

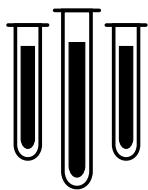
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2008

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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2008 BADGER CHEMIST

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From the Chair

Fall 2008

Dear Badger Chemists,

Over the last year and half as chemistry department chair, I have been continually reminded of how the University of Wisconsin-Madison is a truly special place. Our research, teaching, and service activities continue to impact thousands of lives every semester, all made possible through the tremendous dedication and efforts of the many people who, working together, make the University of Wisconsin far greater than the sum of its parts.

This is a time of great change on campus. John Wiley, our Chancellor for seven years, retired and has been replaced by Carolyn "Biddy" Martin. Biddy did her Ph.D. work in German at UW-Madison but most recently was the Provost at Cornell University. She visited our department earlier this semester and we had the opportunity to tell her about our department's strengths and also the areas where we need more help, such as our undergraduate teaching laboratory facilities, and with faculty hires and retentions.



One of the things that makes working at Wisconsin such an enjoyable experience is constantly seeing new faces. Last year Jim Weisshaar did a terrific job heading up our Faculty Search Committee, leading to the successful hiring of two new faculty into our department. Jordan ("J.R.") Schmidt started in Fall '08 and is starting a program that links multiple theoretical and computation methods to solve complex chemical and materials science problems such as hydrogen storage. Daniel Fredrickson will be joining us on January 1 to start a program that integrates experiment and theory to understand the behavior of intermetallic compounds, quasicrystals, and complex alloys. These new faculty continue our recent trend toward increasingly interdisciplinary science, linking the various areas of chemistry and extending to related fields.

Our current faculty continue to garner major national and international awards. Recent examples include Bassam Shkhashiri's receipt of the National Science Board's Public Service Medal, Tom Record's election as a Fellow of the American Academy of Arts and Sciences, Laura Kiessling's election to the National Academy of Sciences, and Bob West's selection as an honorary member of Nippon Kagaku Kai, the Japan Chemical Society. Our junior faculty have been especially successful, with this year's awards including Tehshik Yoon's receipt of an Arnold and Mabel Beckman Award and the recent receipt by Mahesh Mahanthappa, John Berry, and Josh Coon of prestigious NSF CAREER Awards. These awards appropriately reflect Wisconsin's tradition of excellence in research, teaching, and service.

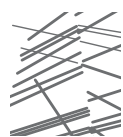
Like most institutions we are being hit hard by the economic crisis. Many of our recent efforts, such as our diversity enhancement efforts and our departmental policy providing additional assistance to students and postdocs who become parents, depend critically upon gifts from alumni and friends like yourselves. We are especially appreciative of any contributions you are able to make.

We anticipate hosting an Alumni Reception at the ACS meeting in Salt Lake City and hope that you will come and reconnect with other alumni and with our current faculty, postdocs and students. We always appreciate hearing from you and hope that you will take the time to tell about your latest activities, how your Wisconsin education is serving you, and any comments you may have on how we can make the Wisconsin experience even better!

Sincerely,

Bob Hamers

Bob Hamers
Chair, Department of Chemistry
chair@chem.wisc.edu



New Badger Chemists

PHD

AUGUST 2007

Sharon Elizabeth Beetner (*Casey*)

In Situ Infrared Observations of Hydrogenations with Hydroxycyclopentadienyl Ruthenium Hydride Catalysts

Melisa M. Cherney (*Burstyn*)

Studies of the Heme Proteins Soluble Guanylyl Cyclase and Cystathionine Beta-Synthase

Dalia M. Dhingra (*Schwartz*)

Single Molecule Barcoding Towards Genomic Analysis

Bhavesht Anilchandra Gandhi (*Burstyn*)

Development of Copper (I)-2,9-di-tert-butyl-1,10-Phenanthroline Chemistry and Applications Thereof

Benjamin Craig Gorski (*Blackwell*)

The Development of New Synthetic Methods and Structural Paradigms for Peptoid Architecture

Heather Dawn Johnson (*Thorson*)

Cytochrome P450 Monooxygenases Involved in the Biosynthesis of Calicheamicin and Rebecamycin

Shan Ke (*Kwon/Wright*)

Avidin-Biotin-Peg-CPA Complexes as Potential Enhanced Permeability and Retention Effect Directed Therapeutic Protein Carriers: Preparation and Characterization

Mansuk Kim (*Lee*)

I. Regio- and Stereoselective Enyne Cross Metathesis II. Metallotropic [1,3]-shift of Ruthenium Alkynyl Carbene Complex

Yi Jin Kim (*Lee*)

I. Development of a New Ring-Closing Metathesis Platform Based on Hydrazine Stereodynamics II. Tandem Ring-Closing Metathesis of Silaketel-Tethered Dienynes and Applications Toward the Total Synthesis of Tartrolon B.

Amber Teresa Krummel (*Zanni*)

Extending Two-Dimensional Infrared Spectroscopy to Study DNA Structure With Native and Non-Native Infrared Probes

Revati Kumar (*Skinner*)

Understanding and Modeling Hydrogen Bonding in Liquid Water

Qi Lin (*Blackwell*)

New Avenues and Applications for Parallel Library Synthesis: I. Application of Multicomponent Reactions for the Efficient Synthesis of Small Molecule Macroarrays II. Characterization of Non-Native N-Acylated L- Homoserine Lactones

Michelle Monnens Rogers (*Stahl*)

Development of Palladium (II)-Catalyzed Methods for Alkene Functionalization: Intermolecular Oxidative Alkylation and Intra- and Intermolecular Oxidative Amination

Lu Shang (*Hamers*)

Assemble Nanowires into Novel Biosensor Configurations Using Dielectrophoresis

Bin Sun (*Hamers*)

Integrate carbon based materials with microelectronic and electromechanical devices for biosensing applications.

Kiu Yuen Tse (*Hamers*)

Electrical properties of nanostructured carbons in aqueous and non-aqueous electrolytes.

Hua Yu (*Schwartz*)

Single molecule investigations of transcriptional products and processes.

Jian Zhang (*Shen*)

In vivo and in vitro study of enediynes biosynthesis and Engineering of drug carrier protein from tumor targeting drug delivery.

Xu Zhang (*Smith*)

Biological mass spectrometry for proteome analysis.

DECEMBER 2007

Stephanie Shannon Cape (*Li*)

Development of Mass Spectrometric Techniques for the Analysis of Neuropeptides: Differential Display, Quantitation, and Imaging

Emily Payne English (*Gellman*)

Development of B-Peptide Inhibitors of Viral Fusion

Michael Lawrence Hause (*Crim*)

Influence of Vibrations of Passage Through Conical Intersections: Velocity Map Imaging of the Photodissociation of Ammonia and Phenol

Jennifer DeZwaan Hayner (*Nathanson*)

The Effects of Dissolved Ions on Near-Interfacial Proton Transfer in Liquid Glycerol

Ji Eun Li (*Smith*)

Cell Surface Proteome Characterization Using Cell-binding Arrays and Mass Spectrometry

Laurel Michelle Pegram (*Record*)

Applications of the Solute Partitioning Model to Quantify Hofmeister Ion Effects on Model Processes and Protein Folding

Annie Tam (*Raines*)

Protein backbones: Aqueous staudinger ligations and synthetic isosteres.

Phillip Sterling Thomas (*McMahon*)

Matrix-Isolation Spectroscopy of triplet R-Co-R'carbenes & interpretation of their electronic absorption spectro.

Janice Mary Hall Tomasik (*Moore*)

I. NMR investigations of Zirconocene-catalyzed polymerization of Alkenes and the role of an aluminum alkyl during polymerization. II. Design and evaluation of an online professional development course: Nanoscience for teachers.

MAY 2008**Ratmir Derda** (*Kiessling*)

Combinatorial Approach to Synthetic Extracellular Environments to Control the Growth of Human Embryonic Stem Cells

Grant D. Geske (*Blackwell*)

The Design, Synthesis and Evaluation of N-Scylated Homoserine Lactone Analogs That Modulate Quorum Sensing in Gram-Negative Bacteria

Brian Glenn Hashiguchi (*Landis*)

Synthesis and Development of Bidentate 3,4-Diazaphospholanes for Metal-Catalyzed Reactions

Chutima Jiarpinitnun (*Kiessling*)

Utilizing Synthetic Multivalent Ligands to Investigate the Roles of G-Protein Coupled Receptor Oligomerization

Heesuk Kim (*Hamers*)

Chemical Grafting of Molecular and Biomolecular Layers to Compound Semiconductor Surfaces

Erin McElroy Kolonko (*Kiessling*)

The Development of Bioactive, Cell-Permeable Polymers

Luke Daniel Lavis (*Raines*)

Tailoring Fluorescent Molecules for Biological Applications

Gaoquan Li (*Nelsen*)

Developments of New Mixed Valence Compounds for Optoelectronics and Molecular Electronics Through Multi-Step Organic Synthesis

Christopher Carl Marvin (*Burke*)

Ketalization/Ring-Closing Metathesis: Synthesis of Didemniserinolipid B and Thromboxane B₂

Katherine Ann Marvin (*Burstyn*)

Characterization of Redox-and Gas-Responsive Heme-Thiolate Proteins

Prabuddha Mukherjee (*Zanni*)

Characterizing Membrane Proteins with 2D IR Spectroscopy

Sangho Park (*Lee*)

I. Transition Metal-Catalyzed Reactions of Xlison-Tethered Enynes
II. Total Syntheses of Epoxyquinones: (+)-Asperpentyn, (-)-Harveynone, and (-)-Tricholomenyn A

Margaret Faye Phillips (*Smith*)

Towards a High-Throughput Surface Invasive Cleavage Assay Using the Maskless Array Synthesizer

Mark Alan Rickard (*Wright*)

Fundamental Studies of Triply Vibrationally Enhanced Four-Wave Mixing Spectroscopy

MS

AUGUST 2007**Brent Lynn Bastien** (*Blackwell*)**Frederick Joseph Boehm III****Michael Ray Boll** (*Shakhashiri*)**Rhiannon Rae Carter** (*Mahanthappa*)**Richard Edward Grant** (*Kiessling*)**Karl James Hrovat** (*Stahl*)**DECEMBER 2007****Lauren Dwyer Boyle** (*Burke*)**Joel Lanny Broussard****Julee Lauren Byram** (*Mecozzi*)**Seo Bong Chang** (*Smith*)**Lani Ashton Macartney** (*Stahl*)**David Russell Moody** (*Mahanthappa*)**Rachel Elizabeth Moss** (*Bleam*)**Jessica Marie Strasses** (*Burke*)**Emily Jean Talbert****MAY 2008****Ian S. Hammond** (*Berry*)**Jason Adam Keith**

BS & BA

AUGUST 2007**Joseph Ray Harnden****John David Larsen****Ann Elizabeth Reinardy****James Thomas Schwindt****Kelsey Ellen Weyenberg****DECEMBER 2007****Andrew James Aring****Mitchell Jordan Asch****Christopher Martin Bates****Eric Matthew Hansen****Daniel Timothy Herbert****Thomas Charles Hilbig****Lindsay Noel Jensen****Thomas Robert Kuech****Bachnga Thi Le****Molly Patricia Miller****Alexandar Peykov****Andrew John Pieper****Jennifer Melissa Ross****MAY 2008****Ashley Rae Baeten****James A Birrell****Robert Charles Butson****Jennifer Ann Cedzo****Megan Eunjeong Demara****Timothy Daniel Dingee****Robert Michael Erdmann****Jacob David Felder****Dennis Nick Fournogerakis****Kevin Charles Gams****Lydia Marie Grundahl****Shannon Elizabeth Higgins****Ashley Christine Jacobsen****Blake Nicholls Johnson****Kayla Jean Knilans****Nathan Andrew Kopf****Christopher Michael Krco****Jenna Marie Lang****Lien Ley****Ryan S Libert****Ian Craig Mandel****Eric Scott Melby****Catherine Anne Misher****Andrew Scott Movrich****Bradlee David Nelms****Cory Alexander Nelson****Paul R. Norland****Matthew Joseph Oboikovitz****Marya Louise Orf****Anthony Lawrence Perillo-Nicholas****Gregory Steven Peters****Elizabeth Ann Radke****Brent Jeffrey Ramaker****Natalie Ann Ray****Laura Elizabeth Rice****Stephanie Ann Rivest****Aleeza Jane Roth****Jeffrey Ryan Schuttenhelm****Mohammed Ozair Shekhani****Oliver L Syu****Nathan Dean Truckenbrod****Kittikhun Wangkanont****Alex Matthew Witek****Joseph Peter Wojcik****Justin W. Woods****Thomas Philip Wyche****Linda Marie Youngwirth**



Our Awards

UW Chemists continue to garner significant awards

FACULTY AND STAFF AWARDS

The James W. Taylor Award for Teaching Excellence recognized Professor **Helen Blackwell** for her outstanding contributions to the educational mission of the department.

Professor Joshua Coon was the recipient of the Eli Lilly Analytical Chemistry Young Investigator Award—an award of unrestricted funds, renewable for a second year. This is an extremely competitive and prestigious award Lilly makes to rising stars in the field of analytical chemistry.

Professor Mark Ediger was awarded a Kellett Mid-Career Faculty Researcher Award in mid-January of 2008. Kellett Awards are extremely competitive awards which recognize faculty who are between 5 and 20 years past tenure who have demonstrated exceptional talent for scientific research. This was certainly a well-deserved honor!

A 2008 Phi Beta Kappa of Wisconsin Teaching Award was given to **Professor Sam Gellman** and was presented as part of the PBK initiation ceremony in April.

The Organic division's **Professor Laura Kiessling** was selected as the recipient of the 2008 Wilbur Lucius Cross Medal from Yale University. This award is an honor presented each year by the Graduate School Alumni Association to a very small number of alumni and it recognizes distinguished achievements in scholarship, teaching, academic administration and public service—all areas in which Laura excels. Laura was also chosen as the recipient of a Guggenheim Award by the John Simon Guggenheim Memorial Foundation. These awards provide fellowships to faculty and advanced professional in all fields of physical and social sciences.



Tom Ladell

Tom Ladell, the Lab Prep Technician for the General



Kristin Plessel and Kris Kolonko joined Hans and Ieva in Germany for the award.

Chemistry Department, won a 2008 Classified Employee Recognition Award from the University. Only five awards were presented from some 45 nominations throughout L&S.

In January, 2008, it was announced that **Professor Mahesh Mahanthappa** of the Inorganic Division was the recipient of an NSF CAREER Award, one of the NSF's most prestigious awards. It will provide five years of support for the early-career development activities of those teacher-scholars who most effectively integrate research and education within the context of the mission of the organization.

The 2008 Braude Award, given by the Maryland Section of the American Chemical Society, was presented to **Professor John Moore**. The award honors excellence in chemistry teaching and was given in recognition of his work with the Journal of Chemical Education. The fund was endowed by and named for George L. Braude, a chemist with W.R. Grace and the Food & Drug Administration. The award will be presented in Fall of 2008.

Hans Reich's Arfvedson Schlenk Award from the Gesellschaft Deutscher Chemiker (German Chemical Society) was announced in last year's *Badger Chemist*. Hans sent a picture from the award ceremony in September 2007; Hans's students **Kristin**

Plessel and **Kris Kolonko** joined Hans and Ieva in Germany for the award.

Ieva Reich, selected to receive the Chancellor's Hilldale Award for Excellence in Teaching, presented a seminar in spring. This award was a true tribute to Ieva's outstanding teaching and mentoring done in the department. Ieva was also selected to receive the Alliant Energy Underkofler Excellence in Teaching Award and the L&S Mid-Career Award by the College of Letters & Science. These awards recognize Ieva's outstanding teaching and performance in her position of leadership.

Two department members, **Professor Lloyd Smith** (Analytical) and **Professor Laura Kiessling** (Organic) were recent selections as Vilas Associates. This award recognizes outstanding faculty in the physical sciences and is highly competitive.

Professor Shannon Stahl (Inorganic Division Chair) was selected to be a "Hamel Faculty Fellow" in the College of Letters & Sciences. This is an extremely competitive program which provides unrestricted funds for five years to top faculty in L&S. The funds were donated by George and Pamela Hamel.

The Japan Chemical Society informed **Professor Bob West** that he was to be honored at the society ceremony in Tokyo with a membership in the Nippon Kagaku

Kai. There are only 13 foreign honorary members in this society, of whom more than half are Nobel laureates. What a tremendous honor for Bob!

Another Organic division member, **Professor Tehshik Yoon**, received a UW Research Service Award. This award, granted to junior faculty who have major service commitments outside their own department, recognizes the burden that these activities exact on untenured faculty. The award consists of two months of summer salary. Tehshik was also the winner of the Arnold and Mabel Beckman Award announced recently. The Beckman Young Investigators' Program is intended to provide research support to the most promising young faculty members in the early stages of academic careers in the chemical and life sciences. Tehshik's award provides three years of funding for his proposal on "Stereo-selective Functionalization of Hydrocarbons using Oxaziridines."

STUDENT AWARDS

Student scholarships and research 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.

The Outstanding TA Awards for 2006-2007 were presented in December 2007 at the Excellence in Teaching Symposium. Teaching and Faculty Assistants are selected to receive these awards each year on the basis of excellent teaching evaluations from students, faculty and staff. Awardees included **Nikki Burrman** (McMahon), **Matt Dodge** (PhD '08, Burke), **Jamie Ellis** (Cavagnero), Lani Macartney (MS '07, Stahl), **Shane Mangold** (Kiessling), **Kathy**

Rees Marvin (PhD '08, Burstyn), **Jeannine Szczech** (Jin) and **Lena Yurs** (Wright). Congratulations to these outstanding teaching assistants—their efforts and accomplishments within the department are well noted!

The department regularly recognizes both graduate and undergraduate excellence. Fellowship/Awards Committee members include Chair **Helen Blackwell**, **Gery Essenmacher**, **Pam Doolittle**, **Thomas Brunold**, **Mahesh Mahanthappa** and **Carolyn Williams**. Their efforts in selecting students for the various awards are greatly appreciated.

Awards and scholarships were distributed at the department's annual "Student Awards Ceremony" held on May 2, 2008. Parents, family members and donors were invited to participate in the award ceremony, as well as an informal reception. Both events were well-attended and provided an opportunity for family members to meet faculty and staff of the Chemistry Department. It is our hope that news such as these awards reaches a wider audience!

Undergraduate research support was provided during Summer 2008 from the following sources: **Theresa Anderson** received the Eugene and Patricia Kreger Herscher Scholarship, the Alpha Chi Sigma Alumni Scholarship and the Martha Gunhild Week Scholarship. **Mingwei Huang** was awarded the Student Support in Chemistry scholarship; continuing support for **Thomas Reigle** was provided by the Edwin M. and Kathryn M. Larsen Scholarship and the Edward Panek Memorial Scholarship. Student Support in Chemistry funds were also awarded to **Timothy Rhorer**, **John Wieting**, **Colin Stecker** and **Aaron Zwicker**. Receiving Ackerman Scholarships were **David Bunck**, **Ryan Drake**, **Amy Kolpin** and **Dimitri Svetlov**. Also benefiting from an Ackerman Scholarship was **Amanda Turek**, who further received funds from the National Starch & Chemical Foundation. A National Starch & Chemical Foundation Scholarship was also awarded to **Matthew Biller**. Summer scholarship funds were rounded out with awards to **Jamie Snyder** (Eugene & Patricia Kreger Herscher Scholarship); **Kyle Thompson** (Walter W. and Young-Ja C. Toy Scholarship); and **Eric Victor** (Edwin M. and Kathryn M. Larsen Scholarship and the National Starch &

Chemical Foundation Scholarship).

The Chemistry Department's Walter W. and Young-Ja C. Toy Scholarships were presented to **Stephen Yang** and **Wenlu Gu**, while **Kevin Metcalf** received the Don Brouse and Alfred L. Wilds Scholarship. In keeping with directives of the Margaret McLean Bender Scholarship, funds from this scholarship were awarded to **Sandra DePorter**. The Richard Fischer Scholarship was given to **Anthony Nguyen**.

One of the Chemistry department's older awards—the Edwin M. and Kathryn M. Larsen Scholarship—was also presented to **Benjamin Strick**. **Kristin Andersen** was honored to receive funds from the Mabel Duthey Reiner Scholarship fund. **Vanessa Kung**, recipient of the Wayland Noland Undergrad Research Fellowship, was also fortunate to receive the Andrew Dorsey Memorial Scholarship. The Edward Panek Memorial Scholarship funds were presented to **Stephen Banik** and **Jacob Covey**. **Jamie Snyder** was awarded continuing support by the Martha Gunhild Week Scholarship.

Awards from the Wisconsin Section of the American Chemical Society went to **Laurel Bessey**, **Lukas Bane** and **James Campbell** (Organic), **Max Rusek** (Analytical), **Kyle Amend** (Physical) and **Elizabeth Poli** (Inorganic).

Excellence in General Chemistry classes is recognized with several sets of awards. **Erin Dian**, **Jordan Limbach**, **Gabrielle Mannino** and **Joseph Mueller** were presented the John and Betty Moore Awards for Excellence (Chemistry 109). Francis Craig Krauskopf Memorial Awards given to **Robert Bjerregaard**, **Geralyn Janke**, **Anne Kessler**, **Stephanie Stuebs**, **Rebecca Thiede** and **Brett Van Rossum** recognized outstanding achievements in freshman chemistry classes. Nominated by their respective professors and endorsed by the selection committee, these students represent the best of our freshman students!

The GSFLC (Graduate Student-Faculty Liaison Committee) presented Outstanding Mentor Awards to graduate student **Christopher Scarborough** (Stahl) and faculty member **John C. Wright**.

Graduate fellowships and awards play a vital part in the support of the department's graduate members. The "Excellence in Research Awards" were presented to

the following students: **Tamas Benkovics** (Organic, Yoon), **Laurel Pegram** (Physical, Record), **Laurie Grove** (Inorganic, Brunold), **Matthew Lockett** (Analytical, Smith) and **Matt Bierman** (Materials, Jin). Each of the graduate students presented a brief talk at the awards ceremony held on May 2nd in Seminar Hall.

Kris Kolonko (Reich Group) was recognized for his outstanding work as the recipient of the Paul Bender Fellowship, while **Joseph Binder** (Raines) and **Graeme McAlister** (Coon) were awarded the Dow Outstanding Graduate Student Fellowships. The Ralph F. Hirschmann-Daniel H. Rich Graduate Awards in Bioorganic Chemistry were awarded to **Joshua Price** (Gellman) and **Matthew Shoulders** (Raines). **Katherine Partridge** (Yoon) and **William Pomerantz** (Gellman) will benefit from funds awarded through the Goering Organic Chemistry Fellowship. The department's Farrington Daniels Ethical Leadership Fellowship was given to **Matthew Lockett** (Smith) for his leadership in the Smith research group and high standards shown throughout his career at UW-Madison. The final graduate award was the Leah Cohodas Berk Award for Excellence presented to **Jennifer O'Neill** of the Blackwell research group.

Victoria Wilde (Burke) and **Matt Dodge** (Burke) were recognized for outstanding work in chemistry with 2007-2008 Abbott Graduate Fellowships. This award provides a one-year full graduate fellowship. **Katie Partridge** (Yoon) received the Fellowship for 2008-09.

Jin research group member **Matthew Bierman** was the recipient of the 2007-2008 Air Products Graduate Fellow-

ship which provides a nine-month scholarship for a graduate student doing research in areas of interest to Air Products Corporation. This fellowship included a two-month position at their corporate headquarters in Pennsylvania.

Luke Lavis (PhD '08, Raines) was supported by an ACS Division of Organic Chemistry Fellowship, and **Matt Shoulders** (Raines) received support during 2007-08 from the ACS Division of Medicinal Chemistry Fellowship. We thank ACS and their industrial donors for these fellowships, which include support for travel to an ACS national meeting.

Dave Strasfeld (Zanni) and **Katherine Traynor** (McMahon) received Wisconsin Distinguished Graduate Fellowships, made possible by a donation from the Ackerman Foundation and matched by the Graduate School. Recipients of these fellowships for 2008-09 will be **Jessica Menke** (McMahon) and **Andrew Schmitt** (Jin).

Olivia Johnson (Brunold), **Samira Musah** (Kiessling), **Avery Watkins** (Landis) and **Nicole Woodards** (Li) continued as Advanced Opportunity Fellows in 2007-08.

Our students held many other fellowships and traineeships during the

2007-2008 year. **Katie Alfare Garber** (Kiessling), **Matt Christianson** (PhD '08, Landis), **Samira Musah** (Kiessling) and **Katherine Vanheuvele** (Brunold) were supported with NSF Fellowships. **Katherine Traynor** received a Fellowship from the National Graduate Women in Science Organization; Katherine attended the GWIS National Meeting and presented a poster on her research in June 2008. **Andrew Huisman** (Keutsch) received continuing support from a Department of Defense Fellowship. **Christine McInnis** (Blackwell) received support from the National Defense Science and Engineering Graduate Fellowship Program. **Steve Morin** (Jin) received a 3M fellowship.

Michael Santiago (Burstyn) received continued funding with a Minority Pre-doctoral Fellowship from NIH. **Stephanie Dekeyser** (PhD '07, Li) was supported by a National Research Service Award from NIH. NIH Traineeships supported **Heidi Behrens** (Biotech, Li), **Benjamin Bratton** (Biophysics, Wiesshaar), **Maren Buck** (Chemistry-Biology Interface, Lynn), **Justin Carlisle** (BT, Smith), **David Good** (BT, Coon), **Christle Guevarra** (CBI, Hsung), **Ryan Hilger** (Genomic Sciences, Smith), **Lisa Johnson** (CBI, Gellman), **Olivia Johnson** (CBI, Brunold), **Suzanne Kulevich** (CBI, Smith), **Graeme McAlister** (BT, Coon), **David Michaelis** (CBI, Yoon), **Samira Musah** (CBI, Kiessling), **Kimberly Peterson** (CBI, Gellman), **Doug Phanstiel** (GS, Coon), **Brooke Richardson** (BT, Gellman), **Brian Smith** (BT, Denu), **Tim Schramm** (GS, Schwartz), **Danielle Swaney** (GS, Coon), and **Laura Wysocki** (CBI, Burke) during 2007-08.





Notable News

DEPARTMENT LECTURE SERIES

Announcements of Departmental seminars are listed on the web at <http://www.chem.wisc.edu/areas/newsletter/seminars-list.html>. Some of the named and special seminars held at the department in the preceding year are featured below, but many other fascinating talks are given each week by faculty, students and guests of the Department.

The first Chemistry Colloquium of the year was given by **Professor Mukund Chorghade**, Director and Owner of Pharmachem/Chorghade Enterprises. He spoke on the "Fascinating Personal Adventures in Progression of a New Chemical Entity from Conception to Commercialization."

In October, **Royce Murray** of the University of North Carolina, Chapel Hill, spoke on the topic "Analytical Chemistry & Properties of Monolayer Protected Nanoparticles." This event was the **Second Irving Shain Colloquium**, made possible by Irving Shain Colloquium Foundation funds. This was followed by a talk in November by **William Banholzer**, Chief Technology Officer of the Dow Chemical Company. The Department is fortunate to have these funds available for outstanding speakers—made possible by the generosity of Irv Shain's friends.

In January of 2008, a department colloquium was presented by **Professor Hans Reich** (Organic) of the Chemistry Department. Although speakers outside the university are of great interest to faculty and students, the department feels it is also very important to showcase the outstanding work of department members.

In late February, **Professor Jo Handelsman** of the UW-Madison Department of Plant Pathology presented the department colloquium.

The Chemistry Department also continued its efforts in joining forces with other campus departments and offered joint seminars throughout the year. Presentations with

Water Science and Engineering Laboratory offered talks by **Chris Babiarz** of WESL (Mercury in Wisconsin Aquaculture) and **Professor John Wright** (Spectroscopy) of the Analytical Division of the UW Chemistry Department. In November of 2007, the Materials Science Program, together with MRSEC, hosted a seminar by **Hanno H. Weitering** of the University of Tennessee. His talk was entitled "Electronic Instabilities and Fluctuation in Quantum Chains."

The department was especially pleased to jointly host a seminar under the auspices of the Sloan Foundation supporting under-represented students in Science, Technology, Engineering and Math. The seminar, entitled "A Hope in the Unseen" was led by **Dr. Angela Byars-Winston** and graduate students from the various departments.



SHAIN COLLOQUIUM SERIES

Professor George M. Whitesides (pictured above with **Professor Silvia Cavagnero** and **Irv Shain**) of Harvard University was the featured speaker at the 5th Irving Shain Chemistry Colloquium in late March, 2008. He also presented a McElvain Seminar for the Analytical Division which was very well attended. Professor Whitesides proved to be an engaging speaker and spent a great deal of time with the department's graduate students.

MCELVAIN SEMINAR SERIES

In keeping with the department's intent to sponsor talks from a variety of speakers across academia and industry, **Professor David J. Nesbitt** of JILA presented the first McElvain seminar for 2007. His talk, "Wet' Chemical Physics: From Gas-liquid Collisions to Single Molecule RNA Folding" proved to be informative for graduate students, faculty and visitors who attended the lecture.

Dr. Victor Klimox of the Los Alamos National Laboratories presented a Physical Chemistry seminar in early February for department members. Dr. Klimox spent a great deal of time interacting with graduate students and faculty alike.

The Inorganic Division McElvain Series speaker in early 2008 was **R. Tom Baker** of the Los Alamos National Laboratories. The division also sponsored a talk by **Christopher Cummins** of MIT in early May, 2008.

The Analytical Division's McElvain Seminar series also hosted **Dr. Gary Siuzdak** of the Scripps Center for Mass Spectrometry in early April. His visit, hosted by **Suzie Kulevich** (Smith) and **Melissa Galloway** (Keutsch) proved to be a great success. His interaction with the students was especially appreciated and noted.

HIRSCHFELDER PRIZE

Professor Robert J. Silbey of the Massachusetts Institute of Technology gave the 2007-2008 Hirschfelder Prize lectures in October of 2007. His series of three lectures centered on the topic of

(continued on page 10...)



This N' That

In 2004 **Bassam Shkhashiri** and, in 2006, **Irv Shain** were inducted into the ALPHA CHI SIGMA HALL OF FAME. Alpha Chi Sigma is the chemistry professional fraternity that started here at UW in 1902. The "Hall of Fame" was inaugurated in 1982. This year three more Badgers were inducted: **R. Byron Bird** (PhD '50, Hirschfelder), **Warren E. Stewart**, and **Edwin N. Lightfoot** of the Department of Chemical and Biological Engineering. They were cited in particular for their textbook TRANSPORT PHENOMENA (1st edition 1960; 2nd edition 2002) that was cited as "changing the direction of chemical engineering teaching everywhere in the world." The only other UW faculty member to be inducted into the Alpha Chi Sigma Hall of Fame was **Farrington Daniels**.

Prof. Dietrich Doepp (PD '65-'67, Zimmerman) notes that the University of Duisburg now is the University of Duisburg-Essen. He also wrote "Thank you again for sending the group list, which is very impressive indeed, and you have always more people to add."

Prof. Steve Fleming (PhD '84, Zimmerman) has been the InterAmerican Photochemistry Society Secretary and writes that his term will finish July 1, 2008. He has been responsible for communication with the IAPS membership regarding annual meetings, awards, and Society events. Steve also wrote to say that he has moved from Brigham Young to Temple University. Steve has been a professor at Brigham Young since leaving Wisconsin.

Albert J. Fry (PhD '64, Lemal) received the 2008 Manuel M. Baizer Award of the Organic and Biological Electrochemistry Division of the Electrochemical Society. This is the major award given in the area of Organic Electrochemistry. Professor Fry is the E. B. Nye Professor of Chemistry at Wesleyan University in Middletown, CT.

Prof. Richard Givens (PhD '67, Zimmerman) of the University of Kansas spent three weeks of Sabbatical time here at Wisconsin. Having returned to Lawrence, Kansas he wrote "We really did enjoy our time in Madison and seeing you and Peg. I

was pleased to hear that Senthil got the product and his synthesis is on course. Sounds like a neat project and I will be anxious to read about it in the future. We have our Honors Banquet this afternoon and three of my eight people are to be recognized for their work in research. Then, next week is graduation and two receive BAs and two others their PhDs. A very productive year!"

John Holladay (PhD '94, Reich), Chief Scientist, Chemical and Biological Process Development Group at Pacific Northwest National Laboratory, visited Madison while on a regional business trip. He is working on the development of catalysts for producing alternative fuels.

Glenn Howes (Ph.D. '96, Taylor) is one of three senior software engineers maintaining and improving the widely used ChemDraw chemical structure drawing application by CambridgeSoft. Glenn is responsible for the GUI, application architecture and Mac specific features. Complaints can be sent to support@cambridgesoft.com, praise and Mac feature requests can be sent to glenn@ghowes.com.

Yong Seol Kim (PhD '05, McMahon) is a postdoctoral research associate with Prof. Ralf Kaiser at the University of Hawaii.

Prof. Andrei Kutateladze (PD '92-'95, Zimmerman) is the Co-Organizer for the Pacificchem 2010 Symposium. Prof. Kutateladze has been at the University of Denver for 13 years and is now internationally known.

Bill Lambert (PhD '03, Burke) responded to the request for updates: I graduated from UW-Madison with a Ph.D. in organic chemistry under the guidance of Prof. Steve Burke in December 2003. I then went on to do postdoctoral work in synthetic organic chemistry in Prof. William Roush's group at University of Michigan, Jan 2004 to Feb 2006. In March 2006, I



Rustem receiving his award, with Gary Anderson of Alpha Chi Sigma on the left and ACS President Bruce Bursten (PhD '78, Fenske) on the right.

Rustem F. Ismagilov (PhD '98, Nelsen) was awarded the ACS award in Pure Chemistry for 2008 at the New Orleans meeting in April 2008. This award was established in 1931, and has been sponsored by the Alpha Chi Sigma fraternity and its Educational Foundation since 1940. It is exceptionally prestigious because it recognizes research in all fields of chemistry, and it requires the recipient to be under 35 years old at the time of the award. Five recipients have gone on to win the Nobel Prize in chemistry: Linus Pauling (1931, Nobel 1954), Glenn Seaborg (1947, Nobel 1951), E. J. Corey (1960, Nobel 1990), Dudley Herschbach (1965, 1986 Nobel), and Roald Hoffmann (1969, Nobel 1981). We cannot be prouder of Rustem!

accepted a position as Research Investigator at Eisai Research Institute in Andover, MA, and I am still happily employed there. We are a small company (~210 employees) and are the only U.S. Research and Development site for Eisai Co., Ltd., a Japanese pharmaceutical company. My wife Dawn and I have two boys, Alex (4) and Austin (3) and reside in Windham, NH. We came back to Madison once in the summer of 2006 and are anxious to return, as we made many friends there and have fond memories of the time we lived there. I sincerely miss the Memorial Union terrace and grabbing a brat and a beer for lunch. Out here in New England the cultural norms seem to be clam chowder and nor'easters, so it's been a bit of an adjustment.

Rob Lascola (PhD '98, Wright) updated his activities. I'm splitting time between the house (where I'm having some major work done) and the apartment in Aiken this week, but next week I will fully transition to North Augusta.

Dick Lura (BS '67, Zimmerman) writes: I am still at Milligan, now almost 37 years.

I was dept chair from 1992-2003 and then got tired of the administrative stuff. A number of my contemporaries around here are retiring, but I still like what I do and I really don't need any more spare time. I look back very fondly to my time working in [the Zimmerman] labs. I haven't gone down to Univ. of Tennessee in a long while, but periodically hear things about **Dick Pagni** (PhD '68, Zimmerman). Life is good.

Bruce R. McCord (PhD '86, Taylor) is the recipient of the Paul L. Kirk Award. The Paul L. Kirk Award is the highest form of recognition one can receive from the Criminalistics Section of the American Academy of Forensic Sciences.

Oleg Mitkin (PD '02-'06, Zimmerman) reports from Moscow "I am a head of a new department here, it is now only one lab (6 people total) but it is growing fast. I have to manage several projects already and have a lot of work to do. It will be an important experience and a good addition to my resume."

Dick Pagni (PhD '68, Zimmerman) wrote "I retired from teaching last August but am still active in research. I currently have three papers I am working on, and I and one of my colleagues are still doing theory on the photochemical mechanism for the origin of optically active molecules in the pre-biotic world. I am also thinking of writing a general audience book on chirality. I have a publisher."

Steven Peake (PhD '79, Reich), currently Technical Marketing Director at Park Electrochemical Corp., visited Madison on the occasion of his 30th wedding anniversary - the wedding was held in his research advisor Hans Reich's house on June 24, 1978.

Peter A. Petillo (PhD '91, Nelsen) founded Deciphera Pharmaceuticals in 2003 with Daniel L. Flynn. **Mary Beth Carter-Petillo** (PhD '92, Burke) now handles many of their patents. On October 3rd, 2008 Deciphera and Eli Lilly and Company entered into a collaboration and worldwide licensing agreement related to Deciphera's preclinical B-Raf kinase inhibitor program for the study of potential oncology therapeutics. The collaboration will apply Deciphera's phylomechanics discovery platform, a unique, proprietary approach to kinase inhibitor design, together with Lilly's expertise in discovery, development and commercialization to pursue first-in-class and best-in-class drug candidates for a variety of cancers. Under the terms of the agreement, Lilly and Deciphera will collaborate in four different project areas involving selective or multi-kinase targeted B-Raf inhibitors. Lilly will obtain exclusive worldwide rights to any products developed as part of this collaboration. In return, Deciphera will receive an up front payment and research funding over the next two years from Lilly, and may also receive up to \$130 million in potential development, regulatory and sales milestones for each of the four project areas.

If a product is successfully commercialized from this collaboration, Deciphera will be entitled to royalties on sales.

Caroline Pharr (PhD '08, McMahon/Moore) accepted a position as Assistant Professor of Chemistry at Mercyhurst College in Erie, PA.



Rich Saykally (PhD '77, Woods), Professor of Chemistry at the University of California-Berkeley and the Chemical Sciences Division of the Lawrence Berkeley National Laboratory, has been named as the first holder of the International Solvay Chair in Chemistry by the International Solvay Institutes of Belgium. The announcement is available at: <http://www.chemweb.com/submitted-news/international-solvay-chair-in-chemistry/>. Initiated in 1911 by industrial pioneer Ernest Solvay, the Solvay Conferences have been legendary venues for the development of revolutionary advances in physics and chemistry, including the theory of relativity and quantum theory of atoms and molecules. The new Solvay Chemistry Chair was created to enable visits of one to two months duration to Belgium by an eminent chemist, and follows the creation of a similar Solvay Chair in Physics in 2006, which has been held by physics luminaries Ludwig Faddeev, Michael Berry, and Nobelist David Gross. Saykally is a coauthor of over 350 publications in his field of chemical physics, and is the recipient of over 50 honors and awards. He has mentored over 50 PhD students and is a UC-Berkeley Distinguished Teacher. He will present the inaugural lecture "Water Music: The Latest Word on the Most Important Substance in the Universe" in Brussels on April 22, followed by a series of lectures that are described at: <http://www.solvayinstitutes.be/Activities-%20Description/ListChairs.html>. Saykally's research and teaching activities are described at: <http://www.cchem.berkeley.edu/rjsgrp/>. Saykally will be accompanied by his wife, Chris Read, and daughters, Victoria and Julia Saykally, at the inaugural ceremonies in Brussels, hosted by the Jaques Solvay family.



Pete, Mary-Beth, and their five-year old son Matthew

Forrest Schultz (PhD '97, West) [Zimmerman Grad Student] Things are well at UW-Stout. I am now a tenured full professor, and Chair of the Department of Chemistry. This past year I was Chair of the Faculty Senate and the Chair of the Polytechnic Steering Committee that requested of the Board of Regents to designate UW-Stout as Wisconsin's Polytechnic University. This has created a renewed emphasis on science, math, and engineering on our campus. We are also fortunate enough to be in the process of constructing a \$45M science complex. I am very excited by this addition to the rather impressive facilities we already have. I work mostly with undergraduates in courses and research, which has been a lot of fun and quite productive.

Martin Semmelhack (BS '63, Zimmerman) writes: "When I reflect on my life, the time in your group is always in the highlights. I recall the scuttlebutt when I was an undergrad, that you were a tough person to work for, always hovering over and pushing the project. That sounded exactly like what I wanted, and it turned out to be right, in all the good ways. But it is not "pushing", it is being excited about a project and wanting to talk about the next experiment."

Grigoriy Sereda (PD '96-'02, Zimmerman) has been an Assistant Professor at the University of South Dakota. He just recently visited the Z-group at Wisconsin. He reported several important recent events – One is that he has been promoted to Associate Professor and given tenure (these are separate at So. Dakota), and has become an American citizen. Grigoriy originally came from Moscow. He is spending the summer sabbatical at Argonne National Labs. He also reports "My research is doing fairly well too. During four years of my professorship at USD, I published 11 papers, and 6 more are submitted. I miss being in your group, gatherings in your house, and lunches at Paisan's. Last spring my two master's graduate students successfully defended their theses. In February my undergraduate student and I were invited to Washington DC to present our research results on synthesis of bicyclic quinones. Currently I am developing graphite-based catalysts and work on synthesis of FRET systems, based on quantum dots and organic dyes. I enjoy collaborating with my colleagues around here. I was lucky to end up in such a nice place."

Horst Sulzbach (MS '91, Zimmerman) writes that he has taken a new position, one with Elantas. "I enjoy very much to be able to do more research oriented work (and management). Also ALTANA, the group that ELANTAS belongs to is a very innovation oriented company with a highly pleasant work environment." He and Kate have two children now, Luka and Ella. He still lives in Bremen.

Prof. John Swenton (PhD '66, Zimmerman) is now Emeritus at Ohio State. He reports "As I mentioned my days at Wisconsin working in your group were some of the best in my life. (I still admire your interest in chemistry and research)."

Phillip Thomas (PhD '07, McMahon) is a postdoctoral research associate with Prof Terry Miller at The Ohio State University.

Drew Weber (PhD '88, Zimmerman) wrote that he has enjoyed a nice summer in Wisconsin fishing and boating near Rhinelander. Also he said that he has finally read the 2007 Badger Chemist and saw the nice article and picture of the "60 Years of Physical Organic Chemistry Symposium in Boston" held in honor of Professor Zimmerman. "I am sure it was a special event, and of course it was for a special person. Boston is a nice city; I commuted there for one year (from North Carolina) when I was general manager of DuPont Photonics in 2003. Things are going well here in the Pennsylvania/Delaware area. I have been recently been appointed as global business director of DuPont Photovoltaic Fluoromaterials. Hope all is well, and congrats on "60 Years of Physical Organic Chemistry."

Mike Zuraw (PhD '89, Zimmerman) wrote about the birth of his two sons. Christopher Paul and John Michael were born on October 28, 2007. Both weighed in at 5 lbs 10.8 oz and 19 inches long. Hao and the babies are doing great.

Zhaoning Zhu (PhD '94, Zimmerman) dedicated a J.Med.Chem. article to his former research adviser. Zhaoning writes from Schering-Plough where he is a Senior Chemist. He writes enthusiastically that it is the best place to be.

...(continued from page 7)

coherence and spectroscopy in light-harvesting complexes.

It was announced in February of 2008 that **Professor Mark Ratner** (Northwestern) is the winner of the 2008-2009 Hirschfelder Prize in Theoretical Chemistry. This prize (the largest in the world in theoretical chemistry) was initiated in 1991 and recipients have been top-drawer. He will be visiting the department in mid-October of 2008 and will deliver three lectures.

GARY PARR MEMORIAL AWARD

Smith research group member **Matthew Lockett** was the recipient of the 2008 Gary Parr Memorial Award. The award, presented annually to an outstanding graduate student in the area of biological chemistry, included a generous monetary award and the opportunity to present a special seminar for the department. **Dr. Gary Parr**, who did his Ph.D. work with **Professor James Taylor** and later worked for **Professor Lloyd Smith** in the area of mass spectrometry, died unexpectedly in May of 1993 while working at the UW-Madison. His family set up a fund in his memory, making this award possible. His mother and sister were able to attend the seminar and reception held by the department. We extend a sincere thank-you to the Parr family for this endowment.

MERCK LECTURE SERIES

Professor Timothy Swager of the Massachusetts Institute of Technology spoke in February.

HIRSCHMANN LECTURE SERIES

In April of 2008, **Professor Carolyn Bertozzi** of the University of California, Berkeley presented a seminar for the department. The Hirschmann Lecture Series is supported by a gift from Merck and Co. to honor **Dr. Ralph Hirschmann** (MS '48, PhD '50, Johnson). The purpose of the lecture series is to further education in organic chemistry by bringing to the University of Wisconsin distinguished professors or researchers in the fields of organic, bio-organic, or physical organic chemistry.





Current Chemistry News

DEPARTURES

Gordon Bain, General Chemistry Lab Directory, resigned in June 2007 to pursue a position at Thermo here in Madison.

Tom Foseid, Building Manager for many years, retired in January 2008. Tom was recognized for his service at the Department holiday party in December 2007. He continues to help with the annual department picnic, the Snout Out.

Carolyn Williams, Academic Department Manager since 2003, resigned in September 2008 to take a similar job in the Department of Pharmacology.

ARRIVALS

Matt Bowman (PhD '06, Blackwell) started a position as the Assistant Organic Lab Director in March 2008, replacing **Nick Hill** (PD '02-'04, West), who was hired into the Director's position (see BC 2007).



Kyle Roux took over as Building Manager for **Tom Foseid** in March. I come to the University from the health-care industry and previous to that, an eleven year hitch in the Navy on nuclear submarines. I have a B.A. in Business Administration and Marketing and have also worked in the petroleum and construction industry before finally landing here in education. I am truly excited to be working in the Chemistry Department. The diversity of people and projects ensures that no one day is like the next! Originally from



Northern Wisconsin, I currently live a bit north of Madison with my wife Jennifer and our daughter Ella.

Jordan (JR) Schmidt (PhD '06, Skinner) joined the Department as an Assistant Professor in August 2008. He received his BS from Hope College, and PhD at Madison, before



moving on and doing a post-doc at Yale. He is an avid sports fan, and especially enjoys watching football (both college and professional). In his free time he loves to play softball and tennis. JR describes his research program below.

Our research program seeks to apply the tools of modern theoretical chemistry, namely statistical mechanics and quantum mechanics, to problems related to energy and catalysis. Initial efforts will focus on understanding the catalytic mechanism of hydrotalcite, a heterogeneous catalyst proposed as a possible replacement for the homogeneous basic catalysis used in the production of biodiesel. Despite a wealth of experimental data the catalytically active site and mechanism for this system are not well understood, thus rendering difficult attempts to design more efficient heterogeneous catalysts. A second initial direction will be to examine the use of zeolitic imidazolate frameworks (ZIFs, a type of highly porous, organic-inorganic crystalline structures) as carbon dioxide storage and separation media. Recently these structures have been proposed for use in conjunction with coal power plants to separate CO₂ from the other effluent gases and storing it until it can be sequestered either deep into the earth or ocean. The goal of our work is to understand the molecular-level mechanism for the remarkable chemical and physical properties of ZIFs, with the ultimate goal

of designing ZIFs with improved properties for a variety of applications.

Our research program will also seek to develop new theoretical and computational methodologies to facilitate calculations of previous inaccessible phenomena. For example, we plan to explore the feasibility of using graphics processing chips (found inside almost all modern computers) to accelerate existing quantum chemistry calculations, potentially providing up to two orders of magnitude better performance!

Such computational gains would dramatically extend the size and complexity of the systems that can be examined, opening new worlds to theoretical exploration.

Elena Ungur

joined the Business Office staff as a member of the grants office. Originally from Romania, she received the undergraduate degree from Academy of Economic Studies



Bucharest in 1999. She worked in banking for more than 7 years and in June 2006 started as manager of the lending/loan department. Elena got married in August 2007 and moved to Madison from Romania in September the same year. She will be working on grants management and payroll issues for the department. Welcome, Elena!

Chad Wilkinson joined the Department in September 2007, replacing Gordon Bain as General Chemistry Laboratory Director.



FACULTY AND STAFF NEWS

A recent change in titles available to Faculty Assistants made it possible for the department to promote two long-time members. **Ángel Abruña-Rodríguez** (a faculty assistant since 1994) and **José Laboy** (since 2000) were promoted to Senior Faculty Assistants. Both have been involved in helping to coordinate discussion and lab courses in General Chemistry, with responsibilities well beyond those of standard faculty assistants.

Professor Thomas Brunold, a regular in the Wisconsin Ironman Competition, finished in 10th place in the 2007 event with a time of 9:14:34. He completed the grueling event by swimming 2.4 miles, cycling for 112 miles, and then running a total of 26.2 miles! Congratulations, Thomas!

Silvia Cavagnero's undergraduate students **Dan Baum** and **Darryl Wesener** received NSF-REU research fellowships, and **David Ziehr** received a Hilldale Research Award. **Peter Culviner** received a Letters and Science Honors Sophomore Apprenticeship Award. **Margarita Santiago**, recent BS graduate from UW-Madison and the University of Bayamon in Puerto Rico, received a Research Fellowship for Underrepresented Minorities from the National Institutes of Health to do research on molecular chaperones in the Cavagnero group while she prepares to become a graduate student. Margarita also received a Travel/Registration Award to present the results of her research at the FASEB Meeting on Protein Folding in the Cell. Graduate student **Ashok Sekhar** received an S.P. Manrao Science Foundation Award to attend the Experimental Nuclear Magnetic Resonance (ENC) Conference in Asilomar, CA, in March 2008. **Jamie Ellis** received a Vilas Travel Grant to attend the 22nd Annual Symposium of the Protein Society in San Diego (CA) in July 2008.

Fleming Crim has had a busy and productive year. I presented seminars in the United States, Canada, France, Switzerland, and Belgium. The major event for me in 2008 was spending January through August in Lausanne, Switzerland in the laboratory of my former student, **Tom Rizzo** (PhD '83), who is a professor and dean of basic science at EPFL (École Polytechnique Fédérale de Lausanne). I really enjoyed being

with his group and in beautiful Lausanne but missed the company of my group back here. The other event for me last year was learning that I would receive a Silver Medal as a Centenary Lecturer of Royal Society of Chemistry, London. I will spend three weeks in England in the Spring of 2009 and deliver lectures at six institutions. There will be a symposium and presentation at Oxford. I also continued to serve as Co-chair of the Board on Chemical Sciences and Technology at the National Academy of Sciences.

Mark Ediger's group started a new collaboration this year with **Professor Christoph Schick** at the University of Rostock, Germany. These two groups were awarded grants by NSF and the German Science Foundation in the first year of a new international grant scheme. Schick is an expert on nanocalorimetry, an amazing technique that produces high quality calorimetry data on nanograms of material. In the past year, the German group has come to Madison once while representatives from Mark's group have gone twice to Rostock. The goal of the grant is to adapt nanocalorimetry measurements for the investigation of the unusual organic glasses that Mark's group has been producing, often using materials expertly prepared in the laboratory of **Professor Bob McMahon**. The joint Madison/Rostock project has provided Mark with an additional opportunity to connect with other groups in Europe; this year he presented seminars in Germany, Denmark, and the Netherlands. The university recognized Mark's accomplishments with the Kellett Mid-Career Faculty Research Award in 2008. Also this year Mark finished his term as Chair of the Division of Polymer Physics of the American Physical Society. He and his group have been busy the last five summers organizing an outreach program for high school students through UW-Madison's PEOPLE program.

Bob Hamers was one of three co-chairs of the Spring 2008 National Meeting of the Materials Research Society in San Francisco, CA. The meeting consisted of 42 symposia and set a new record with an attendance of approximately 6,000 people and 2,000 oral presentations. Bob has made a number of overseas trips the last year. He was the plenary speaker at the International Conference on Nanoscience

and Nanotechnology in Hong Kong in June, and at the 2nd International Conference on New Diamond and NanoCarbon in Taipei, Taiwan. He also made a brief trip to the Korean Electric Power Research Institute (KEPRI) to discuss mutual interests in solar energy conversion devices. Bob Hamers and **Bob West** co-founded a company, Silatronix, Inc., which is taking recent work from their labs in organosilicon electrolytes (West) and nanostructured electrodes and electrical measurements (Hamers) to develop safer energy storage devices such as ultracapacitors and lithium-ion batteries. The two Bobs received an SBIR (Small Business Innovative Research) award from the National Science Foundation, along with venture funding and a grant from the Wisconsin Energy Independent Fund, an initiative from the State of Wisconsin to help translate research in renewable energy into economic opportunity for Wisconsin. Some of the funding is sub-contracted back to UW, providing opportunities for grad students and postdocs to get involved in renewable energy research.

Jim Maynard had another busy year in the demo lab. Well over 2,000 lecture experiments were performed in the classrooms of the chemistry building, and other places around campus, the state, and the world through our facility. The fall of 2007 started quickly, with preparations for the 38th annual Christmas show. This was the Strontium themed presentation, and we spent a lot of time trying to make old demos work better, as well as making new ones up. We are also trying to catch up with the modern world, with forays into the world of You Tube, where we have taken the first steps into posting chemistry video for public view. I have only posted one video so far, that of a precipitation reaction forming Prussian blue. It looks neat, but I will most definitely need to add sound. We have also delved into remote conferencing technology, and have been able to utilize some free programs that get the job done.

I was featured along with eleven other chemistry professionals in the October 2007 issue of the Journal of Chemical Education for the theme of last year's National Chemistry Week, "The Many Faces of Chemistry", where I answered several short questions about my work. My first year of being chapter advisor for the alpha

chapter of Alpha Chi Sigma seemed to go pretty well. We initiated three faculty and a bunch of new students. One of my favorite projects this year has been the endeavor to build a giant buckyball. We expect that it will be about 1.6 meters in diameter, and we plan to add a hinged door so kids can get inside! We got the data for its construction from **Ilia Guzei**, the crystallography lab director, and the machine shop customized a model driller to accommodate the large wooden spheres used in the model. The materials were procured through the largesse of NSEC, the Nanoscale Science and Engineering Center, courtesy of **Dr. Andrew Greenberg**, a recent and welcome addition to the department.

We are also making some large wooden models for the department, as large models are scarce, and the quality of materials they are made of has declined in recent years. A related idea I am working on is to help design a playground with equipment that is structured like nano materials, such as buckyballs, nanotubes, graphite and diamond allotropes, and eventually other nanostructures. The National Federation for the Blind (NFB) is holding a workshop here in August, and I plan to support it and the workshop coordinators, **Dr. Andrew Greenberg** and **Dr. Cary Supalo**, by setting up and gathering the chemicals and equipment they need.

On a special note, I wish to congratulate **Andrew J. Aring**, a demo lab worker and lead assistant, on his acceptance to the University of Idaho for graduate studies in organic chemistry. He has given a lot to the demo lab, and he will be sorely missed. Other students graduating out of my lab and into the wild blue yonder include **Aleeza Roth**, who is next bound for the University of North Carolina, **Megan Kultgen**, who is already in pharmacy school and taking leadership positions among her peers, and **Allen C.T. Yang**, who now has a degree in chemical engineering, but will most likely become a chef! I also wish to mention another former member of my staff. His name is **Bill Verbeten**, and he is majoring in Meat Science in CALS. He spent some time on the wrestling team, and after an injury he served as the manager for the team as well. Last semester he went to work in his field, with the ambitious goal of writing software that would be used to

predict crop yields based on information supplied to the program. I hope he gets it done. He was a great asset to my lab.

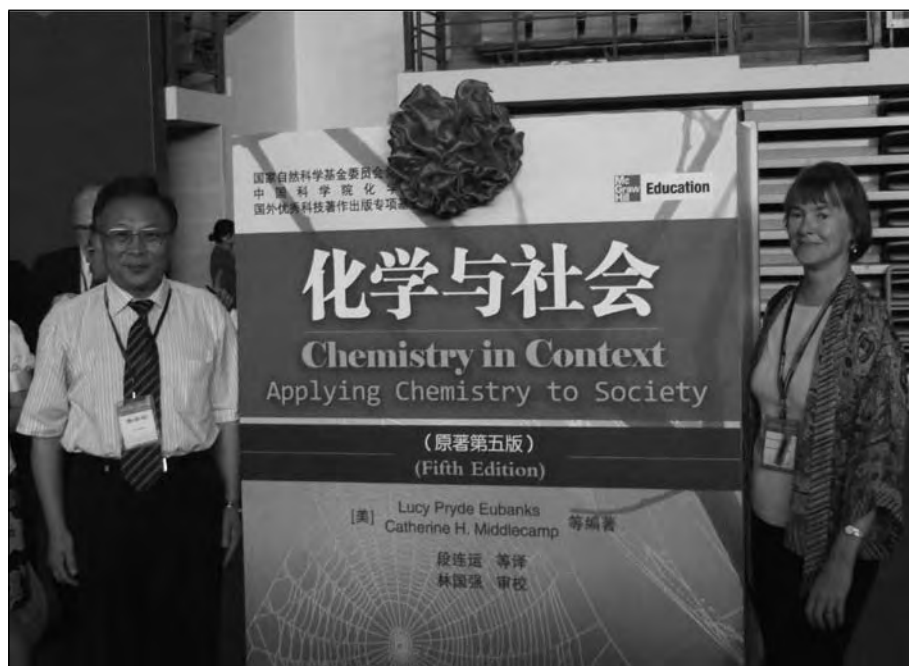
We have begun in earnest to make new web pages for the demo lab web site. It is a monumental task, considering that each demo has its own page, and we do a lot of demos. This one will have a search function with keywords when it is complete. All in all, it has been a great year for the demo lab.

Bob McMahon presented invited lectures at the International Workshop on Quantum Atomic and Molecular Tunneling (Houston, TX), the Second Workshop on Titan – Observations, Experiments, Computations, and Modeling (Miami, FL), the Journal of Organic Chemistry Editor's Symposium on Organic Chemistry (Park City, UT), and the International Symposium on Organic Free Radicals (Heron Island, Australia). Bob continues as an Associate Editor for the Journal of Organic Chemistry and a member of the Executive Committee of the ACS Division of Organic Chemistry.

Cathy Middlecamp sent pictures (below) from her trip to Tianjin, China, in July 2008. As part of the ceremonies for the 26th Chinese Chemical Society Congress, the new Chinese edition of Chemistry in Context was unveiled. Chemistry in Context is a project of the ACS; Cathy is the Editor-

in-Chief for the upcoming 7th edition, and served on the author team of the third through sixth editions. The book teaches chemistry through real-world topics such as air quality, global climate change, and nuclear energy. **Bruce Bursten** (PhD '78, Fenske, current President of the ACS) made remarks at the opening ceremony: "As ACS president and a world citizen, I passionately believe we need to orient our future collaboration efforts to assure that chemistry contributes to solving the world's most vexing current problems relating to sustainability and energy, food, and water."

Tom Record wrote about his research program: Greetings from our '85 wing laboratory, where a lot has been going on in the calm before the storm of demolishing the '50's wing and building the new tower for people in this wing and our medical school biochemistry colleagues. Steered by senior members **Mike Capp**, **Ruth Saecker**, **Irina Shkel** and me, a near-tidal wave of six graduate students, one postdoc, and three undergraduates have finished in the last year and a half. In the process, they have greatly advanced our understanding of how E. coli RNA polymerase opens promoter DNA to initiate transcription, how solutes and salts affect biopolymer processes including DNA wrapping on protein surfaces and coupled folding of protein surface loops on DNA, and how E. coli functions as a chemical and osmotic system.



Carrie Davis (Biochemistry PhD '07) started this recent wave of graduates; her research used DNA footprinting and kinetic studies to characterize the structure and function of the extensive wrapping (100 bp) of promoter DNA on RNA polymerase in an early intermediate in the mechanism of forming the transcriptionally-competent open complex. Carrie is now studying HIV reverse transcriptase as a postdoc with Stephen Hughes at the National Cancer Institute in Frederick, Maryland. **Kirk Vander Meulen** characterized DNA wrapping for his Biochemistry PhD ('07), using Integration Host Factor (IHF) as the protein and fluorescence (FRET) and titration microcalorimetry as techniques. Kirk moved to a postdoc with Sam Butcher in the newer building. Recent Physical Chemistry PhD graduates are **Wayne Kontur** ('06) and **Laurel Pegram** ('07). Wayne characterized DNA opening and other large-scale conformational changes in the steps of open complex formation by RNA polymerase, and is now a Biofuels postdoc across Linden Drive in Bacteriology with **Tim Donohue**. Laurel discovered a straightforward but powerful quantitative method of predicting or interpreting Hofmeister effects of salts on protein processes, using model compound data and structural information about the protein surface buried or exposed to solvent in the process. Laurel is staying on as a postdoc to continue this very productive research. **Michael Konopka**, a PhD ('06) with **Jim Weissshaar** in Chemistry, stayed for a short postdoc in our lab to use recovery of GFP fluorescence after photobleaching (FRAP) to study diffusion of GFP and characterize crowding and confinement effects in osmotically stressed *E. coli*. Michael is now a postdoc at the University of Washington, Seattle. **Jonathan Cannon** obtained his PhD in Biophysics ('06) for his research into the interactions of denaturants and osmolytes (stabilizers) with protein surfaces, and the interpretation or prediction of these

effects in terms of structure. Jonathan is now a postdoc at Case-Western Reserve University. Left behind, in addition to many lab books and good memories, are many papers to write. In addition to these PhD graduates, three very talented Biochemistry undergraduates, **Kevin Beier**, **Kate Engel**, and **Sara Heitkamp**, finished their undergraduate research projects (on IHF, RNA polymerase, and lac repressor, respectively) and headed for graduate school (to Harvard, Berkeley and Yale, respectively). Left behind are more good memories and more papers to write.

Our creative, dedicated and hard-working senior members are **Ruth Saecker** (RNA polymerase-promoter mechanism and other protein interactions), **Irina Shkel** (analysis of GFP diffusion in vivo and salt effects on biopolymer processes in vitro), and **Mike Capp** (solute-biopolymer interactions, solute effects on biopolymer processes, and jack of all trades as well as lab manager). Senior scientist **Charles Anderson** (theory of solute and salt effects) transitioned to emeritus status. My election to the American Academy of Arts and Sciences and selection as a fellow of the Biophysical Society honor our collective accomplishments as a lab.

Hans Reich sent the following picture from the Spring ACS Meeting in New Orleans. Hans and his wife **Ieva Reich**, **Chuck** and **Martha Casey** and **Steve** and **Adrian Nelsen** had dinner with **Barry** and **Susan Trost**. Barry Trost was a faculty member at Wisconsin from 1965-1984, and chair

from 1980-1982. He has been at Stanford since 1987, and the Tamaki Professor of Humanities and Sciences since 1990.

It was announced on June 9, 2008 that Third Wave Technologies, Inc. would be acquired by Hologic, Inc. for a purchase price of \$11.25 per share, or approximately \$580 million in value. Third Wave was co-founded in 1993 by **Lloyd M. Smith** (UW Chemistry), along with **Jim Dahlberg** (UW Biomolecular Chemistry) and **Lance Fors**, a friend of Lloyd's from his postdoc at Caltech in the '80s. The company developed a discovery from the Dahlberg laboratory of a previously unknown enzymatic activity in which the enzyme specifically recognizes and cleaves DNA molecules with a particular secondary structure. This activity served as the basis for development of the "Invader" assay, in which short synthetic DNA molecules referred to as "oligonucleotides" are added to a sample containing a DNA target molecule of interest. Formation of the correct secondary structure and subsequent cleavage only occurs for the correct target sequence, but not for other sequences differing by as little as a single nucleotide.

Third Wave was the first company to come out of the University of Wisconsin in which WARF took an equity position in lieu of licensing fees. This agreement has served as a template for many subsequent WARF agreements with over 20 UW spin-off companies, a situation that has helped to lead to the burgeoning growth in Madison-based high technology companies over the past decade.

The company initially funded its growth primarily through government grants such as the SBIR and ATP programs. Its first external funding was provided by Pro-mega Corporation, followed by an investment from Madison-based Venture Investors of Wisconsin, at that time the only venture capital firm in Wisconsin.



Third Wave executed an IPO on Nasdaq in 2001 and has operated as a public entity since that time. It had annual revenues of approximately \$30 million in 2007, primarily from products for human genetic testing for conditions such as Cystic Fibrosis, Hepatitis C, cardiovascular risk and other diseases. The company recently submitted to the U.S. Food and Drug Administration (FDA) pre-market approval (PMA) applications for two human papilloma virus, or HPV, tests. These submissions are based on a successfully completed clinical trial. **Jack Cumming**, Chairman and Chief Executive Officer of Hologic, said: "The combination of Hologic and Third Wave brings together two great companies that employ complementary technologies but share a common mission: to help save the lives of women."

In April 2008, shortly after his 80th birthday, **Bob West** was appointed in ceremonies in Tokyo Japan as an Honorary Member of the Japan Chemical Society. He also spoke at a symposium and banquet in his honor attended by, among others, 24 of his former students and postdocs. Some of them have now retired as leading professors and scientists; the others are active and productive professors or industrial researchers. Bob addressed them first in Japanese and then in English. Here are his words in English:

"I am tremendously proud of all the fine work my former students and postdoctoral fellows have done. They have become the true leaders of chemistry in Japan, and they have shaped the entire development of chemistry not only in Japan, but internationally. And now in 2008, Japan leads the world in the field of organosilicon chemistry. This is due to the excellent, groundbreaking work done by you, the silicon chemists of Japan."

Bob's collaboration with Japan began in 1965 with a 5-month Fulbright Fellowship at Kyoto University in the laboratories of Makoto Kumada, an early famous researcher in silicon chemistry. Since then Bob has had more than two dozen Japanese researchers carry out graduate and postdoctoral research in his labs here and has returned to Japan for more than 20 brief and sometimes extended stays at Tohoku University, Gunma University, Tokyo Science University, Kyoto University, Toyohashi University, and Tsukuba University.



Bob West receiving honorary membership in the Japan Chemical Society from the President, Prof. J. Nishimura.

Bob is only the thirteenth foreigner to be made an honorary member of the Japan Chemical Society. Half of the other foreign members are Nobel Laureates, so he is in good company.

Arun Yethiraj reports that last year he became senior editor of the *Journal of Physical Chemistry*. TCI also had a first annual TCI canoe trip.

Howard Zimmerman has organized a Pacificchem 2010 Symposium on "Mechanistic Organic Photochemistry". The Pacificchem Meetings are held every five years in Honolulu and include a large number of symposia on different subjects. The Pacificchem meetings include speakers from the U.S., Japan, Canada and "Pacific-Rim" countries in general. This will be the sixth Symposium organized by Zimmerman.

News from the Glass Shop, Room 3201

The glass shop continues to provide the chemistry department with instruments and tools that extend the department's and university's research capabilities.

Tracy Drier remains active in the American Scientific Glassblowers' Society (ASGS) on a local and national level. He is the chairman of the Midwest ASGS section, and the national Questions and Answers Committee. This spring Tracy held the regional meeting here in the department glass shop. This event brings together area glassblowers for a day of demonstrations and information sharing.

The national ASGS symposium was held in Atlantic City, NJ in June. Tracy did a hands-on demonstration showing how to extend the length of coiled glass tubing. He also presented a poster on 'The design and Construction of a Borosilicate Gastrointestinal Tract (GI) Digester'. This project was based on a research project of **Kanokwan Tandee** (Steele, Food Science). **Andy Schmitt** (Jin) was instrumental in helping to prepare the poster.

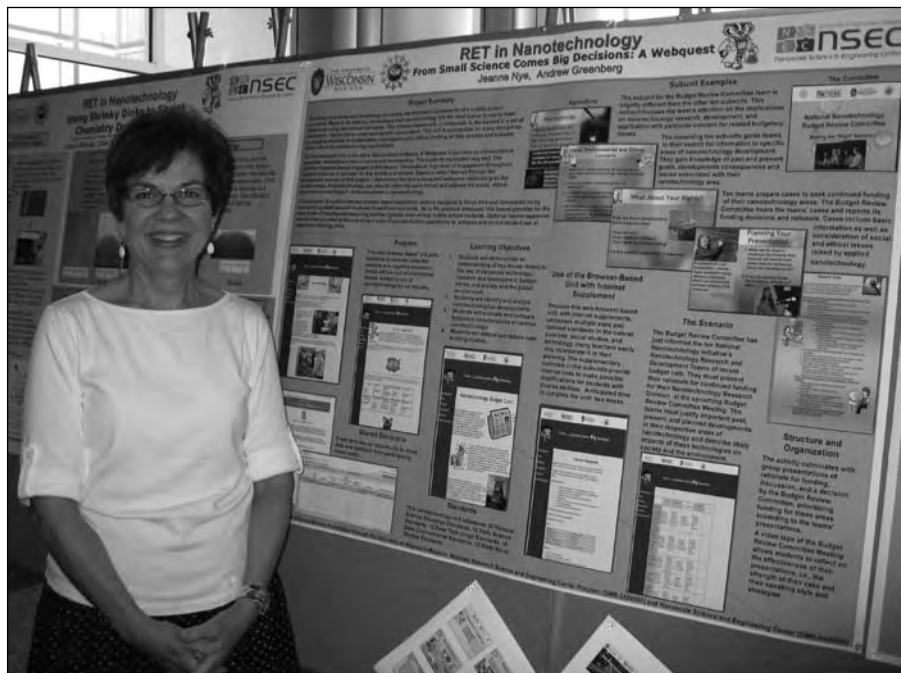
Tracy co-authored a paper with Kansas State University glassblower **Jim Hodgson** on the finer points of extending the length of wound glass coils. This, along with the cover photograph, will be highlighted in the August issue of the scientific glassblowers' journal, *Fusion*.

The glass shop was involved in an outreach and charity event this summer with the Wisconsin Alliance for Fire Safety's annual summer camp for burn injured youth. The camp provides a summer camping experience for Wisconsin youth who have endured significant burn injuries. Tracy himself is a survivor of serious childhood burns. He spent the day demonstrating artistic glassblowing for the kids as part of a large carnival program. The children entered their names to win the variety of pieces produced. We received feedback from the event coordinator saying that the glassblowing demonstration was well received by all age groups.



Nanoscale Science and Engineering Center Outreach

The Institute for Chemical Education (ICE), led by Director **John Moore** and Outreach Coordinator **Andrew Greenberg**, continued its role organizing the education and outreach activities of the Nanoscale Science and Engineering Center (NSEC). The NSEC, in its fourth of a five year \$13 million grant, is comprised of four interdisciplinary research thrusts and the education and outreach group that explore complementary concepts around the central theme of self-assembly at the nanoscale. The NSEC education and outreach program aims to cultivate the next generation of nanoscale science and engineering experts, building on UW's vast experience in science education and infrastructure provided by ICE. Chemistry graduate students and staff guide all the NSEC education outreach programs.



Jeanne Nye, summer 2007 RET program

SCI ENCountErs

With continued support from NSEC, NSF, and the Boys and Girls Clubs of Dane County, the 2007-2008 academic year was a huge success for the after school science program, SCI ENCountErs. SCI ENCountErs, organized by ICE outreach specialist **Jenny Powell** and ICE research intern **Anna Dierking**, had over 65 students from Dane County Boys and Girls Clubs participate in the program while more than 20 UW undergraduates and graduate students volunteered to guide the students through inquiry based activities.

Highlights of the year included design and construction of solar cookers and pin-hole viewers, electromagnetic generators, investigating density and solubility of liquids and solids, lessons on carbon allotropes, and even the classic volcano experiment.



Research Experience for Teachers

ICE and the NSEC continued to host its annual Research Experience for Teachers (RET) program. Through the program the ICE and NSEC worked with two local Wisconsin teachers. **Jeanne Nye**, a 7th grade teacher at Lake Mills Middle School, returned for her third summer with the NSEC. Jeanne completed her innovative webquest project she started during the summer 2007 RET program. Jeanne's "From Small Science Comes Big Decisions: A Nanoscience Webquest" asks middle school students to weigh the economic, societal, and environmental impacts of nanoscience research and make decisions about which research areas should receive funds through the National Nanotechnology Initiative. Joining Jeanne was **Jason Strauss**, a chemistry teacher at Verona High School. Jason worked with **Andrew Greenberg** and **Chad Wilkinson** to build microfluidic devices from Shinky Dinks for use in high school introductory chemistry labs. Jason will continue the project as a discovery lab with his students at Verona High School at the end of 2008-2009 academic year.

Nanoscience Teacher Workshops

ICE along with museum partner, Discovery Center in Rockford, IL, taught a second round of our successful ICE teacher workshop on integrating nanoscience in the middle and high school curriculum. Andrew Greenberg taught the two day workshop developed by NSEC and ICE teacher fellow **Jeanine Gelhaus**, a 2008 winner of a Presidential Teacher Award. The workshop attracted 16 teachers from the Rockford and Madison areas.

Boys and Girls Club Members Participate in a SCI ENCountErs

Nanoscience for Teachers: an Online Professional Development Course

Dr. Janice Hall Tomasik, now a faculty member at Central Michigan University, continued her offering of the online nanoscience course for teachers she designed as a graduate student with ICE. Geared towards high school or middle school science teachers, the online course encourages participants to incorporate nanoscience into their curriculum. The course covers nine topics about nanoscience, ranging from the synthesis and manipulation of nanomaterials to societal implications and environmental impacts of nanotechnology. Summer 2008 served as the fourth offering of the course; the class was also offered during the summer 2006, spring 2007, and summer 2007 semesters. To date, 38 teachers from Wisconsin, Illinois, Florida, Texas, Vermont, Massachusetts, Washington, and New York have participated to learn about nanoscience and how to include it in their classrooms. During the course, teachers chatted online each week with guest nanoscientists from the NSEC, including chemistry faculty **Samuel H. Gellman**, **Padma Gopalan**, **Robert Hamers**, **Song Jin**, and **Mahesh Mahanthappa**. As a final project, educators developed nanoscience teaching modules to take back to their classrooms.



Nano Days Celebration

The NSEC helped to celebrate the inaugural Nanodays, the NSF-funded NISE network's week-long celebration of nanoscale science, by presenting hands-on nanoscience activities to local middle school students. The hands-on nanoscience activity, Nanotechnology: from Viruses to Wires, was created by educational outreach specialists **Jenny S. Powell** and **Anna Rose A. Dierking**. The activity was inspired by current research that used genetically engineered viruses as templates to create nanowires.

The goal of the activity was to have students build their own macroscale nanowire with the help of their classmates. Students were asked to "genetically engineer" their own viruses made of pre-cut cardboard poster tubes that were cut specifically so each student's virus would connect on either side to a second student's virus in the class. Students then made a macroscale nanowire by connecting their viruses together like puzzle pieces to form a long cardboard tube. Finally, students covered their virus chain with aluminum foil to make it a "conductive" wire. Over 200 local students participated with the help of undergraduate volunteers; **Shuhan He**, **Nicki Wenner**, **Maddie Kohs**, **Abby Safranski** and **Brittland DeKorver**.

Independent Laboratory Access for the Blind Conference

ICE and NSEC, with support from the UW-Madison Eye Research Institute, hosted the third annual Independent Laboratory Access for the Blind (ILAB) conference. The focus of the ILAB conference was teaching, learning and practicing science for students

with visual impairments. The conference attracted 40 participants who spent the morning learning about current adaptive technologies and teaching methodologies through hands-on workshops with experienced science educators of students with visual impairments. The morning session included workshops on chemistry and physics low cost adaptations, talking and auditory tools to assist students in the chemistry laboratory, and adaptations for teaching astronomy. The afternoon session included talks from leaders in the field and panel discussions by students with visual impairments and their teachers. The afternoon talks included a presentation by **Andrew Greenberg** on visualizing nanoscale images through touch.



Research Experience for Undergraduates

ICE was host to two Research Experience for Undergraduates (REU) programs during summer 2008. **Andrew Greenberg** continued to serve as director of the NSEC-and-MRSEC supported Research Experience for Undergraduates in Nanotechnology program. Andrew also initiated and directed the new Research Experience for Undergraduates in Chemistry. Both REU programs participated in the Graduate School supported Summer Research Opportunities Program, a consortium of 13 summer research programs on the UW-Madison campus with a common goal of increasing diversity in the graduate student pool.

Together the two programs attracted 14 students from around the United States and Puerto Rico to spend 10 weeks doing research in labs on the UW-Madison campus. Through the two REU programs the chemistry department hosted 10 students in department labs. Faculty who hosted students included **Sam Gellman**, **Padma Gopalan**, **David Schwartz**, **Silvia Cavagnero**, **Mahesh Mahanthappa**, **Bob Hamers**, **Song Jin**, **Helen Blackwell**, **Tehshik Yoon**, and **Laura Kiessling**. REU Students worked on individual research projects under the guidance of graduate students in their assigned laboratories; graduate student volunteers included **Matt Windsor**, **Kristy Kounovsky**, **Corrine Lispcomb**, **Jeremy Higgins**, **Christine McInnis**, **Tamas Benkovics**, and **Becca Splain**.



REU in Chemistry and REU in Nanotechnology Students

Activities for the summer include a weekly lunch seminar series including talks by chemistry faculty **Marty Zan- ni**, **Ned Sibert**, **Bassam Shakhshiri**, **Sam Gellman**, **Bob West**, **Bob Mc- Mahon**, **Lloyd Smith**, **Jim Weisshaar** and **Clark Landis**. Additional activities included a trip to Devil's Lake with REU students from the University of Chicago, a special seminar on applying and surviving in graduate school hosted by graduate students **Mandy Musch**, **Olivia Johnson**, **Chris Bates**, and **Nickeisha Stephenson**. The summer culminated with a department wide poster session where students presented the results from their summer research.



In addition to the traditional *Fun with Chemistry*, *Fun with Forensics* and *Fun with Inventions* camps offered through ICE a new camp, *The Science behind the Superhero*, was an option during the summer of 2008. Nearly 200 5-8th graders from Madison and surrounding communities participated in the camps. Ten undergraduate students led groups of 4-5 campers during each of the four, week-long camps.

During the *Superhero* camp students witnessed the effects of radiation on UV-sensitive yeast, learned about mutations in DNA, tested various materials for resistance to heat, cold, acid and more. The students were introduced to chromatography while making superhero capes and also learned about the five main senses. In addition to the laboratory experience, students developed their own superhero and used science to explain the characteristics of their superhero powers, senses and costume materials. At the end of the week the students acted in short skits which they wrote. In each skit a group of superheroes (the campers) use their scientific knowledge to battle and defeat an evil villain (their group leader).

The camps enjoyed another successful summer thanks to staff members **Cheryl Hansen**, **Tom Ladell**, **Jim Maynard**, **Bruce Goldade**, and **Jenny Powell**.

SPICE is a registered student organization staffed by undergraduate students who perform chemistry demonstration shows, lead hands-on activities in the community, and develop and facilitate activities during National Chemistry Week. During the 2007-2008 academic year the students worked together to create a constitution for the organization in addition to performing nearly 20 demonstration shows. SPICE members also participated in several Family Science Nights in the community, leading parents and their children through hands-on science activities.



Campers Participate in Science of Superheroes Camp



The Wisconsin local section of the American Chemical Society (ACS) and Students Participating in Chemical Education (SPICE) celebrated "The Many Faces of Chemistry" 2008 National Chemistry Week with events at local middle schools and on campus.

Volunteers visited fifteen 7th grade classrooms to inform students of several possible careers as a chemist and lead them in hands-on activities. SPICE member **Sarah Schmid** developed a murder mystery scenario to highlight the life of a Forensic Chemist. Sarah created a message using "invisible ink" which the students had to uncover using a base solution and decode using the periodic table and the code breaker. A career in polymer chemistry was highlighted while preparing gluep, always a favorite among the youth. Students also extracted iron from cereal to demonstrate a career in food chemistry.

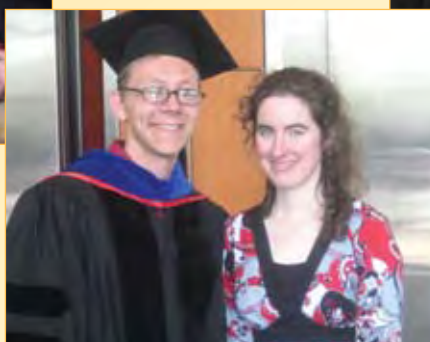
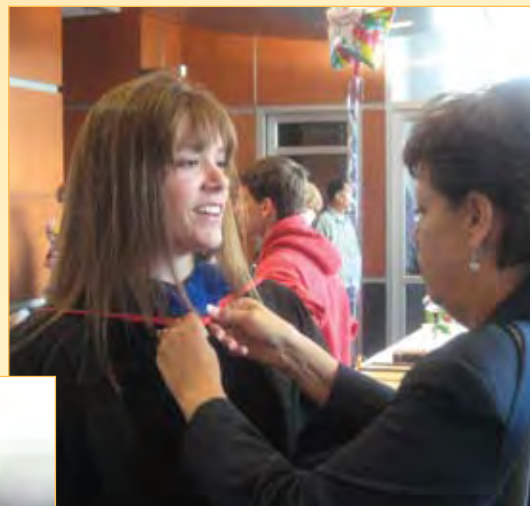
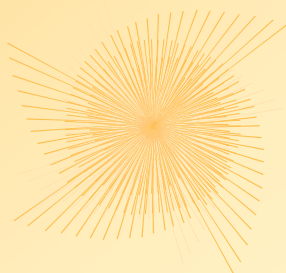
In addition to the activities held at local middle schools the SPICE students presented a demonstration show to the families at Eagle Heights campus apartments.

NCW 2008 was well staffed with 25 volunteers including undergraduates, graduates and science professionals. Nearly 350 community members, pre-K through adults, enjoyed celebration of "The Many Faces of Chemistry."



Student Participating in National Chemistry Week Activities

The Department held an informal reception for the graduate students who would graduate in Spring or Summer 2008. 35 students received PhD degrees at the Spring Commencement held on May, 16, 2008; many of them, their families and their research mentors celebrated with Charman Bob Hamers.



The Chemistry Department sponsored a reception for faculty, alumni and friends at the Spring 2008 ACS Meeting in New Orleans.



We expect to repeat the reception at the Spring 2009 meeting in Salt Lake City.





2007
TREICHEL SYMPOSIUM
on
*Chemical Education
and Careers*

Friday, October 12, 2007

Room 1315 - Seminar Hall
Chemistry Department
University of Wisconsin - Madison



Wisconsin Initiative for Science Literacy

WISL, under the direction of Professor Bassam Shkhashiri, sponsors many programs designed to raise the level of science literacy among all ages and encourage scientists to communicate with the public.

SCIENCE, ARTS and the HUMANITIES

WISL has always promoted cooperation among science, the arts and humanities, believing that the perceived differences between them are exaggerated. Assistant Professor of Chemistry and WISL Fellow **John Berry** proved the connection when he performed both a chemistry demonstration and Bach's Cello Suite in G Major (not simultaneously) at Villager Mall last Spring. Professor Berry earned two undergraduate degrees simultaneously, in music and chemistry, at Virginia Tech, graduating in 2000 with a B.A. in music theory and composition and a B.S. in Chemistry. He earned his PhD in Chemistry from Texas A&M in 2004.



Children at College for Kids are excited by the Briggs-Rauscher oscillating reaction. The liquid being stirred in the beaker changes suddenly from dark blue to yellow and then back. The reaction was discovered by the two high school teachers for whom it is named. It took chemists a long time to figure out exactly what happens in the complicated reaction.

Even his performances at Villager Mall connected chemistry and art with the same theme. Professor Berry performed the Briggs-Rauscher oscillating reaction, in which a liquid being stirred in a beaker changes color suddenly from dark blue to yellow to colorless and then back to dark blue. His music selection, played on the viola, features many oscillating movements across different strings, as if each string has its own color and the sound is an oscillation of colors.



Assistant Chemistry Professor and WISL Fellow John Berry poses with his viola in front of a chalkboard with equations from his group's research.

Professor Berry says the link between music and chemistry is creativity. As a musician, he enjoys composition, making new music. As a chemist, he specializes in synthetic inorganic chemistry, making new molecules. He sees music and chemistry as two forms of creativity, in each case finding connections between things that didn't seem to have any connection, thereby making things that didn't exist before. Professor Berry's chemistry research, on using metal-metal bonds to make new transition metal compounds, is basic research with no immediate application. He says his research is abstract, guided by creativity rather than any potential application, though Professor Berry quickly adds that he would recognize something useful if it's discovered.

Professor Berry says music and chemistry are equally satisfying, but not equally marketable. While a few musicians become very wealthy, it's a very crowded field and Professor Berry realized early on that he was not likely to make a living as a musician, and he says chemistry has a greater effect on society. "I love music and couldn't live without it," he says, "but in directly affecting lives, there's more promise in chemistry—in fact, chemistry has already changed many lives for the better." While music stimulates a different emotional response than science—Professor Berry says he's never had an emotional reaction to a chemistry paper—he says the satisfaction and the thrill of discovery in science and music are similar. "I look at a new chemical reaction and think it's really intriguing," he says, "the same sort of feeling I get listening to a Bach fugue, the sort of structured and complex type of music that I like."

Taking two degrees simultaneously isn't easy. Professor Berry finished his double degrees in just four years and says it was sometimes a little painful. Some semesters he took more than 20 credits to meet the requirements despite being able to skip some beginning chemistry classes due to advanced placement high school courses and testing out of some music courses (he started playing the violin at age 10). But he says Virginia Tech and the UW-Madison are among the few schools that make such double degrees and double majors possible.



At Professor Shkhashiri's annual **Christmas Lecture**, students **Rucha Trivedi** on clarinet, **Elise Larson** on oboe, and **Nora Hickey** on bassoon play a selection and participate in a chemical demonstration.

While taking two degrees is rare, Professor Berry says the combination of science and art in people's lives is not rare at all. He says most people can participate in some type of creative outlet and many science faculty members play instruments or have other interests in the arts. (Emeritus Chemistry **Professor Irving Shain**, a former UW-Madison Chancellor, considered a career in music before deciding on Chemistry. Former **Chancellor John Wiley**, an Engineering Professor, is an avid art collector, and WISL Associate Director **Dr. Rodney Schreiner** (MS '73, PhD '81) is an accomplished pianist and also an avid art collector.

Music is always included in Professor Shkhashiri's annual Christmas Lecture. In 2007, three young students each performed a chemical demonstration and demonstrated her instrument, and then the three played a selection together, **Rucha Trivedi** (BA '11 Music) on clarinet, **Elise Larson** (BS '11 Astrophysics) on oboe, and **Nora Hickey** on bassoon (Nora was a senior at McFarland High School, a member of the Wisconsin Youth Symphony Orchestra and a prize winner in the Wisconsin Science Olympiad). In addition, **Allan Naplan**, General Director of the Madison Opera and a former professional opera singer, sang an aria and performed a musical number on tuned glass beakers. He also demonstrated the effect on the sound of a bicycle horn when squeezed in a plastic bag filled with helium instead of air.

In August, WISL staff provided chemical demonstrations prior to the annual Concert in the Park. The concert, sponsored by the Gialamas Company, was performed by the Wisconsin Chamber Orchestra under the direction of **Maestro Andrew Sewell**, followed by fireworks. The orchestra players included violinist **Edith Hines** who, while in graduate school, was part of WISL's Science Is Fun program.



At the Concert in the Park, Senior Scientist **Rodney Schreiner** demonstrates one of the qualities of sound. He adds sections to the flute, lowering its pitch.

WOMEN IN SCIENCE

Traditionally, girls and young women have not been encouraged to pursue science and, as a result, the contribution of women to science is not as great as it could or should be. WISL encourages the participation of girls and women in science by making them aware of role models and examining efforts of those models in the advancement of science. To promote this goal, WISL sponsored a discussion with

faculty and graduate students by **Professor Jo Handelsman** concerning her book *Scientific Teaching* (W. H. Freeman Company, December 2006), which calls into question the efficacy of the usual lecture/discussion mode of teaching. Professor Handelsman chairs the UW-Madison Bacteriology Department and holds the prestigious Howard Hughes Medical Institute professorship.

WISL also sponsored a public lecture by **Janet Shibley Hyde**, Professor of Psychology and Women's Studies, on the topic, "Men Are from Earth, Women Are from Earth: Science vs. the Media on Gender Differences." Professor Hyde's research, funded by the National Science Foundation, focuses on gender differences in mathematics performance and motivating adolescents in mathematics and science. While the media portray boys and girls as vastly different in areas such as math, verbal ability and self-esteem, Professor Hyde's analysis of mathematics performance by more than 7 million American youth found little difference between the sexes.

SCIENCE IN THE CITY

The purpose of the Science in the City program is to improve the quality of science education in urban areas, especially for minority students, where it is too often deficient. The program is designed to involve not only students and teachers, but counselors, administrators, parents and guardians, families, school boards and the community at large. By including entire communities in science education, Science in the City addresses the problems of lack of interest, understanding and support that often exist in urban schools. The goal is to build home and community involvement through the use of innovative, complementary components.

WISL again provided summer chemistry courses for inner city students from Madison, Milwaukee, Kenosha, Racine and other school systems as part of the PEOPLE Program (Precollege Enrichment Opportunity Program for Learning Excellence). Dr. Rodney Schreiner developed the curriculum. WISL Senior Outreach Specialist Dr. Linda Zelewski (PhD '99 Water Chemistry) led the course presentations along with Science is Fun student demonstrators. Junior high students in the PEOPLE Program attended

three hours of chemistry laboratory instruction every morning for three weeks and high school students attended two hours a day for one week. In addition to the course content, the program is intended to help students develop the habits and discipline to become good college students.



Brittany Ardrey (top) and **Andrew Aring** (bottom) help PEOPLE Program students who are making chemical batteries.

One of the teaching assistants for the 2008 PEOPLE Program chemistry courses is an alumna of the PEOPLE Program. **Brittany Ardrey** (BA '11 Political Science) participated in the program as a senior at Janesville Craig High School. Brittany is a senior at UW-Madison in 2008-2009, majoring in urban policy through the political science department. She took Chem 103 and 104, then went into engineering before creating her own major, a mix of political science and engineering. She says both are needed for successful urban planning, to deal with both the human and physical elements. Brittany is an undergraduate student helper in the chemistry department where she assists in setting up demonstrations for Professor Shkhashiri and other faculty and staff.

Brittany has worked with the Wisconsin Black Engineering Students Society, affiliated with the National Society of Black Engineers, to encourage minority students to go to college and become engineers. During her career at UW-Madison, Brittany has

mentored 36 high school students (20 boys and 16 girls), each of whom had 18 visits to campus. She also goes to local high schools to tell students about the importance of education and available opportunities. Her success rate is high. Six of her students graduated from high school this spring. Four have been accepted to the UW-Madison and two have been accepted to other schools. Brittany says, "It's important for minority students to see someone who looks like them doing well, succeeding in school and in professions, having nice cars and houses and having something to strive for."

Brittany has also participated in the Academic Tech Bowl, a preparation for the Graduate Record Exam, which covers computer science, physics, chemistry, fundamentals of engineering and math. It's a two day process starting with a written exam. Top scorers then go on to a Jeopardy-type competition with other teams.

Brittany would like to go to graduate school and become an urban planner. Her vision is to work for a local government, setting up a city infrastructure which includes affordable housing for anyone with a sufficient income.

Also serving as teaching assistants for the PEOPLE Program were **Wenlu Gu** (BS '11) and **Amanda Turek** (BS '09).

In addition to the PEOPLE Program, WISL also participated in programs at Vil-lager Mall on Madison's South side, which are designed to bring science, as well as the arts and humanities, to disadvantaged children and their families.

SCIENCE IS FUN STUDENT PUBLIC PRESENTATIONS

A corps of undergraduate students again participated in Science is Fun demonstrations during the 2007-2008 school year, with 21 students participating in demonstrations including appearances at schools, community events and University programs such as Science Expeditions and the Waisman Center Children's Theater. The students, 11 women and 10 men, are mostly chemistry majors, though there are a few with other majors. The students earn one credit per semester in Chemistry 299 or 699, directed or independent study, in Professor Shakhshiri's group.



Children of all ages are fascinated by the demonstrations at the hands-on table at Science Expeditions. This is the dancing raisins demonstration. When raisins are submerged in soda, the irregularities on their surfaces serve as focal points for carbon dioxide to come out of solution and bubbles of CO₂ form on the raisins until they achieve negative buoyancy and rise to the surface. At the surface, the bubbles burst and the raisins sink to repeat the cycle, dancing up and down in the beaker.

A veteran student demonstrator, **Andrew Aring** (BS '07, Chemistry), who graduated in December, served as a teaching assistant for Professor Shakhshiri's Chem 104 last semester and for the PEOPLE Program, and is moving on to graduate school at the University of Idaho. Even though Andrew attended a large suburban high school, Waukesha North, near Milwaukee, he says he wasn't prepared for college. Though Andrew took advanced placement courses in high school, he says he didn't have to learn to study and didn't realize what it took to excel in college. As a junior in high school, Andrew took a one semester introduction to organic chemistry, and had to drive across town to another school to do it. Andrew thinks Americans have gotten complacent about education and that people in other countries want it more. Andrew says taking just one or two semesters of organic chemistry involves mostly memorization, and adds: "Those who don't hate it say that at some point organic chemistry just clicks and starts to make sense as students begin to recognize patterns." Andrew said that epiphany happened to him about half way through his second semester. Andrew also calls for more math instruction, starting in grade school. He says students have to start with algebra in sixth grade in order to get to calculus in high school.

Andrew's hobbies include snowboarding and frisbee golf. His choice of the University

of Idaho was influenced by its proximity to snowboarding hills, and he just likes the Northwest. Andrew's favorite author is fantasy writer Katherine Kurtz, who has a degree in Chemistry.

Andrew hopes to earn his Ph.D. in chemistry and go into academic research. "I want to synthesize things no one else has or find better ways to do it, adding to the general knowledge of humanity," he says. Andrew did undergraduate research in Professor Howard Zimmerman's laboratory.

Supervising the WISL Science is Fun demonstrators during the last school year was WISL Senior Outreach Specialist Dr. Linda Zelewski, who also guest lectured for Professor Shakhshiri and supervised the chemistry courses for the PEOPLE Program. Linda spent the previous year teaching at Verona High School in Wisconsin. Since getting her Ph.D., Linda has earned Wisconsin teaching certificates for grades 6-12 in chemistry, biology, environmental science and broad field science (that's four separate certificates).

Linda's educational philosophy is not to tell students about chemistry, but to let them discover it. "That way, they are motivated to find out why things happen," she says. "Not only does the information stick better, it makes the subject more interesting and gives them a better understanding of what science is, not a body of facts but a process of investigation."

At Science Expeditions, **Dr. Linda Zelewski** displays a dollar bill that seems to be burning. She borrowed the bill from a member of the audience and, after dipping it in a clear and colorless liquid, she set the bill on fire. The liquid in this demonstration is half isopropyl alcohol and half water. The alcohol burns, but the water keeps the bill from igniting and it is returned, slightly damp but otherwise unharmed, to its owner.



(continued on page 37...)

Keeping Current with Chemistry Information

How do you stay on top of the literature in your field? This past academic year, I spoke to new graduate students about email alerts and RSS feeds as part of the Chemistry 901 seminar series.

Many article databases (e.g. SciFinder, PubMed, Web of Science) and journal publishers (e.g. ACS, RSC) offer personal accounts for free email search alerts and RSS feeds. These tools allow you to automatically receive notification of newly published information. Examples of the types of searches you might receive from an email search alert or RSS feed include:

- Current works by an author or from an organization or institution
- New research on a topic
- Journal table of contents
- Articles that cite your own articles or an article of interest to you

Email Search Alerts

Email search alerts have been around for a long time. The gold standard for weekly alerts used to be ISI Current Contents. Now most article databases (and some publishers) provide the ability to set up a search profile that automatically runs when the database is updated. The results are emailed to the email address(es) established in the profile. To determine if your database offers email search alerts, look for the ability to set up a personal profile or save search results.

Advantages of using an article database search alert include:

- Article databases include more than one publisher.
- Article databases provide coverage of a wide subject area.



Email output can be formatted for import into a citation manager program such as EndNote, ProCite, or RefWorks.

Disadvantages of using an article database search alert include:

- You or your institution must have a subscription to the article database, except for publicly available databases like PubMed.
- Article databases may not be as up-to-date as the publisher's web site.
- Publication types of interest to you, such as patents, may not be indexed by the article database.

- Results may be too general or too specific, requiring revisions to the search strategy.
- The serendipity of discovery by browsing a journal's table of contents may be lost with keyword-dependent searching.

RSS Feeds

RSS stands for "Real Simple Syndication," a format for sharing web site content. You use an RSS feed reader to receive the information from your RSS feeds so you can browse the updated web site content without having to go to each web site. To determine if the journal or article database offers RSS feeds, look for an image such as  or .

Advantages of using an RSS feed include:

- You do not have to subscribe to the journal to receive an RSS feed.
- Publishers' RSS feeds are updated in real time.
- RSS feed readers can display graphic abstracts.

Disadvantages of using an RSS feed include:

- You or your institution must have a subscription (or single-use article payment account) to view the journal article content.
- RSS feed output is not formatted for import into a citation manager program such as EndNote, ProCite, or RefWorks.

There are several types of feed readers. Feed readers can be on your desk-top, web-based, or web-browser-specific. Popular readers include Bloglines, Google Reader, and web browser readers associated with Firefox and Safari. See the listing of RSS readers at **Open Directory Project:** http://www.dmoz.org/Computers/Software/Internet/Clients/WWW/Feed_Readers/

Selected Email Alerts/ RSS Feeds Services

ACS Noteworthy Chemistry.
<http://feeds.feedburner.com/ACSHeartCut>

**ACS Publications Alerting Services –
Email and RSS Feed.**
<http://pubs.acs.org/alerts/index.html>



**Emily Wixson, Chemistry Library/
Reference and Instruction**

Elsevier ScienceDirect.

<http://info.sciencedirect.com/using/personalization/>

National Institutes of Health Funding Opportunities.

http://grants.nih.gov/grants/guide/rss_info.htm

National Science Foundation RSS.

<http://www.nsf.gov/rss/>

PubMed My NCBI Account. Learn how to set up email alerts in your "My NCBI" account: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=helpmyncbi.chapter.MyNCBI>

RSC Journals Email Alerting Service.

http://www.rsc.org/Publishing/Journals/forms/ej_updateJoin.asp

RSC Journals RSS Feeds.

<http://www.rsc.org/Publishing/Technology/rss.asp>

GETTING STARTED/HELP

To take advantage of these "keeping current" methods, you will be required to log in or register yourself with the information provider. Once you establish your email alert or RSS feed, your only task is to read it! Contact your institution's library staff for alert services your institution may offer.

At the UW-Madison Chemistry Library, we offer free weekly email search alerts for faculty, staff and graduate students in the Chemistry Department. We also provide assistance and consultation in setting up search strategies for personal accounts and RSS feeds as well as instructions for managing the results with citation managers such as Endnote and RefWorks.

For more information about email search alerts, RSS feeds, or other questions about chemistry information, visit us on the web at <http://chemistry.library.wisc.edu/> or contact us by email at askchem@library.wisc.edu.



In Memoriam

Lloyd Willard Beck

(PhD '44, Wilds) of Versailles, KY, husband of Catherine Wagle Beck, died Tues., November 6, 2007, at the age of 88. Born in Batesville, IN, he was retired from Procter and Gamble where he worked in research and management. Survivors in addition to his wife of 61 years include two sons, Mitchell L. Beck of Crescent Springs, KY, Bradley J. Beck of Cincinnati, a daughter, Willa C. Thomas and her husband Joel of Versailles, KY, a sister, Caryl Miller of Indianapolis, seven grandchildren and one great grandchild. Memorial contributions are suggested for Alzheimer's research to the Sanders-Brown Center on Aging, 101 Sanders-Brown Building, 800 South Limestone Street, Lexington, KY 40536.

Margaret McLean Bender

Age 91, died peacefully at Capitol Lakes Terraces on Monday, April 28, 2008. She was preceded in death in 2004 by her husband, Emeritus Professor **Paul J. Bender** of the UW Chemistry Department, after 63 years of marriage. Dr. Margaret Bender was an Emeritus Senior Scientist in the Institute for Environmental Studies. She retired from the Institute at the UW Center for Climate Research in 1981. She was the Director of the UW Radiocarbon Laboratory from 1963 until her retirement. Dr. Bender was a member of Phi Beta Kappa, Sigma XI, and the American Association for the Advancement of Science. She was a pioneer in the field of radiocarbon dating and is widely recognized for her recognition of two distinct photosynthetic pathways through which carbon is utilized in tropical and prairie grasses. Her seminal paper describing these two pathways as C-3 for starch-accumulating gasses and as C-4 for fructosan-accumulating gasses has been widely quoted by researchers in all the scientific fields, such as anthropology, that require accurate dating of carbon-containing materials. Her publications while at the UW-Madison totaled 31 and were primarily related to the radiocarbon dating work. Dr. Bender graduated from Mount Holyoke

College magna cum laude in 1937, where she also received her master's degree and had four publications from her work with Professor Dorothy Hahn. Her Ph.D. was from Yale University in 1941 in organic chemistry with Werner Bergmann with whom she had three publications. She held an instructor appointment from 1941-1942 at Connecticut College for Women and a post-doctoral appointment at Yale University from 1942-1943. From 1943-1945, she held a post-doctoral appointment at the University of Wisconsin-Madison and a lecturer appointment from 1951-1970 with the UW Extension. Her primary teaching responsibilities were with students from the nursing program. She served as Director of the UW Radiocarbon Laboratory from 1963-1981. Margaret and Paul were integral to the development of the UW Chemistry Department and hosted many assistant professors and their families as they found their places in the Madison community. Margaret was particularly knowledgeable about plants and gardens, and many neighbors and colleagues were the recipients of garden plants, flowers, and vegetables for which Margaret could provide their botanical names. She was also a particular role model for women in science and was interviewed concerning her experiences in what was a primarily male environment in the early 1940s. Her thoughts and impressions were taped as part of a UW series "Women in Science and Engineering," that was developed by the UW-Madison Oral History Project as part of the archives section at Steenbock Memorial Library. Margaret is survived by four grand nieces, Vicki Smith of La Quinta, CA, Wilma Kahn of Kingwood, TX, Wini Mercer of Overland Park, KS., and Pam Conckle of Los Angeles, CA.

John Edwards Castle

(PhD '44, Adkins) died November 16, 2007, at the age of 88. John was a native of Minneapolis, MN, where he attended secondary school. He graduated from Carleton College in 1940 with a bachelor's degree in chemistry and received his PhD in chemistry in 1944 from the University of

Wisconsin. John was employed at the DuPont Company in Wilmington for 34 years, initially as a research chemist and ultimately in management in electrochemicals, energy and materials, and central research. During his career at DuPont, he published a variety of research papers in organic and biochemistry and obtained several patents on processes involving organonitrogen and fluorocarbon compounds. Following retirement from DuPont, John became an adjunct professor at the College of Marine Studies of the University of Delaware in Lewes, where he helped to invigorate programs in research and graduate education and did research on chitin in his own laboratory. During his life in the Wilmington area, John was a devoted participant in his resident community at Horseshoe Hill, an elder at Westminster Presbyterian Church and a member of the school board of the Alexis I. DuPont school system. John's final years were spent at Kendal at Longwood where he and his wife, Alice, became the heart of the amateur pottery community.

Janet Ellen Feitelson

(BA '37) died June 24, 2008, at the Fisher Home in Amherst, MA, after a period of declining health; she was 91. Born in West New York, NJ, February 28, 1917, to Annie (Landau) and Frank Pearlstein, she graduated from the University of Wisconsin in 1938 with a chemistry degree. She worked for Standard Oil of New Jersey as a chemist and research librarian. She married Norman Feitelson, a dentist, and settled in Westport where she lived until 2002 when she moved to Amherst. She had a lifelong interest in the arts. She knitted, sewed, wove and did needlepoint and ceramics. She worked as a volunteer in the textile department of the Cooper Hewitt Museum in New York City. Survivors include her daughter, Ann Feitelson, and grandson, Henry Weis, both of Montague, MA; and her brother, Malcolm Preston of Truro, MA. She was predeceased by her husband. Gifts in her memory may be given to the Fisher Home, 1165 North Pleasant St., Amherst, MA 01002.

Robert Johns Gander

(BS '40, MS '42, Adkins) an organic chemist, died on Saturday, February 9, 2008. He was 89. Born in Eagle River, WI, he was the husband of Hilda Gander of Whitehouse, NJ, and the son of Walter and Rose Gander. He earned a BS in Chemistry at the University of Wisconsin, where he was Phi Beta Kappa. He earned his MS in Organic Chemistry at the same university, and in 1944 he received his PhD in Organic Chemistry from the University of Illinois. Post-doctoral work on the Rubber Reserve synthetic program at Illinois followed. Dr. Gander supported the war effort by review of technical documents obtained from German scientific sources as the American forces advanced through Europe. His research during World War II also aided the development of synthetic rubber in this country as the natural rubber supplies in Southeast Asia were cut off during this period. After a five year stint which saw him ultimately serve as the Supervisor in Raw Material Development for Firestone Tire and Rubber Company in Pottstown, PA, Dr. Gander joined Johnson & Johnson in North Brunswick, NJ, in 1950 as a Senior Chemist in the Surgical Adhesives Section. Over the next thirty-seven years until his retirement in 1987, he won several awards and promotions. He became Manager of Polymer Research in 1967, and in 1978 he was singularly honored when he was appointed the first Senior Research Fellow in the history of Johnson & Johnson Research and Development. Dr. Gander was widely respected for his scientific knowledge and proven laboratory leadership. He held in excess of 40 patents, and in 1965 he was awarded the Johnson Gold Medal for his

outstanding work in the development of acrylic copolymer adhesives. This important research resulted in improvements in the adhesive quality of the Band-Aid, which is commonly used in this country and around the world. Dr. Gander was considered a renaissance man by his family and friends because of his many interests. He was an accomplished French horn player who played in many bands and orchestras throughout his life, including the University of Wisconsin marching band, and more recently, the Raritan Valley Symphonic Band. He was an avid golfer as well as an outdoorsman, skilled at ruffed grouse hunting, and a successful fisherman for smallmouth bass and walleye pike, a sometimes-elusive fish. After his retirement from Johnson & Johnson, he remained active in the Mathematical Association of America, the American Chemical Society (a 67-year member), and the Theodore Roosevelt Association. Dr. Gander is survived by his wife Hilda of 59 years; his sister Carol Gander Larson of Los Angeles, CA; and his two sons, Mark of Topanga, CA, and Malcolm of Bainbridge Island, WA, and their families. Dr. Gander's brother, James, was a long-time resident of Appleton, WI, until his passing in 2003. Memorial donations may be made to the Whitehouse United Methodist Church, P.O. Box 190, Whitehouse, NJ 08888 or a charity of the donor's choice.

Paul Kirkwood Glasoe

(PhD '38, Sorum) died July 28, 2008, in Bloomington, MN, at the age of 94. Paul was born and raised in Northfield, graduating from Northfield High School in 1930 and St. Olaf College in 1934. He received a Ph.D. in chemistry from the University of Wisconsin-Madison and throughout his career worked as an assistant professor and professor at various universities and in the development of color photography at Kodak Company. He also performed research on deuterium oxide, publishing articles on his research and lecturing on his finds, and co-authored a textbook, *First Year College Chemistry*, in 1951.

Eugene Lyle Hess

(MS '42, PhD '48, Williams) 93, an early researcher in molecular biology and former executive director of the Federation of American Societies for Experimental Biol-

ogy, died April 6, 2008, of complications of pneumonia at Lancaster General Hospital in Lancaster, PA. A former Potomac resident, he lived in Lancaster. Dr. Hess was born in Superior, WI, and was a 1938 graduate of the University of Minnesota. He served in the Army from 1940 to 1946, including two years in the Pacific as commander of an artillery battalion. He participated in the New Guinea and Philippine Islands campaigns. He received a doctorate in physical chemistry from the University of Wisconsin in 1948. Before moving to the Washington area in 1965 to work in the molecular biology section of the National Science Foundation, he was a senior scientist at the Worcester Foundation for Experimental Biology in Shrewsbury, MA. He conducted research in molecular biology, specializing in the study of proteins and nucleic acids. He also taught at the University of Wisconsin, the University of Minnesota, Northwestern University and Clark University. In 1971, he became executive director of the Federation of American Societies for Experimental Biology of Bethesda, which promotes the biological sciences. He retired in 1979. Dr. Hess was the author of more than 100 articles in scientific journals. He was a consultant for the National Research Council, the National Science Foundation, the Renewable Resources Foundation and the General Accounting Office. He was a member emeritus of the American Chemical Society and belonged to the American Society of Biochemistry and Molecular Biology, the Biophysical Society, the New York Academy of Sciences, the American Association for the Advancement of Science and the Cosmos Club.

Robert R. Lavine

Longtime Director of Analytical Laboratories in the Chemistry Department, age 80, died Monday, Dec. 17, 2007, of natural causes at the Middleton Village Nursing Home. Bob was born in Minneapolis, MN, and began his teaching career at Gustavus Adolphus College, St. Peter, MN, and the University of Missouri, Kirksville, MO. He was the director of Analytical Chemistry Laboratories, University of Wisconsin, Madison for more than 30 years and retired to the best position in the world, grandchild sitter. Dad, best buddy, camper, Swedish lefsa maker, Navajo weaver, creator of



beautiful things, fixer of broken things - he is survived by his family: wife, Connie; daughter, Birgitta Meylor (Jeff); sons, Karl (Karen), Lars (Darcy) and Leif (Mary Camille); and 10 wonderful grandchildren, Evan, Elizabeth, Kyle, Eric, Marissa, Jenna, Rachel, Mattias, Nathaniel and Taylor. Bob will be missed, loved and live in our hearts forever. Memorials may be made to the Luther Memorial Music Fund.

Professor Karen Jean Carlson Muyskens

(PhD '91, Crim) died January 13, 2008, at the age of 46. For almost two decades professors Mark and Karen Muyskens shared one position in the Calvin College chemistry department, eventually earning one tenure slot together, a first for the college. They sought out that shared-job arrangement after graduate school because they wanted to partake equally in both their professional lives as teachers and researchers, and also in their personal lives, first as husband and wife and then later as a family as the Muyskens clan grew to five with the births of their three children. Today Mark is more grateful than ever for those almost 20 years of partnership with Karen as spouse, parent and professional colleague as he mourns her too-soon passing on January 13. Karen Muyskens was just 46. Colleagues of the couple, and students with whom they worked, say the loss is an incredible blow. "We're a pretty close-knit department," said department chair Larry Louters. "There's a real sense of collegiality in the department and Mark and Karen were a really important part of that. I can still remember how excited we were to get them both. They had such a clear vision of what they wanted in terms of balancing

their careers and their home life. And they stuck with it." Louters said the Muyskens also struck a balance at Calvin between their teaching and research responsibilities. In 2004 they were part of a \$222,000 grant from the National Science Foundation to Calvin, Hope, Kalamazoo and the University of Wisconsin-Eau Claire to buy a high-end tunable laser system for use in chemical research. In a Calvin news release Karen Muyskens spoke about her passion for bringing research and teaching together. "We want to be active as scientists in studying interesting chemical processes," she said, "and we want to train college students to be scientists." Karen also had a strong sense of what it meant to be a woman in the sciences, and was not afraid to remind people of that, sometimes in humorous ways. She was part of a 16-month calendar introduced in the fall of 2006 that was entitled "So Far From Cheesecake: The History of Women at Calvin College," and was billed as a semi-serious exhibition of 17 photos of Calvin women faculty and staff from across the disciplines. At the time Calvin Dean Janel Curry called it a celebration of the number of senior women faculty across campus. Karen Muyskens was pictured in a lab that was billowing smoke. Her portrait was titled "Concocting Chaos," a title, said Curry, that referenced women's effect on the academy. For Louters the best part of the calendar was that chaos was something Karen Muyskens rarely caused. "She was a good researcher, a good teacher and a good colleague," he said. "She was a real mentor, especially to female students, and she enjoyed the philosophical side of the sciences. She provided the department and the college with so much. We will miss her so much." Mark Muyskens asks that people who would like to make a



donation in Karen's memory do so by calling 616-526-6090 or going to the on-line giving site at <http://www.calvin.edu/admin/development/makeagift/> and designating gifts to the Karen Muyskens Memorial Fund. Gifts will be used to establish an endowed summer research fellowship in chemistry.

Thomas L. Netzel

(BS '68) 61, a Georgia State University biophysical chemistry professor, died on Sept. 4, 2008, from prostate cancer. He received a B.S. in chemistry from the University of Wisconsin, Madison, in 1968 and a Ph.D. in chemical physics at Yale University in 1973. From 1972 to 1974, Netzel was a member of the chemical physics group at Bell Laboratories, studying photosynthetic bacteria and developing the double-beam picosecond spectrometer. After working with the economics analysis group at Bell Laboratories until 1976, he accepted a position at the Brookhaven National Laboratory in 1977. Then in 1985, he joined the physical technology division of Amoco Technology as a staff chemist. He shifted to academia in 1989, accepting a position as professor of chemistry at Georgia State. His work focused on synthesizing, characterizing, and modeling covalently modified DNA nucleosides, oligonucleotides, and duplexes. Netzel was active in his local section of ACS, which he joined in 1981. He received the ACS Award for Volunteer Service earlier this year, but was unable to deliver the award address at the Chem-Luminary Awards ceremonies at the national meeting in Philadelphia. His daughter Rivka Monheit accepted on his behalf and presented his address. The address was recorded and Netzel was happy to view it. He is survived by his wife, Marla, and in addition to Monheit, another daughter, Adira Netzel-Abramson.

Lindsey Theresa Plank

Age 23, died on Wednesday, August 27, 2008, as a result of a car crash. She was born on November 24, 1984, the daughter of Mike and Terri Plank. After she graduated from Stoughton High School in June 2003 she became our "little gypsy". She moved around Stevens Point while she went to school and worked. Lindsey then moved around Madison while she was finishing



her chemistry degree at UW-Madison. She worked as hard as she could at each job she held and made friends along the way. Lindsey was a joy to her family her whole life. She was never afraid to be herself. Her intelligence, humor, bravery and self sufficiency are an inspiration to us all. Lindsey is survived and missed by her loving parents, Mike and Terri; her brother, Bob Plank; grandparents, Dale (Elaine) Maynard and Barbara Maynard; and numerous aunts and uncles. She was preceded in death by her grandparents, Robert and Peggy Plank. The Lindsey Theresa Plank Memorial Scholarship Fund (12226403) has been set up at the UW Foundation to provide scholarships to Chemistry students.

Richard "Rick" Putze

Age 22, passed away on August 27, 2008. Beloved son of Patti Hernandez-Putze. Dear brother of and best friend of John. Grandson of Barbara and the late Salvador Hernandez and Richard and Bonnie Putze.

Great-grandson of Mae and the late Roy Setsuda and the late Alfred and Elizabeth Putze. Nephew of Steve and Julia Lorenc, Cheryl and Jay Martyka, Pat and Gary Piotrowski, Cindy Mahlberg, Bob and Brenda Putze, Jim and Becky Putze, the late Daniel and the late Steven Hernandez. Cousin of Michael and DJ Hernandez, Stephanie, Sarah and Annie Hernandez, Chris, Nick, Kelly, and Amanda Martyka, Missy and Josh Lorenc, Joey, Jimmy and Emma Putze. Further survived by his fraternity brothers at Delta Tau Delta, UW-Madison, many other cousins, great aunts and uncles, other relatives and many, many friends. Rick was a 2004 Graduate of Milwaukee Tech and currently a student at UW-Madison where he was majoring in Chemistry.

John L. Schrag

We said goodbye to a good and honorable man when **John L. Schrag** lost a courageous battle against renal cell carcinoma on Thursday, Feb. 7, 2008, at his Madison home in the loving care of his family. John was born on April 14, 1937, in Siloam Springs, AR, to John and Verna Lindblad Schrag. He was eight years old when the family moved to Omaha, NE, where he lived until 1960. John was a professor of analytical chemistry at the University of Wisconsin for 33 years. He received a B.A. degree in physics and mathematics from the University of Nebraska-Omaha in 1959, and M.S. and Ph.D. degrees in physics from Oklahoma State University in 1961 and 1967. Although he was not

impressed with awards and honors, he was the recipient of many beginning with the National Honor Society, Phi Kappa Phi, Alfred P. Sloan Research Fellow, Fellow of the American Physical Society, Distinguished Speaker of the Polymer Science and Technology Program at Massachusetts Institute of Technology, Chancellor's Award for Excellence in Teaching, and Department of Chemistry Teaching Award. He is a founding member of the Rheology Research Center at the University of Wisconsin and for all of his career served on its executive committee. He served as co-editor of the Series "Advances in Polymer Science" from 1986-1998, on the Advisory Board of the Petroleum Research Fund of the American Chemical Society for many years, and on ad hoc committees of the Metallurgy, Polymers and Ceramics Section of the Division of Materials Research of the National Science Foundation. His research interests focused on the experimental determination of the influence of specific chemical structure together with polymer-solvent and polymer-polymer interactions, on the conformational dynamics of macromolecules in solution. John loved to teach. One of his greatest joys was seeing students mature into seasoned scientists and solid citizens. John married his college sweetheart, Beverly Harwick, in Omaha on Aug. 6, 1960. To celebrate their twenty-fifth year together, John and Beverly purchased a lake cottage in Vilas County in 1985, where they enjoyed viewing the wildlife and exploring the back roads of northern Wisconsin. Although research and teaching were his profession, John liked nothing better than putting with a clock, a radio, or some other piece of electronics. Listening to music brought him solace, reading a book energized his mind, and a good discussion with friends refreshed his spirit. Spending time with his grandchildren, Jason and Maya, helped him get through his illness. They were his pride and joy. Memorials may be made to the John L. Schrag Analytical Research and Teaching Fund at the UW Foundation, Bethany United Methodist Church, or Hospice Care, Inc.

(Excerpts from "Comments in Memory of John Schrag", by **Jim Taylor**.)

It is a daunting task to comment on the life and work of my colleague and friend, John L. Schrag. There is no question that





John was an accomplished, creative, and well-respected scientist. His career at Wisconsin spanned the range of Lecturer in 1970 to Emeritus Professor of Chemistry in 2003. He was also an accomplished teacher who won the coveted Chancellor's Award for Teaching and the Department of Chemistry Teaching Award. He believed that all of us could make a difference in the lives of others, and he practiced that faith by encouraging undergraduate, graduate students, and colleagues to do our best.

I want to focus on John's human element because this is what made him such a wonderful colleague. His concern for students, his absolute integrity, his willingness to forgo personal advancement for the good of the group, and his sense of humor and playfulness are what made him so valuable to us.

John was there when students had academic difficulties, and he was always helpful. For the Chancellor's Teaching Award nomination, one student wrote, "Enthusiasm is definitely foremost in everything Dr. Schrag has done. He would always come into the class full of energy and emanating a glow of liveliness that was difficult not to notice."

Despite his great accomplishments, he lost one fight - that was with his desk. He holds the Departmental record of having the most piles of papers, journals, research proposals, and other materials on his desk.

He knew where most of the materials were, but I think one would have to say that the desk won that fight in the early years of John's career, and he never recovered.

Now he has finished the race. We will all miss him, but we will remember him as one who encouraged, supported, and saw the good in all of us when he did.

(Excerpts from "John L. Schrag: Teacher, Mentor, Inspiration, and Friend", by **Tim Lodge** (PhD '80) for the Mills Street Modulators.)

For an aspiring scientist, there is no more important decision than the choice of research advisor. The importance derives from the fact that this choice will exert a profound influence over the rest of one's professional career, and, indeed, the rest of one's life. For those of us who chose to work with John Schrag, we were blessed indeed.

John Schrag brought to his vocation remarkable dedication: to teaching, to critical thinking, to paying attention to detail, and to setting the highest possible standards. His style as advisor was not as a cheerleader, goading us on; not as a martinet, inspiring us through fear of retribution; not as "one of the gang", struggling with us side by side at the bench. Rather, he quietly but persistently created an expectation of success, and quietly but persistently helped us to achieve it.

John was also remarkable for his abiding graciousness. We students never heard him utter a derogatory comment, or a personal

criticism; "Rats!" was the apparent limit of his exasperation. John was modest and self-effacing, perhaps to a fault. When at the National Science Foundation's behest he coorganized a big US-France weeklong meeting at a resort in Northern Wisconsin, he did not even put himself on the list of speakers.

The last years have not been easy for John and Bev, and we have only been able to marvel at John's continued courage and optimism. We spent a delightful hour together at the end of December, and John's boundless spirits still shone through. Amazingly, he was still focused on everyone else's news, not his own condition.

As John Schrag was trained as a physicist, it is appropriate to recall some words of Albert Einstein: *Our death is not an end if we can live on in our children and the younger generation. For they are us, our bodies are only wilted leaves on the tree of life.* Certainly all of John's students will take comfort in the thought that in some little way, John lives on in us. We will always cherish his exceptional teaching, his inspiring personal and professional example, and his lasting friendship.

Doyle Charles Udy

(PhD '50, Ferry) died peacefully in his home Thursday, October 4, 2007. He was born July 22, 1921, in Fielding, UT, and was the second son of Mark and Ina Bachelor Udy. Doyle grew up in the Tremonton/Fielding, UT area. He attended the University of Utah and graduated with a degree in physical chemistry. He served in the Navy during World War II. Following the war, he continued his education, obtaining his PhD from the University of Wisconsin. Doyle married Madelyn Hillis and enjoyed a successful career as the president and founder of Udy Corporation, which manufactured analyzer equipment for which he held patents. Doyle enjoyed spending time with his family. He was a faithful member of the Church of Jesus Christ of Latter-Day Saints. Doyle was an avid golfer. He loved skiing, fishing, traveling and his dog, Jeannie. Contributions in Doyle's memory may be made either to Hospice of Larimer County, 305 Carpenter Road, Fort Collins, CO 80525 or Columbine Care Center East, 421 Parker St., Fort Collins, CO 80525.

Diana Mary Wied

(BS '69) 58, formerly of Green Bay, WI, passed away July 15, 2004, in Arlington, TX. She was born in Green Bay on February 2, 1946, to Mark A. and Dorothea (Haworth) Wied. She obtained a BS in chemistry from the University of Wisconsin in 1969, an MS in analytical chemistry from Michigan State University in 1971 and a master of divinity from Brite Divinity College of TCU in 1999. She was ordained as an MCC pastor in 2000. She was an avid machine and hand knitter and seamstress who made many of her own clothes. She worked at LTV in materials and processes from 1983 to 1993. At the time of her death, the Rev. Wied was co-pastor of Trinity MCC in Arlington, TX.

James Charles Wootton

(BS '41, MS '44, PhD '48, Schuette) died peacefully on May 15, 2008 in Austin, TX. Born in Beloit, WI, James graduated from the University of Wisconsin earning BS, MS and PhD degrees in chemistry. During World War II he served as a chemist in the Army's Special Engineering Detachment for the Manhattan Project in Oak Ridge, TN. After earning his PhD degree in 1948 he was employed by Procter & Gamble where he worked as an organic research chemist for 37 years. He is survived by his wife, Muriel, of 63 years. Memorial contributions may be made to the Senior Care and Assistance Fund, Buckner Retirement Services, 11110 Tom Adams Drive, Austin, TX 78753-3301.

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

Morris Herman Aprison (BS '45) died December 2, 2007, at the age of 84.

Henry Edward Arkens (BS '48) died December 28, 2007, at the age of 83.

Norman N. Bernstein (BS '43) died November 8, 2007, at the age of 85.

Thayer Burnham (MS '36) died June 27, 2008, at the age of 95.

Donald R. Colingsworth (BS '34) died May 19, 2003, at the age of 90.

Albert C. Dornbush (BS '39) died November 30, 2007, at the age of 93.

Warren O. Erickson (BS '43) died May 19, 2006, at the age of 84.

B. Elsie Gagneron (BA '45) died June 26, 2007, at the age of 84.

Richard Harry Golder (BS '44) died February 17, 2008, at the age of 85.

Edwin A. Grant, Jr. (PhD '57, Johnson) died December 10, 2007, at the age of 76.

Inez Margaret Hartwell (BS '53) died December 13, 2007, at the age of 75.

Ervin E. Hindin (BS '51, MS '56) died September 25, 2007, at the age of 69.

John Frank Jones (MS '52, Adkins) died September 17, 2007, at the age of 75.

Robert Saxton Klang (BS '48) died May 3, 2008, at the age of 87.

Gordon Robert Leader (BS '37) died July 3, 2008, at the age of 92.

James Jerome Leddy (PhD '55, Larsen) died November 18, 2007, at the age of 78.

Chester Vogel Licking (BS '31) died February 24, 2008, at the age of 101.

Donald Austin Lillegren (BS '39) died March 27, 2008, at the age of 90.

Richard Golbert Livesay (BS '47, MS '58, McElvain) died October 17, 2007, at the age of 86.

Arthur D. Lohr (PhD '42, Adkins) died July 8, 2008, at the age of 102.

John Warren Meier (BS '38) died November 16, 2007, at the age of 91.

Edith Milan (BA '31) died August 11, 2007, at the age of 97.

Donald H. Morman (BS '55, MS '57, Daniels/Shain) died January 27, 2008, at the age of 80.

Robert Matthew Murch (PhD '66, West) died August 30, 2007, at the age of 83.

Robert Dwight Offenbauer (PhD '44) died October 30, 2007, at the age of 89.

Carroll Arthur Pickering (BS '39) died October 14, 2007, at the age of 90.

Clifford Joseph Pukaite (MS '67, Shain) died April 23, 2008.

Sterling Price Randall (MS '50, PhD '68, Larsen) died March 13, 2008, at the age of 84.

Robert White Rosenthal (PhD '49, Adkins) died December 12, 2007, at the age of 84.

Richard Louis Ruka (BS '40) died November 17, 2007, at the age of 91.

Kenneth Howard Schmit (BS '48, MS '50, Schuette/Bender) died September 3, 2008, at the age of 85.

Frederic William Schremp (PhD '50, Ferry) died February 1, 2008, at the age of 91.

Richard Roland Shaffer (MS '60, Van Tamelen) died June 14, 2007, at the age of 70.

Allen John Sinclair (BS '68) died October 21, 2007, at the age of 61.

Paul Warren Sutton (PhD '67, Dahl) died March 8, 2008, at the age of 70.

Hugh Edward Warner (PhD '88, Woods) died March 2, 2008, at the age of 52.

Kenneth Vincent Yorka (PhD '60, Johnson) died January 17, 2008, at the age of 76.



MEMORIAL RESOLUTION OF THE FACULTY OF THE UNIVERSITY OF WISCONSIN-MADISON

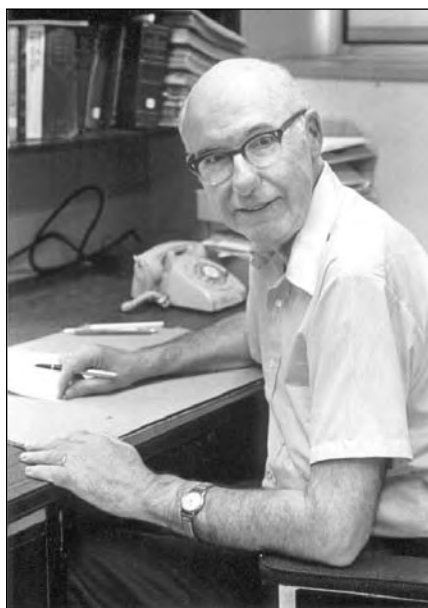
on the death of

EMERITUS PROFESSOR CHARLES FRANCIS CURTISS

Charles F. Curtiss was born April 4, 1921, in Chicago and died December 24, 2007, in Madison. He attended high school in Neenah, Wisconsin, where he met his future wife, Lois. In 1942, he received the degree “Bachelor of Science (Chemistry)” at the University of Wisconsin. From June 1942 to December 1945 he worked at the National Defense Research Committee Geophysical and Allegheny Ballistics Laboratories in D. C. and Maryland. In early 1946 he was a graduate student at the University of Minnesota. He returned to the University of Wisconsin in September 1946, working with Professor Joseph O. Hirschfelder in the Department of Chemistry and receiving his Ph.D. degree in June 1948. He continued at the UW Naval Research Laboratory for another year as a Project Associate.

Chuck began his faculty appointments at UW in 1949 and continued for forty years: assistant professor in chemistry and physics (1949-1954), associate professor of chemistry (1954-1960), and professor of chemistry (1960-1989). During much of this time he was Associate Director of the Theoretical Chemistry Institute. He taught undergraduate and graduate courses in physical chemistry. His courses were always carefully organized and his teaching was very lucid; he made no effort to be colorful or showy. He supervised 3 M. S. candidates and 26 Ph. D. candidates, and worked with 18 postdoctoral associates. After retiring he was emeritus professor of chemistry (1989-2007).

His research areas were kinetic theory of gases, nonequilibrium statistical mechanics of reacting gas mixtures, transport properties of dense gases, transport properties of polyatomic gases, molecular scattering phenomena, and molecular description of the rheology of polymer solutions and undiluted polymers. He published over 140 papers in refereed journals, including more than 10 on work after his retirement, as well as several book chapters. Chuck was coauthor of the 1200 page tome,



Molecular Theory of Gases and Liquids (Hirschfelder, Curtiss & Bird), published in 1954 (corrected printing in 1964) and still in print, and of *Dynamics of Polymeric Liquids: Volume 2, Kinetic Theory*, 1977, (Bird, Hassager, Armstrong & Curtiss); second edition, 1987, (Bird, Curtiss, Armstrong & Hassager). Through these books he had a major impact on physical chemistry and chemical engineering. The book *Molecular Theory of Gases and Liquids* was listed as #4 in the list of most cited books for 1961-1972, and #9 in the 1967 ranking of most cited non-journal items. He showed care in writing, a passion for accuracy, and mastery of various parts of the subject and their interrelations.

Chuck was a member of the American Chemical Society, Fellow of the American Physical Society and a member of the Society of Engineering Science, of which he had served as a Director. Chuck was also a member of the Alpha Chi Sigma Fraternity. He served at various times on the editorial boards of *Journal of Chemical Physics*, *International Journal of Engineering Science*, *Physics of Fluids*, and *Physics and Chemistry of Liquids* and as consultant for various companies and government

agencies. His work was recognized by the Bingham Award of the Society of Rheology, the Kurt Wohl Lecture of the University of Delaware, and the Eringen Award of the Society of Engineering Science.

Chuck was an exceptionally gifted applied mathematician. A 1952 paper with Hirschfelder on “The Integration of Stiff Equations” was listed in “13 Classic Papers in Applied Mathematics”. Many of his colleagues were amazed at his talent for solving extremely complex physical problems by a combination of formal mathematics, uncanny intuition, and shrewd changes of variables. Comments were often made about the fact that Chuck usually wrote on 8 1/2 x 11 paper in “landscape” mode, with the 11 inch sides at top and bottom, so as to be able to accommodate very long equations. Many of the graduate students and faculty members of the chemistry department came to his office to seek help on difficult mathematics and physics problems. Chuck was always willing to listen carefully to their problems and then work with them to find solutions.

Chuck was very family-oriented. He knew a great deal about the Curtiss family genealogy and prepared this work for filing with the Wisconsin Historical Society. He had a nice collection of books and old family pictures. But most of all, he enjoyed going up to his summer cottage on a lake near Boulder Junction. He and his boys had built several buildings on their property, including an 8-sided outhouse, called the “octajohn,” and a simple office-structure where Chuck could work on any kinds of theoretical problems that he had brought along. The lakeshore did not have many cottages, but he and his family enjoyed interacting with the Duffies, Jack and Pat, of the chemical engineering department.

MEMORIAL COMMITTEE

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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, not to the Chemistry Department; gifts can also be made on line at <https://www2.uwfoundation.wisc.edu/MultiPage/processStep1.do>. 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.

Donors are acknowledged every year on the pages following our listing of funds. You are all essential to the continued high caliber of the Chemistry Department in its teaching, research and outreach missions.

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 2007-2008

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 2007-2008.

Department of Chemistry Fund <i>Supports research and teaching activities in the Department.</i>	1222137
Badger Chemist Fund <i>Provides funds to support the Badger Chemist and other Department publications.</i>	1222534
Chemistry Building Fund <i>Supports continued remodeling of Chemistry buildings. The last bill for the new construction and major remodeling project was paid in late 2006. This fund will continue to pay for construction such as remodeling for new professors.</i>	12221293
Farrington Daniels Ethical Leadership Fellowship Fund (Grad) <i>Established in 2004 by William G. and Virginia Hendrickson. First awarded Fall 2007.</i>	12223995
Hall-Fisher Separation/Purification Processes Using Polymers <i>Provides grants to researchers in Chemistry and other fields. Created in 2008 by a gift from the estate of Sallie Ann Fisher in honor of her mentor Norris Folger Hall.</i>	12226335
Lindsey Theresa Plank Memorial Scholarship Fund (Undergrad) <i>Created in 2008 to honor Lindsey Theresa Plank, who died on August 23, 2008. Lindsey was a chemistry student at UW-Madison</i>	12226403

STUDENT SUPPORT

Ackerman Scholarship Fund (Undergrad) <i>Supports undergraduate students in Chemistry, especially those from East High School in Madison.</i>	12223212
Alfred L. Wilds Scholarship in Chemistry (Undergrad) <i>Undergraduate scholarship in memory of Professor Al Wilds.</i>	12220072
Alpha Chi Sigma Alumni Endowed Scholarship Fund (Undergrad) <i>Established in 2006 for the purpose of providing scholarship support for undergraduate students in the Chemistry, Biochemistry, or Chemical Engineering Departments.</i>	12224506
Andrew Dorsey Memorial Scholarship Fund (Undergrad) <i>Undergraduate scholarship in memory of Andrew Dorsey.</i>	12223281
David F. and Donald G. Ackerman, Jr. Wisconsin Distinguished Graduate Fellowships <i>Supports graduate students in Chemistry.</i>	12223243 12223244
Don Brouse Memorial Scholarship (Undergrad) <i>Undergraduate scholarship in memory of Don Brouse.</i>	32220536
Edwin M and Kathryn M Larsen Fund (Undergrad) <i>Supports undergraduate students in Chemistry.</i>	12222308
Elizabeth S. Hirschfelder Endowment for Graduate Women in Chemistry <i>Supports women graduate students in Chemistry research.</i>	12223191
Eugene and Patricia Kreger Herscher Fund (Undergrad) <i>Supports undergraduate students in Chemistry, especially women.</i>	12223562



STUDENT SUPPORT (continued)

Gary R. Parr Memorial Fund (Grad or Undergrad) <i>Scholarship in Bioanalytical or Biological Chemistry, in memory of Gary Parr.</i>	1222192
George J. and Arleen D. Ziarnik Scholarship Fund (Undergrad) <i>Established in 2007 to honor the memory of George J. Ziarnik by presenting scholarships to Wisconsin residents majoring in chemistry.</i>	12224839
Hach Scholarship Fund to Develop HS Chemistry Teachers <i>Established in 2007 by the Hach Scientific Foundation, this fund will provide scholarships to undergraduates who are future high school chemistry teachers.</i>	12224870
Harlan L. and Margaret L. Goering Organic Chemistry Fellowship Fund (Grad) <i>Established in 2004 by Margaret Goering's will, in honor of her late husband, Professor Harlan Goering. The fellowship will reward excellent graduate students in Organic Chemistry, and was first awarded in 2007.</i>	12223951
Harry and Helen Cohen Graduate Research Fund (Grad) <i>Supports graduate students in Organic Chemistry.</i>	12222250
Henry and Eleanor Firminhac Chemistry Scholarship Fund (Undergrad) <i>Supports Undergraduate students in Chemistry, in memory of Ralph Firminhac's parents, Henry Firminhac and Eleanor Firminhac.</i>	12223644
John and Dorothy Vozza Research Fellowships (Grad) <i>Established in 2006 by the John and Dorothy Vozza Trust. Professorship or Fellowships in Organic Chemistry.</i>	12224612
John and Elizabeth Moore Awards in General Chemistry <i>Provides funds for awards to the best students in the Fall Chemistry 108 and Chemistry 109 courses.</i>	12223663
Kimberly-Clark Undergraduate Scholarship <i>Supports undergraduate research with an annual award.</i>	12222807
Leah Cohodas Berk Award for Excellence in Chemistry Research (Grad) <i>Honors an outstanding female graduate student.</i>	12543124
Pei Wang Fund <i>Established in 2005 by a gift from the estate of Pei Wang, to be used for fellowships for students in the Chemistry Department.</i>	12224225
Ralph F. Hirschmann – Daniel H. Rich Graduate Fellowship Fund (Grad) <i>Established in 2004 by Ralph Hirschmann to encourage and assist students in the early stages of their research careers; and to honor and to express his high regard for Professor Daniel H. Rich.</i>	12224086
Roger J. Carlson Fund (Grad) <i>Graduate Fellowship in Analytical Chemistry, in memory of Roger Carlson.</i>	12220918
Student Support in Chemistry (Undergrad) <i>Supports undergraduate students from Wisconsin high schools with GPA above 3.0.</i>	12222068
Walter W. and Young-Ja C. Toy Scholarship Fund (Undergrad) <i>Supports undergraduate students, with preference for students of Asian descent.</i>	12221917
Wayland Noland Undergraduate Research Fellowship <i>Established by Professor Wayland E. Noland to support summer or academic year research by undergraduates.</i>	12222191



DIVISIONAL SUPPORT

Analytical Chemistry Fund <i>Supports research and educational activities in the Analytical Sciences Division, including conferences and grad recruiting.</i>	1222679
Analytical Research Fund <i>Supports research and programs in the Analytical Sciences Division. Originally established in 1990 with a gift from the Olin Corporation Charitable Trust.</i>	12220448
Inorganic Chemistry Seminar Fund <i>Supports the Inorganic Division seminar and research programs.</i>	12221344
Joseph O. Hirschfelder Prize Fund <i>Awards an annual Prize to an internationally prominent scientist to recognize outstanding work in Theoretical Chemistry.</i>	12220984
Joseph O. Hirschfelder Visitors Fund <i>Supports visits to the Theoretical Chemistry Institute by outstanding scholars.</i>	12220912
John L. Schrag Analytical Research and Teaching Fund <i>Provides funds for activities that will enhance the excellence and humanity of the Analytical Sciences Division.</i>	12223637
Organic Synthesis Fund <i>Supports research activities in Organic Chemistry including symposia and visiting lecturers.</i>	1222548



CHEMISTRY EDUCATION

Institute for Chemical Education Fund <i>Supports activities in Chemical Education.</i>	1222929
James W. Taylor Excellence in Teaching Award <i>Established in 2002 and first awarded in 2003, this provides an endowed fund to support awards to outstanding teachers in the Chemistry Department.</i>	12223590
Michael S. Kellogg Chemistry Fund <i>Provides funds to support an annual prize, a lectureship, or other support of science education.</i>	12223655
Shakhashiri Science Education Fund <i>Supports activities in Science Education under the direction of Prof. Bassam Shakhashiri.</i>	12221133



LECTURESHIPS/PROFESSORSHIPS

Evan P. Helfaer Fund <i>Provides funds to support endowed chairs in the Chemistry Department.</i>	32225081A
H. L. and M. L. Goering Visiting Professorship Fund <i>Provides funds to support a Visiting Professor in Organic Chemistry.</i>	12222391
Irving Shain Professorship Fund <i>Established in 2006 with a gift from Irv Shain for a permanent professorship in the Chemistry Department.</i>	12224681
John D. Ferry Lectureship in Macromolecular Science <i>Provides funds to support a Lecturer in Macromolecular Sciences.</i>	12222793
John E. Willard Lectureship <i>Funds a special seminar in Physical Chemistry.</i>	1222829
Joseph O. Hirschfelder Professorship Fund <i>Provides funds to support an endowed chair.</i>	12220310



LECTURESHIPS/PROFESSORSHIPS (continued)

McElvain Seminar Fund	12220241
<i>Supports the ongoing seminar series organized and run by graduate students in the Department of Chemistry.</i>	
Ralph Hirschmann Lectureship	1222295
<i>Funds a Visiting Professor in Organic, Bioorganic or Physical Organic Chemistry.</i>	
Richard B. Bernstein Lectureship Fund	12224951
<i>Established in 2007 by a gift from Virupaksha and Sarveswari Reddy, in honor of former Professor Michael J. Berry, Mr. Reddy's Ph.D. thesis advisor, on his 60th birthday.</i>	
V. W. Meloche-Bascom Professorship	1222889
<i>Provides funds to support an endowed chair.</i>	
V. W. Meloche Lectureship	1222825
<i>Funds a special seminar series in Chemistry.</i>	
<i>These funds provide key support for specific purposes or for our new initiatives.</i>	



GENERAL DEPARTMENTAL SUPPORT

Community-Building Fund for Chemistry	12223316
<i>Provides funds for receptions, retirement parties, funeral memorials, and other similar activities; established in 2001.</i>	
Dr. Norbert Barwasser Chemistry Fund	32225010
<i>Benefits the Department of Chemistry research and programs.</i>	
Farrington Daniels Memorial Fund	1222324
<i>Funds special projects relating to the benefits of science to society.</i>	
Harry L and A Paschaleen Coonradt Fund	12221413
Irving Shain Chemistry Colloquium Series Fund	12224514
<i>Established in 2006 in conjunction with the ceremony honoring Irv Shain with the naming of the "Irving Shain Research Tower".</i>	
Jean Irene Love Fund	12223870
<i>Established in December 2003 by the family of Jean Irene Love and John Edmund Wright, to remember Jean's kindness, her self-sacrifice, and her deep and unconditional love for all people.</i>	
John and Caroline Dorsch Fund	12220322
Les Holt Memorial Endowment	12223535
<i>A general fund established with a gift from the estate of Professor Les Holt.</i>	
Norman G. Mailander Fund	12224058
<i>Established in 2004 by Norman Mailander's will, for special enhancement of the Department of Chemistry in the College of Letters and Science at the University of Wisconsin - Madison.</i>	
Lloyd L. Withrow Fund	12221190
Paul A. and Jane B. Wilson Fund	32220550
Thomas B. Squire Fund	12221796
Bio-Analytical Chemistry Fund (Lloyd Smith; Upjohn)	12220368



INDIVIDUAL RESEARCH GROUP SUPPORT

<i>(Group Established by)</i>	
Carbohydrate Chemistry Research Fund	12221999
<i>(Laura Kiessling; Zeneca Pharmaceuticals)</i>	
Chemistry Catalysis Fund (Shannon Stahl)	12223733
Chemistry Fund for Interactive Education	12224764
<i>(Ieva Reich; BerbeeWalsh Foundation)</i>	
Kocher Award	12223165
<i>(Thomas Brunold; Kocher-Preis Kommission, University of Bern)</i>	
Lawrence Dahl Research Fund (Larry Dahl)	12222076
Nuclear Magnetic Resonance Research Fund	12221877
<i>(Tom Farrar; Johnson Controls)</i>	
Organic Chemistry Research (Hans Reich; Bell, DuPont)	12220190
Organic Research Studies Fund	12220747
<i>(Howard Zimmerman; Alumni and Friends)</i>	
Surface Science Research and Community-Building Fund	12224916
<i>(Hamers)</i>	

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

STUDENT SUPPORT

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

DIVISIONAL and INDIVIDUAL SUPPORT

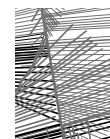
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 Hilldale Foundation Funds
 Innovation Recognition Research Fund (Casey)
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 MacArthur Fund (Smith)
 Steenbock Professorship in Chemical Sciences (Casey)
 Theoretical Chemistry Institute Fund

LECTURESHIPS/PROFESSORSHIPS

James M. Sprague Lectureship
 Karl Folkers Lecture Series in Chemistry

GENERAL DEPARTMENTAL SUPPORT

Chemistry Building Fund
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In addition to honoring and acknowledging those people who donate to the Department to help support our Teaching, Research, and Outreach missions, we would like to also honor the people for whom funds are established and named. Many of you have donated to pay tribute to a mentor, colleague, friend, or relative in the Chemistry Department. This is a tribute not only to the donors, but to the people memorialized in donations.

David F. and Donald G. Ackerman	Evan P. Helfaer	Mabel Duthey Reiner
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Stephen E. Freeman	Gary R. Parr	George J. and Arleen D. Ziarnik
Harlan L. and Margaret L. Goering	Lindsey Theresa Plank	

(...continued from page 25)

CONVERSATIONS IN SCIENCE FOR TEACHERS

Entering its ninth year, Conversations in Science for Teachers is open to all teachers in Dane County and offers them a monthly two hour seminar with top University researchers. The purpose is to re-invigorate the teachers' enthusiasm for science by exposing them to cutting-edge research and to enlist researchers to help promote science literacy, an activity for which they are not usually rewarded. It's not easy for researchers to make time for a two hour conversation, but they are always glad they did. After her presentation, Associate Professor of Chemistry **Helen Blackwell** remarked, "I thoroughly enjoyed interacting with the teachers. Their questions were very insightful, and I learned something."

Teachers participating in Conversations in Science are uniformly enthusiastic. One teacher commented, "Where else could a person be privileged to share in the experiences of so many stunningly interesting and significant presenters?"

Another teacher said, "I left each session feeling good and had my sense of purpose as a science teacher renewed."

The teachers pay no fee and can earn continuing education credit. Most of them are high school math or science teachers, but participants have included middle school and elementary school teachers from both public and private schools. Conversations in Science for Teachers is developed and organized by Professor Shakhashiri who selects and invites the speakers. Each session begins with refreshments (the teachers are grateful for a snack after a long day of teaching—the talks begin at 4 PM). Others involved are the Sonderegger Science Center at Edgewood College, which provides an excellent auditorium, and the Madison Metropolitan School District, which publicizes the series with teachers and registers them and also records each session for showing on its cable television channel in Madison.

Presentations during the 2007-2008 school year were:

Evan Richards, UW-Madison Space Science and Engineering Center, "*Science in Space: Wisconsin's 100 Year Journey to the Hubble Space Telescope*"

Professor Michael Corradini, Department of Engineering Physics, "*The Rebirth of Nuclear Power*"

Professor John Delamater, Department of Sociology, "*The Science of Love*"

Professor Molly Jahn, Dean, College of Agriculture and Life Sciences, "*Across Biological Kingdoms: From Potatoes to Polio*"

Professor Emeritus John Magnuson, Center for Limnology, "*Climate Change and the Waters of Wisconsin*"

Professor Pupa Gilbert, Department of Physics, "*Biomaterials: The Toughest Structures of Life*"

Professor Ronald Numbers, Department of Medical History and Ethics, "*Evolution and its Enemies*"

Professor Cliff Thurber, Department of Geology, "*Faults and Earthquakes: Up Close and Personal*"



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This list acknowledges donors to all Departmental funds from July 2007 through June 2008, as recorded by the University of Wisconsin Foundation. We thank each of you for making improvements to our program possible.

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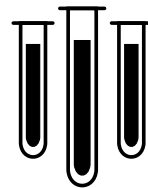
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