Dear Alumni and Friends:

As always I hope this letter finds you well. Our letter is arriving later than it has in the past four years, and our plan is to continue sending it out at the end of the spring semester. This allows us to undertake the task of creating the letter at a time of the year that is a little less hectic.

The big event during 2004 was the centennial celebration held on October 9. Although students were taking chemistry courses and graduating as majors before 1904, it was in this year that the School of Chemistry was established and George B. Frankforter was appointed as its first Dean. The presentation, which highlighted selected parts of our history, can be downloaded from our departmental website at www.chem.umn.edu/alumni/HistoryWeb/History.html. Following the presentation about 250 participants joined us for dinner and a party at the Campus Club in Coffman Memorial Union. We include a few pictures of the event elsewhere in this newsletter.

Over the past two years we have focused a great deal on the Kolthoff Hall renovation. The state bonding bill, which includes two-thirds of the funds for the 26.1 million dollar project, was signed into law by Governor Pawlenty on April 11, 2005. One of the major components of the project will involve installing new fume hoods throughout the building and redoing the entire heating, ventilation, and air conditioning system. We will also redress many of the fire and safety code issues that have changed since its construction in the late 1960s. Perhaps the most exciting component of the project is the renovation of the space (approx. 10,000 sq. ft.) that was “temporarily” (since 1970) used to teach the general biology labs. This provides us with an important opportunity to reorganize space and relieve some of the congestion around the department. Planning the entire project will require another nine to twelve months, so construction will begin in mid-2006 and be completed in 2008.

We thank Professor Ron Gentry, who is retiring after 35 years, for his outstanding scholarship and service to the department. This included serving as Chair from 1989 to 1999. At the same time we are excited to welcome Christy L. Haynes as the newest faculty member. She is planning to arrive this summer and initiate a research program in bioanalytical chemistry. Christy received the 2005 Nobel Laureate Signature Award from the ACS at the San Diego meeting. This was an exciting event because in addition to Christy’s award, Jeannette Brown (MS ’58) received the American Chemical Society Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences. Jeannette was also awarded an Outstanding Achievement Award from the University of Minnesota in 2005. Also on stage at San Diego were Harvard Professor Eric Heller (BS ’68) who received the ACS Award in Theoretical Chemistry and Dr. Joe Porwoll (PhD ’82), President of Sigma Aldrich, who presented the Sigma Aldrich Award in Synthetic Organic Chemistry. This was also a great year for our faculty, who received many awards summarized elsewhere in this letter.

After nine years of service, Dean H. Ted Davis returned to full time teaching and research in the Department of Chemical Engineering and Materials Science. Our new Dean is Steven L. Crouch, who has been a member of the Department of Civil Engineering for 35 years and who has served as the Associate Dean of Finance and Planning since 1997. One of Dean Crouch’s early tasks was to appoint the new Chair of Chemistry. We are very fortunate that Jeff Roberts has agreed to accept this assignment. This means, of course, that I am completing my term as Chair. It has been an honor to serve in this office for these past six years, and I am grateful to many staff, faculty, and students for making this time productive. One of the joys of the job has been developing a closer relationship with many of you. It has helped me to recognize that our impact on the field of chemistry and, more broadly, on society is amplified many times over by our students. I look forward to continue meeting you at ACS or other meetings in the future.
Dr. Christy Haynes Joins Department

Christy L. Haynes will be joining the Chemistry Department faculty this fall as an Assistant Professor. While she was actually hired more than two years ago, she has spent the interim time doing postdoctoral research with Professor R. Mark Wightman at the University of North Carolina, Chapel Hill.

Christy grew up in Arizona and moved to Minnesota in 1995 to attend Macalester College in St. Paul. While at Macalester, she performed research in Professor Rebecca Hoye’s laboratory, working toward the total synthesis of elenic acid. She also worked in the polymer formulation laboratory at Imation Corporation throughout her undergraduate years under the direction of Dr. Sharon Simpson.

Upon finishing her B.A. in Chemistry (with minors in mathematics and Spanish) in 1998, Christy decided to attend graduate school at Northwestern University, where she thought she would study inorganic synthesis and x-ray crystallography. Instead, she joined the research group of Professor Richard P. Van Duyne, a physical/analytical chemist, and started working on projects relating to nanostructure fabrication and laser spectroscopy.

Christy had a very successful doctoral career, publishing 28 peer-reviewed manuscripts, writing several funded research grants, and winning numerous awards. In fact, she just accepted the Nobel Laureate Signature Award for Graduate Education at the spring 2005 ACS meeting (see Faculty Awards, p. 12) in San Diego. This award recognizes the outstanding achievements of one graduate student/preceptor pair in Chemistry each year.

Christy will be teaching General Chemistry II for the department this fall. Although she has never been in a class with more than 40 students, she is excited to interact with the 350 University of Minnesota undergraduates in her course. She plans to bring nanoscience, green chemistry, and some biological chemistry into her lectures and class activities.

In addition she will be setting up a research laboratory, with the help of her postdoc, Dr. Adam D. McFarland, to perform state-of-the-art laser spectroscopy and electrochemistry measurements. Christy is highly collaborative and enjoys working at the interfaces of physical, analytical, biological, and materials chemistry. She plans to apply surface-enhanced Raman scattering to study sediment pollution and remediation. She also intends to correlate Raman scattering measured inside living neuronal cells with electrochemically measured neurotransmitter release to understand brain-based disorders. Her diverse research plans also include a new route to synthesis size and shape tunable noble metal nanoparticles for plasmonics applications.

Christy will arrive in Minnesota during the summer of 2005 with her spouse, Charles, and their two dachshunds. Charles has just completed his M.B.A. and hopes to find a job in real estate development focusing on sustainable building and community enhancement. When not in the laboratory or classroom, they are likely to be at the theater or the symphony or visiting Charles’s large extended family in the Twin Cities.

Newly Appointed Institute of Technology Dean

Steven L. Crouch

awards the Horace T. Morse/University of Minnesota Alumni Award for Outstanding Contributions to Undergraduate Education to Professor Ken Leopold at the 2005 graduation celebration (see page 12).

Dr. Crouch was named dean of the Institute of Technology in January 2005. He grew up in Sleepy Eye, Minnesota, graduating from its public high school in 1961. He received bachelor’s, master’s, and doctoral degrees in mineral engineering from the University of Minnesota and began his career with the Mining Research Laboratory of the Chamber of Mines of South Africa in 1968. In 1970 he joined the University of Minnesota faculty as an assistant professor in what is now the Department of Civil Engineering. From 1987 to 1997 he served as head of that department and in 1997 became the college’s associate dean for finance and planning. As dean, Crouch hopes to strengthen the college’s interdisciplinary initiatives in digital technology and nanotechnology and to expand its involvement in the University’s Initiative for Renewable Energy and the Environment.
Distinguished McNight University Professor Jeffrey Roberts has accepted a five-year appointment as Chair of the University of Minnesota Chemistry Department effective September 1, 2005. He will be replacing Wayne Gladfelter. Professor Roberts has been with the University since 1990, fresh from postdoctoral studies at Stanford. He is looking forward to his tenure as Chair and believes that the University of Minnesota’s new Strategic Positioning Initiative will offer many opportunities for the Chemistry Department to prosper.

Jeff’s interest in teaching has led him to work diligently toward creating a quality educational experience for graduate students and undergraduate students alike. He thinks that "the most satisfying part of the job is watching the light come on when they (students) begin to understand . . . it is what makes the job worthwhile."

He served as Director of Graduate Studies for the Chemistry Department from 2000 to 2003 and since then has become Graduate Faculty for the Department of Mechanical Engineering. In addition, he is the Director of The University of Minnesota Twin Cities Research Site for Educators in Chemistry (see page 7), a National Science Foundation–funded initiative designed to foster new and meaningful scientific interactions between a large, Ph.D.–granting chemistry department and the departments of 30 to 35 primarily undergraduate institutions (www.chem.umn.edu/rsec/).

Jeff is married to Deborah Jaffey, Ph.D. and chemist for the Imation company in Oakdale, Minnesota. He and Deborah have two children, Anna (9) and Eleanor (4). Among his many awards and honors, he received the Camille and Henry Dreyfus New Faculty Award for 1990-1991 and has been a Fellow of the Alfred P. Sloan Foundation (1996-1998). He received his B.S. in Chemistry in 1982 from UC Berkeley and his Ph.D. in Chemistry from Harvard University in 1988.

---

**Retirement**

Ron Gentry was born on July 7, 1942 in Texarkana, Texas. He received his Bachelor of Science in chemistry, summa cum laude, in 1964 from the University of Redlands in California. He did his graduate work in physical chemistry at the University of California, Berkeley, and was granted the Ph.D. in 1967. After postdoctoral studies at Massachusetts Institute of Technology, he joined the faculty of the Department of Chemistry, University of Minnesota, in 1970, and served his entire academic career at Minnesota. He was promoted to Associate Professor in 1975, to full Professor in 1979, and served as Chair of the Department of Chemistry from 1989 to 1999. His professional awards include an Alfred P. Sloan Research Fellowship, 1975-77, and a Yamada Science Foundation Fellowship at Keio University and University of Tokyo, 1984. He was elected Fellow of the American Physical Society in 1987. His numerous professional activities include service on the editorial board of the *Journal of Chemical Physics*, service as a *Journal of the American Chemical Society* associate editor, and chairing or co-organizing national and international conferences including the Conference on the Dynamics of Molecular Collisions at Gull Lake, Minnesota.

Gentry’s research interests are in physical chemistry and chemical physics: molecular energy transfer, state-to-state reaction dynamics, laser chemistry and spectroscopy, and dynamics of atomic and molecular collisions at ultralow kinetic energies. In addition to mentoring many undergraduates, he supervised the studies of twelve Ph.D. students and one Master’s student.

Professor Gentry is generally considered, along with Nobel Laureate Yuan T. Lee, one of the two most outstanding molecular beam experimentalists in the world. His merged beam and pulsed beam apparatus were widely influential, and his current-loop pulsed value design and electroformed skimmer revolutionized the whole field. His discovery of the extremely weakly bound helium dimer with an average internuclear distance greater than 50 Å is considered one of the most dramatic tour de force measurements ever accomplished. Most of his experimental work was the result of a fruitful thirty-year collaboration with Professor Clayton F. Giese of the Physics Department.

Gentry has moved to Port Townsend, Washington, and will spend his retirement years on his photography hobby, on his love of boating, and continuing to work on his latest research interest, which involves the use of ultraminiature mass spectrometers for environmental monitoring of volcanic behavior in Hawaii and Costa Rica. We wish Ron and his wife Sharron many happy and productive years.
The creation of new companies is a vital component of Minnesota’s economic growth and future prosperity. During the early 1990s the Institute of Technology (IT) set out to determine how many active companies had been founded by our alumni. The goal of this project was to show that investment in IT, whether through state funding or private contributions, yields a tremendous return.

The findings were impressive: more than 1,000 companies in business at the time (in some cases under a different name or ownership) could trace their roots to IT. Published in 1993 as IT alumni: more than 15,000 responses. Broader in scope and more detailed in its analysis than the late 1990s. And the dawn of the 21st century heralded a wave of new ventures at the intersection of biology, information technology, and engineering. Clearly the time was ripe to take another look at our alumni and their accomplishments.

Last fall, with generous support from the Mr. and Mrs. George W. Taylor Foundation, IT surveyed nearly 48,000 alumni and received more than 15,000 responses. Broader in scope and more detailed in its analysis than the 1990s poll, the 2004 survey confirmed that the entrepreneurial spirit is thriving among IT alumni:

• 3,024 respondents—a fifth of the total—reported founding one or more companies.
• Approximately 4,150 of the companies created by IT graduates remain active today. Many of these companies are mature: forty percent have been in business more than ten years; another 25 percent have been in business between five and ten years; a third have been in business less than five years.
• Nearly two-thirds of the active companies founded by IT alumni are located in Minnesota: 53.1 percent in the Twin Cities metro area and 8.6 percent in Greater Minnesota.
• These Minnesota companies (roughly 2,600) employ more than 175,000 people and generate approximately $46 billion in annual revenue.
• The active companies located outside Minnesota (about 1,500) employ nearly 376,000 people and generate approximately $44 billion in annual revenue.

2005 IT Alumni Survey

The Institute of Technology again surveyed its alumni in 2004 in an attempt to clearly define the economic impact that IT alumni have had on the state of Minnesota, to build bridges between industry and IT, and to allow us to learn from our alumni how we can improve the career development of our students.

Since the first report was published, the corporate landscape has changed dramatically. The rise of the Internet and rapid advancements in information technology fueled an explosion of entrepreneurial activity in the late 1990s. And the dawn of the 21st century heralded a wave of new ventures at the intersection of biology, information technology, and engineering. Clearly the time was ripe to take another look at our alumni and their accomplishments.

Last fall, with generous support from the Mr. and Mrs. George W. Taylor Foundation, IT surveyed nearly 48,000 alumni and received more than 15,000 responses. Broader in scope and more detailed in its analysis than the 1990s poll, the 2004 survey confirmed that the entrepreneurial spirit is thriving among IT alumni:

• 3,024 respondents—a fifth of the total—reported founding one or more companies.
• Approximately 4,150 of the companies created by IT graduates remain active today. Many of these companies are mature: forty percent have been in business more than ten years; another 25 percent have been in business between five and ten years; a third have been in business less than five years.
• Nearly two-thirds of the active companies founded by IT alumni are located in Minnesota: 53.1 percent in the Twin Cities metro area and 8.6 percent in Greater Minnesota.
• These Minnesota companies (roughly 2,600) employ more than 175,000 people and generate approximately $46 billion in annual revenue.
• The active companies located outside Minnesota (about 1,500) employ nearly 376,000 people and generate approximately $44 billion in annual revenue.

• Approximately 1,000 Chemistry alumni completed the 2004 survey, with 57 percent responding that they had attended the Institute of Technology for graduate school.
• Over 100 Chemistry alumni identified themselves as company founders, representing graduating classes ranging from 1935 to 2001.
• Chemistry Founders have established more than 140 companies, with 67 percent of the companies being founded in the last ten years.
• The companies represent a variety of economic sectors, with the majority in consulting services and manufacturing.

Imagine that with a phone call, an email, or the stroke of a pen you had the power to double all the good that a fellowship does: change a life, spark new ideas, generate breakthrough technologies, or underwrite creative work in a discipline you love. The 21st Century Graduate Fellowship Endowment gives you the power to create a meaningful legacy during your lifetime, and is the perfect opportunity to help nurture promising graduate students in Chemistry.

Established in 2000, this endowment is a result of the University licensing agreement for the AIDS drug Ziagen with Glaxo Wellcome PLC, a pharmaceutical company. The fund was created with royalties generated by worldwide sales of Ziagen, which was developed at the University by a research team led by pharmacy professor Robert Vince. Gifts of $25,000 or more that are designated to endow graduate fellowships may be eligible for matching through the fund.

Maybe you’ve been thinking about making a gift to Chemistry for a while now, but you’ve been waiting for the right moment to come along. I hope you will conclude that now is the perfect time to create a legacy by investing in human potential—the best bargain you’ll ever find. For more information, contact David Hoffman, development officer for the Chemistry Department at 612-625-6035 or 800-587-3884, or dhoffman@it.umn.edu.
Where Are You and What Are You Doing?

Dr. Conrad Bergo (Ph.D. 1972)
is a professor of Chemistry, recently returned from a lecture tour in Kentucky and North Carolina. Bergo was the invited speaker to the chemistry departments of Eastern Kentucky University and University of North Carolina-Asheville. He was also the speaker at a dinner meeting of the Sigma Xi Chapter in Asheville. Bergo reported on results of research carried out at East Stroudsburg University and on trips to gather information in Thailand. He spoke about the chemistry of processes used in manufacturing crafts and the chemistry of foods and spices that give the foods in Thailand its distinct character.

Jeffrey J. Cernohous (Ph.D. 1997–Hoye)
spent five years in 3M’s Adhesive Technologies Center working on applications for materials that have a controlled polymer architecture. He then moved to 3M’s Dyneon organization in late 2002 as their Development Group Leader. After being six-sigmatized to death, Cernohous left 3M in October 2003 to start his own specialty materials (polymers) company, Interfacial Solutions. He is currently in the process of joining a new business incubator at the University of Wisconsin-Stout and has been named an adjunct professor there. Cernohous is enjoying the life of an entrepreneur and says he will continue to do so as long as he can.

Lt. Col. Mark W. Dahl (B.S. 1985) has not had much contact with U of MN over the last 19 years. He became a Marine officer five days after receiving confirmation of his 1985 graduation and was quickly swept off to Quantico, VA, with his new bride of three days, to become a 2nd Lieutenant. Dahl went on to flight school and has spent 18 years flying F/A-18 Hornet fighter aircraft. He now works as a Legislative Affairs Officer as a Lieutenant Colonel at the Pentagon. Dahl has taken 30+ credits toward an M.S. in Biology at the Institute for Creation Research in Santee, CA, and he has completed multiple military schools over the years. His goal is to become a teacher after military retirement, probably junior or senior high school in math or science. Dahl’s father still lives in Minnetonka, and his sister is finishing her fourth year at U of MN, going into medicine. The Dahl’s have four children: Devin 13, Connor 11, Tyler 9, and Lauren 7.

Memorial

Peter Keim Trumper

age 48, died of cancer at his home in Brunswick, Maine, on July 7, 2004, following a valiant struggle to overcome the disease.

He was born in Philadelphia and grew up in Vermont. He attended the Grammar School and the Putney School and spent some of his childhood in the Dominican Republic, Bogota, Columbia, and on a Navaho Reservation in Shiprock, New Mexico. He worked at Rescue, Inc., and completed his undergraduate education at St. Olaf’s College in Minnesota. He earned his doctoral degree in Chemistry at the University of Minnesota and held a postdoctoral fellowship at the University of Pennsylvania. Peter taught organic chemistry at Bowdoin College and the University of Southern Maine, co-authored several editions of the textbooks Microscale Organic Laboratory and Microscale Techniques for the Organic Laboratory, served as editor of Chemical Educator and edited numerous medical textbooks. He was a student at the University of Maine School of Law and at the time of his death was one paper short of his law degree.

He was predeceased by his mother, Nance Peiper Trumper and is survived by his wife, Susan A. Kaplan of Brunswick, Maine, brother Jonathan Trumper of Maplewood, New Jersey, sister Rachel Debasitis of Woodstock, Vermont, father John Trumper of Brattleboro, Vermont, aunt and uncle El- lin and Donald Spitzer of Haverford, Pennsylvania, and nephews Max and Willy Trumper and Jesse Snyder.

Peter enjoyed reading a broad range of literature, listening to music, autocross and Formula One racing, and cooking extraordinary dinners for his friends and family. He was passionate about education and proud of his students, particularly those who pursued careers in research, education, or medicine. A man with a keen intellect and a lovely dry wit, Peter will be sorely missed by those who loved him and whose lives he touched. The family requests that contributions in Peter’s name be made to the Palliative and Supportive Care Program at MidCoast Hospital in Brunswick, Maine, where an educational fund will be established to recognize and further the education of nurses and certified nursing assistants.

Alumni Jeanette Brown Receives ACS Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences

Sponsored by the Camille and Henry Dreyfus Foundation

Chemistry’s 2005 Outstanding Achievement Award recipient is Jeanette E. Brown (MS 1958) from Hillsborough, NJ. Ms. Brown earned the B.A. degree in chemistry from Hunter College in 1956 and the M.S. degree from the University of Minnesota in 1958. She was the first African American woman to receive a degree from our graduate program. continued on page 7

continued on page 5

continued on page 6
informal brown bag seminars on the current literature and current work in the labs. Attests to the great job Britton did in keeping his student on track to finish. He also organized and ran very engaging informal brown bag seminars on the current literature and current work in the labs. Collins has been Professor of Chemistry at Viterbo University in La Crosse WI since 1976 and is currently completing a term as Chair of the Natural Science Division and Chemistry Department chair. He will be spending the next academic year on sabatical at Minnesota in the RSEC program, working with Dr. Larry Que, tentatively to explore the thermodynamics of ligand binding and the redox properties of catecholase model complexes.

Successes over the years have included his first sabbatical with Alan Hooper, Professor of Biochemistry, Molecular Biology, and Biophysics in CBS. Subsequent work with him and his group resulted in several publications on the electrochemistry of hydroxylamineoxidoreductase and other heme proteins.

Collins was named the CASE Wisconsin Professor of the Year in 1988 and was awarded the bronze medal in the CASE National Professor of the Year Program that year.

Viterbo has sent several of its chemistry graduates to the U of M for graduate study in chemistry over the years, most recently Adam Schellinger. We also presently have a chemistry grad in St. Paul studying plant biochemistry.

Karl Ochs II is currently living in St. Paul with his wife, Diane. He works as a waste treatment operator/laboratory technician at Midwest Finishing Inc. in Brooklyn Park.

Kari Hendlin (BChem 1996) now also has a degree in Biomedical Engineering, and she is working at the VA Medical Center and the University of Minnesota doing clinical research and device testing in urology. Her daughter, Kenzie, is 10 years old and keeping her very busy.

Bob Buntrock (BChem 1962–Noland) and wife Gloria have moved to Orono, Maine, primarily to be near their daughter’s family, including two small grandchildren. He is getting well acquainted with the staff and faculty at the University of Maine Chemistry Department and Library. He has made a presentation on chemistry careers to a freshman chem class (with more planned). Buntrock will be assisting in the Chemistry Olympiad exam for the Maine Section ACS. Buntrock Associates is still in business, with a few remaining information service customers.
We want this publication to reflect your interests. Send comments to: www.chem.umn.edu/alumni/contact.html or alumni@chem.umn.edu

Vickie Woodcock

Roberts

with the expert assistance of Vickie Woodcock. Professors and their students from undergraduate institutions all over the Midwest (and beyond) are able to forge new collaborations with Minnesota faculty members and to build their own sustainable research programs.

The last year saw a significant increase in the number of women participating in the program. Rita Majerle (Hamline University) used RSEC funding to start a collaboration with George Barany, in which she learned the state of the art in solid-phase peptide synthesis. Shoshanna Coon (University of Northern Iowa) launched a new research project on the production and characterization of organic monolayers on silicon. Dr. Coon, a colleague of Xiaoyang Zhu, writes, “The RSEC program has been incredibly valuable to me already. Just being able to see and copy existing experimental techniques, rather than having to reinvent the wheel, has made it feasible for me to start this new research project and write a proposal to obtain funding for it.”

Thirty-one students, over half of them women, have participated in RSEC-sponsored research projects. A number of them have graduated and gone on to graduate or professional programs or into industry; some are still undergraduates. Most have presented posters at national meetings, with their travel underwritten by RSEC travel grants.

She carried out her graduate thesis research in the area of synthetic organic chemistry in the laboratory of Professor Frederick Koelsch. Ms. Brown’s independent research career began at CIBA Pharmaceutical Company (now Novartis) where she worked as a Chemist for eleven years. She then moved to Merck and Co. where she was a Research Chemist for 26 years until her retirement in 1995. From 1995 until 2002 Ms. Brown was affiliated with the New Jersey Institute of Technology, Newark, N.J. She is presently an Educational Consultant and was the 2004 Société Fellow of the Chemical Heritage Foundation.

Throughout her research career Ms. Brown has been an advocate for science education and a mentor and role model for underrepresented students. She has participated in countless scientific outreach programs and career days for students at all educational levels from elementary levels through college. Ms Brown has served the American Chemical Society in many capacities. Her leadership as Project SEED Committee Chairperson from 1986 - 1988 was critical for the program’s growth and current success. Project SEED continues today, and in 2001 the program received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring.

Ms. Brown began her association with the New Jersey Institute of Technology prior to her retirement from Merck. While “on loan” from Merck (1993 - 1995), she was a Visiting Professor of Chemistry and helped craft the New Jersey Institute of Technology Alliance for Minority Participation in Science Grant that was successfully funded by NSF. She was also a Science Advisor to the New Jersey Institute of Technology Urban Outreach Program and to the New...
Organic Laboratory Course a Little Greener

The general organic laboratory course, 2311, is required for nearly a thousand students each year at the University of Minnesota. The two-semester-in-one course meets for lecture once a week and then for two four-hour experimental sections where students learn the techniques required for isolation, purification, separation, and identification of organic compounds. Approximately twenty experiments are performed during the semester and include the synthesis of banana oil, recycling of a plastic beverage bottle, and hydrogenation of the essential oil isolated from cloves.

In an effort to keep the curriculum of the laboratory course current, Dr. Jane Wissinger, Director of the Organic Laboratories, has been investigating the use of “greener” experiments. That is, experiments that consider the impact on the environment of starting materials used, energy consumed, by-products formed, and waste produced. Many challenges exist en route to accomplishing this goal including maintaining a connection between the reactions and theory taught in the lecture portions of the organic course and considering the cost and equipment involved in running a large institution’s laboratory.

Chemistry graduate student Page Johnson has been a Teaching Assistant for Dr. Wissinger in the organic laboratory course 2311 for the past three years and has decided to pursue a career in teaching. As part of her master’s thesis, Page decided to investigate recently published green organic chemistry experiments and their suitability for use in the 2311 curriculum. She successfully tested the most promising experiment with her own section of 2311 students spring semester 2005.

The experiment titled, “Solvent-Free Synthesis of Chalcones” involves the aldol condensation reaction; an important carbon-carbon bond forming reaction in organic synthesis. An aldol condensation reaction traditionally is performed in an aqueous and/or organic solvent and requires external heating, extraction workup, and purifications. In contrast, the chalcone experiment (illustrated generically in Figure 1) involves solvent-less solid to solid grinding of the two reactants plus solid NaOH (Figure 2) with a mortar and pestle. No solvent is necessary and energy is applied through grinding versus electrical heating source and reflux. The resulting product is then simply rinsed with water and vacuum filtered (Figure 3). In a few cases, this synthesized chalcone is of sufficient quality that further purification is not necessary. More commonly a recrystallization yields a pure white solid, as illustrated in Figure 4.

Most of Page’s students obtained excellent experimental results and enjoyed “learning about green chemistry.” In addition, the chalcone class of compounds is of interest because many of these molecules are natural products isolated from plant sources and have been shown to have interesting biological activity including anti-cancer properties. Overall, the chalcone experiment was a pedagogical success and will be fully implemented in the 2311 organic laboratories this summer.

Analytical techniques to investigate the sequestration of anticancer drugs in individual acidic organelles

Scientists have speculated that acidic organelles (lysosomes and endosomes) sequester drugs that are weak bases (e.g. doxorubicin, pKa ~8.4) because they become protonated when they enter the lumen of an acidic organelle (e.g. pH < 6). If this process occurs in a cancer cell, the acidic organelle contributes to eliminate the drug from this cell, which ultimately leads to the cell’s survival and cancer drug resistance.

In a recent accelerated article published by Analytical Chemistry (77, 2281–2287, 2005), Yun Chen, Richard Walsh and Edgar Arriaga report on the detection and quantification of the anticancer drug doxorubicin in individual acidic organelles. The investigators used as models human leukemia cell lines that engulf (endocytose) fluorescently-labeled nanospheres into acidic organelles and then treated these cells with doxorubicin. Using confocal fluorescence microscopy, the investigators were able to identify the position of acidic organelles (Green domains in Figure 1A), but doxorubicin (red domain in Figure 1A) did not colocalize in acidic organelles and was mainly localized in the nucleus.

In contrast, when these researchers used capillary electrophoresis with laser-induced fluorescence detection (CE-LIF) they were successful at separating and detecting individual events associated with acidic organelles containing doxorubicin (e.g. event detected simultaneously in the two channels of the LIF detector, Figure 1B) and other acidic organelles that did not contain doxorubicin (e.g. event detected only in acidic organelle channel). After calibration of this detector, they discovered that on average acidic organelles contained ~ 10^-10 molecules of doxorubicin per organelle. This was the lowest measured amount of a fluorescent drug associated with acidic organelle sequestration.

The contribution of phosphate-phosphate repulsions to the free energy of DNA bending

The packaging of nucleic acids, especially DNA, is of vital importance to all life-forms from viruses to multicellular organisms. Human cells, for example, contain approximately 2 meters of DNA packed into a nucleus with a radius of 3 µm. This represents a million-fold reduction in the effective packing volume of DNA in the nucleus relative to that in solution. In addition to its role in the packaging of genetic material, DNA bending is also important for the regulation of gene expression and protein-DNA binding. It is of fundamental importance therefore to understand the nature of the forces that govern the bending of charged DNA molecules into non-linear structures and quantify the magnitudes of their associated energetic factors.

Recently, the research group of Prof. Darrin York of the Department of Chemistry along with graduate students Kevin Range and Evelyn Mayaan, and in collaboration with Prof. L. James Maher III of the Department of Biochemistry and Molecular Biology, Mayo Clinic College of Medicine, have studied the energetics of DNA bending with theoretical models.
Christy Haynes: 2005 American Chemical Society’s Nobel Laureate Signature Award for Graduate Education in Chemistry

This prestigious national award was established to recognize an outstanding graduate student and her or his preceptor(s), in the field of chemistry, as broadly defined. Christy’s award winning dissertation was entitled, “Fundamentals and Applications of Nanoparticle Optics and Surface Enhanced Raman Scattering,” with Rich van Duyne at Northwestern University. She is currently an NIH Postdoctoral Fellow in R. Mark Wightman’s laboratory at the University of North Carolina at Chapel Hill and will begin her independent academic career as an Assistant Professor of Chemistry at the University of Minnesota in the fall of 2005.

Christy joins Wayne Gladfelter in receipt of this national award.

Michael Bowser: American Chemical Society Division of Analytical Chemistry’s Award for Young Investigators in Separation Science

This award is intended to recognize and encourage outstanding contributions to the field of separation science by a young chemist or chemical engineer. The award is presented annually at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy.

Mike is the second recipient of this new national award.

Tim Lodge: Institute of Technology Distinguished Professorship

This professorship is the highest honor granted by the college to its professors. Tim was recognized for excellence in service to the Institute, teaching, and research, which have made him one of the most respected faculty members in the college. The highly interdisciplinary and collaborative research program that he leads has earned him a glowing international reputation. His unusually effective teaching has earned accolades and generated widespread enthusiasm from his students.

Tim joins three other IT Distinguished Professors in the department: Wayne Gladfelter, Louis Pignolet, and Don Truhlar.

Ken Leopold: Horace T. Morse/University of Minnesota Alumni Award for Outstanding Contributions to Undergraduate Education

Each year since 1965, the U of MN has recognized a select group of faculty members for their outstanding contributions to 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.

Two other chemistry professors have received this award: Gary Gray and Kent Mann.

Jeff Roberts: Distinguished McKnight Professorship

The purpose of the program is to honor and reward our most distinguished and highest-achieving mid-career faculty who have recently attained full professor status - especially those who have made significant advances in their careers at the University, whose work and reputation are identified with the University of Minnesota, and whose work has brought great renown and prestige to Minnesota.

In the broadest terms, Jeff’s scientific interests lie in the study of chemical reactions at complex interfaces, especially those relevant to atmospheric and materials science. Guided by this general theme, Jeff has made seminal contributions in three important areas: (i) surface chemistry on ice and liquid sulfuric acid, (ii) mechanisms for chemical vapor deposition, and (iii) the chemistry of size-selected aerosol particles.

Jeff joins George Barany, Bill Tolman, Tim Lodge, and Chris Cramer in receipt of this award.

Andy Taton: McKnight Land-Grant Professorship

The major purpose of the McKnight Land-Grant Professorship program is to strengthen our faculty for the future. The program is designed to advance the careers of our most promising junior faculty members who are at the beginning stages of their professional careers, and who have the potential to make significant contributions to their scholarly fields and to their departments.

Andy is frequently consulted as an expert in the burgeoning field of “bionanotechnology,” and has participated in the organization of a new “Center for Translational Nanotherapy,” a collaborative effort among researchers in science and engineering, biology, and the medical school. He has extended this multidisciplinary approach to his teaching, which has included overhauling our graduate-level course in organic spectroscopy and our junior level polymer laboratory course to reflect current technologies and research.

Andy joins the ranks of these fellow chemistry professors to receive this accolade: Doreen Leopold, Steven Kass, Ken Leopold, Jeff Roberts, Bill Tolman, Karin Musier-Forsyth, Chris Cramer, Craig Forsyth, Ilja Siepmann, Andreas Stein, Marc Hillmyer, Richard Hsung, and Kris McNeill.

Andy Taton: Alfred P. Sloan Research Fellowship

Selection procedures for the Sloan Research Fellowships are designed to identify those who show the most outstanding promise of making fundamental contributions to new knowledge. Sloan Research Fellows, once chosen, are free to pursue whatever lines of inquiry are of the most compelling interest to them. Their Sloan funds can be applied to a wide variety of uses for which other, more restricted funds such as research project grants cannot usually be employed.
Professor Taton has begun an ambitious, creative research program combining inorganic nanoparticles with nanostructured polymers, with an eye towards applications in materials science and biotechnology.

Andy joins the following faculty who have received this national recognition: Chris Cramer, Ron Gentry, Wayne Gladfelter, Tom Hoye, Steve Kass, Larry Que, Jeff Roberts, Ilja Siepmann, Bill Tolman, and Don Truhlar.

Don Truhlar: Lise Meitner Lectureship Award 2006/2007

The “Lise Meitner Lectureship” is the distinction given by The Lise Meitner-Minerva Center each year to a prominent quantum chemist whose work has had an important impact on the chemical community.

The Lise Meitner Lectureship award for the year 2006/07 is given to Professor Truhlar as one of the major contributors to the enormous potential of computational quantum chemistry as a research tool in chemistry, through his numerous contributions to the generation of practical methods for electronic structure, potential energy surfaces, solvent models, reaction rates, and dynamics.

Marc Hillmyer: Elmore H. Northey Professor of Chemistry

Marc Hillmyer has been chosen as the first recipient of the Elmore Northey Professorship. This five-year award is intended to recognize an outstanding member of the department who does not currently hold another revenue-bearing Chair or Professorship. The resources for this departmental award come from the bequest of Elmore Northey. Marc joins three other distinguished faculty as holders of Departmental Professorships: Don Truhlar (Lloyd H. Reyerson Professorship), Karin Musier-Forsyth (Merck Professorship), and Tom Hoye (Merck Professorship).

Chris Cramer: Award for Outstanding Contributions to Postbaccalaureate, Graduate, and Professional Education

Commencing in 1998-99, the University of Minnesota recognized a select group of faculty members for their outstanding contributions to postbaccalaureate, graduate, and/or professional education. This honor is awarded annually to exceptional candidates nominated by their colleges in their quest to identify excellence in postbaccalaureate, graduate, and/or professional education. In addition to honoring individual faculty members, the award will contribute to the improvement of postbaccalaureate, graduate, and/or professional education at the University by publicizing their work to serve as resource to the whole faculty.

continued on page 14
Undergraduate Fellowships and Prizes

Senior Awards
- Peteris Auzins Memorial Scholarships awarded to advanced undergraduates who have demonstrated outstanding achievement in undergraduate research in addition to overall scholastic excellence: Benji Mathews.
- 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: Anthony Vosberg.
- 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: Emily Que.

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: Prateek Verma.
- The Lloyd W. Goerke Scholarship awarded to a chemistry major who has shown outstanding academic achievement and who has financial need: Kevin Tung.
- M. Cannon Sneed Scholarship awarded to a chemistry major who has demonstrated great promise for future achievement: Jenny Werness.
- George T. Walker Scholarship awarded to a chemistry major who has shown outstanding academic achievement and who has financial need: Jacob Kilian and Shawn Olson.

Sophomore Awards
- Thomas DuBruil Memorial Awards awarded to sophomores who have demonstrated outstanding achievement in undergraduate research in chemistry: Loren Greenman and Quincy Long.

Other Awards
- J. Lewis Maynard Memorial Prize in Advanced Inorganic Chemistry. This award is given for outstanding scholastic achievement in advanced inorganic chemistry: Brandon Johnson.
- 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: Sherry Imsdahl.
- Merck Index Award: This award is given to the latest edition of the Merck Index and is given to sophomores in chemistry majors for outstanding scholastic achievement in organic chemistry: Richard Osness and Nicole Thome.

Faculty Awards (continued from page 13)

Through the entirety of his career at the U of MN, Chris has made enormous contributions to the Graduate Program of the Chemistry Department, and these efforts are particularly deserving of the recognition for which this award has been designed. He has also made substantial contributions to graduate education in chemistry outside the University, both through service and in his role as the author of the leading textbook in his research field.

Chris joins Tom Hoye, Larry Que, and Pete Carr in this recognition.

Mark Distefano: George W. Taylor/IT Alumni Society Award for Distinguished Teaching

The Taylor Award for Distinguished Teaching recognizes faculty who have made outstanding contributions to undergraduate and/or graduate teaching in the Institute of Technology.

A citation from one of the supporting letter’s states, “He taught the students with a sort of dynamic enthusiasm that is rarely witnessed in professors, particularly ones who teach in the sciences. Difficult subject matter was made accessible by his concrete examples and direct links to his own research. These characteristics transformed organic chemistry from a potentially boring subject to one filled with excitement and fascination.”

Other Taylor Distinguished Teachers include Gary Gray, Kent Mann, Ken Leopold, and Lou Pignolet.

Bill Tolman: L. I. Smith Professor of Chemistry

Bill Tolman has been chosen to receive the title of L.I. Smith Professor of Chemistry. Bill joins four other distinguished faculty as holders of Professorship: Don Truhlar (Lloyd H. Reyerson Professorship), Tom Hoye (Merck Professorship), Kevin Musier-Forsyth (Merck Professorship), and Marc Hillmyer (Elmore H. Northey Professorship).

Larry Que: The Max Planck Institute for Bioinorganic Chemistry Frontiers of Biological Chemistry Award

In 1995 the Directors of the Institute established an annual guest lecture-ship on “Frontiers in Biological Chemistry,” combined with an award.
Postdoc and Graduate Fellowships and Awards

Postdoc Awards
• NIH National Research Service Award Post-doctoral Fellowship (Modeling Oxygen Activation by Monocopper Enzyme Sites) 2003-2006
  Ben Gherman (Cramer)
• NIH Postdoctoral Fellowship
  Robert Kennedy (Musier-Forsyth)
• NIH-NRSA Postdoctoral Fellowship 2004
  Kristen Stewart (Musier-Forsyth)
• Minnesota Supercomputing Institute Research Scholar 2004-2005
  Divesh Bhatt (Siepmann)

First Year Fellowships
• Four Year 3M Graduate School Fellowship
  Kelly E. Anderson (Siepmann)
• Graduate School First Year Fellowship
  Erik Farquar (Que)
  Dorian Nelson (Hoye)
  Jake Rafferty (Siepmann)
• First Year IT Fellowship
  Julia Rossini (Gladfelter)
  Jaye Warner (Buhlmann)
• First Year Departmental Block-Grant Fellowship
  Lynn Weyer (Forsyth)
• First Year Departmental Kolthoff Fellowships
  Amanda Bialke (Hoye)
  Jeff Buth (McNeill/Arnold, CivEng)
  Melanie Fearing (Arriaga)
  Rachel Gabor (Penn)
  Carolyn Gamble (Hillmyer/Tolman)
  Brendan Gordon (Mann)
  Ramona Johnson (Penn/Swackhamer)
  Joe Katzenmeyer (Arriaga)
  Matthew Meyer (Kass)
  Travis Mills (Zhu)
  Ayako Hosokawa (Distefano)
  Changhong Ko (Hsung)
  Stepan Lenevitch (Distefano)
  Elena Sizova (Hoye)
  Yan Zhou (Gao)

Graduate School Dissertation Fellowships
Jia Liu (Hsung)
Amanda Nienow (Roberts)
Chad Lindstrom (Zhu)

Other Awards
• American Chemical Society COMP Division Chemical Computing Group Excellence Award and Overend Award in Physical Chemistry Fall 2003
  Jason Thompson (Cramer)
• NIH Chemistry and Biology Interface Predoctoral Training Grant 2004-2005
  My-Nuong Vo (Musier-Forsyth)
  Ben Duckworth (Distefano)
  Jen Grzybowski (Veglia)
  Brandie Kovaleski (Musier-Forsyth)
• Louise T. Dosdall Endowed Fellowship 2004-2005
  Nermeen Aboelella (Tolman)
• DOE Computational Science Graduate Fellowship 2004-2008
  Matthew J. McGrath (Siepmann)
• Carl Storm Fellowship to attend the Metals in Biology Gordon Conference (January 2004)
  Anne Reynolds (Tolman)
• 3rd Annual Graduate Student Research Symposium Travel Awards (May 2004)
  Dwight Stoll (Carr)
  Angela [DeGreef] Follett (McNeill)
  Amanda Nienow (Roberts)
• Best Dissertation Award from the Graduate School (June 2004)
  Sherri Hunt (Leopold)
• Overend Award in Physical Chemistry Fall 2004
  Matt Craddock (Leopold)
• Louise T. Dosdall Endowed Fellowship 2005-2006
  Anne Boreen (McNeill)
• 4th Annual Graduate Student Research Symposium Travel Awards (May 2005)
  Ce Wang (Forsyth)
  Nathaniel Lynd (Hillmyer)
  Aleksy Kurdyumov (Hsung)
  Eric Klinker (Que)
• Department of Chemistry Travel Grant
  Laurie Breyfogle (Hillmyer/Tolman)
• 2005 Distinguished Master’s Thesis Award of the Midwestern Association of Graduate Schools (MAGS) Nominee: Christopher Jeffrey (Hoye)
• Robert L. Ferm Outstanding Graduate Teaching Assistant Award for 2004-2005
  Erin Dahlke (Truhlar)
  Junha Jeon (Hoye)
  Larry Masterson (Veglia)
  Jaye Warner (Buhlmann)

Established in 1999, the Academy of Distinguished Teachers is a forum through which its members provide important leadership to the University community, serving as mentors, advisers, and spokespersons for the University’s teaching mission. Academy members come from all four of the University’s campuses – Crookston, Duluth, Morris, and the Twin Cities.

Former University of Minnesota President Mark Yudof established the Academy of Distinguished Teachers in 1999 in recognition of the importance of outstanding teaching to the University. Winners of both the Horace T. Morse-University of Minnesota Alumni Association Award and the Award for Contributions to Postbaccalaureate, Graduate, and Professional Education comprise the membership of the Academy.

Chemistry inductees are:
  Pete Carr
  Chris Cramer
  Gary Gray
  Tom Hoye
  Ken Leopold
  Kent Mann
  Larry Miller (retired)
  Lou Pignolet
  Larry Que

http://www.adt.umn.edu/index.html

The mission of the Academy of Distinguished Teachers is to recognize and celebrate teaching excellence, to foster the continued improvement of teaching and learning at the University of Minnesota, and to strengthen the resources necessary to do so.
<table>
<thead>
<tr>
<th>Ph.D. Degrees</th>
<th>Advisor</th>
<th>Thesis Title</th>
<th>Current Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mohammed Al-Daos</td>
<td>Stein</td>
<td>Synthesis, Physicochemical Characterization, and Catalytic Evaluation of Three-Dimensionally Ordered Macroporous Metal Oxide Catalysts and Photocatalysts.</td>
<td>SABIC, Saudi Arabia: Researcher</td>
</tr>
<tr>
<td>Adrian Anderson</td>
<td>Arriaga</td>
<td>Strategies for the Elucidation of Doxorubicin Metabolism by Capillary Electrophoresis with Laser-induced Fluorescence Detection.</td>
<td>Aimgen, Thousand Oaks, CA (after Eco Labs, St. Paul, MN)</td>
</tr>
<tr>
<td>Jeffrey Bankers</td>
<td>Miller</td>
<td>Vapour Conductive Materials: Mechanism and Sensor Applications.</td>
<td>Dial, Scottsdale, AZ: Senior Scientist, Home Care Division</td>
</tr>
<tr>
<td>Michael Danielson</td>
<td>Hoye</td>
<td>A Total Synthesis of Collipetoside A.</td>
<td>3M Pharmaceuticals</td>
</tr>
<tr>
<td>Mary Engler</td>
<td>Forsyth</td>
<td>Phorboxazole A: Enhanced Synthesis of Biologically Active Analogs of the Phorboxazoles.</td>
<td>Madison, Wisconsin</td>
</tr>
<tr>
<td>Kathryn Fuller</td>
<td>Arriaga</td>
<td>Analysis of Individual Mitochondria and Acidic Organelles by Capillary Electrophoresis with Laser-Induced Fluorescence Detection.</td>
<td>Minnesota Bureau of Criminal Apprehension, St. Paul, MN (after postdoc, Mass Spectrometry Consortium for the Life Sciences, U of MN)</td>
</tr>
<tr>
<td>Nihan Gunaseker</td>
<td>Arriaga, Musier-Forsyth</td>
<td>Investigations Into the Use of Capillary Electrophoresis for the Analysis of Nuclear Preparations and the Nuclear Localization of Fusion Proteins at the Single Cell Level.</td>
<td>University of Wisconsin Madison County: Assistant Professor</td>
</tr>
<tr>
<td>Min Hu</td>
<td>Hoye</td>
<td>A Total Synthesis of (+)-Zampanolide and (-)-Dactyloside.</td>
<td>Albany Molecular Research</td>
</tr>
<tr>
<td>Thomas Hunter</td>
<td>O’Doherty</td>
<td>Investigation Into the Syntheses of alpha, beta-Unsaturated delta-Lactone and Macrolide Natural Products.</td>
<td>Postdoc, Stanford University (with Prof. Barry Trost)</td>
</tr>
<tr>
<td>John Jalas</td>
<td>Distefano, Hecht</td>
<td>Synthesis and Reactoselectivity in the Cytochrome P450-Mediated Metabolism of the Tobacco-Specific Nitrosamine 4-(MethylsINTrosamino)-1-(3-Pyridyl)-1-Butanone (NNK).</td>
<td>U of MN, Medical School (starting a pathology residency at UCSF soon)</td>
</tr>
<tr>
<td>Yang Khandogin</td>
<td>York</td>
<td>Development and Application of Linear-scaling Quantum Methods for the Study of Biological Macromolecules.</td>
<td>NIH postdoc with Anne Baranger at Wesleyan University</td>
</tr>
<tr>
<td>Ryan Major</td>
<td>Zhu</td>
<td>Physical and Chemical Properties of Organic Monolayers on Silicon Oxide and Gold Surfaces.</td>
<td>Postdoc U of MN (with Prof. G. Veglia)</td>
</tr>
<tr>
<td>Alessandro Mascioni</td>
<td>Veglia</td>
<td>Solution and Solid-State NMR of Membrane-Bound Proteins and Peptides.</td>
<td>NIH postdoctoral fellow under Prof. Jonas Peters at Caltech</td>
</tr>
<tr>
<td>Mark Mehn</td>
<td>Que</td>
<td>Modeling Oxygen Activation at Mononuclear Nonheme Iron(II) alpha-Keto Acid-Dependent Dioxygenases.</td>
<td>NIH postdoctoral fellow at Harvard University (Professor David Evans)</td>
</tr>
<tr>
<td>Amy Saenger</td>
<td>Stankovich</td>
<td>Thermodynamic Investigation of Substrate Activation and Regulation in Human Short-Chain ACYL-CoA Dehydrogenases.</td>
<td></td>
</tr>
</tbody>
</table>
The Following Companies Have Generously Donated to the Department of Chemistry Educational Grants

3M Company
Abbott Laboratories
Agilent Technologies, Inc.
Air Products & Chemicals, Inc.
Alliant Techsystems, Inc.
AstraZeneca Pharmaceuticals LP
BP Foundation, Inc.
Bristol-Myers Squibb Foundation, Inc.
Cargill, Inc.
ChevronTexaco Corp.
Cognis Corp.
Crompton Corp.
Deloitte Foundation
Dow Coming Corp.
The Dow Chemical Company Foundation
Ecolab Foundation
Eli Lilly & Company Foundation
ExxonMobil Foundation
GE Foundation

Matching Funds
General Mills Foundation
GlaxoSmithKline Foundation
Guidant Foundation, Inc.
H B Fuller Company Foundation
Honeywell Hometown Solutions
IBM International Foundation
The Medtronic Foundation
The Merck Company Foundation
Motorola Foundation
Novartis U S Foundation
The Pfister Foundation
The Pharmacia Foundation, Inc.
The PQ Corp.
The Procter & Gamble Fund
Seagate Technology LLC
Shell Oil Company Foundation
The Sherwin-Williams Foundation
Tennant Foundation
Waters Corp.

Bachelor’s Degrees and Home Town

Bryan Paul Berry
Douglas Brinkman
Beth Brockshus
Robin Caperton
Anna Chalin
Andrew Lee Fraser
Kate Gemmell
Vikisha Goberdhan
Helia Hatefi
Derek Heidbrink
Carla Marie Hemmila
Joshua Hewuse
Jacob Hodge
Kristopher Hodgson
Cori Ann Huffman
Medora Huseby
Andy Janisch
Amy Jenk
Uil Stan Kar
William Knopke
Timothy Kohnke
Paul Kravolec II
Casey A Lantz
Christian Lavarreda
Angela Mandy
Matthew Mann
Benji Mathews
Jason Merkel
Kristen Mills
James Nathan
Andrea Nelson

Duluth MN
Plymouth MN
Burnsville MN
Minneapolis MN
St. James MN
Lino Lakes MN
Minneapolis MN
Minnetonka MN
Roseville MN
Burnsville MN
Blaine WI
Spencer WI
Rochester MN
Sioux Falls SD
Appleton WI
Moorehead MN
Thief River Falls MN
Wauwatosa WI
Fridley MN
St. Louis Park MN
Eagan MN
Wayzata MN
Brooklyn Park MN
Minneapolis MN
Long Lake MN
Kamloops, BC, Canada
White Bear Lake MN
Fort Atkinson WI
Arden Hills MN
Robindale MN

Mumbai, India
St. Paul MN
North Branch MN
Little Canada MN
Calloway MN
Minnetonka MN
Roseville MN
Apple Valley MN
Apple Valley MN
Mukwonago WI
Fridley MN
Minneapolis MN
Roberts WI
Inver Grove Hts MN
Mahtomedi MN
Prior Lake MN
Lansing MI
St. Louis Park MN
Bloomington MN
Lake Elmo MN
Fort Atkinson WI
Burnsville MN
Jakarta Pusat, Indonisia
Roseville MN
New Hope MN
Kuala Lumpur, Malaysia

Left to right, new graduates Alison Wagner, Jareessa Tucker, and Jason Merkel
Many Thanks to our Individual Donors in 2003 and 2004

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 2003-2004 donors.

Chemistry Special Projects Fund

Andrew D. Bruskiewicz
Eileen M. Ferguson
Steven G. Hentges
John G. Koland
Jay S. Buckley Jr.
Daniel W. & Patricia D. Firth
Kim L. Henze

Paul W. Busse
Douglas E. & Kristi A. Fjære
Jerry A. & Deborah Herby

Clyde W. Cady
Steven R. Flom
Martin V. Herschberger

Paul J. Cahill
Marvin W. Formo
Robert E. Hileman

John D. Cahoy
Nile N. Frawley
Kevin K. Hobbie

Gordon B. Carlton
Andrew J. Caruso
Keri L. Hobbs

S. Chakrabarati & P.J. Bell
Chi Chang
Milton L. Hoefle

Daniel Y. Chang
David J. Hoffman
Heidi J. Hогlund

Yu Sen Chen
Robert W. Freerksen
Troy V. Holland

Phyllis R. Chiarelli
Irong Fu
Theodore R. Holman

Brian H. Chollar
Mark A. Fung Fook
Howard E. Holquist

Clayton G. Christensen
A. C. Gilby
Paul A. Holte

Lief Christensen
James W. & Joan Jill
Norman W. & Joann Jill

Karen D. Donnelly
David C. Gilmer
Evan J. Hoyme

Qi Dongfeng
George R. Glaros
Yue Hu

S. Chakrabarti & P.J. Bell
Sabitha A. Gokcen
He Huang

Sarah L. De Silva
Susan W. & Bill W. Houck
Allan M. Huffman

Jonathan & Sharon De Vries
Jonathan De Vries
Brian J. Johnson

Gregg M. Downing
David K. Johnson
Bruce M. Mattson

Jonathan W. Draxten
Douglas S. Dunn
Richard A. Jackson

Diane R. Dittenhafer
Allison A. Eckhoff
Anthony C. Jeanotte II

Mark L. Dittenhafer
David W. Edelstein
Melody Jewell

Qi Dongfeng
Karen D. Donnelly
Joyce B. Hall

Kenneth J. Dornfeld
Kevin D. Hallen
Claude D. Hall Jr.

Kenneth J. Dornfeld
Charles H. Douglass Jr.
Gale R. Haasch

Karilyn J. Donnelly
Karen A. Grutzmacher
Richard T. Haasch

Charles H. Douglass Jr.
Gregg M. Downing
Max M. Haasch

Erik A. Edmonds
Douglas S. Dunn
Mark P. Hambrook

Erik A. Edmonds
Douglas S. Dunn
Mark P. Hambrook

Mark E. Branum
Brian M. Breckinridge
Paul R. Hanson

Mark E. Branum
Brian M. Breckinridge
Paul R. Hanson

Larry J. Breigda
Evan J. Hoyme
Terri L. McLernon

Donn A. Brock
Murray W. Brockman
Clyde H. Brockman

G. Bohner Bodek
Michael Boehlke
Angela J. Boettcher

Leo P. Bohanan
Newman M. Bortnick
David C. & Felicia J. Boyd

Mark E. Brumley
Brian M. Breckinridge
Paul R. Hanson

Mark E. Brumley
Brian M. Breckinridge
Paul R. Hanson

Gary W. Brudvig
Gary W. Brudvig
Gary W. & Rita E. Brudvig

Chemistry Special Projects Fund
Many Thanks to our Individual Donors in 2003 and 2004

John G. Newman
Richard G. Newell
Brian E. Nelson
Richard G. Newell
John G. Newman
Joseph Nichols

Barany Research Account: Michael Barany
Graham N. Gleysteen Fellowship: Agnes Gleysteen Fraser
Wayland E. Noland Research Fellowship: Rodney D. Dekruij, Roy A. Johnson, Lee E. Klade, and Wayland E. Noland
Owens Endowed Fellowship: Kenneth E. & Marion S. Owens
Owens Scholarship: Kenneth E. & Marion S. Owens
Krogh Endowed Fellowship: Janna P. DeLue, Lester C. & Joan M. Krogh
Brasted Memorial Fund: Ieva O. Hartwell
Overend Memorial Fund: Madolyn Y. Babcock, Kathleen A. Davis, Thomas G. Goplen, and Curtis A. Marcott
Moscowitz Memorial Fund: Mary E. Learmonth & Steven C. Riemer
Sally Herz Memorial Scholarship Fund: Edgar E. Hardy
Margaret C. Etter Memorial Lectureship in Materials Chemistry: Elise A. Sudbeck
John Wertz Fellowship Fund: Florence C. Wertz

Malcolm M. & Carol C. Renfrew
Matthew K. Renner
Veronica A. Reynolds
Rebecca L. Rezac
Aloyce J. Rholl
Daniel H. Rich
Timothy L. Richardson
Martin P. Rigney
Donald N. Robinson
Thomas S. & Debra J. M. Robison
Daniel S. Rocque
Kevin J. Roessleit
Edgar R. & June M. Rogier
Anthony R. Rossini
Wayne J. Rothschild
Emily S. & Nestor A. Rotstein
Leonid I. Rubinstein
Alan H. Runck
David P. Ruschke
Paul S. Russo
Mark A. Rustad
Victor & Catherine Ryan
Lowell E. Salyards
Gary L. Santee
Scott S. Sardeson
Richard F. Saunders
Mark S. Schaberg
Joseph D. Schroeder
Jay F. Schulz
Kirby J. Scott
Richard M. Scribner
John K. Seaburg
Lyne T. Sergi
Edward J. Seus
William J. Shugard
Richard J. Sinn
Steven R. Skorich
Richard S. Smith
Samuel Smith
Quentin F. Soper
Richard F. Sprecher
Thomas G. Stavros
Mark & Kathleen Steine
Vernon A. Stenger

Robert E. & Debra R. Stevens
Mary P. Stickelmeyer
Joseph F. Stieber
Roger W. Strassburg
Dorothy B. & Melvin P. Stulberg
Elise A. Sudbeck
Joseph C. Suhadolnik
Richard J. Sundberg
Todd A. Swanson
Laychoo Tan
Kenneth J. Tauer
Paul E. Tavernier
Paul R. Thatcher
James R. Throckmorton
Charles R. Thuesen
Steven J. Tinker
Wade J. Torquist
Charles A. Trippett
Edward T. Ulrich
Rebecca A. Urbanek
John R. VanPilsen Jr.
Richard E. Volkmann
James R. Vyvyan
James J. Wade
Terence C. Wagenknecht
Mary J. Wahlstrom
Joseph T. Warden Jr.
Bridget K. Warmka
Mark W. Watson
Edward O. Welke
Valerie Ann Weller
Edward L. Wheeler
Larry R. Wilson
Larry D. Winter
Dawn M. Witherill
James T. Wolter
Charles D. Wright
Ellen L. Wu
Frank Z. Yang
Lee R. Zehner
Hongyu Zhao
Patrick G. Zimmerman
John J. Zingheim
Michelle M. Zirngible
<table>
<thead>
<tr>
<th>Ph.D. Degrees</th>
<th>Advisor</th>
<th>Thesis Title</th>
<th>Current Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergey Sokolov</td>
<td>Stein</td>
<td>Macroporous Metal Oxides: Synthesis, Characterization and Application in Catalysis and Electrochemical Power Sources.</td>
<td>Schlumberger</td>
</tr>
<tr>
<td>Cheng-Min Tann</td>
<td>Distefano, Brezonik, Sobelman</td>
<td>Design of Artificial Enzymes by Site Directed Mutagenesis and Chemical Engineering of a Protein Cavity.</td>
<td>Pace Analytical</td>
</tr>
<tr>
<td>Fai Chu Wong</td>
<td>Musier-Forsyth, Distefano</td>
<td>Class II Proline-tRNA Synthetase: Amino Acid Editing and Incorporation of Unnatural Amino Acids.</td>
<td>Postdoc, University of Utah (with Prof. Peter Beal)</td>
</tr>
<tr>
<td>Xiqin Yang</td>
<td>Carr</td>
<td>Mixed-Mode Separations of Cationic Analytes on Polybutadiene Coated Zirconia and Octadecyl Silane Bonded Silica Phases.</td>
<td>GlaxoSmithKline, King of Prussia, PA</td>
</tr>
<tr>
<td>Andrew Zalusky</td>
<td>Hillmyer</td>
<td>Nanoporous Materials from Ordered Polylactide-Containing Block Copolymer Templates.</td>
<td>Dow</td>
</tr>
</tbody>
</table>

Jeanette Brown continued from page 7

Jersey Statewide Systemic Initiative Professional Development Site. In 1995 Ms. Brown officially joined the New Jersey Institute of Technology as a Faculty Associate in the Department of Pre-College Programs. She assumed the position of New Jersey Statewide Systemic Initiative Coordinator with responsibility as the chief professional developer of K-8 teachers where she designed, developed and coordinated the NJIT Thrust K-8 Professional Development Program. Ms. Brown was also a New Jersey Institute of Technology curriculum trainer for middle school teachers and served as a Regional Director of the New Jersey Systemic Statewide Initiative between 1998 and 2002.

Ms. Brown has been recognized for her exemplary career. She was named an “Outstanding Woman in Science” in 1990 by the Metropolitan New York Chapter of the Association of Women in Science (AWIS). In 1991 she was named to the Hunter College Hall of Fame for her mentorship of minority students and her work with Project SEED. Ms. Brown received the ACS Women Chemists Committee Regional Award for Contributions for Diversity in 2002. Her mentorship and advocacy continue with her current writing project, a history of African American women chemists for Harvard University’s “African American Lives Series.” Finally, in 2005 she received the national American Chemical Society Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences.

Research Highlights continued from page 9

In this work, a linear-scaling Green’s function solvation method was employed, along with Monte Carlo simulation of counterion occupations at the phosphate residues, in order to quantify the preferential ion and solvation stabilization of bent versus linear DNA. From these calculations, they were able to predict that the electrostatic phosphate-phosphate contribution to DNA bending is on the order of 30 percent - a substantial, but not fully dominating effect. This work is featured on the cover of a recent issue of *Nucleic Acids Research* 33(4) 1257 (2005). A movie showing how the counterion distribution changes with ion load is also available.