Badger chemist : the newsletter of the University of Wisconsin-Madison Chemistry Department. No. 47 2003

University of Wisconsin--Madison. ; Dept. of Chemistry
Madison, Wisconsin: Dept. of Chemistry, University of Wisconsin, 2003

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Est. 1953. NO. 47
2003

Badger Chemist

THE NEWSLETTER OF
THE UNIVERSITY OF WISCONSIN - MADISON

CHEMISTRY DEPARTMENT

THE NEWSLETTER OF THE UNIVERSITY OF WISCONSIN-MADISON

CHEMISTRY DEPARTMENT

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2003 BADGER CHEMIST

Matthew Sanders
Editor

Designed by the Instructional Media Development Center
School of Education, University of Wisconsin-Madison

Linda Endlich
Art Direction

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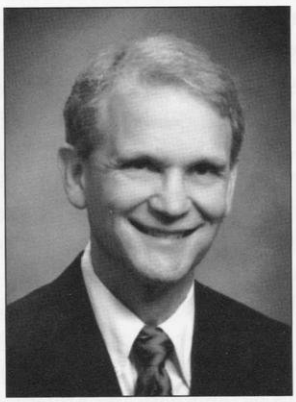
2003

From the Chair

Fall 2003

Dear Badger Chemists,



This year has been a wonderful time to welcome back old friends and grow closer to our friends and alumni. The highlight of our year was the special Spring Chemistry Celebration where we opened up all of our facilities to young and old alike as our friends, alumni, and their families returned from around the world to celebrate our new facilities and thank the donors, architects, builders, and leaders who made the entire project possible. Almost every part of our Department was represented by "hands-on" activities. The kids developed Chemistry Shows with the lecture demonstration staff, built lie detectors in the electronics shop and spectrometers in the instrumental labs, etc. As I walked around the Department to visit the many activities, I was struck by the enthusiasm, energy, and joy on the faces of the kids. I also watched as my own wife got to blow glass for the first time. We still have her accomplishments on display at our home. The dinner that evening included a special Chemistry Show by our own Mr. Wizard, Basssam Shakhashiri, as he teamed with Bucky Badger to do amazing chemistry experiments. Now the faces on the kids and the adults showed the excitement of science.

The weekend highlighted many of the reasons we exist as a Department and a University: namely to engage people in the discovery of how the world works and in the process help them discover their own special talents and the excitement and satisfaction that come from using your mind. It is a process that you have all experienced and have made part of your everyday lives. It is important for everyone to experience the same thrill of scientific inquiry and discovery of the principles that govern the world.

The weekend also made it clear that our mission is shared by many - faculty, staff, students, alumni, the citizens of Wisconsin, and the University's administration. Everyone does their part. Many of you have helped through your contributions. In fact, this last Christmas season, my annual letter changed format to ask you for donations to the Department as our State goes through some tough financial times. Wisconsin has always valued its educational opportunities but it has been forced to cut back on the resources that it can send to the University. Your response to the need was truly heart-warming. On behalf of our Department, I would like to thank you for all of the ways that you have contributed.

Your donations are made because you sincerely believe in the Department's mission to our society and want to do your part to support it. We have established the Department's Wall of Honor, which recognizes the major donors to the Building Program and the Department's on-going academic program. But there are also a number of people who either have or are trying to establish an endowment as a memorial to an individual who has played an important part in their lives. These endowments include memorials to former faculty, staff, alumni, students, and friends. They provide a concrete way to perpetuate the ideals and memory of a special person in a way that makes a difference to the future. The Department would like to establish a Memorial Wall that will provide a lasting and public memorial to those special people. We expect it will appear at the main entrance to the Department at University and Mills Street.

The leadership of a major Department is a sobering responsibility because people trust you to advance the mission. It is comforting that there are so many others who help in making it happen. It has been particularly satisfying to meet so many of you during the year and learn first hand how your experiences at Wisconsin have been special and how that has motivated you to help. Again, thank-you.

John Wright
Chair
wright@chem.wisc.edu

Current Chemistry News

DEPARTURES

Professors **Tom Farrar** and **John Schrag** retired in January 2003. Tom had been with the Department since 1979, and John was first appointed in 1970. Both of them enjoyed a reunion of their former students, and the Department celebrated their careers at a party at John Wright's house, complete with slide shows of their lives and careers. John and Tom will continue as *emeritus* faculty.

Mike Grenie retired from the Department after five years in the Payroll Office. Mike had been with the State before he came to us, and with the Athletic Department before that.

Marv Kontney retired in January 2003. Marv had worked as the NMR instrument support technician since 1977. Marv is now spending more of his time fishing and golfing.

Melissa Lucero left the Department in May 2003. Melissa had provided the Department with much needed computer support for email and applications. She also hired the first student computer support staff, and managed them very effectively, providing a new level of computer support to departmental staff.

ARRIVALS

Steve Barnet

Steve Barnet joined the computer staff early in 2002, and is primarily responsible for research computing applications. Steve replaced **Brad Spencer** after Brad's retirement in 2001.

Helen Blackwell joined the department this year as an Assistant Professor. She is a member of the Organic Division and is initiating a research program in organic synthesis and chemical biology. Helen is particularly interested in the chemistry

Helen Blackwell

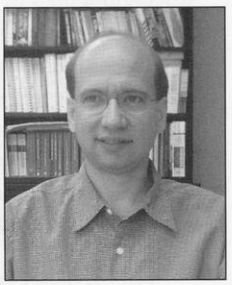
of plant signaling, and her group is at work synthesizing compounds that can modulate early plant development and light sensing. She arrived in Madison in August 2002 with her husband, **David Lynn,** who is a new Assistant Professor in Chemical Engineering here at UW. Dave also has a **0%** appointment in the Organic Division, the first functional organic materials cluster hire, and is pursuing a research program in the design of new materials and devices for gene and drug delivery. Helen and Dave live in Middleton and love their Wisconsin existence so far.

David Lynn

Monika Ivancic joined the Chemistry Instrument Center in April 2003 as Assistant NMR Director of the Magnetic Resonance Facility. Monika received her BS degree in Physics from Sonoma State U. in Rohnert Park, California in 1993. Her PhD is in Biochemistry and Biophysics, specifically in determining duplex DNA structures using NMR spectroscopy, earned from Oregon State U. in 2001. Before arriving in Madison, she spent a year and a half in a postdoctoral position in the Biochemistry Department at the U. of Vermont where she and her advisor solved the NMR structure of the Grb7 SH2 domain protein. This fall and spring semester she will be teaching the "Intro to NMR" course to incoming graduate students and she has been involved in teaching the "Advanced NMR" course this summer.

Monika Ivancic

Robert Shanks started working in the Chemistry Instrument Center as the NMR Instrumentation Technologist in June 2003. Robert has a B.S. in Physics and received his PhD in Applied Science from the University of Arkansas at Little Rock in 1995. During that time, he was awarded a fellowship through NASA's Graduate Student Researchers Program. His studies involved the design of analytical instrumentation as applied to combustion processes. After earning his degree, Robert worked in industry for eight years, first conducting research involving energetic materials and then, both as a manager and consultant, for the electronics manufacturing industry. He is a Wisconsin native, originally from Portage.



Bob Shanks

In July 2002 upon the retirement of long-time Chemistry Library Director **Ken Rouse, Sharon Mulvey** and **Emily Wixson** were appointed co-directors of the Library. Sharon is in charge of library operations and collection management. She was hired in 1992 as the Library Services Assistant in the Chemistry Library. In 1999 she was promoted to Associate Librarian in the Library. Emily has been a campus reference and instruction librarian for many years. Prior to moving to Chemistry, she provided chemistry information instruction from her Steenbock Agricultural Library office. Now based in Chemistry Library, Emily provides reference assistance, conducts course-related instruction and drop-in workshops, prepares print and web-based subject guides, and promotes the use of chemistry information resources across campus.

Catherine Vitale accepted the position of Library Services Assistant-Advanced in the Chemistry Library. She began her duties in the Library on November 3, 2002. Catherine's responsibilities include supervising the student assistants, overseeing the circulation operations and performing the technical services duties of the library.

Carolyn Williams accepted our offer to replace **Jan Froding** after Jan's retirement in 2002 (see BC no. 46). Carolyn brings an exceptionally strong background to the position. She has a BS in Microbiology and Public Health from UW-Oshkosh with a minor in Chemistry and Business Administration. She also has a Master's Degree in Business Administration from UW-Whitewater. She had been the Administrator/Research Program Manager for the University of Wisconsin Medical School Comprehensive Cancer Center where she had 10 years of experience with accounting and budgeting, human resource management and training, strategic planning and management, and grant writing. She has been instrumental in the Center's success in attracting major grant funding.

Martin Zanni joined the Department in June 2002 as an Assistant Professor in Physical Chemistry. Martin did his undergrad work at the University of Rochester in New York State, earned his PhD at Berkeley, and was a postdoc at the University of Pennsylvania. Since growing up outside of Portland, Oregon, he has been bouncing back and forth between coasts and has now landed in the middle. Martin's wife Christie is a nurse practitioner. He is looking forward to canoeing in the summer and learning to play hockey in the winter.

Martin Zanni

The Journal House has some new arrivals this year: **Rachel Bain** is an Instructional Specialist, **Arrietta Clauss** is an Associate Editor, **Darin Burleigh and Ed Fedosky** are Systems Programmers, and **Ieva Reich** is a Faculty Associate.

Rachel Bain

Arrietta Clauss

Ed Fedosky

Ieva Reich

FACULTY AND STAFF NEWS

Silvia Cavagnero has two undergraduate students, **Robert Kirchdoerfer** and **Paul Ellison**, who have received fellowships from the National Science Foundation to perform research in her laboratory under the NSF-sponsored "Research Experience for Undergraduates" (REU) program. **Nese Kurt**, a postdoc in her group, has received a postdoctoral fellowship from the American Heart Association. Silvia's group finally moved into new quarters on the fifth floor of the Daniels Building in June.

In addition to chairing the Committee on Professional Training for ACS, and serving on the Graduate Advisory Board of ACS, **Fleming Crim** lectured from coast to coast this year. He gave talks at the University of Colorado, Boulder; Virginia Polytechnic Institute, Blacksburg; the University of Illinois, Urbana-Champaign; the California Institute of Technology; and UC-Davis. He also spoke at the retirement celebration for Professor I. W. M. Smith in Birmingham, England, in September, and at the Cornell University ACS Section Centenary Celebration in October. In April, Fleming was the Noyes Distinguished Lecturer at the University of Rochester

Mark Ediger and his group moved up to the seventh floor of the Daniels building last year. Mark gave invited talks in Chemistry, Chemical Engineering, and Pharmacy Departments this year at various universities, and also at a solid-state physics conference. He was an instructor for a short course in glasses at the American Physical Society Meeting. Mark also serves as Chair of the John Ferry Lectureship Committee; the first lecture series was held in 2002.

Sam Gellman spoke at the 27th Lorne Conference on Protein Structure and Function in Australia in February 2002. He was the Abbott Lecturer at the University of North Dakota in April 2002, and he spoke at the Stereochemistry Gordon Conference in June 2002. Sam spent a week at the University of Regensberg (Germany) as an Innovatec Lecturer in November 2002. In March 2003 Sam delivered the Boehringer Ingelheim Research Lecture at the University of British Columbia.

Robert Hamers was recently recognized by the Institute for Scientific Information (formerly Science Citation Index) as one of the world's most highly cited scientists. Papers by Bob and his group have been cited more than 4,100 times in the scientific literature, making him the most highly cited member of our Chemistry department and one of the highest on the UW campus. Bob's work is categorized as "materials science" and is featured on the ISI's Highly Cited web site at http://isihighlycited.com.

The Hamers group has been making a splash with work interfacing biological molecules with microelectronic materials. As part of a collaboration with Lloyd Smith's group and Dan van der Weide (electrical engineering), Bob's group has been investigating electrical properties of biological interfaces to electronic materials such as silicon, diamond, carbon nanotubes and metal nanowires, and has been using these electrical properties to develop new types of electronic sensors for biological molecules. Their work on DNA interfaces to diamond was featured on the national ABC news and CNN websites (abcnews.com and usatoday.com) as well as the local television news, and their work on DNA interfaces to carbon nanotubes was featured on the cover of "Nano Letters" in December. Bob and his group have received funding from the Draper Technology Innovation Fund and from a private company to develop a prototype hand-held electronic biosensor.

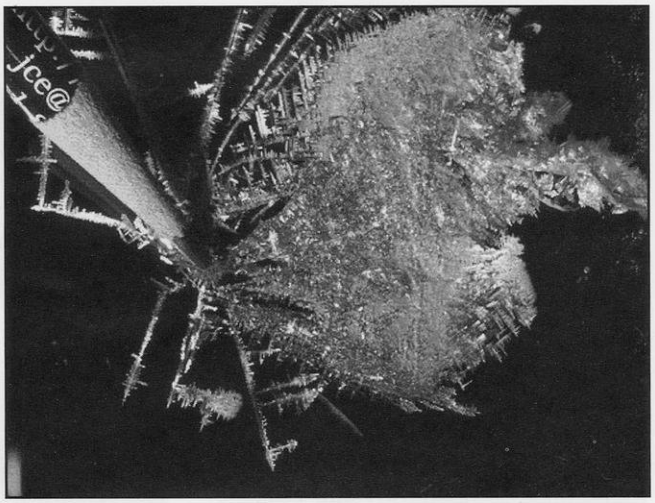
Bob McMahon presented lectures at the Reactive Intermediates conference in Switzerland and the Canadian Society for Chemistry meeting in Vancouver. Bob and **Eric Patterson** (PhD '96, McMahon) enjoyed the opportunity to spend time together at the Reactive Intermediates conference. During his 2002-03 sabbatical, Bob spent some time during the fall semester upgrading the instrumentation in his spectroscopy laboratory. He spent the spring semester at Harvard University, collaborating with the group of Pat Thaddeus, a professor of astronomy and a member of the Harvard-Smithsonian Center for Astrophysics. The collaboration addresses the chemistry and spectroscopy of organic species in interstellar space.

In addition to receiving the 2003 Alliant Underkofler Award for Excellence in Teaching, one of four given each year throughout the entire UW System (see Awards), **Cathy Middlecamp** was appointed as the 2003 Teaching Scholar from UW-Madison (one scholar is appointed from each campus in the UW System).

John Moore received two awards this year, the Benjamin Smith Reynolds Award for Excellence in Teaching Engineers, and the Talbot Prize for visual excellence as the lead author of the college textbook Chemistry: *The Molecular Science*. (See Awards.) John's recent major publications include

- *Chemistry: The Molecular Science,* a chemistry-majors college text published by Brooks/Cole.
- *Chemistry Comes Alive! Volume 6,* the latest in a series of CD-ROMs of photographs, animations and movies depicting chemical reactions; published by *Journal of Chemical Education Software.*
- The chapter, "JCE: A New Teacher's Best Friend", in the *Survival Handbook for the New Chemistry Instructor,* published by Prentice-Hall.
- Editorials in the *Journal of Chemical Education,* one in each monthly issue
- A new kit from the ICE, the Institute for Chemical Education, LED Color Strip Kit.

One of John's most interesting meetings/presentations was as a keynote speaker and participant in the Cottrell Scholar Conference at Research Corporation in Tucson. Despite the intense heat of the summer of 2002, this meeting was very stimulating because it involved young faculty with strong commitments to both research and teaching. (Cottrell Scholar Awards are highly competitive and require that recipients excel at both research and teaching.) John also gave invited talks at the University of Iowa, the University of Arizona, and the University of Michigan. He attended the ACS National Meetings in Orlando, Boston, and New Orleans, at each of which he presented several papers and organized several workshops. He attended the 17th Biennial Conference on Chemical Education where again he made several invited presentations and organized several *JCE*-related workshops.



Dendritic Tin

There were numerous faculty from other institutions who visited for extended periods and/or were involved in collaborations with John:

- Jonathan Mitschele, St. Joseph's College of Maine
- Katherine Barnhard, University of Puerto Rico
- William F. (Flick) Coleman, Wellesley College
- Akira Saito, Tokyo Gakugei University
- Ed Vitz, Kutztown State University
- Theresa Zielinski, Monmouth University
- Jay Young, Consultant in Chemical Safety
- Jongwook Park, Chongju National University of Education, Korea

Research projects with undergraduate students continue to flourish. **Ashley Trantow** worked on developing and testing new JCE Classroom Activities. These are chemistry experiments that can be done with inexpensive equipment and household chemicals. One of the activities Ashley developed appeared in the October 2002 issue (Trantow, Ashley *J. Chem. Educ.* 2002 79(10) 1168A.). **Laura Yindra** collaborated with John and **David Shaw** (PhD '75 Treichel) on translating to HTML and updating the content and appearance of two computer tutorials: Inorganic Nomenclature and Organic Nomenclature.

First-year students **Megha Desai** and **Nazanin Tondravi** worked on cataloging demonstrations for the JCE Digital Library project and testing several electrolysis demonstrations that had been published by JCE Software as *Chemistry Comes Alive!* videos. As part of the latter project, they set up a demo of dendritic growth of tin crystals so that it could be photographed and become a prominent part of the chemistry art of the building's Main Street.

John also directed the work of two science education graduate students from Thailand, **Yupadee Senkao** and **Daungporn Pupaka**. The two Thai students visited UW-Madison's Education School for one year and worked on developing new chemistry curricula using real-world examples and active, inquiry-based learning. The curricula will be tested, evaluated, and improved on the basis of feedback as part of each student's doctoral work at Srinakharinwirot University in Thailand. Eventually both students expect that their curricula will be implemented in Thai middle and secondary schools.

The **Tom Record** lab sends its greetings and best wishes to all former members and Chem/Biochem 565/665 alumni. In the last several years, Tom's outstanding contributions to theoretical and experimental biophysical research and his leadership in the field have been recognized. First, Tom was presented with the Founder's Award by the Biophysical Society in 2001. Most

recently, he was named Steenbock Professor in Chemical Sciences by the University. The lab welcomed two new graduate students this fall: **Melissa Witmer** (Biophysics) and **Caroline Davis** (Biochemistry). Melissa joins **Charles Anderson**, **Mike Capp**, **Scott Cayley**, **Dan Felitsky**, **Jiang Hong**, and **Jonathan Cannon** in the lab's efforts to explore and define the rules for the interactions of small solutes with protein and DNA surfaces, with the goal of using these solutes as probes of changes in surface type in biological processes. Carrie is joining the RNA polymerase team of **Wayne Kontur**, **Marni Raffaelle** and **Ruth Saecker**. The calorimeters are getting a good workout from **Kirk Van der Meulen** and Dan as well as our collaborator Babis Kalodimos from the Kaptein lab in the Netherlands. The Kaptein lab has recently published a series of beautiful NMR papers demonstrating the structural details of adaptation, which Tom and Mike Mossing originally proposed defined DNA recognition by lac repressor in 1985. Other active collaborations include work with the Gourse lab, which will be facilitated by their move to Biochemistry this spring while Fred Hall is demolished and rebuilt. Irina Artsimovitch (former postdoc with Bob Landick), now an Asst. Prof. at OSU, is helping us test our understanding of initiation by supplying us with mutant polymerases. We are looking forward to another great year of progress, meetings in Vermont, Rhode Island and Spain, and exciting results. We encourage everyone to keep in touch.

In the past two years **Bassam Z. Shakhashiri** gave almost 100 invited presentations to audiences in the United States, Europe, the Middle East, China, and Australia. These included UW alumni groups, community groups, schools, colleges and universities, professional society meetings, named lectureships, national and international government agencies, and consultations with private foundations and with major companies such as DuPont, Pfizer, Proctor & Gamble, and the Belgian Chemical Manufacturers Federation. The concerns around the world are strikingly the same as they are in the US: attracting students to careers in science and engineering and to careers in teaching science. Considerable interest was expressed in the goals and programs of the Wisconsin Initiative for Science Literacy and in promoting the public understanding of science and technology. I was especially pleased to be named the first holder of the William T. Evjue Distinguished Chair for the Wisconsin Idea, to be honored as the recipient of the 2002 AAAS Award for the Public Understanding of Science and Technology, and to give the keynote address at the silver anniversary meeting of the UW System Undergraduate Teaching Improvement Council of which I am the founding chair. The greatest satisfaction has come from the successful launching of the Wisconsin Initiative for Science Literacy with generous support from the Department of Chemistry, the College of Letters and Science, and from so many friends and donors.

Jim Skinner won the UW Chancellor's Distinguished Teaching Award, primarily for his seven-year stint teaching Chem 103. He also gave a number of research lectures, including the Reilly Lectures at Notre Dame, but is especially pleased to have spoken in the graduate-student-hosted series at both Stanford and MIT.

Lloyd Smith was on sabbatical for the '01-'02 academic year. He and his family drove across country in February '02 in an SUV pulling a trailer full of mountain bikes and skis, which they used amply during the trip. A picture of Lloyd in his first mountain bike (downhill) race is shown below. Note the look of fear and consternation, mixed with grim determination. Other than an inelastic collision with a well-placed hay bale near the bottom the race went satisfactorily.

Lloyd Smith

Lloyd also accepted the position of the Director of the Genome Center of Wisconsin and began that job during his sabbatical. His appointment in Chemistry is now 1/2 time, with the other 1/2 of his appointment being through the Graduate School. The Genome Center has a new building under construction adjoining the Biotechnology Center, which is slated for completion in July '04. At that time several new interdisciplinary faculty will move into the Genome Center, and form there a nucleus for genomic research on campus.

Dr. Martha Vestling, director of the Mass Spectroscopy Facility, was chosen as an invited speaker for this year's International Mass Spectroscopy Conference, held in Uruguay. She was the only person from the United States who was invited to speak to this conference this year.

Coherent multidimensional vibrational spectroscopy has blossomed this year in the **John Wright** group. After the initial discovery of Doubly Vibrationally Enhanced (DOVE) Four Wave Mixing by **Wei Zhao** in 1999, the group has expanded its understanding of these new methods and their applications to chemical measurement problems. The biggest change in the group has been the addition of femtosecond capabilities to the group's experimental systems. **Kent Meyer** has been the lead graduate student on the project and he both constructed the entire system and applied it to time resolved DOVE, triply vibrationally enhanced (TRIVE) Four Wave Mixing, and coherent control of the relative intensities in two dimensional vibrational spectra. Wright has presented this work at many national and international meetings but the highlight was the International Conference on Multidimensional Vibrational Spectroscopy in Seoul, Korea. There, **Sun-il Mho** (PhD '83, Wright) introduced him to the amazing land and culture of Korea. He saw and ate things that he didn't even know existed. The Wright group also held the record for the largest number of former students to return to the Spring Celebration - 7.

Page 6
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to the University and the College of Letters and Science.

The Board of Governors of the New York Academy of Sciences selected **Professor Bassam Z. Shakhashiri** to become a Fellow of the Academy. Fellowship is a distinction conferred on a limited number of scientists who have made important contributions to the advancement of science or to issues related to the intersection of science and society. Bassam is the only chemist among the 10 fellows chosen this year.

The American Association for the Advancement of Science announced that **Bassam Shakhashiri** has received the 2003 AAAS Award for Public Understanding of Science and Technology. One of the Association's major awards, it was established in 1987 and recognizes scientists and engineers who make outstanding contributions to the "popularization of science." In particular, Bassam was cited for his "tireless efforts in communicating the nature of science to the public."

Ned Sibert and **Robert West** received the 2002 James W. Taylor Excellence in Teaching Award sponsored by Pharmacia Corporation, for their outstanding teaching and educational leadership in the Department of Chemistry. The Awards were presented at a special symposium on November 15, 2002.

Jim Skinner was selected in 2003 for the Chancellor's Award for Excellence in Teaching. This award recognizes the most outstanding teachers on the Madison campus and it is a much sought-after and coveted award. This award is a recognition of the excellence and dedication that Jim brings to his teaching.

Shannon Stahl was selected for a Camille Dreyfus Teacher-Scholar Award for 2003. This prestigious award is given annually to young faculty who have excelled in their research and shown promise as excellent teachers. The awards are given to strengthen the teaching and research careers of talented young faculty in the chemical sciences and the program is designed to provide discretionary funding to faculty at early stages in their careers. There were 13 awards given this year.

Bob West received the 2001 Award for Excellence in Main Group Chemistry, sponsored by Elsevier. This award is made yearly by the International Council on Main Group Chemistry and it consists of a gold medal and plaque. It will be presented at the September ACS meeting in New York, at a special symposium on silylenes.

Professor **John Wright** was selected for the 2002 Benjamin Smith Reynolds Award for Excellence in Teaching Engineers. Benjamin Smith Reynolds and Charles Burgess incorporated the Burgess Battery Company in 1917 in Wisconsin and participated extensively in helping the University. In memory of Reynolds, this award is presented to the faculty member who contributes most to the instruction of engineering students.

Martin Zanni was chosen for a Camille and Henry Dreyfus New Faculty Award, providing $40,000, one of 11 awarded last year. The awards are designed to provide external research support to outstanding faculty in the beginning of their first year. It is the Foundation's expectation that the award will assist in realizing the researchers' promise as educators and will help them dedicate themselves to excellence in education outside of the research laboratory.

STUDENT AWARDS

Student scholarships and awards are made possible by generous donations from alumni, friends, and companies that recognize the value of awards allowing both graduate and undergraduate students to spend more time on research, one of the strengths of this institution. Gifts like these from alumni, faculty, and friends of the Department allow us to make a difference in the academic and professional lives of our students. Teaching awards come from both Departmental and campus sources, and recognize the Department's second fundamental mission – exceptional teaching at both the undergraduate and graduate levels. In this section we salute not only the fine students who have worked hard to earn these honors, but also the donors who have made them possible.

Matt Bowman (BS '99, MIT, with Blackwell) was selected as a recipient of a campus award for Innovation in Teaching. Matt received the award based on his work with the Chemistry 344 labs. This teaching assistant award, along with awards for Exceptional Service, Early Excellence, and Career Excellence, is new for the campus this year. The award includes a $500 stipend.

The Outstanding TA Awards for 2001-2002 were presented in November 2002 at the Excellence in Teaching Symposium. TAs and Faculty Assistants are selected to receive these awards each year on the basis of excellent teaching evaluations from students and faculty. Awardees included **Matt Bowman**, **Arrietta Clauss** (Faculty Assistant), **Wendy deProphetis** (BA '99, U. Penn, with McMahon), **Mike Gorman** (Faculty Assistant), **Joanna Haan** (Faculty Assistant), **Greg Hanson** (BA '00, Knox College, with Burke), and **Rita Nichiporuk** (MS Dahl).

Rakwoo Chang (BS '94, Seoul National U., with Yethiraj) was given the Frank J. Padden, Jr. Award of the American Physical Society at its 2003 March meeting. Rakwoo is a physical chemistry graduate student who finished his PhD work with Arun Yethiraj in the summer of 2003. The Padden Award recognizes a graduate student for "Excellence in Polymer Physics Research", and is awarded to the outstanding PhD student engaged in polymer physics research. Rakwoo also received a summer 2003 Ackerman scholarship.

Wendy deProphetis was selected for the inaugural class of Future Faculty Partners of the UW Teaching Academy. Wendy is a graduate student in the McMahon group. The Future Faculty Partner affiliation encourages commitment to teaching in the next generation of college and university educators. She will participate in the Academy's program to discuss the core teaching issues and challenges in providing leadership in undergraduate, graduate and outreach teaching and learning.

Graduate scholarships and fellowships come from industrial and alumni donors, and also from the Graduate School and outside organizations. Awards and the students who received them during 2002-2003 included: The Abbott Fellowship to **William Lambert** (Burke); **Jennifer Lawrence** (Nathanson) was the Martha Gunhild Week Fellow; a Merck Fellowship went to **Annabel Muenter** (Nathanson); a Hertz Fellowship to **Jordan Schmidt** (Skinner); **Arianne Baker** (Ediger), **Anne Bentley** (Ellis), **Andrew Crowther** (Crim), **Adam Fiedler** (Brunold), **Jonathan Grimm** (Lee), and **Jack Sadowsky** (Gellman) were all National Science Foundation Fellows. **Emily**

(Continued on page 25. . .)

New Badger Chemists

PHD

MAY 2002

Timothy Marlow Boller *(Casey)*
Regioselectivity of Nucleophilic Addition to ETA-3-Propargyl Complexes and Electronic Effects on a Novel Equilibrium Between ETA-3-Propargyl and ETA-3-Allenyl Complexes of Rhenium

Ronald Jay Hinklin *(Kiessling)*
Convergent N-Linked Glycopeptide Synthesis and Post-Synthetically Tunable Glycosylations Using Sulfonamides

Paul Rene Leplae *(Gellman)*
Introducing Diversity Into 12-Helical β-Peptides: Toward Biologically Active Foldamers

Ryan Brett Parks *(Burstyn)*
Heme as an Allosteric Regulator in CooA and Cystathionine B-Synthase

Jennifer Ann Ropp *(Farrar)*
Determination of Rotational Correlation Times for Hydrogen-Bonded Liquids Using Nuclear Magnetic Resonance and Theoretical Calculations

Michael Charles Schuster *(Kiessling)*
Investigating Protein-Carbohydrate Interactions with Glycomimetics and Oligovalent Mannosides

Zhi-Qiang Yang *(Kiessling)*
Synthetic Ligands for L-Selection and for B-Cell Receptors

AUGUST 2002

Thorsteinn Adalsteinsson *(Yu)*
Translational Dynamics of Lipids on Monolayers and of Proteins in Gels

William Travis Berggren *(Smith)*
Mass Spectrometry as a Bioanalytical Technique-Applications and Advancements

Brett Ryan Bodsgard *(Burstyn)*
The Chemistry of Coupling 1,4,7-Triazacyclononane to Silica and DNA: Preparation and Study of Materials to Promote Phosphate Ester Hydrolysis and Preparation of Compounds to Study DNA Bending

Christopher Warren Cairo *(Kiessling)*
Promoting Receptor Clustering With Multivalent Ligands and Identifying Ligands for the Beta-Amyloid Peptide

Xiaoping Cao *(Hamers)*
Interfacial Structure and Bonding of Nitrogen-Containing Organic Molecules With Silicon Surfaces

Thomas David Ferris *(Farrar)*
A Theoretical and Experimental Investigation Into the Structure and Dynamics of Ethanol in the Liquid State

Christina Ann Hacker *(Hamers)*
Optical and Electronic Characterization of Organic Monolayers on Si(001)

Robert James Halter *(McMahon)*
Synthesis and Spectroscopy of Molecules of Interstellar Interest

Bo Hu *(Hamers)*
Chemical and Structural Study at the Interface Between Metal Sulfides and Acids

Bayard Robert Huck *(Gellman)*
The Development of Novel Beta-Peptide Foldamers: 1. Tertiary Amide Beta-Peptide Oligomers 2. Chimeric Alpha/Beta-Peptide Hairpins

Anne-Marie L. Nickel *(Ellis)*
Chemical Sensing Using Semiconductor Luminescence: Enhanced Selectivity With Molecularly Imprinted Polymer Films on Cadmium Selenide and Thermostatic Gas Detection With Light Emitting Diodes

Steven Carl Peterson *(Schrag)*
The Influence of Solvent Dynamics on the Relaxation-Time Spectrum Breadth for Polyisoprene/Aroclor Solutions

Kimberly Anne Rickert *(Ellis)*
Surface Chemistry and Electronic Properties of Nitride Semiconductors Studied via Synchrotron-based Photoemission Spectroscopy

Courtney Thompson Thurau *(Ediger)*
Physical Aging and Equilibrium Dynamics of Polystyrene and Polycarbonate: The Role of Spatially Heterogeneous Dynamics

Ta-Sheng Andrew Tseng *(Burstyn)*
Phosphodiester Hydrolysis and DNA Cleavage with Copper(II) Macrocycles

Pengfei Wang *(Zimmerman)*
Reversal of the Stereochemistry of Kinetic Protonation; Intramolecular Proton Transfer

DECEMBER 2002

Matthias Brewer *(Rich)*
Synthesis of Mechanism-Based Inhibitors of Botulinum Neurotoxin Serotypes A and B

Matthew Gregory Bursavich *(Rich)*
Design and Synthesis of Non-Peptide Peptidomimetic Inhibitors of the Aspartic Peptidases

Maximilian Morrison Heckscher *(Crim)*
The Dynamics of Vibrational Energy Relaxation and Biomolecular Reactions in Solution

Sergei Alexandrovich Ivanov *(Dahl)*
Chemical/Structural/Theoretical Studies of Heterometallic Gold-Metal Carbonyl Phosphine Clusters (where Metal is Nickel, Palladium, or Platinum)

Lei Jiang *(Burke)*
Exploitation of Symmetry in Organic Synthesis

Charley Clifton Langley, III *(Woods)*
Microwave Spectroscopic and Mass Spectrometric Studies of Glow Discharges: Microwave Pressure Broadening of the Silicon Monofluoride Cation in Neon and Argon

PHD's *continued. . .*

Charles Andrew Paulson *(Ellis)*
Near-field Scanning Optical Microscopic Investigations of Immiscibility Effects and Photoreflectance Contrast in III-V Semiconductor Materials

Kimberly Annella Rosaaen *(Landis)*
Metallocene-Catalyzed Alkene Polymerization: Mechanistic Investigations and Instrumentation Development

Thomas Evan Vos *(Casey)*
Synthesis and Reactivity of Aminocyclopentadienyl Ruthenium Complexes: An Exploration into New Organometallic Hydrogenation Catalysts

MAY 2003

John Michael Herbert *(Harriman)*
Reconstructive Approaches to One- and Two-Electron Density Matrix Theory

Christopher Paul Lawrence *(Skinner)*
Ultrafast Spectroscopy of HOD in . Liquid D_2O

Emilie Ann Porter *(Gellman)*
Synthesis and Biological Applications of 12-Helical Beta-Peptides

Michael Paul Schwartz *(Hamers)*
The Role of Dimer Structure in Controlling Organic Reactions on Group IV Surfaces

Emily Ann Smith *(Corn)*
Surface Plasmon Resonance Imaging Studies of Protein-Carbohydrate Interactions, Protein-DNA Interactions, and Chemically Induced Hairpin Formation in DNA Monolayers

Christoph Felix Weise *(Weisshaar)*
Structure and Orientation of the Alanine Dipeptide and Small Amides in a Water-Based Liquid Crystal

Sangwoon Yoon *(Crim)*
Mode- and Bond-Selected Reactions of Vibrationally Excited Methane and Monodeuterated Methane with Chlorine Atoms

MS

MAY 2002

Gina R. Gencarelli *(Casey)*
Jeong Taek Hwang *(Yu)*
John Henry Stevens *(Lee)*
Kaia Jo Torgerson

AUGUST 2002

Brian Harlan Clare *(Gellman)*
Melissa Feenstra *(Burke)*
Joel Hassenzahl *(Ellis)*
Matt Hinderaker *(Raines)*
Kaho Kwok *(Brunold)*
Jessie Lindemann *(Rich)*
Jianzhong Yang *(Dahl)*

DECEMBER 2002

German Jose Arellano *(Smith)*
Dale Robert Mowrey *(Lee)*
Jason Lee Otis *(Hamers)*
Curtis Blake White *(Landis)*

MAY 2003

Kelley Ann Lake
Yun Luo *(Nelsen)*
Brian Jacob Majestic
Angela Suzanne Peters *(Wright)*

BS & BA

MAY 2002

Lily Katherine Abbott *(Honor)*
David Michael Ballweg
Benjamin Todd Bjerke-Kroll
Lisa Marie Brandt
Bryan James Branstetter
Charles Quoc Bui
Steven Joseph Darnell *(Honor)*
Joseph William Fowble
Kenneth Gerard Gilbertson
Julie Marie Greschuk
Daniel John Hyland
Jenny Ann Jagielski

BS & BA *continued. . .*

Babek Khodavandi
Hae Jung Lisa Kim
Tanya Lynn Knickerbocker *(Honor)*
Sarah K. Miller
Matthew Sheldon Petrie
Jonathan David Sulik
Melissa Catherine Wegenka
Jeffrey Jason Werner
Krista Therese Zanon

AUGUST 2002

Jason Michael Ellefson
Paul Ramsey Kader
Nicolas Patrick Kessler
Joseph R. Martinelli

DECEMBER 2002

Benjamin Frederick Dorau
Andrew Thomas Krueger *(Honor)*
Robert James Seifert
Marie E. Wisneski

MAY 2003

David Collins Appleyard
Leah Joanna Aston
Steven David Brown *(Honor)*
Erin Chiang Chow
Alicia Lynne Cronk
Anthony Wayne Ehrbar *(Honor)*
Dennis Robert Friedrichsen
Mark Andrew Gavin
Dominic Paul Halbach
Gwendolyn M. Holley
Kevin Ronald Kolterman
Damian Carl Kosempa
Christopher James McGee
Adam Donald Miller
Karolyn Ann Oetjen *(Honor)*
Christopher Joseph Painter
Paul Andrew Roethle
Sara Elizabeth Rybak
Anne Crystal Schuelke
David Alfred Stone
Julie Tamara Wenzel *(Honor)*
Benjamin Paul Ziemer

Other Notable News

MCELVAIN SEMINAR SERIES

The McElvain Seminar Series provides students an opportunity to choose, invite and host speakers of interest to them. Generally, each division invites one industrial and one academic speaker. During 2002-03, speakers included **Dr. Karl Christe** (Air Force Research Laboratory, Edwards Air Force Base), **Dr. Andrea Cochran** (Genentech), **Professor R. Graham Cooks** (Purdue University), **Professor Daniel Neumark** (UC-Berkeley), **Dr. Anne Plant** (NIST) and **Professor David Tirrell** (Cal Tech).

LINCOLN SEMINAR SERIES

Founded by graduate students **Christopher J. Ciolli** and **Jason K. Pontrello** in the summer of 2002, the Lincoln Seminar Series consists of 30-40 minute research talks given by Organic Division graduate students. The talks are followed by a 20 minute question and answer session. All attendees are provided with evaluation forms on which they can provide feedback (anonymously) to the speaker. The Lincoln Seminar Series is named after Azariah Thomas Lincoln, the first person to be awarded a chemistry Ph.D. at the University of Wisconsin-Madison. The goals of the Lincoln Seminar Series are threefold: (1) Facilitate communication about personal research among the groups in the Organic Division, (2) Provide speakers with productive advice and comments about personal research. This seminar series provides a formal opportunity for graduate students to elicit valuable advice from students in different research groups with expertise in other areas. (3) Raise the general level of student awareness of the research occurring within the Organic Division. A sponsorship by **Fisher Scientific** provides snacks and refreshments at each seminar. A complete schedule of past speakers, including seminar title, abstract and lead references, can be found at the Lincoln Seminar Series website: http://www.chem.wisc.edu/~ciolli/seminar/.

DEPARTMENT LECTURE SERIES

These Department lectures are made possible through funds donated by alumni, faculty and friends of the Department. Named lecture series often occur over periods of up to a week, and allow us to invite outstanding scientists to interact with our faculty, staff and students over several lectures.

Professor Carlos Bustamante from the University of California-Berkeley presented the 2002 Willard Lectures in May. He spoke on aspects of packaging of DNA and RNA molecules.

Professor David Wemmer from UC-Berkeley presented a Physical Chemistry Meloche Lecture in November 2002, and **Professor Ara Apkarian** from UC-Irvine was a Physical Chemistry Meloche Lecturer in January 2003.

Professor Stuart Rice from the University of Chicago presented the 2002 Hirschfelder Lectures in October.

Professor Robert Grubbs from the California Institute of Technology presented the 2003 Hirschmann Lectures in February.

In May 2003, **Harold Scheraga** from Cornell presented the Ferry Lectures in macromolecules, the second time this lecture series has been presented.

Professor Karl E. Wieghardt, Director of the Max Planck Institut für Strahlenchemie, Mühlheim an der Ruhr, spoke on Coordination Chemistry with r adicals at a seminar sponsored jointly by the Department Colloquium and the Meloche Lectureship Series.

Madeline Jacobs, Editor-in-Chief of *C&E News*, was the Chemistry Colloquium speaker in May 2002. She addressed "The Challenges of Editing the Newsmagazine of the Chemical World." **Professor Christie Enke** from the University of New Mexico presented a seminar in the Chemistry Department Colloquium series on Electrospray Ionization Mass Spec. **Shannon Stahl** spoke on "Taming the Diradical"; **David Lindley** spoke on "Ludwig Boltzmann and the Rise of Modern Atomic Theory".

For a complete listing of current Departmental Seminars, see the web site at http://www.chem.wisc.edu.

ILM AWARDS

Gordon Bain, **Allen Clauss**, **Pam Doolittle** and **Rob McClain** wrote successful proposals to the University's Instructional Laboratory Modernization Program. In the Spring 2002 exercise, Gordon received $36,000 for a network of laptop computers to replace the aged computers that had been used in the General Chemistry labs; and Rob and Allen received $62,000 to purchase new infrared equipment to be used in the Organic and Instrumental labs. In Spring 2003, the Lab Directors received a total of $259,000 from the College to purchase small instruments for the organic labs, new molecular models that will be used in General Chemistry and the Biocore Program, new benches and equipment for Analytical Chem in room 2365, and a new ICP and cost-sharing on an NMR for the instrumental classes.

CARNEGIE INITIATIVE ON THE DOCTORATE

Howard Whitlock spearheaded a successful application to the Carnegie Foundation for this Department to be involved in their "Carnegie Initiative on the Doctorate." The Foundation will provide $30-40K each year for 5 years to fund an experimental

study and development of the doctoral education program. The design of the program is very much up to us, and the design is the first task that must be done once funding is awarded. The program can ride on top of existing efforts and it can include anything from recruiting to the end result. Now that we have been selected, we will be developing our proposals for study, and will be able to report on progress in the next several years. **Arun Yethiraj** will head the committee that develops and implements the complete proposal.

UNDERGRADUATE POSTER SESSIONS

Response to the first undergraduate poster session, organized by **Gil Nathanson** in 2001, was so enthusiastic that sessions have been held in April-May each of the last two years. In 2003, the poster session was held in conjunction with the Chemistry Celebration Weekend. Posters are displayed in the lobby of the new building.

DEPARTMENT PUBLICATIONS

A list of faculty publications is published in the department newsletter every other week. If you are interested in keeping track of what our faculty are doing in research, log on to www.chem.wisc.edu and select "News & Events." Here you will also find advance notice of seminars being presented in the Department.

As part of the 125th anniversary of JACS, ACS compiled a list of the 125 most-cited publications in JACS history. **John Ferry's** classic paper is *#14*, with 2522 citations:

14. Williams, M. L.; Landel, R. F.; Ferry, J. D. The Temperature Dependence of Relaxation Mechanisms in Amorphous Polymers and Other Glass-forming Liquids **1955**, *77*, 3701-3707.

Bob Hamers has joined the ISI Web of Science list of Highly Cited Scientists. This list is an ongoing project of ISI, and will continue to change frequently. Bob is one of only 21 researchers (14 from L&S) on our campus to make the list. For perspective, the June 2003 list showed UC-Berkeley had 47 people on the list, Cal Tech had 44, MIT had 42, Harvard had 36, and Illinois had 12. There are 103 people from Chemistry listed so far, and 214 from Materials Science (which is the list Bob is on). Visit http://isihighlycited.com to see the list as it is developed, and to read the method for creating the list.

CHEMISTRY 201

First offered in Spring 2003 by **Cathy Middlecamp** and **Omie Baldwin**, Chemistry 201, "Environmental Chemistry & Ethnicity" is the first course in the Department to meet the campus ethnic studies requirement. The course explores the connections between uranium and the peoples of the Southwest who lived on the land where uranium was extracted. Chemistry topics include atomic structure, radioactivity, nuclear decay series, nuclear fission, half-lives, the nuclear fuel cycle, radon, and the effects of radiation on health. These topics are presented against the backdrop of the Navajo people who mined the uranium, and the changes that the people experienced.

"ONCE UPON A CHRISTMAS CHEERY"

Bassam Shakhashiri's 33rd annual Christmas presentation played to packed houses on the weekend of Dec. 7 and 8, 2002. As usual, it was later broadcast on Public Television stations. The 2003 shows will be Dec. 6 and 7.

DEPARTMENTAL GLASS SHOP

The glass shop has settled into its new location on the 3rd floor. In addition to the daily operation of the glass shop, a number of interesting and exciting events have taken place in the last year.

The Spring Celebration included workshops in the glass shop. In addition to an overview of the glass shop and equipment there were demonstrations on coil winding and construction of a one-piece cold trap. We then quickly moved to lighting torches and giving everyone the chance to put some glass in the fire. Students worked on simple glass manipulations with solid rod and small-diameter tubing. It was a fun day and I am grateful for the help provided by my expert assistants **Ryan Nelson** (Landis), **Jocelyn Cox** (Crim) and **Chris Elles** (Crim). They helped keep everything safe and running smoothly.

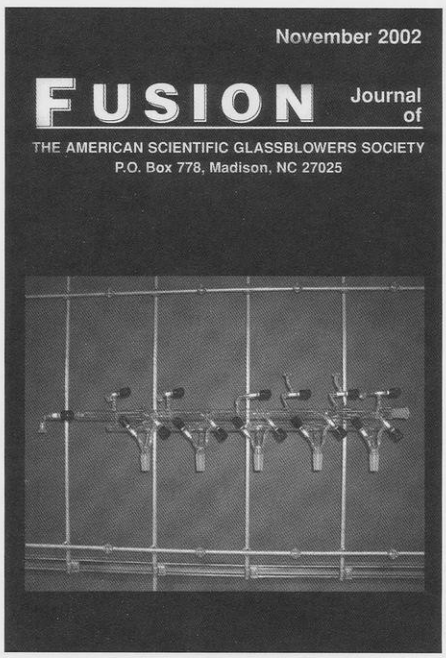
The grand opening of the glass shop was held in September as I hosted the Midwest Section Meeting of the American Scientific Glassblowers Society (ASGS). There were over 40 glassblowers in attendance, traveling from as far away as Arizona, Kansas and New Jersey. In addition to a day of technical demonstrations and a business meeting, **Matt Sanders** kindly gave tours of the chemistry department's new addition.

One direct result of the September meeting was the use of a demonstrated technique to solve a research problem within **Professor Corn's** group. A paper based on this project, "Rapid Prototyping of Microfluidic Systems in Glass" will be presented at this year's ASGS National Symposium.

In 2002, I presented a paper on glassware innovations that have recently come out of UW-Madison at the ASGS National Symposium.

In November 2002, a paper, co-authored with Assistant Professor **Shannon Stahl**, was published in the ASGS national journal, *Fusion*. It highlighted the new design, development and key features of an ergonomic vacuum manifold we call the Wisconsin Schlenk Line. A photograph of the line was also featured on the cover of *Fusion*.

The Institute of Chemical Education has provided funding for a portable glassblowing station. Design and construction is continuing. I will use the portable station for public lectures and community outreach.



Surprise Retirement Party

John and Beverly Schrag at the retirement party.
[Picture courtesy of Christine Landry-Coltrain.]

A party for Prof. John L. Schrag was held at the Madison Concourse Inn on Saturday, Jan 25, 2003 in honor of his 35-year UW career. John and his wife Beverly were greeted with a standing ovation from the nearly fifty attendees as they opened the door to the banquet room. Their arrival was followed by numerous hugs as they walked around the room to greet and thank everyone. It was a day of energy, reminiscing, levity, emotion, and fun for all.

A set of twelve posters were on display to spark discussions. Half the posters focused on John's research interests (publications, academic tree, unique state-of-the-art instrumentation, and professional events); the other half focused on group events. They were based on nearly 200 pictures collected by group members. Pictures were also continuously projected in the banquet room.

A one-hour program to thank and honor John preceded dinner. The focus was on John's leadership and mentorship, as well as his impact on careers. It was a session with energy, levity, and emotion. The speakers (Bob Sammler, John Hostettler, Tim Lodge, Ted Stokich, Isabel Echeverría, John Wright, and Christine Landry-Coltrain) were selected to represent different eras and/or perspectives of John's UW career. Open letters, from several group members unable to attend the party, were also read. Letters from the most distant group members (Kunihiro Osaki, Kyoto, Japan; Arnljot Elgsæter, Trondheim, Norway; Antonio Urbina, Spain) were included.

Gifts to John and Beverly from group members and friends included a 2003 calendar for his office wall (features twelve mosaics of group pictures), a CD of all pictures collected for the party, updated contact information, and most significantly the establishment of the John L. Schrag Analytical Research and Teaching Endowment Fund* for long-term recognition of his career.

The program closed with another standing ovation for John. Talk for a second group reunion/party has already begun. This may be John's first opportunity to "set the record straighter". Perhaps the controversy about the group nickname (Mills Street Modulators or Johnson Street Jigglers) could be settled then too!!

Contributed by Bob Sammler and Ted Stokich

*The John L. Schrag Analytical Research and Teaching Fund was established in 2003 by members of Professor Schrag's research group to recognize the commitment to excellence and dedication to his students that typified Professor Schrag's career in the Analytical Sciences Division. It is the intent of the donors to honor his legacy by using the income generated by the Fund to recognize talented Analytical Sciences students, staff, and/or faculty and to provide the margin of excellence for the Analytical Sciences Program that John worked to establish and cares about deeply. Awards from this Fund may be used for program development, staff and student recognition, and other activities that will enhance the excellence and humanity of the Analytical Program. The awards will be approved by John L. Schrag and/or the Chairman of the Department of Chemistry.

There are three ways to donate to this fund.

1. Mail checks to The John L. Schrag Analytical Research and Teaching Fund, University of Wisconsin Foundation, 1848 University Avenue, P.O. Box 8860, Madison, WI 53708-8860.

2. Make gifts on line with a credit card (Visa, MasterCard, or American Express) at the University of Wisconsin Foundation website, *http://www.uwfoundation.wisc.edu*. Click on the Make A Gift link and follow the directions. For gift designation, select "Other" and then type in the Fund name and number in the text box.
   - The John L. Schrag Analytical Research and Teaching Fund
   - Fund number = 12223637

3. Contact David Simon (608-263-5607, *David.Simon@uwfoundation.wisc.edu*) regarding a gift of stock or a deferred gift.

The John Schrag Retirement Party

BACK (L to R): Mike Minnick, Jim Taylor, Dennis Massa, Steve Peterson, Fred Schaefer, John Wright, Bob Bird, Joe Yaritz, John Hostettler, Linda & Bob Johnson, Fred Braid, Matt Schroeder & Patrick Crain.
MIDDLE: Sandy Minnick, Susanna & Tim Lodge, Jim Miller, Mitch Dibbs, Bob Schmeltzer, Isabel Echeverría, Dee Strand, John Schrag, Christine Landry-Coltrain, Jennifer & Victor Man, Carol Mohler, Doug Radtke, Alan Soli, Cheryl Brueggeman, Ted Stokich, Barry Brueggeman & Bob Sammler.
FRONT: Arthur, Helen, Hannah & Sam Lodge, Carol Wright, Bev Schrag, Dawn Peterson, Monica Johnson & Maria Schroeder.

John Schrag Research Group Reunion

BACK (L to R): Bob Johnson, Dennis Massa, Mike Minnick, Jim Miller, Joe Yaritz, Steve Peterson, John Hostettler, Fred Braid, Patrick Crain, Alan Soli, Barry Brueggeman, & Bob Sammler.
FRONT: Isabel Echeverría, Tim Lodge, Fred Schaefer, Mitch Dibbs, Dee Strand, John Schrag, Christine Landry-Coltrain, Victor Man, Doug Radtke, Monica Johnson, Maria Schroeder, & Ted Stokich.

[Photographs courtesy of Ted Stokich]

This 'n'That

Igor Alabugin (PD '96-'00, Zimmerman) is an Assistant Professor at Florida State. He spoke in Budapest at the IUPAC Symposium on Photochemistry.

Eric J. Amis (PhD '81, Yu), Chief, Division of Polymer Science & Standards at NIST, concluded his decade of service as the editor of the Journal of Polymer Science, Polymer Physics Edition, at the end of 2002. Academic Press, the publisher of the Journal, acknowledged that the polymer physics community attributes much of the journal's upgrading for the past decade to Eric.

Nicole Bennett (PhD '96, Vedejs) is very happy in her new position as Associate Professor of Chemistry at Appalachian State University.

Peter J. Bonk (PhD '85, Trost) moved to Rhode Island as a Principal Scientist at Rhodes Technologies Inc., after 9 years at Abbott Labs. He has served as chairperson for the Division of Small Chemical Businesses, and he enjoys seeing other UW chemists at ACS meetings.

After 34 years running around Dow, **Ralph Czerepinski** (BS '62) has decided to hang up his tennis shoes to pursue other interests at the end of this year, assuming he can get his desk cleaned by that time. Ralph joined Dow in 1967 at the Eastern Research Laboratory after getting a PhD in inorganic chemistry from the University of Washington and, prior to that, a BS in Chemistry and Math from the University of Wisconsin–Madison. In the summer of 1964, he served an Internship at Los Alamos Scientific Laboratory. His BS and PhD thesis were both related to potential high energy rocket fuel oxidizers. Ralph came pretty close to actually *being* a rocket scientist. While at Eastern Research Laboratory, he did temporary assignments at the Sarnia Research Laboratory, and in Midland at the Physical Research Laboratory and at the Contract Projects Laboratory. In 1972, he and his family moved to Midland, where he became part of the Physical Research Laboratory. While there, he did temporary assignments with the Organic Chemicals Department. In 1980, Ralph transferred to Designed Latexes and Resins Research, which, after quite a few name changes and spin-offs, became Emulsion Polymers R&D. While Ralph worked on countless projects over the years, often two or three at the same time, he has probably had the most fun with over a dozen projects related to the field of Reprography, but there have been very few projects he didn't enjoy. However, his greatest pleasures have clearly come from hassling managers. During his 34 year Dow career, he has "trained" 18 direct supervisors and over a dozen second level supervisors. Ralph is known throughout Dow for his many contributions and successes. We saw from Ralph spontaneous ideas, ideas that were risky and sometimes even bizarre, challenging rules and consensus, use of creativity to expand the current structure and break paradigms. He has indicated that while retirement means closing many doors and opening others, he will most miss his many coworkers and mentors. Every person he has worked with has proved to be a mentor to him, helping him learn and grow. He hopes to be fondly remembered as Emulsion Polymers' Information Garbage Pail. We wish Ralph and his wife Donna a very happy and healthy retirement.

Mike Giddings (PhD '97, Smith) received an interdisciplinary "committee degree" in biocomputing from Wisconsin. He accepted a position as an assistant professor in the Department of Microbiology and Immunology at the University of North Carolina in Chapel Hill, and has been there in that capacity for a year. His work is on the development of bioinformatics for the analysis of proteomic mass spectrometry data, particularly targeted at discerning variations in protein structure.

Tim Griffin (PhD '99, Smith) has accepted a position as an assistant professor of Biochemistry at the University of Minnesota (Minneapolis), where he will start this fall. He will be developing and applying new tools for proteomic mass spectrometry, using isotopic tagging and other approaches.

Bill Gruenbaum (PhD '75, Zimmerman) no longer works for Eastman Kodak. In May, 1999, the Office Imaging Division of Kodak was sold to Heidelberger Druckmaschinen AG, the world's leading manufacturer of offset printing presses. Heidelberg acquired Office Imaging to enter the digital printing market with our Digimaster printer. Thus, the former Kodak Office Imaging became Heidelberg Digital L.L.C. The work involves organic chemistry, analytical chemistry, thin film technology, surface science, *etc.* Bill reports info regarding **Sue Boettger** (BS '75, Zimmerman). Sue is a senior scientist at Bristol-Myers Squibb. Bill reports further that **Nick Roberts** (PhD '76, Zimmerman), **Tom Welter** (PhD '77, Zimmerman) and **Don Diehl** (PhD '78, Zimmerman) are still in the Research Labs at Kodak. **Tim Cutler** (PhD '77, Zimmerman) and **Ronda Factor** (PhD '80, Zimmerman) are still managers somewhere out in Kodak Park. **Jeff Blood** (PhD '81, Zimmerman) is vice-president in charge of the Materials & Advanced Technology division here at Heidelberg so Jeff is my boss's boss.

Robert J. Halter (PhD '02, McMahon) accepted a postdoctoral position with Prof. Peter Wipf at the University of Pittsburgh.

Charles C. Han (PhD '74, Yu), retired from the Division of Polymer Science & Standards, NIST, at the end of 2002 as a NIST Fellow, and started his second career in Beijing as the Chief Scientist for Polymer Chemistry, Physics and Materials of the Chinese Academy of Sciences, and the Director of the Joint Laboratory for Polymer Science and Engineering, located in the Institute of Chemistry, CAS, Beijing. An international symposium in honor of his illustrious career at NIST was held in March.

David F. Hillenbrand (PhD '73, Yu) has been the Executive Vice President of Resonance Research, Inc., a supplier of NMR magnets, in Billerica, MA, for several years.

Kurt Hoffacker (PhD '96, Zimmerman) wrote that he spent some time in Tokyo last year with **Yasunari Maekawa** (PD '92-93, Zimmerman), while Kurt was there for a conference.

Hiizu Iwamura (PD Zimmerman) is the recipient of the Japan Academy Prize in 2003 for his research on Molecule-based magnets; the prize was given jointly to Prof. Koichi Itoh and Prof. Minoru Kinoshita, both physical chemists, and organic chemist Prof. Iwamura. The Ceremony for the Award of the Prize was held in the presence of Their Majesties, the Emperor and Empress of Japan, at the Japan Academy located in Ueno Park, Tokyo, on Monday, June 9.

Dan Kapp (PhD '85, Nelsen) was inducted into the Distinguished Inventors Gallery at Eastman Kodak on the issuance of his 20th US Patent.

Masami Kawaguchi (PD '82-'84, Yu) has been appointed as a professor in the Department of Chemistry & Materials, Faculty of Engineering, Mie University, Tsu, Japan.

Carl Kemnitz (PhD '95, McMahon) was promoted to Associate Professor of Chemistry with tenure at California State University - Bakersfield.

Susan Klein (PhD '94, Nelsen) has earned tenure at Manchester College in Manchester, Indiana.

William A. "Alex" Merrill (BS '01, Dahl) is currently working in the lab of Philip Power at UC-Davis. He has been working on molecular clusters, and is moving on to nanoparticles, nanosheets and nanowires.

Marilyn Olmstead (PhD '69, Fenske), UC-Davis crystallographer was recently named the winner of the 2002 James H. Meyer Distinguished Achievement Award. Marilyn has worked at UC Davis for more than 30 years, and "The quality of her work in the chemistry department has simply been outstanding, said the professors who nominated Olmstead: Alan Balch, Susan Kauzlarich and Philip Power." An article about Marilyn that the quote was taken from can be viewed at the UC-Davis web site at http://www-dateline.ucdavis.edu/111502/dl_olmstead.html.

Sangwook Park (PhD '99, Yu) moved from a research staff position at Corporate R&D Laboratories of LG Chemical in Korea to its manufacturing facility for optical films as the production manager. The company is the major supplier for liquid crystal display products to LG-Philips and Samsung.

John Penn (PhD '81, Zimmerman), Professor at the University of West Virginia reports an invited presentation at a meeting in Cuba in June, and a presentation at a meeting in Germany in October. All plans are tentative. Thanks for the publicity about WE_LEARN in the last Wisconsin newsletter. Hopefully, we can get you hooked up for WE-LEARN sometime. It really does help the students to do better in their work.

Mark Reynolds (PhD '99, Burstyn) sent an update. He started a tenure-track position in chemistry at St. Joseph's University near Philadelphia in 2002. Mark really enjoys the small class sizes and the students. St. Joe's is a primarily undergraduate institution. He can be reached at Mark Reynolds, Assistant Professor of Chemistry St. Joseph's University 5600 City Avenue, Philadelphia, PA, 19131, mreynold@sju.edu.

Donn N. Rubingh (PhD '72, Yu), the first Ph.D. student of Yu, retired in March of 2001 after 29 years of a highly respected and productive career from Procter & Gamble in Cincinnati as a Research Fellow.

Masahito Sano (PhD, physics, '87, Yu) has been appointed as an associate professor in the Department of Polymer Science & Engineering at Yamagata University, Yamagata, Japan.

Josh Schantl (PD Zimmerman and Vis. Prof '89-'90), Professor at Univ. Innsbruck, Austria, gave a lecture at the UW in 2002.

Pavel Sebek (PD '94-'96, Zimmerman) has left BASF. He wrote about the recent floods in Prague. Fortunately Prague is a hilly city and thus the flooded areas were relatively small even though some prettiest parts of Prague were damaged. It has turned out that our ancestors knew how to live with occasional floods and they built their houses accordingly. Today Prague is in a good shape again. Pavel has accepted his current position of "project manager" in a local pharmaceutical company called Leciva. His family is doing fine: Vojta is 9 months old, Karolina started her first grade. Veronika is staying at home still working part-time for a biotech company.

Grigoriy Sereda (PD, Zimmerman) is an Assistant Professor at the University of South Dakota. He reports that his wife Marina and son Timothy like this place too. He has a nice office and a lab and is preparing for the fall semester.

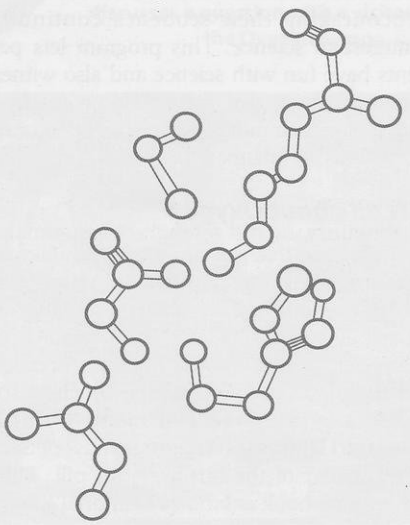
Kaoru Tamada (PD '92-'93, Yu) is now the Leader of Bio-Photonics Group, Photonics Research Institute, National Institute of Advanced Industrial Science & Technology, an independent administrative institution of the Ministry of Economy, Trade & Industry of the Japanese Government. She is the only female group leader of the Research Institute, perhaps a harbinger of changes to come for the traditional gender-biased Japanese society.

Pat Wang (Ph '92, Zimmerman) left Hewlett Packard earlier this year for another job at Xerox.

Drew Weber (PhD '88, Zimmerman) sent an update. Since January 1, 2003, he is the general manager of DuPont Photonics Technologies, a new business unit that develops, manufactures and markets polymer-based, integrated photonic devices for telecom applications. His home will remain in North Carolina with wife, Chris, and three children. He will maintain offices in Wilmington, Massachusetts, and Research Triangle Park, North Carolina.

Dieter Werthemann (PD Zimmerman) retired from Ciba at the end of 2000. He is still involved in politics (city parliament of Basel as well as vice president of the liberal democratic party of the state of Basel). He notes that chemistry is part of his life. "I founded together with 4 other retired Ciba members a new company. We do consulting and trading in the field of specialty chemicals with focus on chromophores. In addition I intensified my musical interest by having started a new swing band by playing the piano. The Werthemann's swing band had its first public performance last August in Basel. Our style is Boogie, Blues, Swing until Mainstream (The 40's and 50's in Jazz)."

Ross A. Widenhoefer (PhD '94, Casey) has been promoted to Associate Professor at Duke University. Ross's research involves development of new reactions for organic synthesis based on organometallic chemistry.



Wisconsin Initiative for Science Literacy

Science Saturdays at WISL

This past spring the Wisconsin Initiative for Science Literacy (WISL) held two very successful "Science Saturdays" with small groups of Madison school children—older elementary and middle school age—and their parents. "Science Saturdays: Energy Matters" was organized by **Dr. Rod Schreiner** and **Mike Modica** of WISL and Prof. Peter Timbie of the Dept. of Physics. Activities included making polymers, a refractor telescope, and a battery to convert chemical energy into electrical energy. "Science Saturdays: Bottle Biology" was organized by **Paul Williams**, emeritus professor of plant pathology, widely known for the rapidly-growing little mustard plants he has bred and the many learning activities he has built around these so-called "fast plants." Using recyclable plastic containers, students and parents made mini-ecosystems as well as containers in which to study the development of the cabbage butterfly. Because learning to observe and record data is an important part of this program, students took home their living projects to study between sessions. These programs were part of WISL's efforts to extend more science opportunities to students everywhere but especially to those in cities. Each program consisted of three three-hour Saturday morning sessions in which students and parents worked together on science projects that were fun and instructive. The inclusion of parents had a specific purpose. Of course, a shared hands-on activity is always a great way for kids and parents to interact and learn. But it's also a way to engage parents who may be intimidated by science and technology but whom studies have shown are key to encouraging their student's continuing interest in science. This program lets parents have fun with science and also witness the enjoyment that their children get from stretching their minds. More Science Saturday programs are planned for the fall.

Its all about Oxygen

Oxygen, that gas that most of us take for granted, took the spotlight in March with three events. First was the presentation of a public symposium on recent research on oxygen. Second was the Madison premiere of the play OYXGEN written by chemistry Nobel Laureate **Roald Hoffmann** of Cornell and **Carl Djerassi** (PhD '46, Wilds) of Stanford, father of the birth control pill. Third was a rare book exhibit at Memorial Library featuring works of the 18th century discoverers of oxygen.

The all-day symposium, organized by **Prof. Bassam Shakhashiri** and the Wisconsin Initiative for Science Literacy, was attended by 200 and featured talks by the OXYGEN playwrights as well as by science historian Alan Rocke of Case Western Reserve. Presenters from UW-Madison were chemist **Shannon Stahl**, biochemist **Brian Fox**, biomolecular chemist **Patricia Kiley**, historian of science **Tom Broman** and medical scientist **Richard Weindruch**. Topics ranged from the adaptations of various bacteria to different oxygen tensions, to means to safely use molecular oxygen in the chemical industry, to a closer examination of who really should get credit for discovering oxygen. Between talks, Prof. Shakhashiri and **Dr. Rod Schreiner** arranged for a series of entertaining demonstrations of oxygen's unique behavior and characteristics. The symposium audience was also treated to a brief Mozart musical interlude, written during the period in which oxygen was discovered and performed by Prof. Marc Fink and members of the Pro Arte Quartet. Those who attended found the day to be anything but ho-hum. The mix of lectures, demonstrations, discussions, and music was unique and stimulating.

In preparation for the play OXYGEN, playwrights Djerassi and Hoffmann visited Madison in February. They discussed details of costuming and staging with University Theatre director Norma Saldivar and student actors in the Department of Theatre and Drama and helped students get a sense of eighteenth century science and the forces at work in a scientist's life in any era. The play OXYGEN focuses on the culture of science both today and in the eighteenth century when Antoine Lavoisier, Joseph Priestley, and Carl Wilhelm Scheele were struggling to understand the behavior of elements and especially oxidation reactions. It is a fictional story but deals with real science and real scientists.

The rare book exhibit, which ran through April, featured very rare texts drawn from the library's Denis Duveen Collection on Chemistry and Alchemy and the Cole Collection of original chemistry works.

Prior to the symposium, Djerassi, Shakhashiri and chemistry **Prof. Laura Kiessling** performed the American premiere reading of Djerassi's word play NO in Dr. Rod Schreiner's general chemistry class. *NO*, which should be interpreted as the chemical abbreviation for nitric oxide, centers on three characters discussing the many biological reactions – from penile erection to firefly's flashing – in which this toxic and short-lived gas has been found to play a crucial role.

According to Shakhashiri, the coming together of all these events was no mere coincidence. Shakhashiri, director of the Wisconsin Initiative for Science Literacy, has worked hard to foster activities that show the commonalities of arts, sciences and humanities and that demystify the passions and creative impulses that drive both scientific discovery and artistic expression. "It is all part of helping the public—and even academics develop a greater appreciation of science and its role in our lives," he says.

Conversations in Science

Each year about 40 science teachers from the Madison area meet with top researchers from the University of Wisconsin-Madison for discussions on the latest developments in science.

The series, called "Conversations in Science," is intended to energize middle school and high school science teachers and bring them up to date on new research. It also encourages university scientists to communicate their work to a broader audience.

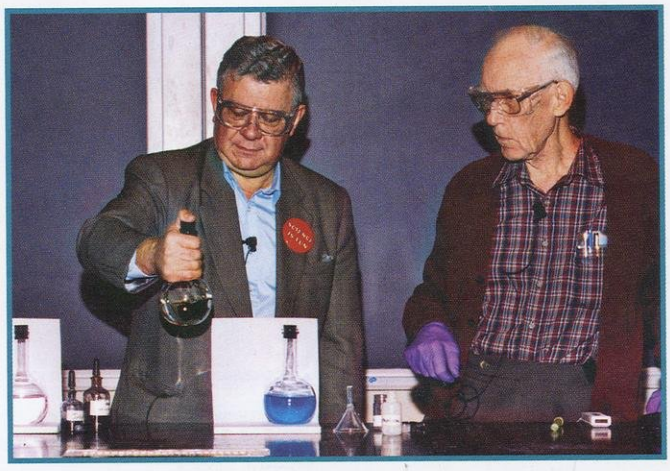
The program is a partnership between the Wisconsin Initiative for Science Literacy (WISL), the Madison Metropolitan School District (MMSD), and Edgewood High School, a private, Catholic school. Though initially offered only to Madison teachers, the program now is available to all public and private schools in Dane County. In this the third year, half the teachers came from outside the MMSD and four taught at private schools.

University of Wisconsin-Madison chemistry professor **Bassam Z. Shakhashiri,** director of the Wisconsin Initiative for Science Literacy says, "Good teachers are vital to science education. Through the series we inspire teachers and contribute to their personal enrichment. The conversations are also a way to share the wealth of talent we have on campus with the immediate community and to motivate faculty to share their expertise." Speakers are recruited from the faculty by Prof. Shakhashiri and he is always happy to receive suggestions.

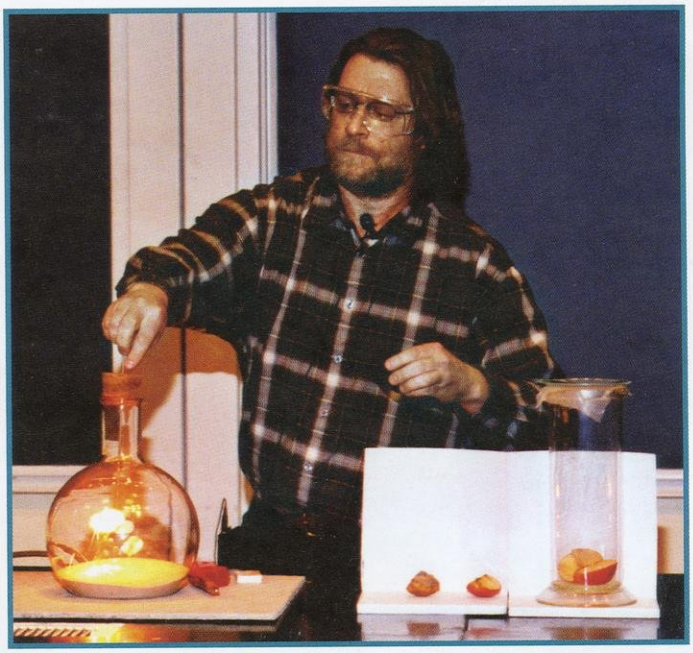
Among the topics the series has offered are: drug addiction and the brain, antioxidants and

(Continued on page 25. . .)

It's All About Oxygen



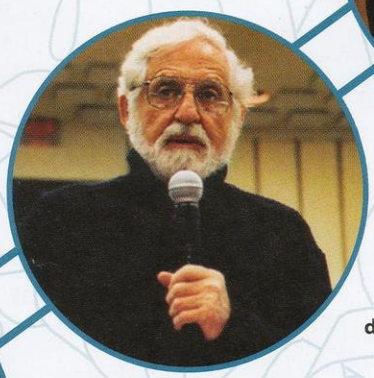
Prof. Bassam Shakhashiri, director of the Wisconsin Initiative for Science Literacy, and Prof. Laurens Anderson (right) explain their research to identify the chain of reactions that occur in some indicator dyes.



Prof. Brian Fox of biochemistry graphically demonstrates several kinds of oxidation reactions at the Oxygen Symposium.

Professor Roald Hoffmann of Cornell University, Nobel laureate in chemistry, provided fascinating insight into the life of the Lavoisiers, their laboratory work methods and their finely-made chemical instruments.

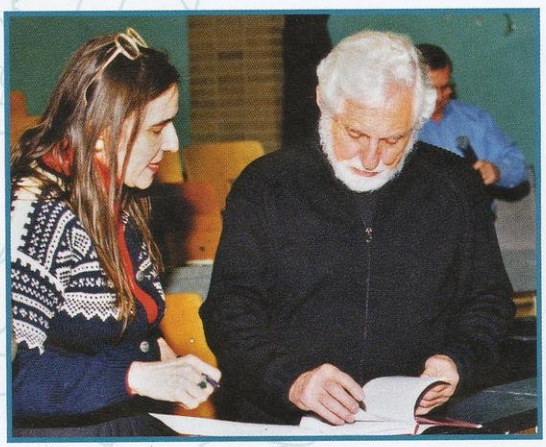
Prof. Shannon Stahl of the chemistry department describes the search to find catalysts that will safely allow oxidation with molecular oxygen in industrial processes.



Prof. Carl Djerassi of Stanford responding to a question at the Oxygen Symposium.

A playwright and inventor of the birth control pill, Prof. Djerassi discusses a question with a visitor at the Oxygen Symposium.

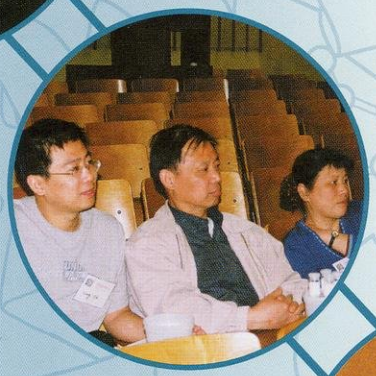
At the Oxygen Symposium, Prof. Brian Fox of the biochemistry department discussed biological pathways that use oxygen with high efficiency. Members of the Pro Arte Quartet, who gave a brief performance of a Mozart piece, looked on with interest. Mozart was a contemporary of the eighteenth century discoverers of oxygen.

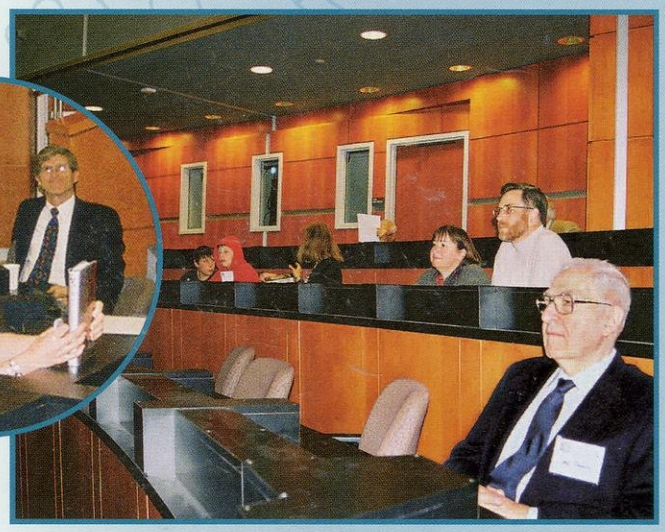


May
2003
Celebration

PHOTOS BY: Terra Potocky, Ed Turner and Martha Vestling

Spring Celebration!





Chemical Education:

Institute for Chemical Education (ICE) & Journal of Chemical Education (JCE)

ICE OUTREACH CONTINUES

For more than a decade the Institute for Chemical Education (ICE) has provided outreach to local schools in which groups of graduate and undergraduate students present programs of chemical demonstrations appropriate for elementary and middle school students. Called SPICE (Students Participating in Chemical Education), this program has reached approximately 70,000 people over the past decade. This year the SPICE program was reinvigorated by incoming graduate student Diane Nutbrown, who has organized a group of students and coordinated the program during the academic year and the summer. By next fall the reorganized program will be in full swing, with many presentations planned and new content designed to correlate with the needs of local teachers and students.

ICE ChemCamps have been a feature of every summer for many years. Aimed at middle-school students, these programs involve five half days of laboratory and classroom work that introduces the students to science and chemistry. ChemCamps are so popular that students often want to return for a second summer's work. Diane Nutbrown has organized two ChemCamps during each of the summers of 2002 and 2003. With a dedicated group of ChemCamp mentors, she is working on updating the content of the ChemCamp so that different content can be included each summer, thus allowing students who are enthusiastic about science more opportunities to learn.

ICE has begun distributing a new kit that will be of interest to anyone who wants to encourage learning about solid-state chemistry-specifically light-emitting diodes, which represent a new, more efficient lighting source. The ICE LED Color Strip kit was developed in collaboration with Art Ellis and the Materials Research Science and Engineering Research Center. The kit includes a circuit board with six different colored LEDs connected in parallel with a capacitor, and optical fiber, several other items, and a booklet that describes eight different experiments that students can do with the kit. In one experiment, a battery is connected to the LED strip to light the LEDs. When the battery is disconnected, the LEDs go out in the order blue, green, yellow, orange, red, infrared, reflecting the band gap energies of the various LEDs and the photon energies of the different colors of light. The effect occurs because as the capacitor discharges the voltage drops below the band gap for each LED. The blue LED has the largest band gap and so it goes out first, followed by the other LEDs in order of decreasing energy of photons emitted. The kit is designed for teachers who want to include the latest solid-state chemistry in their classes or for parents and children who are interested in up-to-date science.

ICE can be contacted at *http:/ ice.chem.wisc.edu* or at 608-262-3033.

JCE AWARDED DIGITAL LIBRARY GRANT

John Moore, editor of the *Journal of Chemical Education (JCE)*, was awarded a $930,000 grant by the National Science Foundation to create the *JCE* Digital Library. This project is part of a major national effort by NSF to create a National Science, Technology, Engineering, and Mathematics Education Digital Library (NSDL). This will allow *JCE* to add to the considerable digital material already available at *JCE* Online, the *JCE* Web site, which operates out of our department. The grant will also encourage and enable a much wider audience to access the JCE materials.

NSDL
THE NATIONAL SCIENCE DIGITAL LIBRARY

Digital libraries have grown out of an effort to bring order to the chaos of the Internet. These efforts include standards for cataloging items in a collection (Dublin Core metadata), and a protocol for sharing that information (Open Archives Initiative). Using this technology, the *JCE* collection, which includes publications over an 80-year period) will be categorized using keywords, organized by curricular level, and correlated with textbooks, which will allow quick and easy access by teachers from high school chemistry through graduate-level courses.

Our collection will initially organize and catalog four *JCE* Online features. DigiDemos, edited by co-PI Ed Vitz, Kutztown University, will contain chemical demonstrations in digital format using hypertext, sound, graphics, and video. *JCE* WebWare, edited by co-PI William (Flick) Coleman, Wellesley College, and Ed Fedosky, *JCE* staff, will make web-based interactive tools available that can be used in the computer room and the student's dorm room or home as well as in the classroom and laboratory. Computer Algebra Systems, edited by co-PI Theresa Zielinksi, Monmouth University, is a growing collection of Mathcad(r), Mathematica(r), Maple(r), or MATLAB(r) documents designed to help students learn mathematically intensive aspects of chemistry. Resources for Student Assessment, edited by Thomas Holme, University of Wisconsin-Milwaukee, and Ieva Reich and Rachel Bain, *JCE* staff, will provide Web-deliverable homework, quiz, and examination questions with feedback and tutoring based on student responses.

As would be expected from an established and respected academic journal, each item will be carefully reviewed to ensure that it is scientifically accurate. Reviewers will also require that materials embody pedagogy supported by the chemical education research literature.

Building a digital library requires considerable technical expertise. We are fortunate that the technical details are being handled ably by Jon Holmes, editor of *JCE* Software and *JCE* Online, and Darin Burleigh, *JCE* systems programmer. Darin obtained his Ph.D. with Ned Sibert in 1993.

Darin Burleigh

The *JCE* Digital Library is looking for contributions! We are looking for innovative teaching materials to add to these new collections. We are also soliciting feedback from educators who are using these materials —which ones work? How are they are used in lesson plans? Contact *JCE*—our editorial offices await your submissions and feedback (*http://jchemed.chem.wisc.edu/*).

Art for Chemistry on Main Street

The Main Street Project, which closely links chemistry and art, was recently completed as the capstone of about $40 million worth of construction and renovation in the Chemistry Department at the University of Wisconsin–Madison. The first floor now includes an L-shaped corridor that connects one corner of the building with the opposite corner. This Main Street corridor always has a heavy traffic flow. The goals of the Main Street Project were to make the building more inviting to everyone who enters, to showcase the many facets of chemistry, and to provide for informal education of students who pass through the corridor.

The Main Street Project involved collaboration among chemistry faculty, staff of the Institute for Chemical Education and the Journal of Chemical Education, a graphic designer, and special high-quality printing facilities on campus. It was supported by the Chemistry Department, the Institute for Chemical Education, and the Eastman Kodak Company. When it was complete the first floor of the chemistry building had been enhanced by;

- 11 art posters highlighting current faculty research
- A 5-panel listing of Ph.D., M.S., and B.S. graduates of the department
- A 3-panel genealogy of the department's tenured faculty
- A video monitor that lists upcoming events and features a different research group's work each month
- Chemistry in Action—photographs of chemistry happening
- Nitric Acid Acting on Copper Penny
- Flame Tests
- Dendritic Growth of Tin Crystals
- Precipitation of Lead Iodide
- Precipitation of Mercury(II) Iodide
- Precipitation of Silver Iodide
- Precipitation of Silver Oxide
- Action shots of undergraduate students in organic lab
- Action shots of graduate students in research labs
- Enlarged covers from the *Journal of Chemical Education*
- Photographs by emeritus faculty member Don Gaines comparison of silver, cyanotype, chrysotype (gold), and pallidiotype (palladium) prints

The committee to plan for Main Street consisted of **Fleming Crim**, **Gordon Bain**, **John Moore** and **James Skinner**; and organization and coordination was provided by **Betty Moore**, aided by **Patti Puccio**. Nearly everything concerned with this project was produced locally, and it required a great deal of teamwork. John and Betty Moore led the effort to create art posters highlighting the Department's research efforts. Eleven posters, each 28 inches x 36 inches, provide succinct and powerful summaries of research on surface plasmon resonance (**Rob Corn**), theoretical chemistry and biomolecules (**Qiang Cui**), metal clusters (**Larry Dahl**), silicon micropillars (**Art Ellis**), gold nanowires (**Bob Hamers**), clustering of protein receptors (**Laura Kiessling**), organic chemistry of interstellar space (**Bob McMahon**), molecular dynamics of solutes in fluids (**Jim Skinner**), natural bond orbitals (**Frank Weinhold**), tracking biopolymers in live cells (**Jim Weisshaar**), and nonlinear laser spectroscopy (**John Wright**).

Someone with special talents was needed to transform still photographs and computer graphics into pieces of scientific art that told a story and could be enlarged, printed, framed, and hung. **Betsy True** (the cover designer for the *Journal of Chemical Education*) filled that role admirably and energetically. True also coordinated the printing of the images at the UW Medical Illustration department's Digital Imaging Service.

Fleming Crim and the Moores spearheaded the effort to update the department genealogy, which was based on the previous work of **Aaron Ihde**, **Alan Rocke**, and **Paul Schatz**. As an example of True's creativity, the faculty genealogy is not simply a set of connected boxes representing chemists, but is superimposed on lecture notes from **Steve Burke's** graduate organic synthesis course, providing a very chemical background. **Gordon Bain** selected the video monitor and, aided by undergraduate **Andrew Krueger**, created the presentations it displays.

Chemistry in Action involved taking digital photographs of visually interesting chemistry, as it happened. This called on the talents of our lecture demonstrator (**Jim Maynard**) and the *Journal of Chemical Education's* videographer (**Jerry Jacobsen**). They first tackled the action of nitric acid on a copper penny—an everyday item familiar to many. Recording what happened to the penny allowed Maynard and Jacobsen to refine the difficult process of capturing stunning images very quickly, very cleanly, and at high enough resolution to print 17 x 16.5 inch images. By the end of February the technique was worked out, and the result was a series of 18 separate action close-ups that now grace a wall in the student study room of the new Dow Instructional Chemistry Facility.

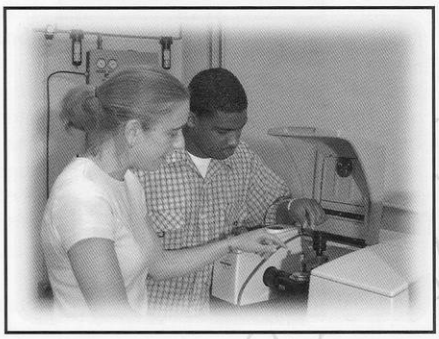
Following this success, our graphics team was ready to move on to flame tests—using 16 aqueous solutions of compounds and 12 metallic powders.

Then there were several precipitation reaction sequences, and a sequence showing the electrolytic formation of dendritic tin (where they collaborated with two first-year undergraduates). By the end of April, 65 images of chemistry had been selected from the hundreds they shot. The images were mounted on the Main Street walls in time for the Open House.

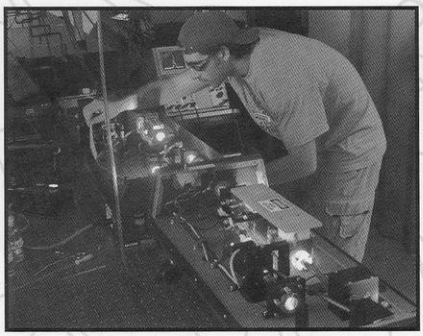
Jacobsen, with the aid of the organic lab director, **Allen Clauss**, also photographed students during organic lab using NMR, GC, and FT-IR instruments, and graduate students in research labs working on molecular beam instrumentation, polymerization catalysts, femtosecond lasers, low-temperature matrix isolation, flash column chromatography, and purification of solvents.

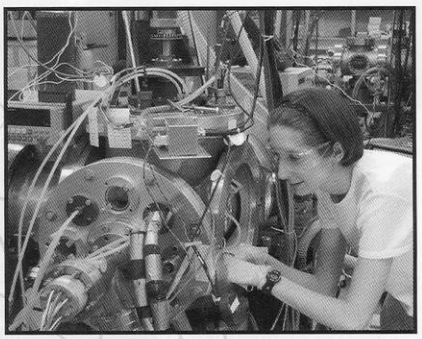
Five prints of a photograph taken by emeritus faculty member **Don Gaines** have been installed next to the new Seminar Hall. This installation demonstrates Gaines's skill as a photographer and as a chemist, because the same photograph has been printed using four different chemistries: silver, cyanotype, gold (at two different humidities), and palladium. Though their subject is the same, the photographs are attractively and strikingly different from each other, and provide fodder for much discussion.The Main Street Project has been a tremendous success not just because it was completed on time or has provided an attractive building in which to work, but particularly for people who visit our department. Chemists visiting from other departments and other universities, UW-Madison undergraduate and graduate students, the custodial crew, and everyone who enters our building notices the images, reads the captions posted next to them, and asks questions about what they see. The hallways of the chemistry building will never be the same. We welcome one and all to stop by and take a tour of the visual wonders of chemistry. ■

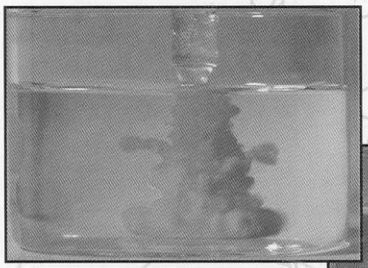
Chemistry on Main Street



◀ The organic lab to the left;
three research labs to the right ▶

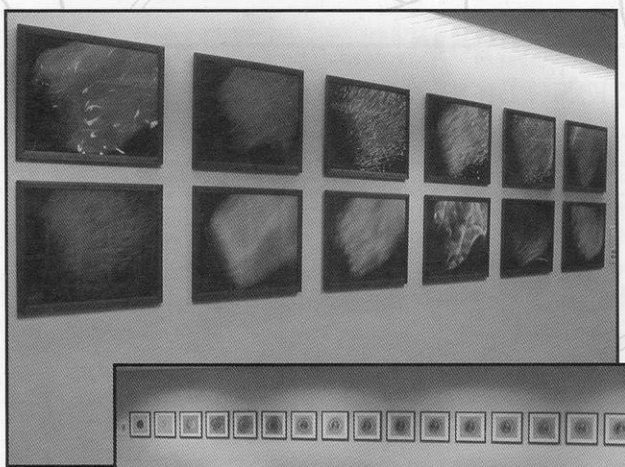


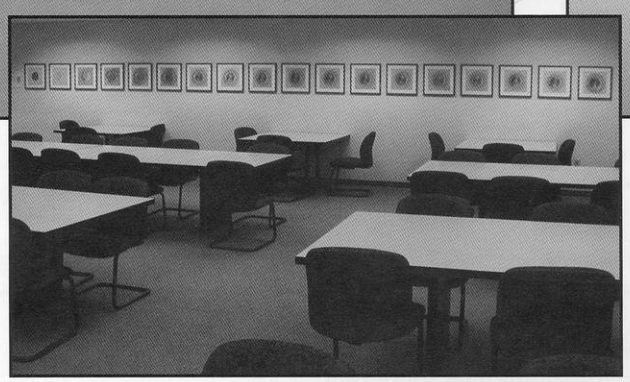


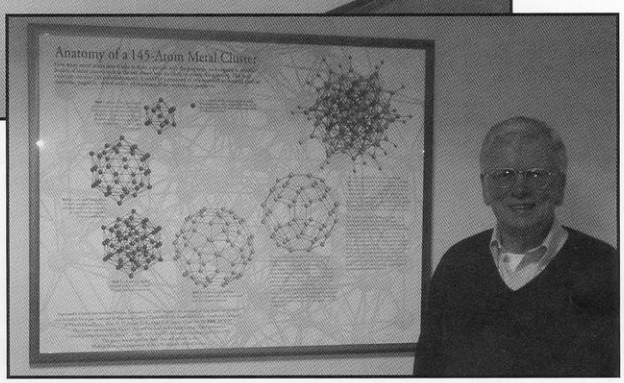


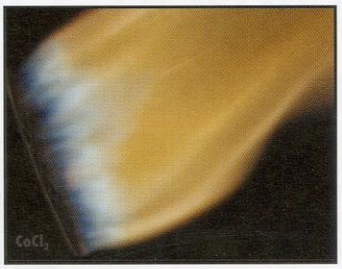
◀ **LEFT ;**
Precipitation reactions: lead iodide and mercury(II) iodide.

BELOW ;
Four photos from the hallways and the student study room, providing an idea of the overall outcome of the Main Street project.
▼



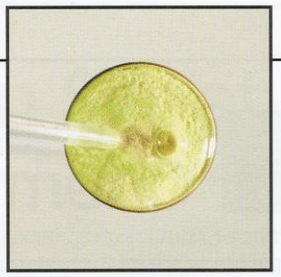


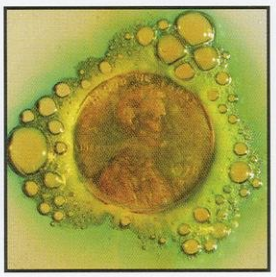




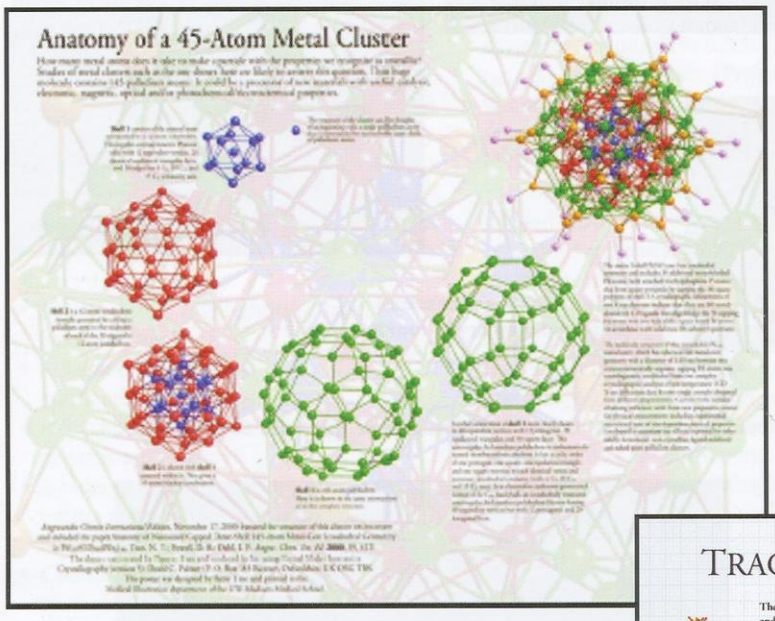
◀ At left are two flames of aqueous solutions (barium chloride and copper chloride);

Four of 18 images in penny–nitric acid sequence ▶





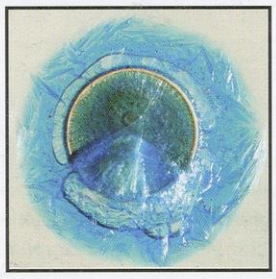
At right are flame tests of magnesium and zinc powders. ▶

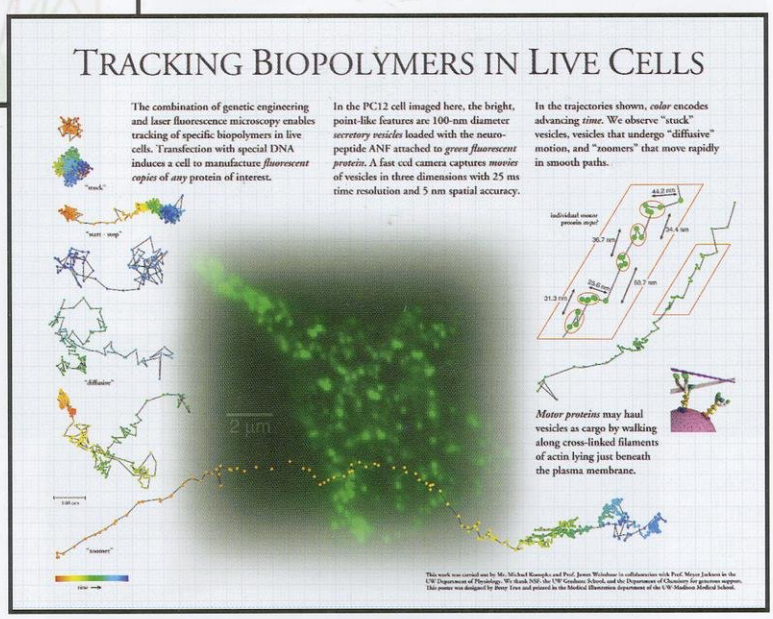


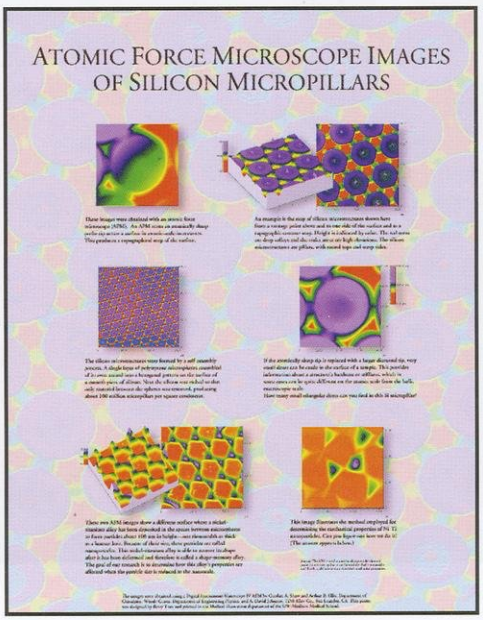
THREE OF 11 FACULTY RESEARCH POSTERS:

◀ AT LEFT;
Anatomy of a 45–Atom Metal Cluster (*Dahl group*).

BELOW RIGHT;
Tracking Biopolymers in Live Cells (*Weisshaar group*). ▼







◀ LOWER LEFT;
Silicon Microstructures (*Ellis group*).

Wisconsin Initiative for Science Literacy

(continued from page 16)

the aging process, understanding weather and climate using satellite observations, new and extreme materials in engineering, and the art and science of theater lighting.

Teachers' responses have been overwhelmingly favorable. One teacher commented, "It's a great pleasure to have the professional side of my brain stimulated and to rub shoulders with people at the next level. I left each session feeling good and had my sense of purpose as a science teacher renewed."

The Science and Environmental Coordinator for the Madison Metropolitan School District, Lisa Wachtel, says, "Teachers feel this is the best kind of in-service experience offered in many years. The interaction of teachers and researchers is rare and reduces teachers' feelings of isolation." Wachtel continues, "It's an example of a truly working partnership that fills a need in the school district."

The conversations are held eight times a year for two hours each, after school, at Edgewood High School. Teachers come voluntarily, pay no fee and can get continuing education credits.

In each of its first two years, "Conversations in Science" received a University Community Partners Recognition Award from UW-Madison's Chancellor John Wiley.

Undergrads Join "Science is Fun" Demonstrations

"Science is Fun" is the motto of WISL and is associated with the many chemistry demonstrations that WISL presents each year for the public. Originally the presentations were entirely the work of Prof. Bassam Shakhashiri, director of WISL, and **Dr. Rod Schreiner,** making for a sometimes, exhausting schedule for the two chemists. But this year some of the presentations have been conducted by undergraduate and graduate students who are taking WISL's independent study course on presenting chemical demonstrations.

To stand before a group of restless children and parents and perform a chemical demonstration with confidence does not come naturally to most of us. Fortunately, before they ever hit the stage, the students receive thorough training from **Mike Modica** of the WISL staff through Chemistry 299/699. This independent study class is open to all students, frosh through grads, in all departments. Not surprisingly, in this its first year, the 12 class enrollees have primarily been undergrads in the chemistry department.

To earn their one UW credit, the students meet 3 hours per week for 4 weeks to review the basics of chemical safety, to learn some of the standard demonstrations, and to refresh themselves on the chemical principles they are illustrating. Then students sign up for upcoming "Science is Fun" demonstrations and apply what they have learned.

"Two generally work together," says Modica. "They play off each other and help each other out."

For example, two of Modica's students did three half-hour demonstrations at the "Science Expeditions" campus open house; another pair did hour-long presentations for Madison school children.

As with any theater production, chemical demos require a lot of advance preparation–lots more than meets the eye.

"We visit the sites in advance whenever we can to find out where things like sinks, electrical outlets and fire extinguishers are and to determine what the visibility will be for the crowd from different vantage points."

"Safety always comes first," says Modica. "I let the students choose the experiments that they feel comfortable doing, the ones where they feel they have control of things."

Modica also helps the students set up practice sessions where they refine their "patter" and nail down their timing. In terms of being able to elaborate on the chemistry of what they are demonstrating, Modica says the students are "minimally competent" at this point. "But," he adds, "A show like this does not require anything more than the bare bones explanation. Beyond that, people lose interest, especially K to 6 grades. Our purpose is to light a fire of curiosity, to introduce them to chemistry and make them want to see and learn more."

How does Modica measure the success of the student-presented chemical demonstrations? "Well, first of all, we had no disasters and nothing caught fire! That's the most important thing," says Modica. But he also reports that many of the undergraduates, who enjoyed interacting with the public, are very enthusiastic about signing up next semester to do it all over again. And WISL will be eager to see them return, providing a trained cadre to assist with "Science is Fun." ■

Our Awards

(continued from page 7)

Payne (Gellman) received a National Defense Science and Engineering Fellowship. **Emily Dykhuizen** (Kiessling) was a WARF Fellow.

Matthew Woll (BS '99, Brigham Young U., with Gellman) was selected to receive the ACS Division of Organic Chemistry Graduate Fellowship, sponsored by Eli Lilly and Co. This fellowship supported Matt for the 2002-2003 academic year. Matt received the award at the 2003 National Organic Symposium in June, 2003, at Indianapolis, IN, where he presented a paper on his research. Matt is working in Sam Gellman's laboratory and is being recognized for his pioneering work on gamma-peptide foldamers. This recognition is only given to the very top graduate students in the country and is a real honor.

Tim Jackson (Brunold), **Lisa Jungbauer** (Cavagnero), and **Margaret Schmitt** (Gellman) were Biophysics Trainees during 2002-03. **Dalia Dhingra** (Schwartz) is a Computation and Informatics in Biology and Medicine Trainee. **Erin Carlson** (Kiessling), **Wayne Kontur** (Record), **Sannali Matheson** (Gellman), **Justin Murray** (Gellman), and **Susan Reslewic** (Schwartz) were Biotechnology Trainees. **Melisa Cherney** (Burstyn), **Whitney Erwin** (Lauhon), **Heather Johnson** (Thorson), **Erin McElroy** (Kiessling), **Reagan Miller** (Lee), and **Eric Voight** (Burke) were Chemistry-Biology Interface Trainees.

Divisional Awards for Excellence in Research were presented to **Wei Cai** (Hamers, Analytical), **Sergei Ivanov** (PhD '02, Dahl, Inorganic), **Michael Schwartz** (PhD '03, Hamers, Materials), **Matt Woll** (Gellman, Organic), and **John Herbert** (PhD '03, Harriman, Physical). Excellence Award recipients are advanced graduate students in each division who are selected as leaders in their fields. The award is made possible through donations to the Department.

Undergraduate research support was provided during Summer 2002 from the following sources: Walter and Young-Ja Toy Scholarships to **Steve Brown** (Kiessling) and **Alicia Cronk** (Reich); Wayland Noland Undergraduate Research Fellowships to **Ryan Porter** (Yu) and **Paul Roethle** (Burke); and the Edwin M. and Kathryn M. Larsen Scholarship to **Jordan Olson** (West).

The following undergraduate students received scholarships during the academic semesters: **Anthony Ehrbar** won the Kimberly-Clark Scholarship. **David Appleyard** and **Nathan Aumock** received Evan P. Helfaer Scholarships. **Steve Brown** and **Chris Painter** received Richard Fischer Scholarships. **Steve Brown**, **Paul Dauenhauer**, **Dennis Friedrichsen**, **Ryan Jeske**, **Andrew Krueger**, **Jordan Olson**, **Ryan Porter**, **Ryan West**, and **Marie Wisneski** received Student Support Scholarships. **Alicia Cronk** and **Benjamin Knox** received Don Brouse Memorial Scholarships. **Adam Miller** received the Dr. Norbert Barwasser Scholarship. **Anne Schuelke** received the Mabel D. Reiner Scholarship.

2003 Daniel L. Sherk Awards for Excellence in Undergraduate Research were given to **Steven Brown** (Kiessling) , **Paul Roethle** (Burke) and **Steven Steiner** (Doolittle and West). These awards were sponsored by the Sherk Fund, the Chemistry Department, and the ACS local section. Each student presented a poster at this year's Chemistry Undergraduate Poster Session on May 2.

Clement Chow, a newly graduated undergrad student in the Cavagnero group, has received a Trewartha-Nodby-Mensik L&S Honors Thesis Fellowship, and the F. Chandler Young Distinguished Senior Honors Student Award.

Michelle Stengel, a 3rd year undergraduate Chemistry major in the Cavagnero group, has received a Hilldale award. Michelle plans to go to graduate school next year. ■

Chemistry Department Support

from Alumni, Staff and Friends

The Chemistry Department is blessed with many generous alumni and friends, and nowhere is that more evident than in the array of funds of various types that we can draw on for support of our activities. These funds include those that support general operations, scholarships and fellowships for students, lectures, seminars, research, awards and publications. We have listed here all of the funds the UW Foundation administers, plus the Trust Funds that have been set up to benefit Department activities. For contributions to Foundation accounts, checks should be made out to the UW Foundation, rather than the Chemistry department. Gifts to the UW Foundation are tax deductible, and many companies provide matching contributions, allowing you to multiply the value of your gift. When you send your donations to the Foundation, you can specify that your gift go to Chemistry, and further specify any of the funds. Donations to trust funds must be made out to the Chemistry Department, with the particular trust noted on the memo line.

Address gifts/correspondence to the UW Foundation, 1848 University Ave., Madison, WI 53708 or to the Chair, Department of Chemistry, University of Wisconsin, 1101 University Ave., Madison, WI 53706

UW-Foundation Accounts for the DEPARTMENT OF CHEMISTRY

OF SPECIAL INTEREST *in* 2002-2003

Although we appreciate all of our donors, the following funds are of very broad application to Department activities, or had some special event occur in 2002-2003

Department of Chemistry Fund 1222137
Supports research and teaching activities in the Department

Chemistry Building Fund 12221293
Supports the construction of the New Chemistry Building Addition, and remodeling of the Mathews and Daniels Buildings - Remodeling was completed in 2003, but bills remain to be paid

Ackerman Scholarship Fund (Undergrad) 12223212
Supports undergraduate students in Chemistry, especially those from East High School in Madison. First award made in 2003.

Alfred L. Wilds Scholarship in Chemistry (Undergrad) 12220072
Undergraduate scholarship in memory of Al Wilds who died July 4, 2002—see Obituaries

Community-Building Fund for Chemistry 12223316
Provides funds for receptions, retirement parties, funeral memorials, and other similar activities; established in 2001.

Elizabeth S Hirschfelder Endowment for Graduate Women in Chemistry 12223191
Supports women graduate students in Chemistry research– Betty Hirschfelder died in September, 2002—see Obituaries

Eugene and Patricia Kreger Herscher Fund (Undergrad) 12223562
Supports undergraduate students in Chemistry, especially women. Established in 2002.

Henry Firminhac and Eleanor Firminhac Chemistry Scholarship Fund 12223644
Supports Undergraduate students in Chemistry, in memory of Ralph Firminhac's parents, Henry Firminhac and Eleanor Firminhac. Established in 2003.

H. L. and M. L. Goering Visiting Professorship Fund 12222391
Provides funds to support a Visiting Professor in Organic Chemistry Margaret Goering died in January 2003—see Obituaries

J. D. Ferry Lectureship in Macromolecular Science 12222793
Provides funds to support a Lecturer in Macromolecular Sciences. The first lecturer was in 2002, and John died in October 2002—see Obituaries

James W. Taylor Excellence in Teaching Award 12223590
Provides an endowed fund to support the James W. Taylor Excellence in Teaching Award for the Chemistry Department. Established by the Pharmacia Corporation in December 2002.

John and Elizabeth Moore Awards in General Chemistry 12223663
Provides funds for awards to the best students in the Fall Chemistry 108 and Chemistry 109 courses. Established in February 2003.

John L. Schrag Analytical Research and Teaching Fund 12223637
Provides funds for activites that will enhance the excellence and humanity of the Analytical Program. Established in January 2003.

Les Holt Memorial Endowment 12223535
A general fund established in September 2002 with a gift from the estate of Les Holt

Michael S. Kellog Chemistry Fund 12223590
Provides funds to support an annual prize, a lectureship, or other support of science education. Established in February 2003. Michael Kellog died in January 2003—see Obituaries.

STUDENT SUPPORT

Andrew Dorsey Memorial Scholarship Fund (Undergrad) 12223281
Undergraduate scholarship in memory of Andrew Dorsey

Don Brouse Memorial Scholarship (Undergrad) 32220536
Undergraduate scholarship in memory of Don Brouse

David F. and Donald G. Ackerman, Jr. Wisconsin Distinguished Grad Fellowships 12223243 12223244
Supports graduate students in Chemistry.

Edwin M and Kathryn M Larsen Fund 12222308
Supports undergraduate students in Chemistry.

Gary R. Parr Memorial Fund (Grad or Undergrad) 12222192
Scholarship in Bioanalytical or Biological Chemistry, in memory of Gary Parr

Harry and Helen Cohen Graduate Research Fund (Grad) 12222250
Supports graduate students in Organic Chemistry

Kimberly-Clark Undergraduate Scholarship 12222807
Supports undergraduate research with an annual award

Leah Cohodas Berk Award for Excellence in Chemistry Research 12543124
Honors an outstanding female graduate student

Roger J. Carlson Fund (Grad) 12220918
Graduate Fellowship in Analytical Chemistry, in memory of Roger Carlson

Student Support in Chemistry 12222068
Supports undergraduate students from Wisconsin high schools with GPA above 3.0

Walter W. and Young-Ja C. Toy Scholarship Fund (Undergrad) 12221917

DIVISIONAL SUPPORT

Analytical Chemistry Fund 1222679
Supports research and educational activities in the Analytical Sciences Division, including conferences and grad recruiting

Analytical Research Fund 12220448
Supports research and programs in the Analytical Sciences Division–Originally established in 1990 with a gift from the Olin Corporation Charitable Trust

Center for Chemical Genomics 12223086
Established in 2001 by a gift from the W. M. Keck Foundation

Inorganic Chemistry Seminar Fund 12221344
Supports the Inorganic Division seminar and research programs

J. O. Hirschfelder Prize Fund 12220984
Awards an annual Prize to an internationally prominent scientist to recognize outstanding work in Theoretical Chemistry

J. O. Hirschfelder Visitors Fund 12220912
Supports visits to the Theoretical Chemistry Institute by outstanding scholars

McElvain Seminar Fund 12220241
Supports the ongoing seminar series organized and run by graduate students in the Department of Chemistry

Organic Synthesis Fund 1222548
Supports research activities in Organic Chemistry including symposia and visiting lecturers

LECTURESHIPS/PROFESSORSHIPS

Evan P. Helfaer Fund 32225081A
Provides funds to support endowed chairs in the Chemistry Department

John E. Willard Lectureship 1222829
Funds a special seminar in Physical Chemistry

Joseph O. Hirschfelder Professorship Fund 12220310
Provides funds to support an endowed chair

Ralph Hirschmann Lectureship 1222295
Funds a Visiting Professor in Organic, Bioorganic or Physical Organic Chemistry

V. W. Meloche-Bascom Professorship 1222889
Provides funds to support an endowed chair

V. W. Meloche Lectureship 1222825
Funds a special seminar series in Chemistry

GENERAL DEPARTMENTAL SUPPORT

These untargeted funds provide key support for our new initiatives

Badger Chemist Fund 1222534
Provides funds to support the Badger Chemist and other Department publications

Farrington Daniels Memorial Fund 1222324
Funds special projects relating to the benefits of science to society

Harry L and A Paschaleen Coonradt Fund 12221413
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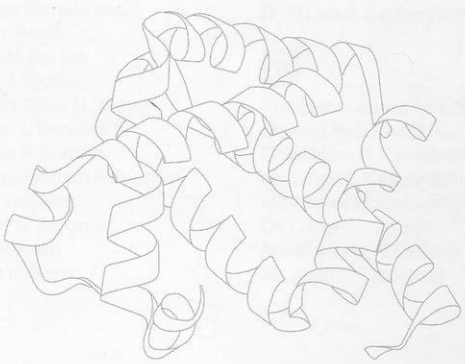

CHEMISTRY EDUCATION

Institute for Chemical Education Fund 1222929
Supports activities in Chemical Education

Project SERAPHIM Fund 12220404
Supports activities in Chemical Education

Shakhashiri Science Education Fund 12221133
Supports activities in Science Education under the direction of Prof. Bassam Shakhashiri

INDIVIDUAL RESEARCH GROUP SUPPORT *(Group; Established by)*

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Carbohydrate Chemistry Research Fund *(Laura Kiessling; Zeneca Pharmaceuticals)*	12221999
Chemistry Catalysis Fund *(Shannon Stahl)*	12223733
Eastman Kodak Professorship *(Hyuk Yu; Eastman Kodak)*	12221901
Kocher Award *(Thomas Brunold; Kocher-Preis Komission, University of Bern)*	12223165
Lawrence Dahl Research Fund *(Larry Dahl)*	12222076
Nathanson PYI Fund *(Gil Nathanson; PYI)*	12220871
Nuclear Magnetic Resonance Research Fund *(Tom Farrar; Johnson Controls)*	12221877
Organic Chemistry Research *(Hans Reich; Bell, DuPont)*	12220190
Organic Research Studies Fund *(Howard Zimmerman; Alumni and Friends)*	12220747
Surface Chemistry Research Fund *(Rob Corn)*	12222934

In addition to the above Foundation accounts, the following trust funds have been established to support Department programs.

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Belle Crowe Fellowship
Daniel L. Sherk Award in Chemistry
Edward Panek Memorial Scholarship
Krauskopf Chemistry Award
Mabel Duthey Reiner Scholarship
Margaret McLean Bender Scholarship in Chemistry
Martha Gunhild Week Scholarship
Richard Fischer Scholarship
Sam Charles Slifkin Award in Chemistry
Willard W. Hodge Scholarship in Chemistry

DIVISIONAL and INDIVIDUAL SUPPORT

Arthur C. Cope Scholar Grant (Casey)
Chemistry Department Special Library Fund
Dreyfus Teacher-Scholar Award (Nathanson)
Hilldale Foundation Funds
Innovation Recognition Research Fund (Casey)
Theoretical Chemistry Institute Fund

LECTURESHIPS/PROFESSORSHIPS

James M. Sprague Lectureship
Karl Folkers Lecture Series in Chemistry

GENERAL DEPARTMENTAL SUPPORT

Chemistry Building Fund
Chemistry Research Fund
Hoechst Celanese Foundation Chemistry Department Fund
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Stephen E. Freeman Chemistry Department Fund
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We thank each of you for making the improvement of our program possible.

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In Memoriam

Edward G. Brame Jr.

(PhD '57, Meloche) died unexpectedly on September 1, 2002, in Shanghai, China, while on vacation with his wife. He was 75. Dr. Brame was President of the CECON Group (http://www.cecon.com), a group of nearly 1000 chemical and engineering consultants. He worked for the DuPont Company for 27 years, was editor of *Applied Spectroscopy Reviews* for 30 years, editor in chief of *Practical Spectroscopy* for 22 years, and associate editor of *Applied Spectroscopy* for 5 years. He was also the editor of a series of college handbooks on spectroscopy. Along with Dr. Edward Dunlop, Dr. Brame founded the Federation of Analytical Chemistry and Spectroscopy Societies, and served as president, secretary and exhibits chairperson.

Joseph Farber

(PhD '51, Bender) Died May 2, 2002, at the age of 75. After many years in the aerospace and solar energy industries, Joe worked part time on environmental problems for the city of Irvine, CA. At Joe's memorial celebration, Irvine Mayor Larry Agran said he thought every city should have a 'rocket scientist' on the payroll.

Tom Fleck

(PhD '90, Vedejs) Died peacefully at home Tuesday, March 4, 2003 after a long battle with kidney cancer. Tom was born in Detroit, MI on July 15, 1962, the son of Bruce F. and Marcelline M. Fleck. He received a Bachelor of Science degree from Kalamazoo College in 1984, followed by a Ph.D. in Organic Chemistry in 1990 from the University of Wisconsin. He then completed a two-year postdoctoral program at Indiana University. He was employed as a Senior Research Scientist at Pharmacia Co. from March 1992 until his death. Please visit Tom's personal web page at http://www.lifestorynet.com, where you can read his life story, share a memory, make a memorial contribution to St. Joseph Catholic Church or the American Cancer Society, or order flowers online.

Margaret Goering

Age 80, died peacefully Tuesday Jan. 2, 2003 in Sun City West, Arizona. She was born August 9, 1922 in Newton, Kansas. She resided in Madison from 1950 to 1999, where her husband, Harlan Goering, was a Professor of Chemistry at the University of Wisconsin until 1990. Margaret was an intelligent and gracious woman with many interests. She received a B.A. in biology from Bethel College in Newton, Kansas, and worked as an X-ray technician in the 1940s. In the 1970s, she returned to school and earned a master's degree in social work from the University of Wisconsin. She then worked as a medical social worker at Madison General Hospital. Margaret established a city-wide Junior Great Books discussion program in Madison area schools and served on the Madison PTA board. She was a member of the First Congregational Church in Madison, where she served on the board of education and board of social action. She traveled widely, enjoying many winter trips to the Caribbean and several extended stays in Europe. Margaret was preceded in death by Harlan. She is survived by her son, Richard, of Santa Cruz, California, and brother, Carl Ebersole, of Redding, California. Margaret was a great friend of our Department, and arranged for two substantial bequests, one to endow the Organic Visitor, and the second to endow a Graduate Fellowship.

Michael Stephen Kellogg

(BS '68) died Jan. 7, 2003. Dr. Kellogg was born Sept. 26, 1946, in Chicago, IL, and raised in Oregon, WI. He graduated from Oregon High School, received his Chemistry Course degree with Honors in 1968, and went on to earn his PhD in organic chemistry at the University of California, Berkeley. After a postdoctoral year at Stanford, he joined Pfizer as a medicinal chemist. In his career at Pfizer and Monsanto/Searle he contributed to the development of medicines to manage infectious disease and treat pain and inflammation. He led projects that resulted in sulbactam (Unasyn), trovafloxacin (Trovan) for resistant bacterial infections and amprenavir (Agenerase) for HIV/AIDS. He also managed the medicinal chemistry leading to the anti-inflammatory agents celecoxib (Celebrex), valdecoxib, and paracoxib. While with Nutrasweet, he worked toward an understanding of sweet taste, developing chemical tools to investigate the response. Mike and his wife Janice have 3 children. Mike enjoyed science and the outdoors, particularly bird hunting with his family, friends and dogs.

Virginia March Kline

(BS '47, Klein) died Feb. 22, 2003, at the age of 77. Dr. Kline returned to the UW to earn her MS and PhD in Botany in the mid-70s, and then spent many years passing on her knowledge of the natural world to countless students of nature in Madison and beyond, as ecologist and research program director for the UW-Arboretum. She became a specialist on the control of unwanted species in restored and natural habitats. She retired from her position at the Arboretum in 1996.

Norman Gustav Mailander

(BS '47, Wilds) died March 13, 2003, at the age of 83. He was born in Milwaukee and spent many years working as a chemist for S.C. Johnson and Company. Most recently he was living in Sun City, AZ. Mr. Mailander was proud of his UW degree, and included a donation to the Chemistry Department in his will.

Lester Snowdon Sinness

(PhD '35, Roseveare) Died June 17, 2003, at his home in Devil's Lake, ND, at the age of 94. Following graduate school, Dr. Sinness entered employment with the DuPont Company as a research chemist in what was then known as the Rayon department. After serving as general manager of the textile fibers department, he was elected a director, vice-president, and member of the executive committee in 1963. He was designated a senior vice-president in January of 1972 and a member of the board of directors of DuPont of Canada and Ducilo, a jointly owned company in Argentina. He retired from active duty 1972 and from the board of directors of DuPont in 1981. After retirement, Lester served on the boards of numerous charitable organizations, and was awarded an honorary Doctor of Science degree by Carleton College in 1982. He is also listed in Who's Who in America and Who's Who in the World. Although Lester traveled the world and lived in the East for most of his life, his heart remained in ND. In a speech during the Devil's Lake Ramsey County Centennial celebration, Lester was quoted as saying, 'After half a century of living in cities, and after having traveled much of the world, my first observation is this: you don't know how lucky you are to have lived in North Dakota and the Lake Region.' He returned to his 'roots' in 1999 to spend his last years near family and old friends.

We have also been informed of the following deaths of alumni and friends:

Floyd Lewellyn Beman (MPH '33, Adkins) died May 8, 2000, at the age of 89.

Warren Richard Biggerstaff (PhD '48, Wilds) died July 5, 2000, at the age of 82.

Robert Donald Bocksch (PhD '60, Wilds) died May 3, 2001, at the age of 69.

Gilbert Herman Boeder (BS '41, Meloche) died June 2, 2001, at the age of 81.

Kenneth James Busse (BS '48, Schuette) died March 16, 2000, at the age of 80.

William Arthur Carr (BS '42, Schuette) died Feb. 5, 1999, at the age of 82.

James Brackney Christiansen (MA '34, Adkins) died Dec 1998, at the age of 87.

Edward Allen Durand (PhD '50, Sorum) died Oct. 27, 2002, after a short illness. He was 82.

David Bowerman Ehrlinger (BS '42, Johnson) died Nov. 10, 2000, at the age of 80.

Harold Johannes Eisner (BS '48) died April 30, 2000, at the age of 82.

Glenn Everett Elger (B '40, Willard) died Oct. 16, 2001, at the age of 83.

Paul Powers Entrikin (PhD '40, Williams) died Oct. 18, 2001, at the age of 86.

Charles Everhart (BS '49, Aycock) died Nov. 12, 2002, at the age of 78.

Francis Patrick Farrell (BS '38, Spielman) died August 31, 2001, at the age of 88.

Elton Gordon Foster (BS '41, MS '42, PhD '44, Daniels) died Feb. 16, 2002, at the age of 82.

Harold Hyman Geller (BS '39, McElvain) died Dec. 9, 1916, at the age of 86.

Gerald Gilbert (MS '51, PhD '51, Aycock) died Oct. 31, 2001, at the age of 73.

Walter Wilson Gilbert (PhD '50, Aycock) died June 22, 2001, at the age of 75.

Daniel Pierre Gilboe (BS '56) died Jan. 13, 2000, at the age of 65.

Robert Howard Gillespie (PhD '44, Adkins) died Jan. 22, 2003, at the age of 86.

George Herman Gloege (MS '31, Schuette) died Jan. 20, 1996, at the age of 91.

Stewart Wayne Gloyer (PhD '39, Schuette) died Jan. 14, 2003, at the age of 92.

Harriet Augusta Godfrey (BS '26, Schuette) died March 14, 1996, at the age of 90.

Karl Bernard Goetsch (BS '36) died Nov. 28, 1997, at the age of 83.

Stanley Glen Gruenwald (BS '62) died July 1, 2001, at the age of 62.

Stuart Robertson Hadden (BS '31, Williams) died July 29, 1997, at the age of 88.

George Jerry Hajny (PhD '42, Ritter) died June 9, 1998, at the age of 81.

Douglas Garavel Heberlein (BS '40, Klein) died April 5, 2003, at the age of 86.

Arno Henry Herzog (BPH '39, Hall) died Dec. 19, 2000, at the age of 84.

Robert John Highet (PhD '54, Johnson) died July 15, 2002, at the age of 76.

Elizabeth Smyth Hirsch (BS '33, Schuette) died Oct. 28, 2000, at the age of 88.

Wallace Kenneth Hoya (BS '43) died Jan. 11, 2003, at the age of 83.

Mark Hsiao (PhD '92, Crim) died July 1, 2003, at the age of 38.

Monie Sanders Hudson (MS '39) died August 8, 1996, at the age of 87.

Douglas Mark Jackson (BA '75) died August 3, 2002, at the age of 48.

Harold Gustav Johnson (PhD '41, McElvain) died Jan. 22, 1999, at the age of 83.

Kenneth Gardner Johnson (BS '47) died Dec. 18, 2002, at the age of 80.

George Kitzes (MS '42, PhD '44, Schuette) died Dec. 26, 2000, at the age of 81.

Walter Grey Konrad (BS '34, MPH '40, Schuette) died March 18, 1999, at the age of 88.

Gordon John Krueger (BS '41, Schuette) died Nov. 15, 2002, at the age of 82.

Leonard Henry Kurz (BS '36, Meloche) died Aug. 31, 1998, at the age of 88.

Robert William Laundrie (BS '42, Schuette) died June 16, 2001, at the age of 82.

Edward Arthur Leslie (BS '36) died May 31, 2002, at the age of 88.

Charles John Lind (BS '40, MS '42, McElvain) died Oct. 18, 1999, at the age of 80.

Lenhart Harold Maas (BS '33, Schuette) died July 29, 1999, at the age of 91.

William Richard Maleckar (BS '20, Lenher) died March 22, 1999, at the age of 102.

Elbert Saxton McLoud (BS '31, MS '35, Meloche) died Sept. 19, 1997, at the age of 88.

Edmund Russell Meincke (BS '34, MS '35, McElvain) died July 21, 1994, at the age of 81.

Robert Carr Milham (PhD '52, Willard) died Dec. 21, 2001, at the age of 79.

Carol Constance Neuman (MS '67) died June 25, 1999, at the age of 63.

Edwin Elmer Niemi, a friend of the Department, died Jan. 12, 2003, at the age of 79.

William Louis Nikolai, Jr. (MS '49) died March 25, 1999, at the age of 77.

Philip Ellis Phillips (BS '51) died June 25, 2001, at the age of 72.

Allen Kelsey Prince (PhD '56, Bender) died Oct. 24, 1995, at the age of 68.

John Rae, Jr. (MS '42, PhD '43, Hall) died Jan. 14, 2002, at the age of 84.

Donald A. Robinson (MS '47, PhD '48, Adkins) died Feb. 8, 1999, at the age of 78.

Bruce Leo Rodenkirch (BS '51, Blaedel) died Jan. 22, 2000, at the age of 73.

Margarete Agnes Sandner (BS '55) died Jan. 6, 2001, at the age of 67.

Janet M. Schlatter (MS '36) died Nov. 27, 2001, at the age of 88.

Kenneth Herman Schlifske (BS '51, Ihde) died Feb. 9, 2001, at the age of 78.

Karl Peter Schmidt (BS '70) died May 27, 2001, at the age of 52.

Robert Scherer Schmitz (BS '44, Klein) died June 17, 1996, at the age of 74.

Julius Maxwell Schrager (MS '43, Schuette) died Jan 31, 2001, at the age of 81.

Earle S. Scott died July 9, 2002, at the age of 79.

Jacob Sedlet (BS '45) died March 29, 2003, at the age of 80.

J. Harold Smith (PhD '41, Daniels) died Aug. 28, 1994, at the age of 79.

Theodore Smith (BS '37, MS '39, Klein) died Aug. 26, 2002, at the age of 93.

Margaret Rowley Sterling (BA '23, Kemmerer) died April 6, 2002, at the age of 100.

Robert Hale Stow (BS '40, Spielman) died Dec. 20, 2000, at the age of 82.

Marjorie Ellen Svoboda (BS '43, MS '47, Meloche) died Sept. 28, 2002, at the age of 81.

Wesley A. Tarwid (BA '50, Ihde) died May 11, 2001, at the age of 80.

Lester Joseph Teply (BA '40, Klein) died Nov. 12, 1993, at the age of 73.

John Henry Terhorst (BA '37) died March 28, 2002, at the age of 90.

Bruce K. Thomas (BS '41, Klein) died Feb. 10, 2003, at the age of 85.

Ralph Edwin Thompson (BS '43, Johnson) died Feb. 27, 2003, at the age of 81.

Walter Paul Trost (BS '41, Schuette) died Jan. 20, 2001, at the age of 82.

Ralph Fredrick Turner (BS '39, Mathews) died May 22, 1994, at the age of 76.

Paul John Utnehmer (BS '35, Meloche) died Feb. 5, 2000, at the age of 92.

Chin Hsuan Wei (PhD '63, Dahl) died Jan. 7, 1989, at the age of 62.

Edwin Charles Welsh (BA '40) died Nov. 12, 2000, at the age of 83.

Edward Joseph Wendt (BS '34, Krauskopf) died Feb. 14, 2000, at the age of 88.

Daniel Horace Wing (BA '35, Meloche) died Feb. 17, 1998, at the age of 83.

Max B. Wolf (BS '46) died Feb. 7, 2003, at the age of 86.

Ivan Abraham Wolff (MA '38, PhD '40, Adkins) died May 13, 2000, at the age of 73.

Mary Jeanne Woodward (BA '34, Hazel) died Sept. 2, 2002, at the age of 90.

Howard James Wright (MA '41, Schuette) died Jan. 20, 1995, at the age of 76.

Harland Dewitt Wycoff (BS '42, Keller) died April 15, 2002, at the age of 84.

Lawrence Louis Zoch (BS '51) died April 28, 2003, at the age of 83

John Douglass Ferry

A Memorial Tribute
1912 - 2002

John Douglass Ferry, *Emeritus* Professor of Chemistry at the University of Wisconsin-Madison, died October 18, 2002, in Madison, at the age of 90. He was undoubtedly the most widely recognized research pioneer in the study of motional dynamics in macromolecular systems via viscoelastic techniques, and thus played a definitive role in polymer rheology. From the beginning of his career he realized that the unique physical properties of polymeric materials are intimately linked to the motions and configurations available to these large, flexible macromolecules. He made an extensive and concentrated effort to determine experimentally the relation between the chemical structure of well characterized samples and their viscoelastic properties, both for naturally occurring macromolecules of biological importance and for synthetic polymer of particular interest to the chemical sciences and industry.

John was born on May 4, 1912, in Dawson, Yukon Territory, Canada. He spent his first two years living in log cabins in that immediate area since his father was a civil and mining engineer specializing in prospecting for placer deposits. These early years are documented by Eudora Bundy Ferry, John's mother, in her book *Yukon Gold: Pioneering Days in the Canadian North,* Exposition Press, New York (1971). Most of John's childhood was spent in small mining communities in Idaho and Oregon; he attended a one-room school in the ghost town of Murray, Idaho, and completed the eight grades in four years with what he described as "somewhat uneven training." Murray was similar to Dawson in that the family was snowed in from November to May; a trip to the doctor was an all-day affair by horse-drawn sleigh over two mountain passes. During high school John taught himself enough Latin and German to later go into advanced classes in these subjects.

John D. Ferry

This fascination with language persisted as his most extensive avocation.

John attended Stanford University, receiving the A.B. degree in 1932. In those days Stanford's Department of Chemistry each year selected and prominently displayed on a silver cup the name of the outstanding freshman chemistry student. In 1929 John's name was posted; in 1930 David Packard, the Packard of the Hewlett-Packard Company, was selected. Although John's grade school and high school education was minimal and had of necessity involved some home schooling, he was considered a prodigy. He completed the A.B. degree at age 19; he was the first Stanford undergraduate (out of approximately 32,000) to achieve a straight A record. Following two years of graduate study at the University of London, together with research at the National Institute for Medical Research in London where he worked with W. J. Elford and Sir F. M. Burnet on the general problem of ultrafiltration of proteins, he returned to Stanford and completed the Ph.D. degree in 1935.

John's first employment after graduation was as a private research assistant at the Hopkins Marine Station of Stanford University, where he worked for a year with Dr. David Spence, the 1941 recipient of the first Charles Goodyear Medal. He then served as instructor and tutor in biochemical sciences at Harvard University, and subsequently became a Junior Fellow of the Society of Fellows at Harvard, which enabled him to pursue studies of his own choice, centered on the viscoelastic properties of polymers. During the second world war he held a joint appointment at Woods Hole Oceanographic Institute and the Harvard Medical School. At Woods Hole he worked on antifouling paints for marine applications; at Harvard he was attached to the E.J. Cohn Project, which had as its overall objective the large scale fractionation of human blood plasma proteins for clinical use. This work began a career-long interest in fibrinogen and its conversion to fibrin, and the general problem of blood coagulation. The unit to which John was attached had as its assignment the conversion of fibrinogen to various useful forms. The group produced two particularly useful materials: a fibrin foam that found extensive use for the stoppage of bleeding during tooth extraction, brain surgery, and other surgical procedures; and a fibrin film that revolutionized brain surgery, the product of a collaboration between John and Dr. Peter Morrison, which became the first safe and effective surgical replacement for the dural membrane that lines the brain cavity. In 1946 John joined the faculty of the Department of Chemistry of the University of Wisconsin as an Assistant Professor; by 1947 he had been promoted to full Professor. He served as Department Chairman from 1959 to 1967 and was appointed Farrington Daniels Research Professor in 1973. He was a founding member of the Rheology Research Center at Wisconsin, serving on its Executive Committee until 1984.

John's fundamental studies of rubbers, polymer melts, and polymer solutions provided the foundation in mechanical properties for polymer scientists in both academia and industry. His book *Viscoelastic Properties of Polymers* first appeared in 1961 and rapidly became

a standard reference for researchers in the polymer field. The second (1970) and third editions (1980) reflect the advances in polymer theory and experiment that occurred subsequently. The book generated sufficient worldwide demand to be translated into Japanese, Russian, and Polish. His more than 280 research publication dealing with macromolecules attest to his interest in and extensive contributions to polymer science. Some of his research group's most notable contributions to rheology are:

- The principle of reduced variables, giving the mathematical form and physical basis for time-temperature superposition (together with contributions from Leaderman and also Andrews and Tobolsky).
- Detailed and extensive studies of viscoelastic properties to examine the dependence of the relaxation spectrum on polymer structure.
- The development of the WLF equation and detailed examinations of the relation between the temperature dependence of viscoelastic properties and free volume.
- Use of concepts elucidated by the Rouse theory linking conformational dynamics and viscoelasticity, giving an explicit form for the relaxation time spectrum. Extension of Rouse theory to explain bulk polymer behavior.
- Application of the extended Rouse theory to the study of the glass-to-rubber transition zone.
- Extensive studies of the role of entanglements in viscoelastic properties of bulk polymers and concentrated solutions. Detailed investigations of the effects of trapped entanglements in cross-linked systems.
- Definitive experiments demonstrating the relation between small molecule diffusion in a rubber matrix and the monomeric friction coefficient for the matrix chains.
- The first extensive high precision dilute solution viscoelasticity studies which were sufficiently precise to provide reliable extrapolations to obtain the infinite dilution properties required for quantitative tests of statistical mechanical theories (Zimm, Rouse, Kirkwood, and others).
- Development of unique, specialized, high precision instrumentation. One of the principal reasons that John Ferry made such wide-ranging and unique contributions to our understanding of the role of molecular motions in rheology is that with each move to a different area he and his collaborators developed new instrumentation that could probe the requisite temporal regimes; such instrumentation was not — and to a large degree still is not — available commercially. Largely because of this instrumentation, experimental studies of chain dynamics via viscoelasticity have substantially preceded theoretical understanding.

Throughout his career John received many national and international awards, including membership in the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, the Eli Lilly Award in Biological Chemistry of the American Chemical Society, the Bingham Medal of the Society of Rheology, the Colloid Chemistry Award of the American Chemical Society, the High Polymer Physics Prize of the American Physical Society, the Colwyn Medal of the Institute of the Rubber Industry (London), the Witco Award in Polymer Chemistry of the American Chemical Society, the Technical Award of the International Institute of Synthetic Rubber Producers, and the Charles Goodyear Medal of the Rubber Division of the American Chemical Society. He aided the scientific community in various capacities, including Chairman of the Committee on Macromolecular Chemistry of the National Research Council, President of the Society of Rheology, joint editor of the distinguished series *Advances in Polymer Science* and editorial board member for five journals. He supervised more than fifty graduate students, and had more than 30 postdoctoral and international associates from 17 countries working in his laboratories at Wisconsin.

John Ferry was equally well known and appreciated for attributes other than his scientific abilities and contributions. He was a true gentleman, a dedicated teacher and mentor who always had a genuine and abiding interest in and concern for all of his former students and collaborators. His gentle, patient and quiet personality had a profound effect on all of us that were privileged to know and work with him. His reputation for absolute integrity and his uncanny ability to emphasize and encourage the best in other individuals were attributes to which we all should aspire. He was a warm, unassuming, and dedicated person who was also one of our most distinguished polymer scientists. Former students and associates have many fond memories of times spent at the Ferry home with John and his charming and vivacious wife Barbara, a former chemist turned artist.

The Department joins John's family and friends, and the polymer science community, to which John was friend, mentor, colleague and exemplar, in mourning his passing.

John Schrag

For more on the life of John Ferry, see the following references:

J.L. Schrag and R.F. Landel, "Laudatio for John Ferry," *Rheologica Acta*, Vol. 36, No. 3 (1997).

R.F. Landel, "Professor John D. Ferry," *J. Polymer Science*, Physics Edition, 21 (1983).

J.L. Schrag, "John D. Ferry, Charles Goodyear Medalist – 1981:Biography," *Rubber Chem. Tech.*, 54, G72-75 (1981).

N.W. Tschoegl, "John D. Ferry," *Macromolecules*, 20, 909 (1987).

J.D. Ferry, "Macromolecular Science, Retrospect and Prospect," in "Contemporary Topics in Polymer Science," Vol. 1, R.D. Ulrich, ed., pp 63-68, Plenum Publ. Corp., New York (1978).

J.D. Ferry, "Probing Macromolecular Motions Through Viscoelasticity," *Rubber Chem Tech.*, 54, G72-82 (1981) (The Goodyear Medal address).

MEMORIAL RESOLUTION OF THE FACULTY

of the

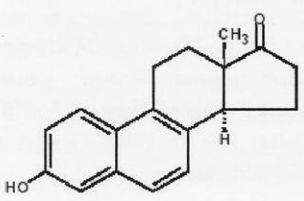
UNIVERSITY OF WISCONSIN-MADISON

on the death of

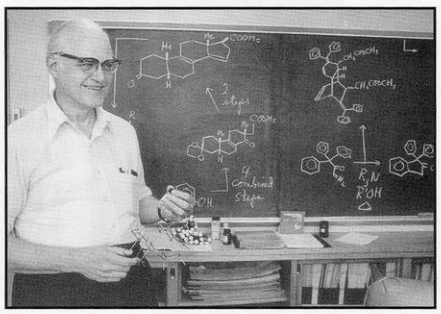
PROFESSOR EMERITUS ALFRED LAWRENCE WILDS

Alfred L. Wilds was born in Kansas City, Missouri on March 1, 1915. He performed all of his advanced education at the University of Michigan in Ann Arbor, where he received his BS in 1936, his MS in 1937 and his PhD in organic chemistry in 1939. He married his wife Carolyn in 1937. His doctoral research was done under the guidance of Professor Werner E. Bachman at Michigan at a time (mid thirties) when modern organic chemistry and synthesis was just starting to emerge. His thesis work is hailed even today as a major and revolutionary break with the past.

The total synthesis of the steroidal sex hormone Equilenin, published in the Journal of the American Chemical Society in 1940, was the first successful total synthesis of a complex natural product. We must not forget that in the context of the time it was not a widely disseminated view that chemical structures of this degree of structural and stereochemical complexity could indeed be made from common starting chemicals. The holdover of the old vitalism theory still distorted many people's views as to the relationship between "ordinary" chemicals and such esoterica as animal-isolated sex hormones. So the "Bachmann, Cole and Wilds" paper is widely recognized as inaugurating the modern era of chemical synthesis of complex medicinally important structures. This modern era still goes on after some 60 years as we struggle with the synthesis of such complex targets as HIV protease inhibitors. It all started with the Equilenin synthesis by Al Wilds.



Equilenin



Alfred L. Wilds

In 1940, the Department of Chemistry at Madison faced a major crisis in the form of a wave of retirements coupled with a continuing growth in numbers of undergraduate students served. At this time Al was hired as an instructor together with Bill Johnson from Louis Fieser's labs at Harvard. Interestingly they were both deeply involved in the chemistry of steroids but the possible conflicts never materialized. Together with Johnson, Al brought a true renaissance to organic chemistry at Wisconsin. They were quickly recognized as budding leaders in the area. Both were popular and effective teachers, and built their organic research programs in an aggressive and effective manner. Al produced his first PhD student, Lloyd Beck, in 1944, and had directed some fifteen doctorates by 1950. He was promoted regularly, becoming full professor in 1948. The modern era of organic chemistry at Wisconsin thus started, the two young stars Al Wilds and Bill Johnson, and the two older members, Homer Adkins and Sam McElvain.

It is a testimony to Al's ability as a researcher and mentor of graduate researchers that he produced a series of steroid chemists who went on to play pivotal roles in developing the area in the postwar period. Particularly noteworthy is Carl Djerassi, one of the founders of Syntex SA, and widely recognized as the "father of the pill." Carl earned his PhD with Al in 1945. His thesis again dealt with steroid synthesis, an expeditious construction of the female sex hormone estradiol from the commonly available steroid cholesterol. This was published in the Journal of the American Chemical Society in 1946. Al was a "hands-on" mentor of graduate students. Many stories relate that when a graduate student ran into experimental difficulties toward the end of his PhD work, Al Wilds would join him in lab and directly help with the synthetic work.

Al Wilds was an effective and popular teacher of undergraduates in the subject of organic chemistry. Many of us who started at Wisconsin remember the always-crowded office hours for his undergraduate organic course, and the uniformly enthusiastic comments of students about its content. We were honored by a gift of $100,000 in 1985 from one of his grateful ex-students, Chester Davis. This was used for undergraduate chemistry majors in need, and is a comment on Al Wilds' impact as a teacher. He also contributed effectively to the graduate chemical lectures wherein his encyclopedic knowledge of chemistry served many beginning graduate students well.

Lastly, Al Wilds was a warm and brilliant colleague that many of us remember with great foondness. His welcoming of us as beginning assistant professors was so important in getting us off on the right track. In his later years he was a delightfully eccentric colleague. He was a firm advocate of Karo® syrup as brain food and would be seen with his ever-present bottle when launched on periods of intense work. His dismantling of a blaring speaker in Paisan's pizzeria with a pocketknife earned him much gratitude.

He passed away on July 4, 2002 in Sun City West, Arizona; we remember him well, and miss him deeply.

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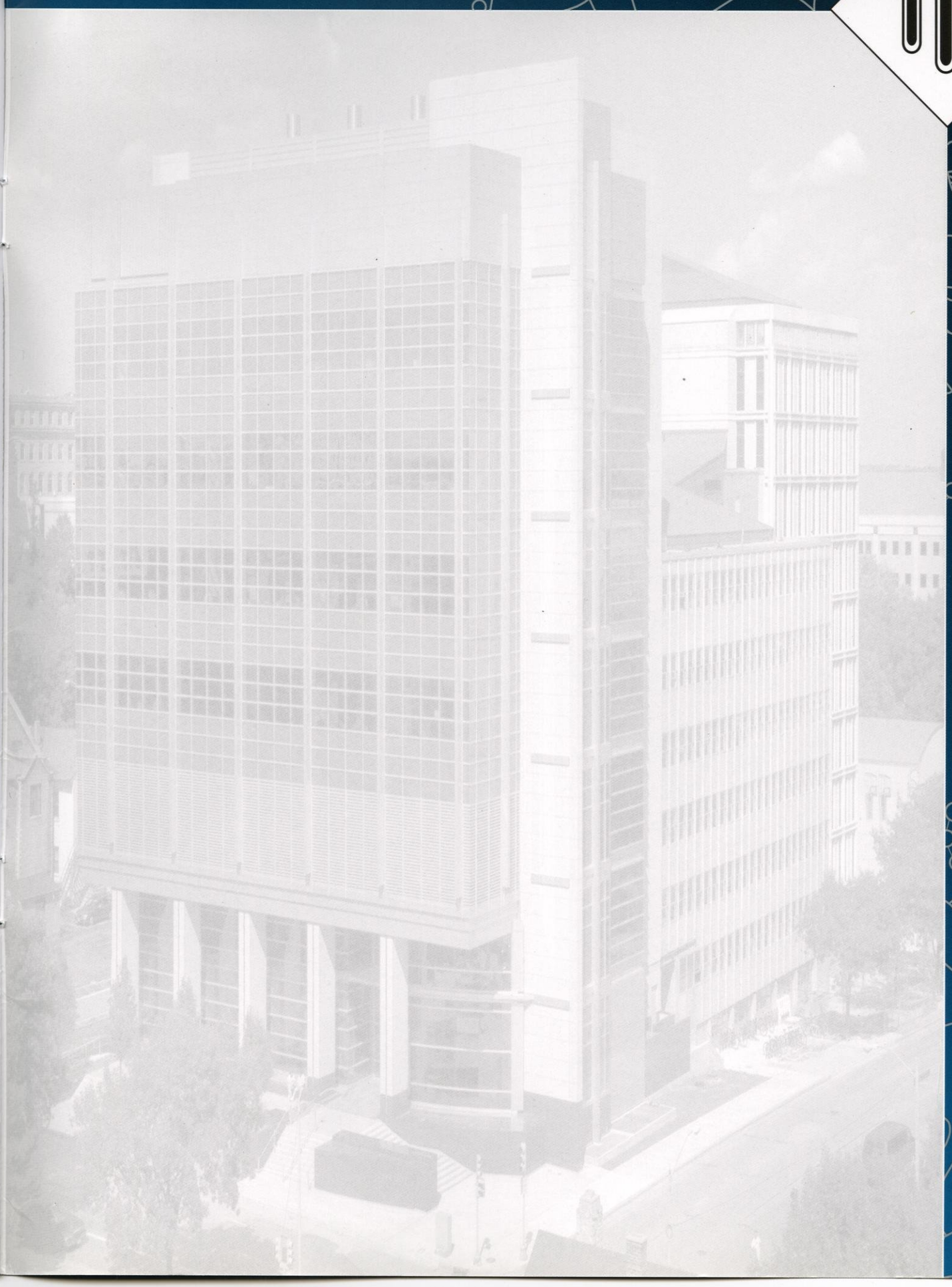

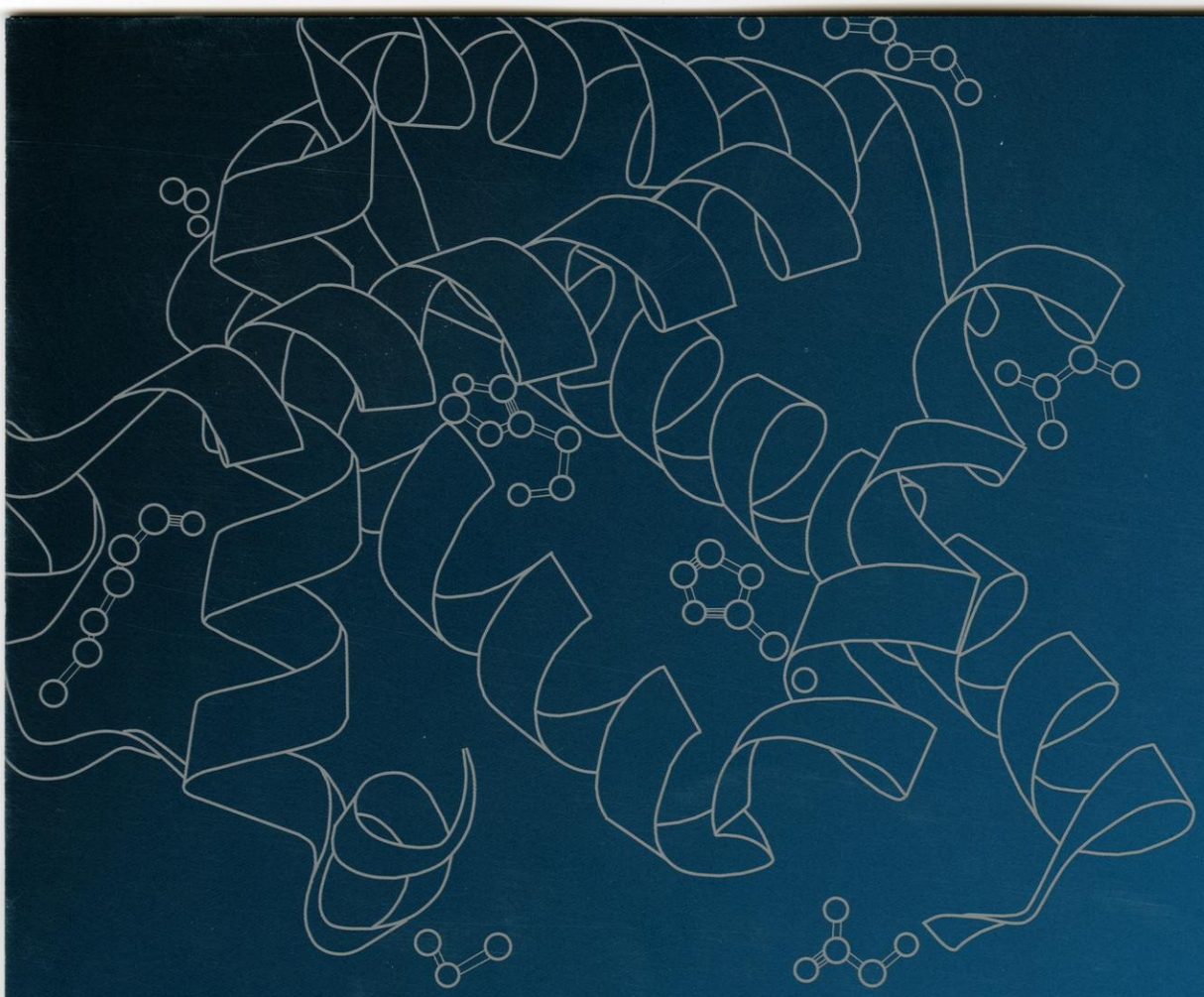

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