Alberto F. Thompson, Jr. Dick married wife, Doris ("Do") in 1939, and their son, Robert, was born in August 1940, followed by their daughter, Mary Lyn (Wonderlic). Dick was promoted to Assistant Professor in 1940, at which time he had 13 publications, one based on his Ph.D. work and 12 based on his work at Minnesota, largely in the field of physical organic chemistry. In 1940 his first

three Ph.D.'s graduated: Harold E. Zaugg, J. C. McCool, and Fred J. Bordwell.

During World War II, besides carrying out his normal academic duties, Arnold collaborated for 51% of his time with his senior colleague, Professor Walter M. Lauer, in directing an antimalarial synthesis research project assigned by the Committee on Medical Research of the Office of Scientific Research and Development (O.S.R.D.). He was promoted to Associate Professor in 1944, at which time he had 30 publications. In 1946, as outside offers became more prevalent, he was promoted to Full Professor.

In 1948-49 Arnold became a Guggenheim Memorial Fellow, and, after spending five days in Oslo, Norway, spent six months at the ETH in Zurich, Switzerland and six months at the Radiation Laboratory in Berkeley, California. In 1949 he was awarded the American Chemical Society (A.C.S.) Award in Pure Chemistry for his detailed explanations of chemical reactions.

During the academic year 1950-51 and the fall of 1952, Arnold served as Assistant to the Dean of the Institute of Technology, two-thirds time, while Dean Athelstan F. Spilhaus was engaged in special work on a government research project. After part of a year back full time as a Professor, Arnold took a leave of absence for the academic year 1952-53 to serve as the first Science Attache to the U. S. High Commissioner in the newly established U. S. Embassy in Bonn, Germany. Upon his return to Minnesota in the fall of 1953, Arnold became Head of the Chemistry Department. Less than two years later, after 18 years on the faculty at Minnesota, Arnold resigned, effective June 15, 1955, to become Director of the Basic Research Program in Physical Sciences of the Alfred P. Sloan, Jr., Foundation in New York City.

In 1960, Arnold joined Mead Johnson and Co. in Evansville, Indiana, as Director of Research. Subsequently, he became Vice-President of Research and Development, then President of the Mead Johnson Research Center, and finally Vice-President and Chairman of the Scientific Advisory Board. In 1970, he returned to his undergraduate alma mater, Southern Illinois University, as Professor and Chairman of the Department of Chemistry and Biochemistry. He left the chairmanship in 1975, but remained as Professor until his retirement in 1982. The following year he served as a Visiting Professor at Northwestern University, in Evanston. He continued to live in the Evanston area until his death at age 87 on January 16, 2001 in Evanston Hospital, following a fall at the Mather Garden Retirement Home in Evanston the week before.

Besides the A.C.S. Award in Pure Chemistry received in 1949, Arnold received Honorary D. Sc. Degrees from Northwestern University (1979) and Southern Illinois University. He had over 100 scientific publications. He was noted for his detailed explanations and keen insight into the mechanism of organic chemical reactions, including his early espousal of "quasi six-membered ring transition states." While at the University of Minnesota, he served as a chemical consultant to five major companies. He was active on departmental and university committees, and as an officer in the Minnesota Section of the A.C.S. and later on National Committees of the Society.

Dick Arnold served an eight-year term on the Board of Editors of *Organic Syntheses*, and edited Vol. 32, published in 1952. Then, as is customary, he became a member of the Advisory Board and, later, was elected a member of the Board of Directors and served as its Treasurer from 1957-67 and President from 1968 until his retirement from the Board in 1980. He last attended an Organic Syntheses Dinner in Chicago on August 20, 1995, at the age of 82.

Dick Arnold will be remembered as a talented researcher, a skillful and enthusiastic teacher, an effective administrator, and an extremely personable individual whom you couldn't help but like. He was preceded in death by his wife, Do, and survived by his son, Robert, and his daughter, Mary Lyn Wonderlic, four grandchildren, and five great-grandchildren.

By Wayland E. Noland

**Gaylord (Pete)
Peterson**
**June 22, 1923 -
July 28, 2002**



Pete graduated from Clarissa, MN, high school in 1941 and attended technical school until he enlisted in the U.S. Air Force, where he was awarded the Distinguished Flying Cross Medal, along with many letters of recognition of service. Pete flew in 29 missions over Japan as the radio man on B29 planes. Pete was a Staff Sergeant.

Pete and Betty met at the Minneapolis Gospel Tabernacle and were married on October 25, 1947. Their daughter, Jill, arrived after 8 years of marriage, and Jeff 2 years later.

Pete began his association with the University of Minnesota in 1946 when he joined the Physics Machine Shop as a machinist. After eight years of employment in the Physics Shop, Pete left the University to work for several local companies, including

Research, Inc., Honeywell, and Univac. In 1970, Pete returned to the University and the Institute of Technology when he joined the Department of Chemistry as the foreman of their Machine Shop. He served for eighteen years in that capacity, providing skills and expertise that have been invaluable to a large number of research and teaching projects. Pete retired from the Chemistry Department in 1988 but enjoyed continuing to work for the University two mornings a week.

Pete and Betty lived in St. Louis Park and enjoyed travelling and entertaining their children and two grandchildren. Pete was a classic car enthusiast, enjoyed working on his metal lathe in his hobby shop, reading, doing the daily newspaper crossword puzzles, and being a sports spectator.

Dale O. Burling
January 14, 1923
- August 14, 2002



Dale Burling was born in Carver, Minnesota, on January 14, 1923. After graduating from Minneapolis' Sough High in 1941, he served in the army from 1942 through 1945 in the South Pacific and Australia.

In 1950 Dale graduated from Northwest Electronic Institute and, after working in the television repair business for a number of years, began working in the Department of Chemistry in April of 1960 as a chemical apparatus supervisor with duties which included not only the repair of electronic instruments but also the operation of an electronic instruments "stockroom". In March of 1969 Dales was promoted to the position of principal electronics technician and in June of 1980 to the position of electromechanical systems specialist. In addition to the repair of teaching and research instrumentation, Dale designed and constructed a variety of instrumentation techniques, and served as an informational resource for those planning to purchase scientific instruments.

Dale's career spanned more than three decades of development in the field of scientific electronic instrumentation. From the vacuum tube pH meter of the 60s to the computerized FTIR spectrometer of today, Dale repaired them all. His selection as a recipient of a 1992 IT Civil Service Outstanding Service Award was an appropriate recognition of his many contributions.

Dale enjoyed traveling and after his retirement from the Department of Chemistry in 1993, he continued to enjoy that activity.

ACA Establishes New Award Honoring the late Professor Margaret C. Etter

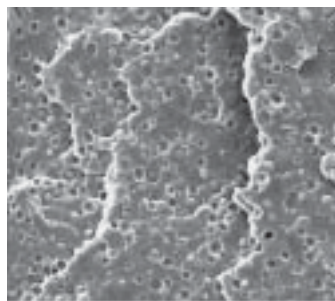


The American Crystallographic Association established the new Margaret C. Etter Early Career Award to recognize achievement and future potential among those at an early stage in their independent career. The award celebrates Professor Etter's tremendous scientific accomplishments and especially her well-deserved reputation as an outstanding mentor of students and junior colleagues.

The award is established to honor the memory of Professor Margaret C. Etter (1943-1992), who was a major contributor to the field of organic solid-state chemistry. Her work particularly emphasized the use of hydrogen bonds and co-crystals. In addition to a large body of experimental work she was the major force in devising a set of rules known as graph sets to describe hydrogen bonds in a way that revealed similarities between structures without being tied up in the crystallographic details. Her experience teaching at an undergraduate institution and in working in both an industrial and academic setting gave her an unusually broad perspective from which to mentor students and to support and encourage colleagues. She had a love for people, for science, and especially for people who do science, that we honor.

Established in 2002 as an annual award, it consists of an honorarium plus travel expenses to accept the award and present a lecture at the American Crystallographic Association annual meeting.

These are just a few of the highlights of the research conducted in the department within the last year. For more on the research developments see the departmental website: <http://www.chem.umn.edu/netstep/>



The scanning electron microscopy image shown above is a blend of polylactide and polyethylene (80/20) containing 5% of a polyethylene-poly lactide block copolymer. The image is approximately 20 μm x 20 μm .

Improved Toughness for an Environmentally Friendly Plastic

Poly lactide is a biodegradable aliphatic polyester derived from renewable resources that has gained much interest in recent years. Currently, poly lactide is primarily used for biomedical applications such as sutures and drug delivery devices. However, the fact that poly lactide is derived from renewable resources makes it attractive from an environmental standpoint. Poly lactide could become a competitive alternative to traditional commodity plastics for everyday applications. Unfortunately, broad substitution of poly lactide is thwarted by its brittle behavior under impact loads. In a study led by graduate student Kelly Anderson working with Professor Marc Hillmyer, melt blends of semi-crystalline poly lactide with semi-crystalline linear low-density polyethylene were examined as toughened poly lactide composite, and significant toughening was achieved in these binary blends. They are currently investigating the mechanism responsible for this. These hybrid materials will ultimately be useful for applications that require strength not found in the parent poly lactide materials.

Dioxygen Activation by Copper

Activation of dioxygen at copper sites is important in both biological and industrial catalytic systems, and the reactions of discrete Cu(I) complexes with O_2 have been studied extensively. Typically, an initial 1:1 Cu/ O_2 adduct either is presumed or established by transient spectroscopy, but efforts aimed at the isolation and characterization of such adducts have been hindered by their tendency to react with a second Cu(I) ion to yield dinuclear species. Graduate students Nermeen W. Aboelella, Anne M. Reynolds, and William W. Brennessel, postdoctoral associate Elizabeth A. Lewis, and Professors Christopher J. Cramer and William B. Tolman characterized a novel 1:1 Cu/ O_2 complex that features side-on coordination of the O_2 unit by x-ray crystallography and density functional theory. The data suggest significant contribution of a Cu(III)-(O_2^{2-}) resonance form, which is an unusual bonding description for such a species. This demonstrates the use of an isolable adduct as a synthon for building multicopper species in stepwise fashion and moreover provides important precedent for future applications of the methodology to other systems, including those containing alternative metal ions.

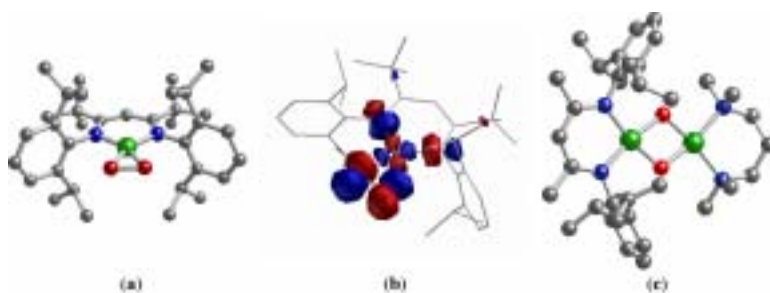
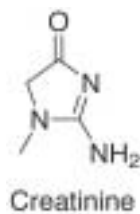
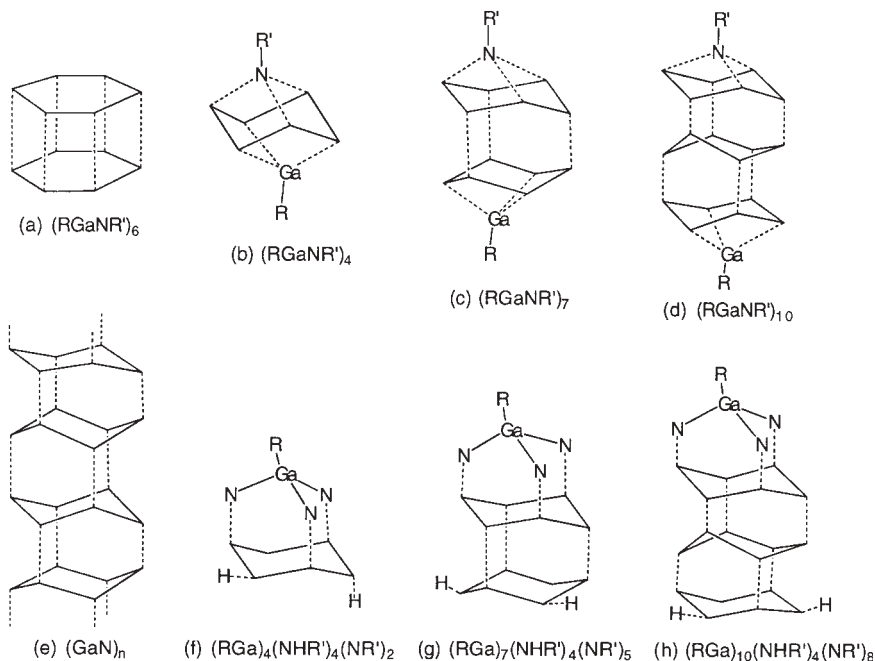


Figure. (a) X-ray crystal structure of 1:1 Cu/ O_2 complex 1. (b) Lowest Unoccupied Molecular Orbital (LUMO) calculated for 1 using DFT calculations. (c) X-ray crystal structure of an asymmetric bis(m-oxo)dicopper complex prepared by reaction of 1 with $[(\text{TMPDA})\text{Cu}(\text{I})(\text{CH}_3\text{CN})]\text{O}_3\text{SCF}_3$ (TMPDA = N,N,N,N-tetramethylethylenediamine). Key for X-ray structures: green = Cu, blue = N, red = O, gray = C.

Ion Sensors for Clinical Chemistry

Creatinine is one of the most important analytes in clinical chemistry. Because creatinine is produced in the human body in relatively constant concentration and passes through the kidney into urine, creatinine measurements provide an important measure of kidney health as well as crucial information for the dosage of drugs in the treatment of cancer or heart diseases. Professor Phil Buhlmann and co-workers optimized potentiometric membrane electrodes for use in clinical chemistry and found selectivities that were comparable or superior to previously reported creatininium-sensitive sensors. Applying these electrodes to measurements in urine, they discovered that certain lipids occurring naturally in the human body may lead to substantial undesirable selectivity changes. Potentiometric, chromatographic, nuclear magnetic resonance spectroscopic, and mass spectrometric evidence revealed that these selectivity changes are caused by electrically neutral lipophilic compounds of low molecular weight, which are easily extracted into the sensor membranes. This discovery opens ways to improve the robustness of ion-selective potentiometric sensors for new applications in clinical chemistry.





Clusters and the Solid State: Probing the Connection for Gallium Nitride

Correlating the properties and structures of isolated molecules and solid state materials remains an important goal in science, especially as it involves structures with dimensions on the scale of 1 - 100 nm. There has been much work in synthesizing nanocrystalline GaN that would lead to a systematic increase in the bandgap of this semiconductor. Although some size control has been achieved, these methods produce a wide distribution in particle sizes making meaningful measurements of optical properties difficult.

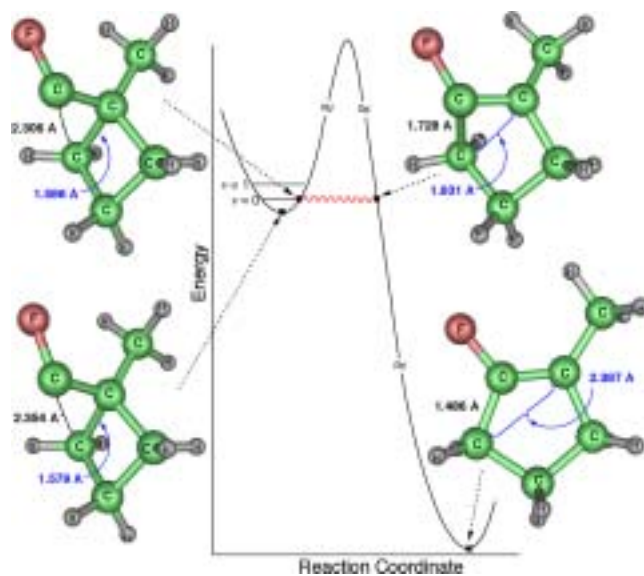
Graduate student Bing Luo, working with Professor Wayne L. Gladfelter, developed a mild route to synthesizing larger Ga-N clusters as a first step toward overcoming this problem.

Structural relationship among new gallium imido clusters, hexameric prismatic structures, higher oligomers and the solid state structure of hexagonal GaN is represented in the Figure above. The gallazine ring, $(\text{RGa})_3(\text{NR}')_3$, is the common building block.

Low temperature limit of a chemical reaction rate

Although most chemical reactions can be understood in terms of thermally activated molecules crossing potential energy barriers, it is well known that quantum mechanical tunneling "through" barriers is sometimes more important than passage "over" barriers. However, tunneling is also thermally activated under most conditions. Quantum mechanical tunneling can play an important role in reactions in which a hydrogen atom, proton, or hydride ion is transferred. Such tunneling contributions to rates have recently been implicated in reactions as diverse as those in interstellar space, enzyme catalysis, and organic chemistry. As the temperature is lowered, the reactant population becomes concentrated in the lowest-energy quantum state; and one should, in principle, be able to observe tunneling out of this single vibrational state.

Peter S. Zuev and Robert S. Sheridan of the University of Nevada, David A. Hrovat and Weston Thatcher Borden University of Washington, and postdoctoral associate Titus V. Albu and Professor Donald G. Truhlar of our department have reported an observation of this single quantum-state limit for a reaction involving carbon tunneling. They observed ring expansion of 1-methylcyclobutylfluorocarbene at 8 K, a reaction that involves carbon tunneling. At this temperature the limiting reaction rate is $4.0 \times 10^{-6} \text{ s}^{-1}$; and the tunneling contribution to the rate is calculated to be 152 orders of magnitude greater than the contribution from passing over the barrier. The reaction proceeds from a single quantum state of the reactant, and they also reported environmental effects of the solid-state, inert-gas matrix on the reaction rate. The theoretical rate calculations were based on methods developed at the University of Minnesota.



Four snapshots along the reaction path. The snapshots correspond to geometries along the vibrationally adiabatic ground-state potential curve. Two key bond lengths are indicated in angstroms.

1940's

Walter Harris (Ph.D. '44 Kolthoff)

Synthetic rubber research with Kolthoff during WW II. Career at U. Alberta since 1946 which is now a first rate chemistry department. We have 9 productive analytical chemists in a second-to-none analytical division. Major research area in programmed temperature gas chromatography. Contributed to work on national high level nuclear wastes and also on non-nuclear hazardous wastes. Retired for several years and now widowed. Two children and two grandchildren.

1950's

Roger Strassburg (Ph.D. '50 Parham)

It seems like only yesterday but the ten years following retirement have sped past. Mary Ann and I are about to leave for Sun City Center, Florida where we spend the winter. And then it's back to school for both of us. We are spending a week at the Ben Sutton Golf School to see if there is any hope for our deteriorating golf games. Will let you know next year.

1960's

Joseph F. Dooley (Ph.D. '67 Parham)

Joseph has written a new book called "The Coming Cancer Breakthroughs", published by Kensington Publications, New York, NY (2002). The book explains how new information in genomics and better understanding of how cancer cells work are now creating new targeted therapies against cancer. These new drugs offer the promise of better cancer survival with fewer toxic side effects. Dr. Dooley is president of Biotechnology Associates, a worldwide market research and database company specializing in the biotechnology, diagnostics, medical devices and the pharmaceutical sectors.

Alan R. Hargens (BA '66)

Professor of Orthopaedics at University of California, San Diego, is currently President of the International Society of Adaptive Medicine and Program Chair for the 7th Congress that will be held in San Diego 20-23 August 2003. The meeting will gather national and international experts in adaptations to heat, cold, altitude, exercise, microgravity, radiation, diving, and other adverse environments. For more information, please visit our website: <http://cme.ucsd.edu/isam/> and attend if you can.

1970's

Dave Beebe (B.S. '75)

I am still a professor in the Medical School in the Department of Anesthesiology. I am vice-chair of the department and director of research. Most of my research involves problems associated with Pediatric Anesthesia. I am married (Martha) and have 3 daughters (Megan 20; Gretchen 18; and Hannah 6) and live in Circle Pines Minnesota.

Steven J. Tinker (B.S. '75)

After 31 years with Ecolab Inc., in St. Paul, I retired in December of 2001. I worked for nearly 15 years in various positions in Product Development with the Institutional R&D team and another 15 years in Marketing. I have the

honor of being associated with and leading the teams that developed many of the key institutional dishwashing and laundry detergents that still generated millions in sales for Ecolab. In March of 2002 I took the position of Director of R&D for a small industrial laundry chemical company in Chicago, Gurtler Industries Inc. Moving to a new city after so many years in Minnesota is quite an adventure. And my wife Kathy and I are taking advantage of all the fun experiences we can find in Chicago.

1980's

Frank D. Blum (Ph.D. '81 W. Miller)

I am finishing up my third (and final) year as chair of the American Chemical Society's Committee on Divisional Activities which monitors and facilitates the activities of the Society's 34 Technical Divisions with about 110,000 divisional memberships.

Neil J. O'Reilly (Postdoc '84-'86 Gassman)

Following a 1984-86 postdoctoral position at the Univ. of Minnesota, working under the late Prof. Paul Gassman, Neil O'Reilly moved to Buffalo, NY and joined Oxychem working on novel synthetic routes for pharmaceutical and agricultural intermediates. He left the laboratory in 1990 [sin of sins!] and began to work in the area of international technology sourcing in support of specialty chemicals, ethylene oxide, and polymers. Neil moved to Houston in 1994 to focus on the polyolefins part of this work, and lived through several names changes from Oxychem, to Lyondell Petrochemical, then Equistar. In 1996 he formed the Polymers Licensing Division of Lyondell and spent 4 years licensing HDPE and LDPE technologies around the world. Since 1999 he has been Director of Technology at Engelhard, still based in Houston and focusing on PP and PE catalysis. Stop by and say hello next time you visit Space City!!

Gary Proehl (Ph.D. '80 Gassman)

I currently work at Eisai Research Institute (ERI) located in Andover, MA just outside of Boston. This is a subsidiary of Eisai Chemical, a pharmaceutical company based in Japan. I'm the head of the Process Optimization Group. We do late-stage process improvement work using computer-controlled reactors and statistical design of experiments. We also do all of the thermal hazards assessment work at ERI including reaction calorimetry and compound thermal hazard studies. Process chromatography is also a part of this group. We work on compounds that are in early discovery all the way to those entering Phase III clinical trials. My wife, Elizabeth Burns, is the Director of Research at a coatings company in the area. Our son Kyle is a junior in high school. We currently live in southern New Hampshire.

Janet L. Schrenk (Ph.D. '85 Mann)

I am currently enjoying life as an instructor in the chemistry department at MIT. When not teaching I can be found in my other roles of soccer mom, Brownie troop leader....and generally trying to keep up with Charles (8) and Elizabeth (7).

My husband, Joe Eyermann, is a computational chemist involved in drug design at Astra Zeneca.

1990's

Lane Callahan Patten (BS '96)

Lane and Justin Patten (BS EE '97) would like to announce the birth of our daughter Anna Rose Patten on September 27, 2002. Lane is currently in the midst of her surgery residency at Baylor College of Medicine in Houston, TX and is welcoming this time off to care for the newest addition to the family!

Paul Deck (Ph.D., Gassman '93)

Paul and his wife, Carla Slebodnick, had their first child, Madeline Emma Deck (born May 4, 2002).

Aaron Holm (B.A. '97)

Aaron just finished his PhD work at the University of California, Davis, and is now a post-doctoral researcher at Ames Lab under Dr. Vitaly Pecharsky and Dr. Karl Gshneidner, Jr.

Melody Jewell (BS '97)

Melody has completed her Ph.D. in Paper Science and Engineering from the University of Minnesota. She has obtained employment as an Assistant Professor at South Dakota State University in the Department of Chemistry and Biochemistry.

Amy Jorgenson (Ph.D. '97 Gladfelter)

I headed straight from U of M to go work for Monsanto in St. Louis. I'm still working here and enjoying it a great deal. I've been at Monsanto now for 5 years and have made it through multiple mergers/spinoffs. Monsanto is a large agricultural biotech company, and I work in the chemistry sector directing lab research and providing plant support for the manufacture of Roundup herbicide. I enjoy living in St. Louis and keep myself busy with biking around the area and also enjoying the local hiking trails.

Roseann Kroeker Sachs (Ph.D. '93 Kass)

After receiving my Ph.D. in 1993, I joined the faculty at Colorado College, in Colorado Springs, CO, where I teach organic chemistry. I teach sophomore level organic chemistry and two advanced courses: synthetic and physical organic chemistry. I spend most of my time teaching, but I have involved a large number of students in research during the academic year and summer months. In 1999 I was awarded tenure and soon thereafter began a sabbatical working in Bridgette Barry's lab in the Biochemistry Department at the University of Minnesota where I used IR spectroscopy to probe the specific reactions involved in photosynthesis. I enjoyed that time back in the lab again, and it broadened my horizons considerably. I returned to Colorado in 2001. My husband Ron, and I have three children: Janaya (8), Austin (5) and Acacia (3). We enjoy Colorado College hockey, camping, hiking and gardening.

Shouchin Man (Ph.D. '96 Gray)

Shouchin is with Analytical R&D, Pfizer in Ann Arbor, MI. She would like to take this opportunity to say "Hi" to the colleagues from her days.

Ann Morrill (MS '94 Kreevoy)

Ann is a structure analyst at Chemical Abstracts Service in the Biochemistry Department though she is frequently rented out to other departments who appreciate her encyclopedic memory. She lives in Grove City in an apartment across the street from her 79 year old mother. Over the last few years, she has worked on her baking and this year won Best of Show in the Quickbreads division at the Ohio State Fair. She got her State Fair start in Mpls. in 1993 with two 5th places. Ann also enjoys biking, camping, hiking, gardening, and playing with her telescope. She misses California though intends to settle in Ohio and is saving money for a 'farmette.'

Karl Ochs II (M.S. '91 Pignolet)

I'm married to Diane, and we live in St. Paul. I work at DecisionOne in Richfield as a computer helpdesk technician.

Darrell Rahn (B.S. '91)

After graduating, I went off on what I thought was a side-line while deciding what to do with my chemistry degree. I made a two year commitment to the Teach for America Program and went to Louisiana to teach in an underserved community. Well, I got hooked and am still teaching, although under much less challenging conditions. My current position is with DoDDS in Germany, teaching the children of our military personnel. It is quite an adventure. While surfing the alumni web site last year I ran across the e-mail address of a former classmate, Mohammad Zia-Ebrahimi. I hadn't communicated with him in over 10 years but I dropped him an e-mail out of the blue inviting him to come visit in Germany. A couple of days later he replies with a request for

my address so he can come the very next weekend. It turned out that he was on a temporary assignment in Germany! He visited that weekend and again near the end of his assignment! It was a wonderful reunion!

Scott W. Reeve (Ph.D. '92 K.Leopold)

Don't know how many folks are aware the Debra Ingram (worked in Gen Chem office with Mary Jane many years ago) and I are married. We celebrated our 10th anniversary this past July. We also are enjoying our 1st child, Tristan Scott Ingram-Reeve. He was born 29 March 2002 with the following relevant specifications: 20.75 inches, 7 lbs 8 oz. I am currently an Associate Professor of Chemistry at Arkansas State University.

Ted Ulrich (B.S. '92)

I graduated in 2001 from The Catholic Univ. of America in Washington D.C. with a Ph.D. in religion. I now have a tenure track position in the Theology Dept at the Univ. of St. Thomas.

James Vyvyan (Ph.D. '95 Hoyer)

Jim has been promoted to Associate Professor of Chemistry at Western Washington Univ. (WWU) and was recently selected as one of six Henry Dreyfus Teacher-Scholars for 2003. Jim joined the WWU faculty in 1997 after a Camille and Henry Dreyfus postdoctoral fellowship at Hope College, Holland, MI with Stephen K. Taylor. His research group consists of five undergraduates and two M.S. students investigating the synthesis of allelopathic natural products. His research is supported by a NSF Career grant and a grant from the Herman Frasch Foundation. Jim lives in Bellingham, WA with Cathy, his wife of twelve years, and their children James Robert (4) and Nicholas (1). Hope to see many fellow alums at

the next Alumni Breakfast at the ACS Meeting in New Orleans.

Anne Weber-Main (PhD '97 Stankovich)

I've spent the last five years working a stone's throw away from Smith and Kolthoff Halls as a medical writer/editor in the U of M Department of Family Practice and Community Health. (I've since been "promoted" to Assistant Professor/Research Associate.) My job is to help increase our faculty's productivity in research, which means assisting them with scholarly writing projects, most typically grant proposals and peer-reviewed journal articles. It's my dream job to be able to stay connected to the research process, while spending the bulk of my day developing creative and persuasive prose. (Although I could occasionally do without always pressing grant deadlines!) I'm currently co-writing a book with my department's Director of Research, on the spine-tingling topic of how to create and sustain research-productive departments in academia. I also teach in our department's Family Medicine Research Course and help facilitate a writing workshop for research fellows in our department and in Pediatrics. I live in the Como Park area of Saint Paul with my husband, Mike (yikes, 11 years of marriage!) and 5-year-old daughter, Naomi, who just started kindergarten. In my rare spare time, I play Ultimate Frisbee and try to prevent Naomi from growing up too fast.

2000's

David Flannigan (B.S. '01)

I am currently in my second year of graduate studies at the University of Illinois at Urbana-Champaign. I am studying sonoluminescence under Kenneth Suslick.

Chemistry Degrees Granted from July 1, 2001 to June 30, 2002

Bachelor's Degrees and home town

Angela Bealka
South St. Paul, MN
Kelly Bolling
Maple Grove, MN
Angela Borek
Burnsville, MN
Mark Brenner
Brookfield, WI
Jason Buccer
Minneapolis, MN
Christopher Burrell *
St. Paul, MN
Marty Carlson
Minneapolis, MN
Bryan Carroll
St. Paul, MN
Mitchell Croatt
New Prague, MN
Gezahegn Damte
St. Paul, MN
Christopher Deegan
Coon Rapids, MN
Matthew Dunlop
Minneapolis, MN

Jill Ebeling
Farmington, MN
Suzanne English
Bolingbrook, IL
Eric Frank
Cottage Grove, MN
Neal Gabrys
Gilman, WI
David Gavle
Crystal Lake, IL
Jamie Gergen
Lakeville, MN
Jesse Godfroy
Int'l Falls, MN
Tyler Grebe
Marshall, WI
Matt Haensel
Ham Lake, MN
Jill Hartung
Inver Gr. Hts, MN
Huda Hassen
Blaine, MN

Christopher Heil
Lake Villa, IL
Eric Herr
Forest Lake, MN
Barbara Hoberg
Golden Valley, MN
Philip Imholte •
Detroit Lakes, MN
Melissa Iseminger
Coon Rapids, MN
Christopher Jackson
Belle Fourche, SD
Abdullahi Ali Jama
Roseville, MN
Jason Jennissen
Columbia Hts, MN
Keith Jensen
Burnsville, MN
Jon Joriman
North St. Paul, MN
Eric Kehoe
Forest Lake, MN

Regina Kim
Shoreview, MN
Michael Koivula
Milford, MI
Spencer Ladd
Maple Grove, MN
Maisy Liao
Plymouth, MN
Marc Marty
Woodbury, MN
Abraham McEathron
Lino Lakes, MN
Jessica Meidinger
Fargo, ND
Timothy Meier
Hastings, MN
Seth Nelsen ++
Belulah, ND
Tsz-Man Ng
Hong Kong
Thu Minh Nguyen
Brooklyn Park, MN

Alexis Ogdie •
Sioux Falls, SD
Peter Oman +
White Bear Lk, MN
Cuong Pham *
Little Canada, MN
Amy Philips ++
St. Louis, MO
Jessica Pierre-Mansour
Blaine, MN
Jessica Plumbo
White Br TWP, MN
Andrew Presley *
Duluth, MN
James Pruden
Mar St. Croix, MN
Tasha Rennerfeldt
St. Paul, MN
Justin Riddle
Sioux Falls, SD
Sean Scott
St. Paul, MN

Sean Solberg
Fargo, ND
Jarrett Sommers
Apple Valley, MN
Sarah Swanson
Lino Lakes, MN
Joe Touchet +
Oshkosh, WI
Tai Thi Tran
Woodbury, MN
Elizabeth Uhrich
Richfield, MN
Dana Weiland +
Howards Grove, WI
Diana Wong
Blaine, MN
Yuching Wong
Maple Grove, MN
Joseph Young ++
Lexington, KY
Theresa Zahn *
Stevens Point, WI

+ Distinction, ++ High Distinction, • Magna Cum Laude, * Summa Cum Laude

Chemistry Degrees Granted from July 1, 2001 to June 30, 2002

Master's Degrees	Advisor	Thesis Title	Current Location
Nathan Wood	Mann	<i>Vapochromic Volume Expansion of Microcrystalline Tetra (Isopropylisocyno) Platinum Tetracyanoplatinate.</i>	Education dept
Kevin Bechtold	Hillmyer & Tolman	<i>Alternating Copolymers of Lactic Acid and Ethylene Oxide for the Plasticization of Polylactide.</i>	3M
Mark Consugar	Que		Mayo Clinic
Jonathan Raff	Mann	<i>Synthesis and Physical Studies of Oligothiophene Substituted Beta-Diketonates and Their Metal Complexes.</i>	PhD at University of Indiana
Douglas Latch	McNeill	<i>The Interaction of Singlet Oxygen With Models of Solid-Supported Probe Molecules and the Pharmaceuticals and Personal Care Products Ranitidine and Triclosan.</i>	continuing PhD work
Matthew Rose	Distefano	<i>Attachment of Azide Containing Isoprenoids Onto A Pentapeptide: A Method for Specifically Labeling Proteins Via A Modified Staudinger Ligation.</i>	Medical School at Uniformed Services Univ.
Yohaana John	Ward		Seagate
Jonathon Salsbury	Munson	<i>Solid-State NMR Studies of Pharmaceuticals.</i>	Albany Molecular
Aaron Johnson	Hoye	<i>Studies of the Synthesis of the Sugar and Side-Chain Moieties of Callipeltoside A.</i>	law school
Jason Abrams	Forsyth	<i>Large-Scale Syntheses of Two Novel Bicyclic Ring Systems: Applications Toward the Construction of Swainsonine and Okadaic Acid.</i>	Research Associate, Abbott Labs
Ossama Darwish	Hsung	<i>Toward the Synthesis of Novel Coumarins and Nitrogen Alkaloids.</i>	PhD at Notre Dame
Ph.D. Degrees	Advisor	Thesis Title	Current Location
Dana Reed	Kass	<i>The Structure and Energetics of Reactive Intermediates Studied with Fourier Transform Mass Spectrometry.</i>	U of MN - Chem Mass Spec Lab
Bret Johnson	Stein	<i>Hybrid Materials Constructed From Polyoxometalate Clusters.</i>	Postdoc, Univ of MN
Maria Nagan	Cramer	<i>Class II Aminoacyl - tRNA Synthetase Substrate Specificity: A Computational and Experimental Analysis.</i>	Asst Prof, Truman State Univ, Kirksville, MO
Manomi Tennakoon	Hoye	<i>Part I: Efforts Towards the Total Synthesis of Scyphostatin. Part II: Synthetic Studies Towards Peloruside A.</i>	Johnson & Johnson Pharm. R & D
Amy Dounay	Forsyth	<i>Synthesis of Spiroketal Domains of Marine Natural Products: Part I. Total Synthesis of 7-Deoxy-Okadaic Acid and Analogues. Part II. Synthetic Investigations of the C1-C20 Domain of Azispiracid.</i>	NIH Postdoc, UC Irvine
Bin Chen	Munson	<i>NMR Study of n-Butane Oxidation Catalyzed by Vanadium Phosphorus Oxides and Other Metal Oxides-Based Catalysts.</i>	Postdoc, University Kansas
Yun Mao	Carr	<i>Selectivity Optimization in Liquid Chromatography Using the Thermally Tuned Tandem Column (T3C) Concept.</i>	Merck
Paul Winget	Cramer	<i>Solvation Models: Theory and Applications.</i>	Postdoc, Erlangen, GER
Natalia Carulla-Casanovas	Barany	<i>Design, Synthesis, and Characterization of Beta-Sheet Peptides and Proteins.</i>	Postdoc, Cambridge UK
Jose Aiguade Bosch	Forsyth	<i>I. Synthetic Studies Toward Pandamarilactone-1. II. Synthetic Efforts Toward the Synthesis of Azaspiracid: Synthesis of the C27-C40 Polycyclic Domain.</i>	EU-Marie Curie Postdoc, Cambridge UK
Yu (Albert) Ren	Lodge	<i>Synthesis, Characterization and Thermodynamics of Fluorinated Polymers.</i>	Merck
Lauren Kaune Carlson	Munson	<i>Flow Magic-Angle Spinning (MAS) and Two-Dimensional Exchange NMR Studies of Heterogeneous Catalysis and Polymer Microstructure.</i>	Ecolab, St. Paul MN
Eric Codner	Ward	<i>Simultaneous Spectroscopic and Adhesion Measurements with a Tandem IR-JKR Instrument.</i>	postdoc, University of Wisconsin-Madison
Tamara Kale	Distefano	<i>Photoactivatable Prenylated Cysteine Analogs: Syntheses and Applications in Studies of Prenylated Proteins.</i>	law school, University of Washington
Bing Luo	Gladfelter	<i>Molecular Precursors to Gallium and Indium Nitrides.</i>	Postdoc, UofTX
Teresa Lamm	Stankovich	<i>Redox Modulation of Acyl-CoA Dehydrogenases (ACDs) and Their Ligands in Several ACD-Analog Systems.</i>	Kraft, Madison WI
Ted Pappenfus	Mann	<i>Synthesis, Characterization, and Physical Studies of Oligothiophene-Based Molecules, Ligands, and Metal Complexes.</i>	postdoc, U of MN Chem & ChEn
Michael Haukaas	O'Doherty	<i>Enantioselective Synthesis of Iminosugars and Hexoses From Furfural.</i>	law school
Carrie Buss	Mann	<i>Structural and Spectroscopic Investigations of Vapochromic Platinum (II) Double Salt Compounds.</i>	Seagate
Junliang Hao	Forsyth	<i>Synthetic Innovations Inspired by the Complex Marine Toxin Azaspiracid.</i>	Postdoc, Scripps
Rick Schrodin	Stein	<i>Design and Analysis of Porous Materials for Photonics, Catalysis, and Adsorption.</i>	Dow Chemical

2002 Outstanding Achievement Award

The Outstanding Achievement Award is conferred on graduates or former students of the University who have attained unusual distinction in their chosen fields, professions, or public service, and who have demonstrated outstanding achievement and leadership on a community, state, national, or international level.

Highly creative scientist who brilliantly integrates organic chemistry and biotechnology into pharmaceutical research and development.

Scientific innovator, whose work represents a significant contribution to medicinal chemistry, with 88 patents and 36 peer-reviewed manuscripts.

Lead inventor of many important classes of drugs, including Celebrex, which have greatly benefited millions of people worldwide.



John F. Talley

Ph.D., 1979

Vice President of Drug Discovery, Microbia, Inc.

John Talley received his Ph.D. from the Department of Chemistry in 1979 under the tutelage of former Regents Professor, Paul G. Gassman, in the area of physical and mechanistic organic chemistry. He received his BA in 1975 from the University of Northern Iowa.

Talley's independent research career began at the General Electric Corporate R&D Center in Schenectady, NY. Seven years later in 1986 his move to the Monsanto/Searle Research Laboratories in St. Louis, MO permitted the launch of his career in medicinal chemistry. In 1999 Pharmacia-Upjohn merged with Monsanto/Searle to form the Pharmacia Corporation.

John is the lead inventor of the blockbuster drug, Celebrex (celecoxib). This compound was first synthesized in his laboratory. More importantly, John orchestrated large portions of the multifaceted, team effort that was required to shepherd his bench discovery into the largest-selling,

first-year pharmaceutical ever launched. Celebrex is a non-steroidal anti-inflammatory drug (or NSAID). It functions by a different mechanism than more common agents like ibuprofen and naproxen (traditional NSAIDs). As a result Celebrex is of great benefit in the treatment of rheumatoid arthritis and other pain-related afflictions. Talley is also the lead discoverer of Bextra, a second recently-approved drug, and at least two other related anti-inflammatory agents likely to be commercialized in the very near future. Prior to his research in the NSAID arena, Talley was a major co-inventor of several anti-HIV agents including Agenerase, an HIV protease inhibitor licensed from Searle and now marketed by GlaxoSmithKline.

In January of 2001 John was named Vice President of Drug Discovery at Microbia, Inc. where he now leads drug discovery programs in developing novel anti-infective therapeutics based on their unique ability to identify and selectively target the regulatory circuitry controlling microbial behavior.

Faculty Awards

Larry Miller

George W. Taylor/IT Alumni Society Distinguished Teacher Award

This award consists of an award citation is on permanent display outside the Taylor Undergraduate Academic Center in Lind Hall. The Distinguished Teacher Award is given for outstanding contributions to undergraduate and/or graduate teaching in the Institute of Technology.

This distinction was bestowed on Larry Miller due to his contributions to teaching that have been both exemplary and extraordinary. He set the standard by which others are judged in this regard and he continues to strive to make this University a better place for its students.

Lou Pignolet

Outstanding Teaching Award, Institute of Technology

Lou Pignolet was named as "The Best Professor in the Chemistry Department" by the I. T. Student Board. The winner of this annual award is chosen by I. T. students who vote for their choice during registration every semester.

This is the only teaching award that is chosen by an actual student vote. Lou has received this award for the past three years.

Peter Carr

Distinguished Teaching Award, Graduate-Professional Award for Outstanding Contributions to Post-Baccalaureate, Graduate, and Professional Education

This University-wide award recognizes a select group of faculty members nominated by their colleges for outstanding contributions to post baccalaureate, graduate, and/or professional education. Recipients are honored for their performance as teachers, advisors, and mentors; their development of instructional programs; and/or their inclusion of students in research, scholarship, and professional development.

Peter Carr was chosen for this distinction for his gifted teaching, innovative leadership in graduate education, serving as an empathetic mentor and research advisor who is known for his ability to incubate excellence in his Ph.D. students.

Marc Hillmyer

Institute of Technology's Taylor Career Development Award

In recognition of his exceptional contributions to teaching during his time as assistant professor.

Tom Hoyer

Merck Professorship

One of five professorships the Department of Chemistry created from donations and is awarded for outstanding contributions to teaching, research and service.



Chemistry faculty attending commencement (from left to right) Wayland Noland, Gary Gray, Wayne Gladfelter, Larry Miller, and Marc Hillmyer.

Department Awards

Staff

Without the support of a dedicated team of staff, the department could not function. Their duties were honored by the 2002 civil service outstanding service awards. Recipients were [Nancy Hagberg](#) (Executive Secretary) and [Tom Stefanek](#) (Manager, Glass Technology Facility).

Postdoc

[Tina Poulsen](#), a postdoctoral associate working on enzyme kinetics with Truhlar and Gao, was the recipient of a Minnesota Supercomputing Institute Research Scholar Award.

Graduate Students

Recipients of the Lester C. and Joan Krogh Endowed Fellowships are [Jingzhi Pu](#) and [Jiashi Wang](#). [Angela Eder](#), [Erin Hilton](#), [Eric Klinker](#), [Lucas Kopel](#), and [Kari Mitchell](#) are Kolthoff fellows, and [Teresa Jentsch](#), [Matthew McGrath](#), and [Victor Sussman](#) are supported by 3M Graduate School fellowships. [Nathan Wells](#) received the John Wertz Fellowship.

[Collin Wick](#) (Siepmann) was awarded a Department of Energy Computational Science Graduate Fellowship. [Amy Dounay](#) (Forsyth) is supported by an Organic Chemistry Division fellowship of the American Chemical Society. [Anne Reynolds](#) (Tolman), [Nermeen Aboeella](#) (Tolman), [Victor Sussman](#) (Ellis), and [Sarah Schmidtke](#) (Blank) continue to receive fellowships from the National Science Foundation. [Andrew Zalusky](#) (Hillmyer) was awarded a Graduate School Dissertation Fellowships. [John Stubbs](#) (Siepmann) received the Frieda Martha Kunze award and the recipients of the John Overend Awards for Graduate Research in Physical Chemistry were [Greggory Dutton](#) (Zhu) and [Edward Sherer](#) (Cramer).

[Ann McNally](#) received a Departmental Teaching Internship Award. [Mary Messner](#) and [Lee Stanek](#) were the recipients of the Robert L. Ferm Memorial Outstanding TA Award. One of Mary's students wrote "Mary is the best TA I have had at the University, in any department. She inspired me to continue my study of chemistry when I had no plans to do so previously. Above all, I think that Mary's fair nature and caring personality make her the best TA." One of Lee's students wrote "Lee always makes sure everyone understands the chemistry behind the lab. Lee is very enthusiastic about our learning. He makes us answer questions and guides us to make sure we really understand. He is very patient and if we don't understand something at first, he tries explaining it again in another way."

Ten graduate students received in 2002 BP Amoco and Chemistry Department travel grants, allowing them to attend various national conferences. Those attending National meeting of the American Chemical Society [Min Hu](#), [Jana Khandogin](#), [Catherine Smith](#), and [Fai-Chu Wong](#) (Boston, MA in August) and [Bethany Kormos](#), [Cheng-Min \(Amy\) Tann](#), and [Judit Tulla](#) (New Orleans, LA in March). The other recipients of travel grants were [Xiqin Yang](#) (HPLC Conference), [Nilhan Gunasekera](#) (Pittcon) and [Jiashi Wang](#) (Nat'l Organic Symposium).



Civil Service award recipients Tom Stefanek and Nancy Hagberg.



Graduate student award recipients Jingzhi Pu, Jiashi Wang, Victor Sussman, Sarah Schmidtke and Andrew Zalusky.

Investing in the Future of Chemistry

I am delighted to have an opportunity to introduce myself to you as the new development officer for the Department of Chemistry. My name is David Hoffman and I joined the IT development staff in late July. In my first few months, I have enjoyed meeting and connecting with a number of Chemistry alumni. I have visited with alumni in Minnesota, Pennsylvania, Delaware, New York, Florida, and I attended the Minnesota Chemistry Alumni Breakfast at the ACS meeting in Boston as well.

I have been fascinated with the many stories I have heard, and the impressive careers and achievements our graduates have accomplished. The one common thread that weaves its way through each of the conversations I have had with Chemistry alumni is a deep appreciation for the education they received at Minnesota. Many of these individuals have shown their appreciation financially, and are recognized in this newsletter.



*David Hoffman
Development Officer
105 Walter Library
117 Pleasant St. S.E.
Minneapolis, MN 55455*

In order to maintain its highly ranked programs and to compete effectively with other top schools, the Department of Chemistry is in need of additional resources. Our greatest areas of need include endowed chairs and professorships, graduate fellowships, programs that benefit undergraduate students, and the construction of a new Chemical Instrumentation Facility.

As the development officer for Chemistry, I will be happy to work with you and your advisors as you consider your support. There are a number of ways for you to make your gift, and accomplish your financial goals as well. For example, if you have experienced a drop in income from falling interest rates, consider making your gift through a Charitable Gift Annuity. A Charitable Gift Annuity could help you gain a higher, partially tax-free income and an additional tax deduction.

In addition to connecting with our Minnesota alumni, I am also planning to visit Naples, Florida, San Francisco, and Philadelphia in the months ahead. Please feel free to contact me at dhoffman@it.umn.edu, or 612.625.6035 if you are interested in a visit, or if you would like to receive information about supporting the Department of Chemistry. I look forward to meeting you!

Undergraduate Fellowships and Prizes



Seniors Jill Ebeling, Jessica Dahlquist, Jessica Pierre-Mansour, Melissa Iseminger and Sarah Swanson at the Recognition Reception May 10, 2002.



Seniors Cuong Pham and Dana Weiland with research advisor Karin Musier-Forsuth at the Recognition Reception prior to IT Commencement.



Seniors Cuong Pham, Seth Nelsen, Philip Imholte, Joseph Young and Dana Weiland at the Recognition Reception May 10, 2002.

Senior Awards

Peteris Auzins Memorial Scholarships awarded to advanced undergraduates who have demonstrated outstanding achievement in undergraduate research in addition to overall scholastic excellence: [Philip Imholte](#), [Seth Nelsen](#), and [Cuong Pham](#). **David A. and Merece H. Johnson Scholarship** awarded to an advanced undergraduate who has demonstrated outstanding achievement in undergraduate research in addition to overall scholastic excellence: [Andrew Presley](#). **The Kenneth E. and Marion S. Owens Scholarship In Chemistry** awarded to an advanced undergraduate who has demonstrated outstanding achievement in undergraduate research in addition to overall scholastic excellence: [Peter Oman](#). **Gleysteen Scholarship** awarded to an advanced undergraduates who has demonstrated outstanding achievement in undergraduate research in addition to overall scholastic excellence: [Alexis Ogdie](#).

Junior Awards

The Robert C. Brasted Memorial Fellowship a fellowship as well as a part-time apprenticeship in the Department's General Chemistry Program awarded to an outstanding chemistry major who has expressed an interest in a teaching career in chemistry: [Sarah Geers](#). **The Lloyd W. Goerke Scholarships** awarded to a chemistry major who has shown outstanding academic achievement and who has financial need: [Edward Huttlin](#). **M. Cannon Sneed Scholarship** awarded to a chemistry major who has demonstrated great promise for future achievement: [Mike Frederick](#). **George T. Walker Scholarship** awarded to a chemistry major who has shown outstanding academic achievement and who has financial need: [Katya Nikitsina](#).

Sophomore Awards

Thomas DuBruil Memorial Awards awarded to sophomores who have demonstrated outstanding achievement in undergraduate research in chemistry: [Amos Anderson](#) and [Benji Mathews](#).

Other Awards

J. Lewis Maynard Memorial Prize in Advanced Inorganic Chemistry. This award is given for outstanding scholastic achievement in advanced inorganic chemistry: [Theresa Zahn](#).

CRC Freshman Chemistry Achievement Award sponsored by the CRC Press, Inc. This award consists of the latest CRC Handbook of Chemistry and Physics and is given to a freshman chemistry major for outstanding scholastic achievement in freshman chemistry: [Prateek Verma](#).

Merck Index Award sponsored by Merck & Co., Inc. This award consists of the latest edition of the Merck Index and is given to a sophomore chemistry major for outstanding scholastic achievement in organic chemistry: [Benji Mathews](#).

Undergraduate Award in Analytical Chemistry sponsored by the Division of Analytical Chemistry of the American Chemical Society. This award consists of a year's subscription to the journal, Analytical Chemistry and is given for outstanding scholastic achievement in analytical chemistry: [Adria Tyndall](#).

Robert C. Brasted Outstanding Undergraduate TA Awards. This award was established in 2001 in honor of Robert C. Brasted, Professor at the University of Minnesota from 1947 to 1986 and former Director of General Chemistry for more than 25 years. Dr. Brasted's strong commitment to teaching and education earned him fifteen teaching awards including: the American Chemical Society Award in Education, The Chemical Manufacturers Award, The James Flack Norris Award of the Boston ACS Section, the John Kuebler Award of Alpha Chi Sigma and the Mosher Award of the California Section. He was the only person to receive all five of these awards. The Brasted Outstanding Undergraduate TA Awards recognize outstanding contributions to teaching by undergraduate assistants: [Adam Amundson](#) and [Maran Wolston](#).

Many Thanks To Our Donors

Industrial support to education is a boon to both academia and industry. The strength of this partnership is the key to the future of chemistry in this country for top universities provide the high caliber individuals who will tomorrow lead the very companies who have invested in them today. Special projects, including matches for equipment grants, the departmental portion of set-up packages for new faculty, and summer support of graduate students, are made possible through the generosity of our friends in industry. Some companies provide support directly to the research programs of faculty members whose basic research is important to industrial applications. On behalf of the department, its faculty and staff, and the student beneficiaries of this generosity, we thank the following companies and educational foundations for their support in 2001.

The Air Products Foundation
BP Amoco Foundation, Inc.
Dow Chemical Company Foundation
Ecolab Foundation
Exxon Mobil Foundation
Glaxo Smith Kline
Hercules, Inc.
Hoffman-La Roche Foundation
The Merck Company Foundation
Monsanto Fund
The Pfizer Foundation
Phillips Petroleum Company
Shell Oil Company Foundation
Texaco Foundation
3M Foundation, Inc.
Waters Corporation

The **Kolthoff Fund** was anonymously endowed in 1976 for the purpose of establishing a prestigious lectureship series. Each semester, the eminent scientist chosen as Kolthoff Lecturer visits our campus for a week's residency, presenting a series of public lectures, and interacting with our faculty and students. The Kolthoff Fund also supports a Kolthoff Fellowship for an outstanding first year graduate student. Donors during 2001 were: David C. and Felicia J. Boyd, Miran K. Chantooni, Jr., Grace Po-Yuen Chiu, Willa I. Guss, and Yutaka Okinaka.

Abbott Laboratories
BP Amoco Foundation, Inc.
Bristol-Meyers Squibb Company
Camille & Henry Dreyfus Foundation
The Dow Chemical Company Foundation
E.I. DuPont de Nemours & Co.
Eli Lilly & Company
The James Ford Bell Foundation
Pfizer, Inc.
The Proctor & Gamble Fund
Schlumberger Foundation, Inc.
Shell Oil Company Foundation
3M Company

Companies with matching gift policies help to ensure that industrial donations are consistent with public sentiment about the merits of charitable giving. Such programs vary from one-to-one to three-to-one matching ratios. We thank the following companies for their donor matches in 2001.

The **Paul G. Gassman Lectureship Fund** brings a Gassman Lecturer in organic chemistry to our campus each semester. 2001 Donors were: Newman M. and Lillian Bortnick, John H. Dygos, Gerda A. Gassman, Joyce B. Hall, Kentaro Okuma, and D. James Schreck.

Gassman Lecturers



Dennis Dougherty
Cal Tech



JoAnne Stubbe
MIT



Dave Evans
Harvard

Kolthoff Lecturers



René Schwarzenbach
Swiss Fed. Inst. For Enviro.
Sci. & Tech. (EAWAG)



Geraldine Richmond
University of Oregon

Individual Donors

Individual support from our alumni and friends is crucial to the myriad activities of our department. Thanks to your generosity, we have been able to offer fellowships and scholarships to our outstanding students, retain our best faculty, and implement projects which will 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 2001 donors.

Harmon B. Abrahamson	George E. Davis	Milton L. Hoefle	Patricia L. McNally	Thomas S. and Debra J.
Irving M. Abrams	Warren F. Davis	Derk J. Hogenkamp	Angish Mebrahtu	M. Robison
Steven J. Albrechtsen	Eugene De Wald	Peter A. Howell	Curtiss J. Meredyk	Anthony R. Rossini
Carl J. Almer	Clifford C. Deiner	Rebecca C. Hoyer	Vaughn P. Miller	Wayne J. Rothschild
Roger K. Amidon	Jonathan P. Dick	John W. Hull, Jr.	Robert F. Modley	Leonid I. Rubenstein
Mark L. Anderson	Mark L. Dittenhafer	Michelle J. Hunt	James D. and Carol M.	Catherine E. Ryan
Jerold O. and Donna M.	Karen D. Donnelly	Steven E. Husebye	Moenke	Paul F. Schacht
Bahls	Charles H. Douglass, Jr.	Jonathan E. Hutchins	Lyn C. and Glenn R.	Joseph R. Schneider, III
Jack Baldwin	Charlotte Drenckhahn	David Hyun	Moodie	Joseph D. Schroeder
Robert L. Batdorf	James J. Eaton	E. Harry Jancis	John and Gale Muellner	George F. Schuette
Wadim Batorewicz	John A. and Barbara L.	Melody E. Jewell	Mary H. Murai	John L. Schultz
Donavon G. Beaver	Edgar	Eugene C. Johnsen	Craig B. and Pamela	Lynn T. Sergi
Robert D. Berg	David C. Egberg	Brian J. Johnson	Murchison	Young-Tzung Shih
John T. Bergman	Gilbert L. Eian	John A. Johnson	Mark D. Nachbor	Donald W. Sjoblom
Steve J. Bezuk	Jurgen H. and Mary M.	Kenneth E. Johnson	Lawrence A. Nielsen	Thomas J. and Mary
Leonard F. Bjeldanes	Exner	Susan A. Johnson	Thomas G. Ostertag	Pyne Smith
William and Sandra	Ronald B. Faanes	Theresa M. Kelly	Rudolph Pariser	Richard V. Soderberg
Blackley	James E. Fairman	Kenneth E. Kosel	George W. Parshall	Kathleen and Mark
G. Bohnert Bodem	Raymond J. Farm	Horatio H. Krause Jr.	Kim E. Paulsen	Steine
Newman M. and Lillian	James B. Federline	Richard J. Kvittek	David R. Peck	Joseph F. Stieber
Bortnick	Daniel W. Firth	Roger W. Kwong	James R. Persoon	Richard J. Sundberg
Larry J. Bresina	Steven R. Flom	Juey Hong Lai	Marvin L. Peterson	Todd A. Swanson
Nicolas Brodoway	Nile N. Frawley	Ronald F. Lange	Sheri L. Peterson	Lay C. Tan
Dow E. Brophy	Terry J. Gilbertson	William A. Larson	Hazen C. Pratt	Kathleen P. Tekautz
Jay S. Buckley, Jr	Sabiha A. Gokcen	Melinda J. C. and Steven	James H. and Elberta	Charles R. Thueson
Albert V. Buettner	Bob G. and Mary Beth	H. C. Lee	Prestegard	Steven J. Tinker
John D. Cahoy	Gower	Wu-Shyong Li	William W. Prichard	Charles A. Triplett
Deanna D. Carlson	Karen A. Gruetzmacher	Steven E. Lindberg	R. James Puhl	Gregg A. and Marcia M.
Gordon B. and Sandra L.	Richard T. Haasch	Kyle J. Lindstrom	Peter M. Radford	Vandesteeg
Carlton	Mark D. Hadler	Yu-Ying Liu	Edgar E. Renfrew	Victoria K. Veach
Edward M. Carr	David A. Halsrud	Robert G. Lockwood	Prof. Malcolm M. and	Richard E. Volkmann
Charles J. Cerjan	Charles F. Hammer	Karen D. Lucast	Carol C. Renfrew	Mary J. Wahlstrom
Clayton G. Christensen	Joseph B. Hanson	Gerold Luss	Michael and Patricia	David A. Weil
Margaret S. and Tze-Yao	Paul R. Hanson	Andrew S. Magee	Rethwill	Percy A. Wells
Chu	Todd R. Hayes	Helmut K. and Mary P.	Daniel E. Rich	Edward L. Wheeler
Henry B. Clark	Walden L. Heino	Maier	Reuben D. Rieke	Richard M. and Gisell
Arthur J. Coury	Jerry A. Herby	Daniel R. and Marcia A.	Frederick H. Roberts	Wien
Darwin D. Davis	Charles W. Hobbs	Mantell	Donald N. Robinson	James T. Wolter
		M. John Markuson		

Memorial funds are a most fitting remembrance of those whose contributions to science and to society deserve special recognition. These funds and their 2000 contributors are: **Robert C. Brasted Memorial Fellowship Fund**, Leah A. and Peter Carr, George D. Kreuzkamp, Wayland E. Noland, and Robert K. Sandager; **Thomas P. Du Bruil Memorial Fund**, Ann C. Brey, and Paul D. Brey; **Albert J. Moscowitz Memorial Lectureship In Physical Chemistry Fund**, Mary E. Learmont and Steven C. Riemer; **Overend Memorial Fund**, Thomas G. Goplen; and **John Wertz Fellowship in Chemistry**, John A. Wertz, Florence C. Wertz

A number of other funds have been created for special purposes, usually at the request of the donor for specified purposes. These funds and their 2000 benefactors are: **Lester C. and Joan M. Krogh Endowed Scholarship Fund**: Lester C. and Joan M. Krogh; **Kenneth E. and Marion S. Owens Scholarship In Chemistry Fund**, Kenneth E. and Marion S. Owens; **Goerke Undergraduate Fellowship Fund**, Lloyd W. Goerke; and the **Wayland E. Noland Research Fellowship Fund**, Rodney D. DeKruif, Lee E. Klade, and Wayland E. Noland.

The Science & Engineering Library



Inside Walter Library



The back of Walter Library is the entrance to the Digital Technology Center. Smith Hall is to the right.



The newly constructed walking bridge over Washington Avenue. Kolthoff Hall is behind it.

continued from page 3

both floors boast a magnificent view of the downtown Minneapolis skyline. Conference rooms and a large, state-of-the-art scientific presentation room are also available

The DTC was established in 1998 as part of former University president Mark Yudof's digital technology initiative. The DTC has three main objectives: to advance the University as a national leader in digital and information technology; to enable the University to produce graduates able to meet the workforce needs of high-technology industries; and to build alliances between the University, government, other educational institutions, and industry. The Supercomputing Institute, created in 1984 to provide leading edge high-performance computing resources to the University's research community, is now one of the DTC's research centers.

There are many Chemistry Department faculty members with active research projects at the Supercomputing Institute, and several of these are Fellows or Associate Fellows of the Institute. These include George Barany, David Blank, Christopher Cramer (Fellow), Mark Distefano, Jiali Gao (Fellow), Wayne Gladfelter, Thomas Hoyer, Steven Kass (Associate Fellow), Doreen Leopold, Kenneth Leopold, Karin Musier-Forsyth, Jeffrey Roberts, J. Ilja Siepmann (Fellow), Donald Truhlar (Fellow and Director of the Institute), and Darrin York (Fellow).

One of the research laboratories of the Supercomputing Institute, the Scientific Development and Visualization Laboratory (SDVL), is now located in some of the new spaces on the fifth floor of Walter. This laboratory provides researchers access to current supporting technology and expertise necessary to carry out successful state-of-the-art supercomputing. The SDVL consists of three rooms, including a workstation room, a dual-purpose workstation/tutorial room, and a video production and imaging room.

More information about the Supercomputing Institute can be found at their Web site, www.msi.umn.edu. The DTC Web site is www.dtc.umn.edu.

UNIVERSITY OF MINNESOTA

*Department of Chemistry
Institute of Technology
Kolthoff and Smith Halls
207 Pleasant St. S.E.
Minneapolis, MN 55455*

Nonprofit Org.
U.S. Postage
PAID
Minneapolis, MN
Permit No. 155
