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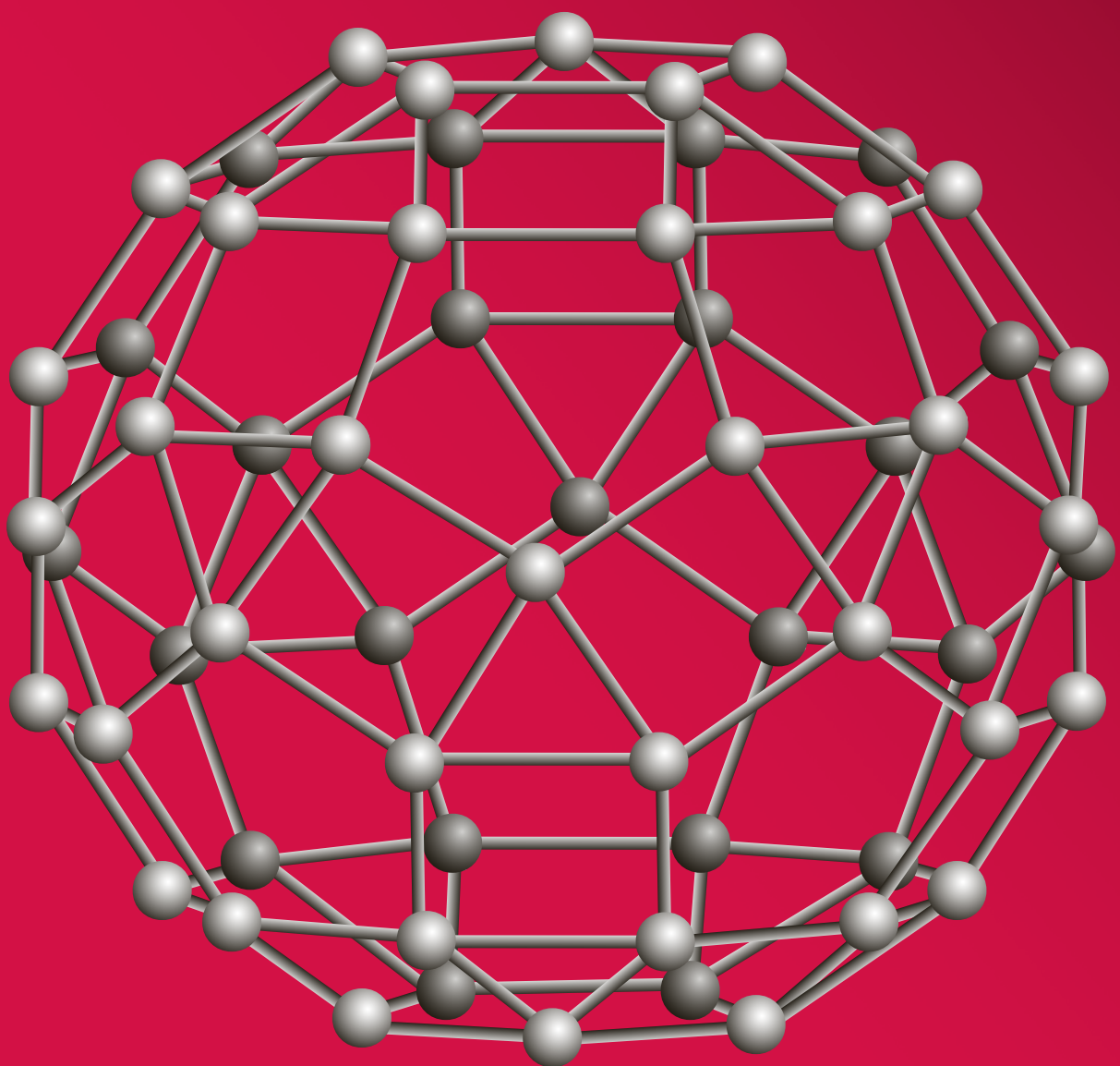
2009

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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2009 BADGER CHEMIST

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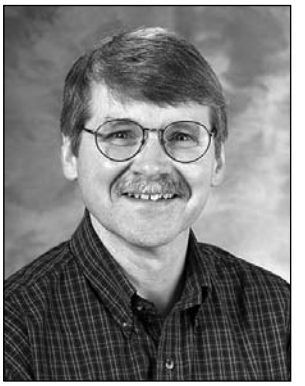
From the Chair

Fall 2009



Dear Badger Chemists,

As 2009 comes to a close, I'm pleased to again have the opportunity to tell you about some of the many activities of our faculty, staff, students, and alumni. The campus is a beehive of activity as always. Matt Sanders (our Executive Director) and Sue Martin-Zernicke (our Analytical/Materials Administrative Assistant) have done an excellent job of compiling and editing this year's highlights into the latest issue of the "*Badger Chemist*". As this is the last year of my 3-year term as Department Chair, I also want to take this opportunity to thank all of you for your support during my tenure in this position.

This last year's faculty search, led by our Associate Chair Jim Weisshaar and our Faculty Search Committee, was a spectacular success. We hired two new faculty with expertise in organic chemistry, solving one of our most pressing hiring needs. Jennifer Schomaker and Eric Strieter both started in summer 2009. Jennifer has several years of industrial experience and most recently was a postdoc with Bob Bergman at Berkeley; her program is centering on developing new methods for transforming simple hydrocarbons into more complex building blocks for synthesis. Eric was an undergraduate here and was eager to come back after his Ph.D. with Stephen Buchwald at MIT and a postdoc with Chris Walsh at Harvard Medical School. His program centers on how small molecules impact cellular homeostasis. We're delighted to have Jennifer and Eric on our faculty!

Our faculty, staff, and students continue to win major national and international awards. Four of our department members—Chuck Casey , Fleming Crim, Cathy Middlecamp, and John Moore—were elected as part of the inaugural class of ACS Fellows by the American Chemical Society. ACS also announced that Larry Dahl, Clark Landis, and Helen Blackwell will all receive ACS National Awards in 2010, while Martin Zanni and his student, Sang-Hee Shim, will receive the 2010 ACS Nobel Laureate Signature Award. Marty will receive it for his role as preceptor and Sang-Hee as the recipient student. Most of these will be conferred at the ACS 2010 Spring meeting. Our Assistant Professors are doing spectacularly well, with Danny Fredrickson receiving an NSF CAREER Award, while Song Jin and Tehshik Yoon both received Sloan Foundation Fellowships. And that's just a sampling of some of the major national and international awards from 2009!

We're excited and cautiously optimistic about a possible new Chemistry Instructional Facility on the horizon. The university has a signed contract to purchase some of the land immediately adjacent to the chemistry building, and if this succeeds (closing date is later this month) we may finally have a site for a new Chemistry Instructional Facility to replace our aging teaching labs and lecture halls. Our alumni and friends are likely to make a crucial difference in how this develops. If this is of interest to you, please feel free to contact me and we will make a special effort to keep you posted on progress in this area.

As you read this year's Badger Chemist, I hope you will take some time to reflect on your own experiences and how your own career may have been transformed by your experiences at Wisconsin. Your financial support will help to ensure that the next generation of Badger Chemists will be able to enjoy the same tradition of excellence that you and I did. The Badger Chemist lists various accounts maintained by the UW Foundation, and donations are especially needed now due to the poor economy. You can make donations at any time via a secure web site at http://www.chem.wisc.edu (click on "Donate") or simply send a check if so inclined.

Irrespective of whether you can help financially or not, we want to foster close connections to our alumni, and we would love to hear about your own activities. We plan to host another Alumni Reception at the spring '10 ACS meeting in San Francisco and hope you will stop by to see old friends, make new friends, and help us celebrate the Wisconsin Experience with our latest ACS awardees!

Wishing you the best of success in the New Year,

Robert J. Hamers

Robert J. Hamers
Wisconsin Distinguished Professor and
Chair, Department of Chemistry
chair@chem.wisc.edu

New Badger Chemists

PHD

AUGUST 2008

Benjamin Michael Auer *(Skinner)*
Vibrational Spectroscopy of Water in the Bulk and at the Liquid/Vapor Interface

George Lloyd Barnes *(Sibert)*
Vibrational Effects on Symmetric and Asymmetric Proton Tunneling in Formic Acid Dimer

Heidi Leigh Behrens *(Li)*
Coupling In Vivo Microdialysis Sampling to Mass Spectrometry to Detect Neuropeptides in a Decapod Crustacean

Melissa Dawn Boersma *(Gellman)*
Engineering the Affinity and Selectivity of Peptide-Based Inhibitors of Protein-Protein Interactions through Side Chain and Backbone Modification

Eun Jin Cho *(Lee)*
I. Pt, Au, and Ru-Catalyzed Reactions of Multi-ynes: Reactivity and Selectivity
II. Synthetic Studies on Natural Products: (3R, 9R, 10R)-Panaxytriol and (-)-Dactylolide

Matthew David Christianson *(Landis)*
Mechanistic Studies of Catalytic Alkene Polymerization and the Development of Stopped-Flow NMR Kinetics

Matthew William Dodge *(Burke)*
Synthesis of Annonaceous Acetogenins Via Asymmetric Double Cycloetherifcation

Emily Carla Dykhuizen *(Kiessling)*
Inhibitors for Enzymes Involved in Oligosaccharide Biosynthesis

Jonathan Peter Fast *(Mecozzi)*
Fluorous Encapsulation of Volatile General Anesthetics for Intravenous Delivery: In Vitro and In Vivo Characterization

Sarah Ann Fowler *(Blackwell)*
Design, Synthesis and Evaluation of Novel Peptoids: I. Analysis of Peptoid Folding in Nonamer Model Systems
II. Peptoid Mimics of Quorum Sensing Signaling Molecules

Adam Livingston Garske *(Denu)*
Design and Use of Combinatorial Peptide Libraries in the Study of Epigenetics

Laurie Eileen Grove *(Brunold)*
Spectroscopic and Computational Insights into Second-Sphere Amino Acid Tuning of Active-Site Properties in Iron and Manganese Superoxide Dismutases

Erik Benton Hadley *(Gellman)*
The Study of Protein and Peptide Folding Via Backbone Thioester Exchange

Matthew Denis Liptak *(Brunold)*
Spectroscopic and Computational Insights Into the Cofactor Activation Mechanism of Cobalamin-Dependent Methionine Synthase

Joshua Brian Mandir *(Smith)*
Rapid Determination of Ribonucleic Acid Accessible Sites

Jennifer Campbell O'Neill *(Blackwell)*
Syntheses of Dipeptidic Small Molecules and Their Evaluation as Bacterial Modulators

Caroline Rebecca Pharr *(McMahon/Moore)*
Spectroscopic Characterization of Triplet (2- and 3- Thienyl) Carbenes and Development, Implementation, and Testing of a Web-Based Tool for Use in Middle and High School Classrooms

Joshua Lloyd Price *(Gellman)*
Development of a/B-Peptide Foldamer Tertiary and Quaternary Structure

Kevin Peter Schultz *(Nelsen)*
Valence-Trapped to Valence-Delocalized Mixed-Valence Systems by Bridge State Modification

Sang-Hee Shim *(Zanni)*
2D IR Spectroscopy: Automation With Pulse Shaping and Application to Amyloid Folding

Brian Christopher Smith *(Denu)*
Chemical Mechanisms of SIR2 Protein Deacetylases

DECEMBER 2008

Soo Hyuk Choi *(Gellman)*
Crystallographic Characterization of Secondary Structures in Unnatural Peptides

Jane Marie Coughlin *(Shen)*
Hybrid Peptide-Polyketide Natural Product Biosynthesis: Resistance to the Bleomycin Family of Antitumor Antibiotics, Beta-Amino Acid Activating Adenylation Domains, and Oxazolomycin Polyketide Synthases that Require Discrete....

Andrew Currie Crowther *(Crim)*
Time-Resolved Studies of CN Radical Reactions and the Role of Complexes in Solution

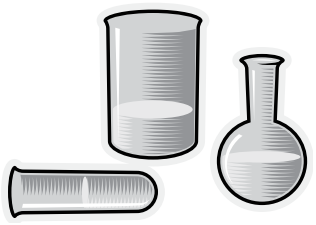
William Charles Pomerantz *(Gellman)*
I. Association Behavior of ACHC-Rich Beta-Peptide Foldamers
II. Fluorine-19 NMR Methods for Monitoring Alpha-Peptide Folding

Christopher Charles Scarborough *(Stahl)*
1. Axially-Chiral 7-Membered N-Heterocyclic Carbenes: Synthesis and Application to Palladium-Catalyzed Intramolecular Aerobic Oxidation of Olefins
2. Development of Palladium-Catalyzed Aerobic Oxidative Olefin Amination Reactions

Jeremy Alan Streifer *(Hamers)*
Photochemical Functionalization of Hydrogen Terminated Silicon Surfaces With Functional Organic Alkenes

Adam C. Tomasik *(West)*
The Synthesis, Reactivity, and Characterization of N-Heterocyclic Silylenes and Germylenes

Victoria Lynn Wilde *(Burke)*
Synthetic Efforts Toward the Total Synthesis of Bryostatin 1: Emphasis on the C17-C27 Fragment



Laura Marie Wysocki *(Burke)*
The Total Synthesis of Trilobacin and Investigation of the Synthesis of Phorboxazole B

Yang Yang *(Cui)*
Theoretical Study of Phosphate Hydrolysis Reactions: Method Improvement, Validation and Application

MAY 2009

Joseph B. Binder *(Raines)*
Catalysis in Biopolymer Chemistry

Andrew Karl Dilger *(Burke)*
The Total Synthesis of (-)-Dictyostatin

Jamie Paule Ellis *(Cavagnero)*
Exploring the Folding and Dynamics of Nascent Proteins

Nilanjan Ghosh *(Cui)*
Computational Investigation of Biomolecular Proton Pumps Using QM/MM Simulations

Andrew Jeremy Hawk *(Burke)*
Efforts Toward the Synthesis of a C Three-Symmetric Triol Macrolide and Efforts Toward the Synthesis of a C Three-Symmetric Triacetate Triol Macrotriamide

Kris John Kolonko *(Reich)*
Rapid-Injection NMR Studies of Carbonyl Functionalities With Organolithium and Phosphazenium Reagents

Bo Li (Hamers)
Nanowire-Based Chemical/Biological Sensor Fuses

Michael Santiago *(Burstyn)*
Development of Luminescent Coinage Metal Materials for Use as Small Molecule Sensors

Seyed Hassan Seradj *(Burke)*
Towards the Total Synthesis of Bryostatin 1: Synthesis of Northern Fragment (C1-C16)

MS

AUGUST 2008

Charles Paul Allen *(Yoon)*
Megan M. Jacobson *(Burke)*
Whitney Leanne Johnson *(Hsung)*
April Lauren Jue *(Coon)*
Quincy A. Long *(Hsung)*
Ram Prasad Neupane *(Landis)*

DECEMBER 2008

Daniel Russell Albert *(Nathanson)*
Richard James Arts
Emily Erin Blamer *(Stahl/Gellman)*
Tanya Jeanne Cordes *(Landis)*
Christle C. Guevarra *(Hsung)*
Erin Elizabeth Henninger
Alexander Khrizman *(Mecozzi)*
Rebecca Louise Vander Zanden *(Brunold)*
Samir Youssef
Junjun Yu *(Cui)*

MAY 2009

Lauren Jean Carlson *(Hsung)*
Valerie Elizabeth Fako *(Furgeson)*

BS & BA

AUGUST 2008

Oscar Alberto Aviles
Jacob Alan Henrichs
Bill John Kondrasuk
James Michael Krier
Anton Nicholas Mlinar
Brian Robert Roth
Stacy Marie Wittkopp

DECEMBER 2008

Ju-Hyun Bae
Alexandra Hawley Dillon
Ryan James Drake
Aaron Lee Eernisse
Jeffrey Joseph Guokas
Nicole Janette Heth
Mingwei Huang
Trevor J. Koss
Collin Chandler Stecker
Joshua Isaiah Suhonen
Jennifer Lyn Vanden Heuvel
Jacqueline Joy Vavrek
Aaron R Zwicker

MAY 2009

David Gerald Bayer
Aaron Alan Bedermann
Matthew John Biller
David Nelson Bunck
Yuwei Chen
Sixun Chen
Davin Joel Chernak
Mitchell Andrew Daane
Sandra Marie DePorter
Theodore Walton Graphos
Andrew P Hatas
Matthew Jordan Hourwitz
Riley Sam Houston
Kara Jean Kaplan
Vanessa Kung
Travis Beck Lauder
Stephen Richard Lee
Wongyu Lee
Richard Eric Lightsey Jr.
Justin Lee Mallek
Patrick Robert Menden
David James Murray
Keane Joel Neilsen
Travis O'Brien
Dane Lucas Peterson
Lindsey Theresa Plank
Khian Hong Pua
Richard Henry Putze
Timothy Benjamin Rhorer
Matthew Paul Sebranek
Patrick Michael Shipway
Corey John Skadahl
Benjamin F Strick
Meghan Neilsen Tauber
Monika Bernice Tincher
Jonathan Tong
Amanda Katherine Turek
Souriya Vong Vang
Eric Victor
Jeremiah Scott Walsh
Christa Marie Welch
Jennifer Adele Wroblewski
Stephen Yang
Chi-Yu Yen

Our Awards

UW Chemists continue to garner significant awards

FACULTY AND STAFF AWARDS

The American Chemical Society honored Emeritus Professor **Chuck Casey**, Professor **Fleming Crim**, Dr. **Cathy Middlecamp** and Professor **John Moore** by selecting them as Fellows of the society. This is a new level of recognition at the ACS and is given to those who combine true excellence in their contributions to the chemical enterprise coupled with distinctive service to ACS or to the broader world of chemistry. They were recognized at the ACS National Meeting held in Washington, DC in late summer.

The ACS also recognized other Chemistry faculty members for their excellence: Professor **Larry Dahl**, the F. Albert Cotton Award in Synthetic Inorganic Chemistry; Professor **Clark Landis**, ACS Award in Organometallic Chemistry sponsored by the Dow Chemical Co. Foundation; Professor **Helen Blackwell**, Arthur C. Cope Scholar Award; and Professor **Martin T. Zanni**, Nobel Laureate Signature Award for Graduate Education in Chemistry.

Faculty Assistant **Ángel Abruña-Rodríguez** was selected as an Honored Instructor by students in the Chadbourne Residential College. This is the second time he has been so recognized and is an indication of his excellence in teaching.

The department was delighted to learn that the Romnes Award was given to Professor **Thomas Brunold**. This is a highly competitive award and recognizes outstanding faculty who have received tenure within the last four years. Award winners receive $50,000 in research support. Thomas also was selected to receive the Graduate Student-Faculty Liaison Committee (GSFLC) Outstanding Mentor Award.

Professor **Joshua Coon** was selected to receive the Ken Standing Award, presented biennially by the University of Manitoba and sponsors of the Enabling Technologies for Proteomics (ETP) Symposium. This award honors a young scientist who has made a significant contribution to technology development in support of research in the life sciences. Nominees are expected to be 45 years or younger at the time of the nomination. The award was presented at the ETP Symposium and included a cash award and commemorative sculpture.

Glassblower **Tracy Drier** was the recipient of the Wale Award for the best technical presentation at the American Scientific Glassblower's Society. Tracy's presentation was on "GI Digester Construction."

In spring, **Ilia Guzei** received an L&S Early Career Award from the College of Letters and Science, for his contributions to the research mission of the Department. Ilia manages the X-ray Crystallography Center.

Jeanne Hamers received the designation of Honored Instructor by the students in the University Residence Halls. This is certainly a well-deserved honor for Jeanne, who teaches several undergraduate chemistry courses.

It was announced in 2009 that Department Chair Professor **Robert Hamers** was selected to receive the 2009 Medard Welch Award of the AVS (formerly the American Vacuum Society), the society's highest award. The citation read "for wide ranging studies of chemistry and photochemistry at semiconductor surfaces and for establishing connections to various emergent technologies." The Welch Award consists of a cash prize, a gold medal and an honorary lectureship at the national AVS meeting in fall.

In early Spring 2009, the department was notified that both Professor **Song Jin** and Professor **Tehshik Yoon** had been selected to receive prestigious Sloan Research Fellowships. These fellowships provide $50,000 each over a two-year period.

The James W. Taylor Award for Teaching Excellence recognized Lecture Demonstrator **Jim Maynard** for his outstanding contributions to the educational mission of the department. The Taylor Award was endowed through the efforts of Professor **Jim Taylor** and the generosity of the Pharmacia Corp.

Diana Duff and Dianne Mitchell

Purchasing Specialist **Dianne Mitchell** won a Letters & Science Classified Staff Excellence Award in 2008. Dianne is pictured above with **Diana Duff**, who nominated her. Organic Lab Prep Tech **Brian Karas** also won a Letters & Science Award, and is pictured below with his nominator, **Nick Hill**. Dianne and Brian were honored at a ceremony held in the Spring, and also received cash awards. Chemistry Department members received two of the five awards presented!

Nick Hill and Brian Karas

Professor **Laura Kiessling** (Hilldale Professor of Chemistry) was inducted as a Fellow of the Wisconsin Academy of Science, Arts and Letters. This is the highest level of recognition conferred by the Academy; Fellows are elected for their high levels of accomplishment in their fields, a lifelong commitment to intellectual discourse and have a career marked by an unusually high order of discovery. Professor Kiessling is the third UW-Chemistry faculty member to be so honored.

The American Association for the Advancement of Science (AAAS) elected Professor **Clark Landis** to membership in the society. Selection as an AAAS fellow is a high honor conferred by peers in recognition of distinguished efforts to advance science and its applications. AAAS is the world's largest general scientific society.

Professors **John Moore** and **Mahesh Mahanthappa** were selected as Honored Instructors by students in the Chadbourne Residential College. The designation is awarded to instructors for their excellence in teaching and is certainly a well-deserved honor. Mahesh and John both teach Chemistry 109.

Professor **Tom Record** was given the 2009 Hugh M. Huffman Award at the 64th Calorimetry Conference, in recognition of his lifelong research accomplishments emulating the creativity and care demonstrated by Prof. Huffman, one of the founders of The Calorimetry Conference and a pioneer in the field of heat capacity measurements. Tom's award address was published in the *Journal of Chemical Thermodynamics*.

Professor **Lloyd Smith** was selected to receive a WARF Named Professorship. These positions are awarded to our most prestigious faculty. A unique feature is that the recipient is allowed to name the professorship after a person of their choosing. Lloyd elected to recognize **Wayne Hubble** and he will be designated the Wayne Hubble Professor of Chemistry. Lloyd was also pleased to receive the 2010 Pittsburgh Analytical Chemistry Award. The award consists of a scroll and honorarium which will be presented to him at a special symposium in 2010.

Professor **Robert West** was appointed as Distinguished Professor of Chemistry under the "World Class University" program of the Korean Science and Engineering Foundation. In Spring of 2009 he spent two months in Korea supervising joint research and giving lectures, and will do so for each of the next three years. He will be based at the Wonju campus of Yonsei University, which is the home of the major institute for silicon chemistry in Korea.

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 one of the Department's fundamental missions – 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 2007-2008 were presented in February 2009 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 **Tamas Benkovics**, **Stephen Block**, **Chris Brown**, **Melissa Galloway**, **April Jue**, **Amanda Musch** and **Jayashree Nagesh**. Congratulations to these outstanding teaching assistants/faculty assistants...their efforts and accomplishments in teaching our future scientists are very much appreciated!

Joseph Binder (PhD '09, Raines) was recognized for furthering the goals of green chemistry through research or education through the 2009 Kenneth G. Hancock Memorial Award. This ACS honor was for developing simple processes to transform crude biomass into useful fuels and chemicals, and for adapting olefin metathesis reactions to aqueous solvents. He received the award in spring at a ceremony at the Carnegie Institution in Washington, DC.

The 2009 Iota Sigma Pi Award was given to **Amanda Turek** (BS '09, Yoon). The award, given by the national honor society for women in chemistry, is given to only one student per year on a national basis. Congratulations to Amanda!

The department regularly recognizes both graduate and undergraduate excellence. Fellowship/Awards Committee members include Chair **Helen Blackwell**, **Gery Essenmacher**, **Pam Doolittle**, **Rosana Ellmann**, **Mahesh Mahanthappa** and **John Moore**. We appreciate their hard work in selecting the award recipients.

Awards and scholarships were distributed at the department's annual "Student Awards Ceremony" held on May 8, 2009. 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 2009 from the following sources: **Elizabeth Solom** and **Elizabeth Huffman** received the Eugene and Patricia Kreger Herscher Scholarship. Elizabeth was also the recipient of the Wayland Noland Scholarship for the fall semester. **Matthew Scheske**, **Daniel Lynch**, **Matthew Regner** and **Max Rusek** were awarded the Student Support in Chemistry scholarship; continuing support for **Matt O'Brien** and **Kevin Metcalf** was provided by the Edwin M. and Kathryn M. Larsen Scholarship; and the Walter W. and Young-Ja C. Toy Scholarship was given to **Michael Lambrecht**, **Joshua Wiensch** and **Haoyue Zhu**.

Support for undergraduate students during the fall 2009 semester included the following awards: receiving the Ackerman Scholarships were **Daryl Staveness**, **Kevin Metcalf**, **Matthew O'Brien** and **Daniel Baum**. Dan was also the

recipient of the Andrew Dorsey Memorial Scholarship. Other students benefiting from the Ackerman Scholarship fund included **Max Rusek**, **Ben Kerns** and **Andrew Reidenbach**.

The Chemistry Department's Henry and Eleanor Firminhac Scholarship was given to **Jessica Masterman**. **Theresa Anderson** was the recipient of the Margaret McLean Bender Scholarship. Funds from the Martha Gunhild Week Scholarship were awarded to **Molly Dimond**. The Richard Fischer Scholarship was given to **Steve Banik**. Steve also received funds from the Student Support in Chemistry Scholarship. **Matthew Regner** was also awarded funds from this scholarship.

Lauren Borja received support from the Eugene and Patricia Kreger Herscher Scholarship fund, while **Daniel Lynch** was provided funds from both the Don Brouse and Ackerman Scholarships.

One of the Chemistry department's older awards—the Mable Duthey Reiner Scholarship—was presented to **Amy Kolpin** and **Wenlu Gu**. The Edward Panek Memorial Scholarship funds were awarded to **Joshua Wiensch**. **Matthew Scheske** will benefit from continuing support by the George J. and Arleen D. Ziarnik Fund.

Awards from the Wisconsin Section of the American Chemical Society went to **Clayton Lepak** (Analytical), **Adam R. Hahn** (Inorganic), **Desmond S.P. Chan** (Organic), **Weicheng Zhang** (Organic) and **Theresa Anderson** (Physical).

Alpha Chi Sigma recognized **Lauren Buckley** with a scholarship for her excellent undergraduate work.

Excellence in General Chemistry classes is recognized with several sets of awards. **Lauren Buckley**, **Alex J. Gooding**, **Timothy R. Reasa**, **Jesse J. Susa** and **Tyler S. Valkoun** were presented the John and Betty Moore Awards for Excellence in Chemistry 109. Francis Craig Krauskopf Memorial Awards given to **Corie Borchert**, **Patricia Geisler**, **Vanessa Grosskopf**, **Gabriel Lawless**, **Rachael Lester**, **Alexandra Mehan** and **Xian Wang** provided financial support for 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!

Graduate fellowships and awards play a vital part in the support of the department's graduate students. The "Excellence in Research Awards" were presented to the following students: **Douglas Phanstiel** (Analytical–Coon), **Avery Watkins** (Inorganic–Landis), **Beth Landis** (Materials –Hamers), **Yu-Shan Lin** (Physical–Skinner) and **David Michaelis** (Organic–Yoon). These graduate students presented brief talks at the awards ceremony.

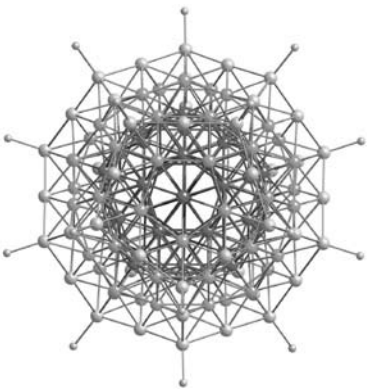
Katherine Partridge (Yoon) and **Andrew Dilger** (PhD '09, Burke) were recognized for their outstanding work as the recipients of the Abbott Laboratories Fellowships; **Richard McDonald** (Stahl) will be supported by the Abbott Fellowship in 2009-10. **Elizabeth Landis** (Hamers) and **Danielle Swaney** (PhD '09, Coon) were awarded the Leah Cohodas Berk Awards for Excellence. The Farrington Daniels Ethical Leadership Fellowship was given to **David Michaelis** (Yoon) for both leadership in the research group and ethical standards shown throughout his career at UW-Madison. **Ye Sun** (Lian Yu) and **Jeremy Higgins** (Jin) both received support from Merck fellowships in 2009-10. **David Michaelis** (Yoon) received a Fellowship from the ACS Organic Division, and **Rebecca Splain** (Kiessling) received one from the Medicinal Chemistry Division.

A new award this past year, the Research Mentor Awards, provided gifts of $1,000 each to the following students who mentored undergraduates in their careers: **Tamas Benkovics** (Yoon), **Richard McDonald** (Stahl), **Michael Nippe** (Berry), **Aaron Smith** (Burstyn), **Li Guo** (Gellman), **Jessica Menke** (McMahon), **Douglas Phanstiel** (Coon), **Jeremy Higgins** (Jin), **David Michaelis** (Yoon), **Rachel Selinsky** (Jin) and **Nicky Stephenson** (Stahl/ Gellman).

Jessica Menke and **Andrew Schmitt** (PhD '09, Jin) were supported during 2008-09 by Wisconsin Distinguished Graduate Fellowships, funded by a gift from the Ackerman Foundation, matched by the Graduate School. **Colin Ingram** (Weisshaar) and **Xiaoyu Wang** (Hamers) were selected to receive these fellowships in 2009-10. **Kristy Kounovsky** (Schwartz) and **Mohana Ray** (Schwartz) received Morgridge Distinguished Graduate Fellowships from the Biotech Center in 2008-09. **Milton Repollet-Pedrosa** (Mahanthappa), **Avery Watkins** (Landis) and **Nicole Woodards** (Li) were AOF Fellows during 2008-09.

Samira Musah (Kiessling) and **Gene Wong** (Landis) were supported by National Science Foundation (NSF) Fellowships during 2008-09, while **Joseph Yeager** (Hamers), **Lauren Buchanan** (Zanni) and **Jennifer Laaser** (Zanni) received NSF Fellowships beginning in 2009-10. **Christine McInnis** (Blackwell) received continued support from a National Defense Science and Engineering Graduate fellowship (NDSEG) in 2008-09; **Joseph Gerdt** (Blackwell) joined Christine as a NDSEG Fellow in 2009-10. **Andrew Huisman** (Keutsch) is in the final year of support from a Department of Defense Fellowship.

A number of Chemistry students are supported through NIH Traineeships. These are competitive awards from NIH, and Chemistry students receive support, usually for 3 years, from the Chemistry Biology Interface, Biophysics, Biotechnology, and Genomic Sciences Training Programs. Students with traineeships during 2008-09 included **Ben Bratton** (Weisshaar), **Justin Carlisle** (MS '09, Smith), **David Good** (PhD '09, Coon), **Graeme McAlister** (Coon), **Brooke Richardson** (Gellman), **Maren Buck** (Lynn), **Olivia Johnson** (Brunold), **Robert Sturm** (Li), **Suzanne Kulevich** (Smith), **Timothy Schramm** (Schwartz), **Danielle Swaney** (PhD '09, Coon), and **Sarah Weinreis** (Cavagnero).



Notable News

DEPARTMENT LECTURE SERIES

Seminar announcements are on the web at http://www.chem.wisc.edu/content/chemistry-newsletters. Some of the named and special seminars held at the department in the preceding year are featured below, but many other excellent talks were given each week by faculty, students and guests of the Department.

In late September, the department hosted its first colloquium speaker, **Glen Ruskin**, Director of the Office of Public Affairs for the ACS. The second Department colloquium was presented by Chemistry's Professor **John Moore**, who talked about chemical education's digital library as a new online resource for teachers and students.

Tim Donohue, Director of the Great Lakes Bioenergy Research Center at UW-Madison, presented a seminar in spring. The department was also pleased to welcome Chancellor **Biddy Martin** for a departmental colloquium. The event was well-attended and provided some interesting insights.

GSFLC hosted Professor **Neal Lane** of Rice University in late March. Professor Lane is a former Director of the National Science Foundation and a Senior Fellow at the James Baker Institute for Public Policy. His talk centered on "*Science in the OBAMA Era*".

SHAIN COLLOQUIUM

In late April, the department hosted Professor Dr. **Helmut Schwarz** of the Technische Universität Berlin, Institut für Chemie, and President of the Alexander von Humboldt Foundation, as the 6th Irving Shain Colloquium Speaker. The title of Professor Schwarz's talk was "*From Bare FeO+ to Cytochrome P-450: New Insight in the Intriguing Mechanisms of C-H Bond Oxygenation*". Professor Schwarz also presented the Merck lectures during his visit: "*Ligand and Cluster-size Effects in Metal-Mediated Activation of Methane: A Cold Approach to a Hot Problem*", and "*Keto-Enol Tautomerism: A 125 Year Old Story Revisited*".

The final department colloquium was given by the Chemistry Department's Professor **Larry Dahl**. Professor Dahl has now retired from active teaching, but continues to direct a research program in the department.

Dr. **Tim Harris** of the Howard Hughes Medical Institute visited the department in January as part of the Meloche Lecture series held annually by either the Analytical or Inorganic Division.

The Physical Chemistry Division presented the John E. Willard Lectures in Physical Chemistry with talks by Professor **James G. Anderson** of Harvard University; and the Bernstein Lectures in Physical Chemistry with Professor **Raphael D. Levine** of Hebrew University. Both lecture series are made possible by donations in the names of former prominent professors in the department.

The Organic Division presented the Hirschmann Seminar series in May 2009, with speaker Professor **Barry Trost** of Stanford University. Professor Trost spoke on "*Self Assembly of Dinuclear Main Group Catalysts for Asymmetric Synthesis" and "On the Impact of New Synthetic Methods for the Synthesis of Bioactive Targets*".

The Chemistry Department also continued to sponsor joint seminars with other campus departments throughout the year. A joint seminar presentation with Materials Science & Engineering and our department included a talk by Professor **Matt Tirrell** of the University of California, Santa Barbara, with a talk titled "*Peptide Materials Science*". In early March, a special Astrochemistry seminar was held featuring Dr. **Harshal Gupta** of the University of Texas & Harvard-Smithsonian Center of Astrophysics.

ABBOTT SYMPOSIUM

The Organic Division presented its annual Abbott Symposium on May 28th, 2009. The Abbott Organic Synthesis Student Award Lecture was presented by **Andrew Dilger** (PhD '09, Burke), who spoke on "*The Total Synthesis of (-)- Dictyostatin*". Dr. **Michael Schrimpf**, Chemistry Group Leader in Neuroscience from Abbott Labo-

(continued on page 14...)

This N' That

Eric J. Amis (PhD '82, Yu) has moved to the United Technologies Research Center in East Hartford in August of 2009, as the Director of Physical Sciences Department from his prior position as the acting director of the Materials Science and Engineering Laboratory of NIST.

Jay Badenhoop (PhD '94, Weinhold) was selected as the Outstanding Professor of the year 2008-09 at Potomac State College, a division of West Virginia University. Dr. Badenhoop is teaching Chemistry courses, but has also filled in on Math, Physics and Astronomy courses as needed. Jay is also Vice President of the local Kiwanis Club in Keyser, WV.

Richard Bunce (PhD '81, Zimmerman) won the 2009 Oklahoma Chemist of the Year Award. After starting his career at Oklahoma State, Rich developed a synthetic program investigating processes involving tandem reactivity. Most recently he has extended his research to the synthesis of heterocycles. In addition to all of his research and teaching activities, Rich has served on the Editorial Advisory Board of several major chemical journals.

Eric Buxton (PhD '96, Smith) is back at UW as a clinical assistant professor in Extension Services in Pharmacy, after 13 years in Texas at Lexicon Pharmaceuticals. His focus will be on setting up new opportunities for continuing education for those in the pharmaceutical industry.

George F. Caflisch (PhD '76, Yu) retired from Eastman Chemical Company as the Director of Analytical Division in 2006, and continues to reside in the area of Kingsport, TN.

Taihyun Chang (PhD '83, Yu) has been involved with his second tour of duty as the chair of Chemistry Department of Pohang University of Science & Technology for the past two years. Recently, he received a notable recognition by the Federation of Scientific Societies of South Korea as the scientist of the month, April 2009.

Left to right: Dr. Martin Abraham, Dean of YSU STEM; Chris Ciolli; Congressman Tim Ryan (OH-17); Dr. David Sweet, YSU President.

Chris Ciolli (PhD '04, Belshaw) was honored at an awards dinner as the Outstanding Young Alumnus from the Youngstown State University College of Science, Technology, Engineering and Mathematics (YSU STEM).

David Crumrine (PhD '71, Zimmerman), Professor at Loyola University, wrote to say that he was part of the mini-ZGroup gathering in La Crosse. They went canoeing in addition to other activities. Dave also reports: "I am still working. I just got another paper published and I have two more that I am working on. I will be 65 this summer but have no plans for retiring. I think of you often when I am teaching or working with graduate students. You continue to be a great model for all of your former students!"

Dr. Edward P. Fody (MS '71, Gaines), MD, was one of eleven recipients of the 2008 College of American Pathologists Lifetime Achievement Awards. He was recognized at a ceremony held in San Diego in September at the College's annual meeting. He is the editor of a popular clinical chemistry textbook.

Rich Givens (PhD '67, Zimmerman) spent two weeks at Wisconsin getting some writing done.

Charles C. Han (PhD '74, Yu) retired from the Polymers Division of NIST as a NIST Fellow, and moved to Beijing in 2002 as the Director of Polymer Chemistry and Materials Laboratory of Institute of Chemistry of the Chinese Academy of Sciences. He is now widely regarded as the principal pillar of the polymer physics community of China.

David F. Hillenbrand (PhD '74, Yu) retired from Resonance Research, Inc., of Billerca, MA, as the Executive Vice President in 2007.

Kurt Hoffacker (PhD '96, Zimmerman) reports that he has a new son and he is getting used to the Dad role. Kurt is at the Luminex Corp in Austin, Texas, and things are going very well for him. He is "sending out good thoughts to the NSF that they see [Howard Zimmerman's] proposal in the best light (pun intended)". A note about my company's new product: I spent about three years working on the chemistry part. The instrument is based on simultaneously measuring the fluorescence from three different dyes inside a small polystyrene sphere. My group was able to design a 3-D encoding scheme to give 500 different codes. I used my old crystallography notes from Wisconsin to design the product.

Amber Janda (BS '06, Zimmerman) won a NDSEG Fellowship for graduate study at UC-Berkeley. There were 2,000 applicants but Amber was the top one and selected. She sent advice on how to write fellowship applications.

Chanjoong Kim (PhD '03, Yu) was appointed as an assistant professor at Liquid Crystal Institute of Kent State University in fall of 2008. Prior to his present position, he spent 4 years as a postdoc at Applied Physics of Harvard in David Weitz's lab.

Drew Klein (PhD '78, Evans; PD '78-'79, Yu) is a project leader and Six Sigma Blackbelt in the Lean/Six Sigma group of Solae, LLC. Solae is a joint venture of DuPont and Bunge and is a leading global supplier of soy-based food ingredients. Prior to moving to Solae, Drew spent 23 years in the agrochemical industry with Monsanto Company. His Formulation Science Team was responsible for the development of Roundup® WeatherMax™ with Transorb™ II Technology, Roundup UltraMax™ and

Roundup RTU with FastAct™ technology. Drew has an extensive background in Regulatory Affairs and Environmental Science, in areas such as ground and surface water studies and product registration. Drew was married to the late **Barbara Kure Klein** (PhD '80, Record) for 31 years. He is also active in the St. Louis chapters of the Wisconsin Alumni Association and the UW Foundation Women's Philanthropy Council.

Michael R. Landry (PhD '85, Yu) has moved to Display Technologies / Dow Advanced Materials at Marlborough MA from Eastman Kodak after 23 years. The move was induced by two consecutive purchases; that by Rohm and Haas Electronic Materials of Kodak's Optical Display Films business in June 2007, followed by the acquisition of Rohm and Haas by Dow Chemical in April 2009.

Donald L. Macalady (PhD '69, Cornwell) is to be honored by a symposium "Aquatic Redox Chemistry" at the National ACS Meeting in San Francisco in March, 2010. Don is Professor and Director of the Center for Environmental Risk Assessment at the Colorado School of Mines. The symposium, celebrating the diversity of Don's contributions to the field, is cosponsored by the Divisions of Environmental Chemistry and Geochemistry.

John McCall (PhD '71, Zimmerman) wrote that he joined his classmates at La Crosse for the mini-ZGroup gathering. Also, John reports "It's funny how careers change. I don't use much photochemistry any more, but the methods of thinking and the drive for results that you taught us have both been important to me over the years. Havala and I remember our years at Wisconsin fondly. I am currently president and founder of PharMac LLC. I began my career as a medicinal chemist with Upjohn and subsequently held leadership positions with Pharmacia and Upjohn, Pharmacia, and Pfizer. I was Director of CNS Research with Upjohn, Vice President and Global Head of Chemistry for both Pharmacia and Pharmacia&Upjohn and Vice President of Research with Pfizer. I currently chair a NINDS development team in the spinal muscular atrophy area, participate as NIH study section member, and co-chair a NINDS translational research review committee. I serve on administrative and scientific advisory boards and consult with a number of companies. I'm actively engaged with three venture capital funds, and am a partner with the Apjohn Group. I hold 53 US patents and have over 60 refereed publications. Since retiring from large pharma and starting my own consulting business, I've enjoyed a return to the science that makes pharmaceutical research fun.

Ronald McKelvey (PhD '71, Zimmerman) hosted a reunion of some members of the HEZ group from July 3-6 at his house. Guests included **Lynn Sousa**, **Dave Crumrine**, **John McCall**, **Paul Schatz** (not an HEZ Alumnus, but a good friend), **Albert Pratt**, and their wives.

Jeff Moore (Grad Student Zimmerman) reports that his wife Janet and he are living in Las Cruces, NM after leaving the Bay Area a couple of years ago. We both had high tech executive positions and decided we wanted a more "normal" life style. Jeff is doing some consulting work and also is the Chief Technical Officer and Co-Founder of a new company called Latest Medical, Inc. We are developing new ways to find and process scientific and less technical information and make it available to patients and health care professionals. Our initial work has been in breast cancer.

John Penn (PhD '81, Zimmerman) reports that he has been promoted to the rank of Professor at the University of West Virginia Chemistry Department.

Albert Pratt (PD '67-'69, Zimmerman) reports that he is now Professor Emeritus at the School of Chemical Sciences at Dublin City University in Ireland. He joined his classmates in La Crosse for the mini-ZGroup-gathering but stopped in Madison en route. Albert and his wife Iona stopped in Madison to look around and to visit with the Zimmermans. On his return to Dublin he wrote: "We arrived back in Dublin on Thursday, having had a very enjoyable time in the US. The reunion in La Crosse with the McKelveys, Sousas, Crumrines, McCalls and Schatzs was a great success, the first time we'd all got together in 40 years. How time flies! It was great to have had the opportunity to meet you and Peggy again, and Iona and I enjoyed our time with you both."

Donn N. Rubingh (PhD '72, Yu) retired from the Miami Valley Laboratory of Procter & Gamble as a Research Fellow in 2004 and continues to reside in Cincinnati, OH.

Carl Seidel (BS '59) was elected to the New Hampshire Legislature last November and was sworn in as Representative for Hillsborough district 20 in Nashua, NH. He is serving on the Public Works and Highways Committee. NH has the largest state legislature in the US. Carl is one of 400 Representatives, and he plans to run for reelection in 2010. He retired in 1997 after 28 years with Dupont Merck, having served as President and CEO of International Isotopes from 97-99; he then formed a consulting company, CWS and Associates. He plays softball year round, and participated in the Boston Red Sox Fantasy Camp for the last two years. Carl visited the Department when he was in Madison for his 50th Reunion in May.

Steven A. Shaya (PhD '74, Yu) retired from Johnson & Johnson as the Manager of Corporate Technology in 2006, and now resides in Austin, TX.

Alex F. Sluzas (PhD '76, Yu), patent attorney, has been with Paul & Paul in Philadelphia since 1982, and became a partner in 1990.

Lynn Sousa (PhD '70, Zimmerman), notes that he joined his classmates at La Crosse. Lynn retired in June 2008 after thirty years at Ball State University. I enjoyed my five years at Michigan State, but I wanted to find a university corresponding better to my set of skills and abilities. Ball State University in Muncie, Indiana proved to be an excellent place for me. My Ball State colleagues and I believed in research with students to the point where we volunteered our time each summer to mentor undergraduate and master's students. I enjoyed my teaching very much and work with students individually also. In 1984 I won an NSF research grant (a standard RO1 type grant) to support my work on fluorescent chemosensors, and in the fall of 1992 I was the lead-off speaker at a symposium at the national ACS meeting on chemosensors, since my publications described one of the first examples of cation-enhanced fluorescence. In 1991 Bea and I lived in Cambridge England for seven months while

I worked with Ed Constable and was a Bye Fellow of Robinson College (Al Cotton was a Bye Fellow in that college also). From 1992 through 2002 I served as department chair and although you may not believe it, I enjoyed that time as well. I helped my department go through a nearly complete renovation of facilities (the Ball State Chemistry Department remains one of the best equipped comprehensive universities in the country). We also were able to provide computers for each pair of students in all of our general chemistry laboratories and several other classes as well. My colleagues and I also hired and mentored two faculty who were recognized as the best young faculty in their respective fourth years on the faculty. We now graduate as many ACS certified chemists as Purdue and Indiana University, even though we are a campus of 18,000 and much smaller than either of those research universities. In 2002 I went back to heavier teaching and got more active in research with students. In 2007-2008 I was asked to be acting chair and retired at the end of that academic year. I enjoyed that work, but was ready to retire after a year of unrelenting work for the department and university. It was gratifying to receive one of the University's Excellence in Teaching Awards at the end of my career. So now Bea and I are enjoying travel and work in our garden and volunteering at our Unitarian Universalist Church and other activities. We have a group of very special friends in Muncie, but also enjoy visits with **Dave** and **Sheila Crumrine** and **Paul** and **Ellie Schatz** as well as **John** and **Havala McCall**. We have been very fortunate to visit **Albert** and **Iona Pratt** several times over the past 18 years. Bea, who retired from middle school teaching in 2000, remains very active in all sorts of good causes and activities, and we are having a very rich and enjoyable life together. Our son, Aron, born in 1969 while we were in Wisconsin, is now the Principal Associate Dean of the Michigan State University Medical School at East Lansing, Michigan. He seems to be working nearly all the time, but enjoying what he does. His main administrative challenge is managing the expansion of the medical school as it doubles the number of students and opens a large research and teaching operation in Grand Rapids, Michigan. He is married to Alice Dreger, an internationally known activist (her area of interest is intersex and other different ways people are born: conjoined, dwarf, etc) and author (published by Harvard Press and others), who has an appointment at the Northwestern University College of Medicine. Aron and Alice have a nine year old son named Kepler who is very interested in science and engineering, and he is quite a charming young man. I would say this even if her were not my grandson!

Finally, and most importantly, I want to thank you for helping me learn to do chemistry, and for attracting such an interesting and talented group of students. I have always tried to emulate your willingness to think out loud about chemistry at our group meetings. I still hear you saying that an idea might be a little crazy, but worth thinking about because of there it might lead.

Kaoru Tamada (PD '92-'94, Yu) became a full professor in Tohoku University in September of 2008. She is one of a handful of woman senior faculty members in major Japanese universities.

Keiji Tanaka (PD '98-'00, Yu) became the youngest full professor of Kyushu University, in Department of Applied Chemistry, in March of 2009.

John S. Thayer (PhD '64, West) retired as Emeritus Professor from the Department of Chemistry, University of Cincinnati, where he had been a faculty member since 1966. Building on his UW experience, Professor Thayer wrote three books on organometallic chemistry, especially its importance in biology and the environment. His current research, continuing after retirement, falls under the topic "Organometallic Chemistry at The Water's Edge."

Mary Uhing (PhD '75, Yu) retired from Nalco of Naperville, IL, as a director of polymer analysis in 2006 and continues to reside in Chicago.

Pengfei Wang (PhD '02, PD '02-'03, Zimmerman) reports "good news to share with you. I was recently awarded a NSF grant for methodology development. This is a regular grant for three years, starting this month. I am glad my hardworking eventually get recognized." Pengfei is at the University of Alabama, where he has published a number of superb papers.

Dieter Werthmann (PD '71-'73, Zimmerman) reports that "Susanne and I are well and are enjoying retirement. Instead of Chemistry I occupy myself with music (we have a jazz band where I play the piano and Susanne is vocal, plus a drummer and a bass) and politics. In September I was elected to the parliament of the state of Basel (Canton Basel), where I am the speaker of my party (Fraktionspresident). You may know that Switzerland is a similar federation as the US. The 26 cantons have the main power as the 50 states in the US and also the main part of taxes. As you can imagine, I am still quite busy even without chemistry."

Zhihao Yang (PhD '96, Yu), CTO of NanoMas Technologies, Inc., found a person to replace him as CEO which position he held since 2006. The company is located in a suburb of Binghamton, NY, and specializes in mass production of high quality nanoparticles and carbon nanotubes.

Zhaoning Zhu (PhD '94, Zimmerman) writes from the Department of Medicinal Chemistry at Schering-Plough Research Institute. He sent a copy of his latest publication entitled "Discovery of Novel Hydroxamates as Highly Potent Tumor Necrosis Factor-r Converting Enzyme Inhibitors: Part I Discovery of Two Binding Modes" published in J. Med. Chem. and dedicated to his Ph.D. adviser.

Vedejs Group Reunion
Summer 2010

We are looking for all Vedejs group members past and present as we prepare for an EV reunion in Summer 2010. Please look for updates as we plan the reunion on *www.linkedin.com* at the group "*Professor Edwin Vedejs Students-Past and Present*" or contact one of us below:

Nicole Bennett
bennettns@appstate.edu

Jamie Stacey
Jamie.Stacey@abbott.com

Lisa Seaney
lseaney@earthlink.net

Current Chemistry News

DEPARTURES

Ken Cochems retired from the Analytical Stockroom in January. Ken had been with chemistry for 23 years, and a group of his friends had a party for him shortly before he left. Unfortunately, in early summer 2009, Ken had a stroke, and he is now rehabilitating. If you'd like to send him a card, his address for a while will be Ken Cochems, Legacy Gardens, 1601 Wheeler Rd., Madison, WI 53704.

Larry Dahl, Professor of Chemistry, retired before the start of the 2008-09 academic year. Larry taught in fall 2008, but is now concentrating on research. A symposium honoring Larry was held in Summer 2009—see the BC centerpiece for pictures from that gathering.

Ed Turner, longtime Lab Director in the Physical Chemistry Lab, retired in 2008. He was replaced by **Mark Wendt** (PhD '99, Farrar), who had been on the staff as a Lecturer.

Pat Wermeling, a Financial Specialist in the Business Office, retired in January 2009, after more than 28 years of state service. She was replaced in September by **Reba Ames**.

Howard Whitlock, Professor of Chemistry, retired after the 2008-09 academic year.

Mary Kay Zimmerman retired after over 19 years of service in the Chemistry Department, the last 13 serving as Graduate Student Services and Industrial Recruiting Coordinator. Mary Kay is happily spending her retirement in Florida. **Stephenie Nagle** was hired in January to replace Mary Kay.

ARRIVALS

Rebecca "Reba" Ames joined the Department in September 2009, replacing **Pat Wermeling**, who had retired earlier this year. Reba comes to us most recently from North Carolina, and is thrilled to be back in Madison after a seven-year absence. Having lived in warmer climates during the past years, she will be easily recognizable by her propensity to wear excessive layers of clothing whenever the temperature drops below seventy.

Rosana Pérez Ellmann joined Chemistry in January of 2009 as the Academic Department Manager. Rosana spent most of her professional career working at Lands' End in many roles involving marketing, supply chain and most recently the International side of the business. Rosana is originally from Uruguay, but has lived in Wisconsin for more years than she will admit. She is an alumni of UW Madison School of Business. She, along with her husband Curt, son Adam and daughter Christina live in Madison—minutes from work.

Michelle Fitzgerald took over as second floor stockroom Laboratory Prep Technician in April 2009 after Ken Cochems retired. I had previously worked as a Lab Prep Tech since May of 2005, in the Physical Chemistry Stockroom. Prior to that, I worked in the second floor stockroom since May 2002 as a student. I have a BS in Psychology from the University of Wisconsin-Madison. I live with my father a bit north of Madison. On vacations, I enjoy horseback riding in Kentucky. In my spare time, I enjoy knitting, sewing and quilting.

Danny Fredrickson joined the Department in January 2009 as an assistant professor. Danny received a B.S. degree from the University of Washington in 2000, and his Ph.D. degree from Cornell University in 2005. Following his Ph.D. studies, Danny moved to Stockholm, Sweden for post-doctoral work at Stockholm University.

Danny has come to Madison with his wife, Rie (also a chemist in the area of solid state chemistry), and their daughter, Cordelia.

Below Danny writes a brief description of research in his group:

The focus of our research is the elucidation of the chemical principles underlying the structures of the solid state compounds that form upon alloying metals together: intermetallic compounds. In 1923, Linus Pauling's X-ray diffraction examinations of $NaCd_2$ revealed inter-metallics to be a realm of incredible complexity. While Na(s) and Cd(s) both form in crystal structures typical of metals (body-centered cubic and hexagonal close-packed lattices, respectively, each with just 2 atoms per unit cell), mixing them in a simple 1:2 ratio yields a giant 31 Å cubic unit cell, containing more than 1000 atoms. Extensive families of intermetallic compounds with rivaling complexity have since been discovered, and as X-ray diffraction technology and crystallographic methods continue to advance, we continue to find new layers of intricacy in the structures of intermetallics. Examples include the Nowotny chimney ladder phases, a family of compounds formed from the threading of helices of Sn, Ga, or other main group elements through the insides of transition metal helices; and the icosahedral quasicrystals, such as $YbCd_{5.7}$, whose structures are perhaps most easily comprehended via models in 6D space.

Our aim is to reveal the chemical origins of these beautiful structures, with the ultimate goal of gaining some degree of synthetic control of this structural diversity. With this knowledge in hand, we hope to use the atomic structures of these phases as parameters for the optimization of a variety of materials properties important for energy technology, including superconductivity, thermoelectricity, and catalysis.

In our research, we combine quantum mechanical calculations with solid-state synthesis and advanced crystallographic methods. Students working in our group can adjust the balance between these theoretical and experimental components to best suit their interests and goals. Below you may find each of these aspects of our work described in more detail.

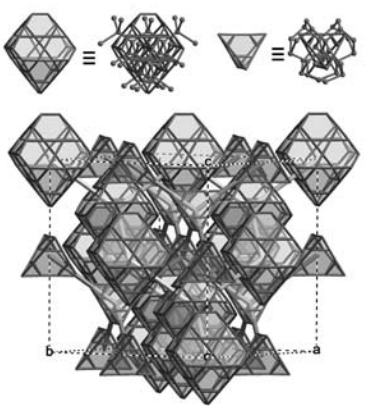
Empirical observations and earlier quantum mechanical calculations have drawn intriguing connections between intermetallic phases and molecular chemistry. Electron-counting rules, atomic size effects and electronegativity differences all appear to be at work in these compounds. We are exploring these connections, using electronic structure calculations—ranging from the orbital-based extended Hückel method to density functional calculations—to build theoretical schemes for understanding the chemical driving forces behind the structures of intermetallics. To this end, we are seeking new ways of extracting chemical stories from the vast arrays of numbers resulting from electronic structures calculations.

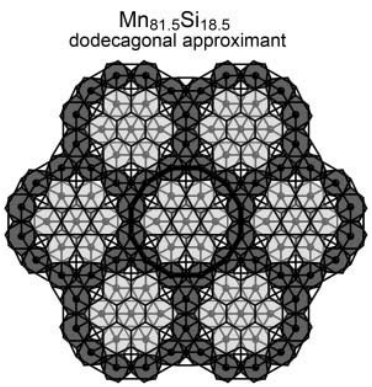
Our theoretical efforts are currently directed toward exploring a common theme that has emerged over the course of calculations of several families of structures: complex structures are built at the electronic level from fragments or slabs of simpler ones fused together in new ways. The $NaCd_2$ structure is a shimmering example of this. Model calculations reveal it to consist of nanometer-sized blocks matching the much simpler structure of $MgCu_2$. $NaCd_2$ is, in essense, a crystal of nanometer-sized crystallites of the $MgCu_2$ structure (below). We are working now to developing this theme of complexity as a perturbation on simple periodicity into a predictive theoretical framework.

The synthesis and structure determination of new intermetallic structures provides both input for our theoretical calculations and mode of expression of our new conceptual understanding of their bonding. Synthesizing these beautiful structures follows standard routes of solid-state synthesis, often requiring little more than cooling of a molten mixture of metals.

Their structure determinations, on the other hand, pose exciting crystallographic problems, such as incommensurate modulations, and quasi-crystalline order. To face these challenges, we employ state-of-the-art crystallographic methods, such as superspace modeling, in which complex structures are viewed as cross-sections of simpler structures in four or more dimensions. One project in this area is the structure determination of dodecagonal quasicrystals. A hint of the geometrical features within these structures is illustrated below with the approximant structure solved previously by Shoemaker and Shoemaker.

In addition to their often breath-taking structures, intermetallics are attractive for their materials properties. Complex magnetic ordering, superconductivity, thermoelectricity, and hydrogen storage are examples of the properties observed in this family of compounds. One goal of our experimental and theoretical investigations is the development of chemical principles for the design of new intermetallic materials with structures tailored to specific properties.





Stephenie Nagle started as the Graduate Program Coordinator in January, after Mary Kay retired in December of 2008. I have a BS in Business, a MS in Industrial Relations and 20 years of Human Resources experience in industries ranging from automotive, retail, and agriculture to health care and human services. I am very excited about the opportunities here to utilize my skills and abilities in new ways. I have found my time in Chemistry so far to be very enjoyable—the students, the professors and the staff are great. I look forward to continuing to be a part of the team, helping the students and assisting the department in strengthening its alumni program.

Jennifer Schomaker joined the department as an Assistant Professor in July 2009. She received her PhD from Michigan State University and enjoyed the beautiful CA weather as an NIH Post-doctoral fellow at UC-Berkeley before returning to the Midwest.

Research in the Schomaker group is driven by the need for new, efficient methods to transform renewable hydrocarbon sources and heteroatomic gaseous molecules into more valuable building blocks for synthesis. Our program will encompass new catalyst development and optimization, elucidation of reaction mechanisms and applications of new methodologies to the synthesis of natural products and other useful molecules.

One of the broad goals of our research program is to develop new methodologies that utilize readily available, inexpensive gaseous reagents for the synthesis of heterocycles with high regio-, diastereo- and enantioselectivity. The use of CO as a carbonyl source for the transformation of alkenes, alkynes and aryl halides into useful compounds is well documented. However, there remains much to be explored in the realm of asymmetric carbonylation chemistry and in developing new methods for incorporating CO into sterically congested and/or highly functionalized substrates. The motifs accessible from these methodologies will serve as precursors for the construction of biologically active molecules and natural products.

The design and synthesis of transition metal catalysts for the selective oxidation of petroleum and biomass-derived hydrocarbon feed stocks is an important and active area of research. Nitrous oxide, a potent greenhouse gas, has demonstrated promise as an unusually selective oxidant for transforming hydrocarbons into useful synthetic building blocks. As the only by-product of the reaction is N_2, these transformations are obviously attractive from an environmental point of view. However, the typical reaction conditions necessary to achieve activation of the kinetically inert N_2O are often harsh, requiring high temperatures and pressures. Nature activates this small molecule using nitrous oxide reductase, an enzyme that contains multiple metal centers. We propose to develop active and selective homogeneous bi- and polymetallic catalysts to transform a wide variety of lower-value hydrocarbon sources into useful, higher value oxidized molecules. Additionally, studies to develop an accurate mechanistic understanding of the behavior of metal-N_2O complexes and to explore the factors that control the activation of N_2O have the potential to unlock new oxidations of aromatics, alkenes, alkynes and alkanes that currently require much more involved and expensive procedures.

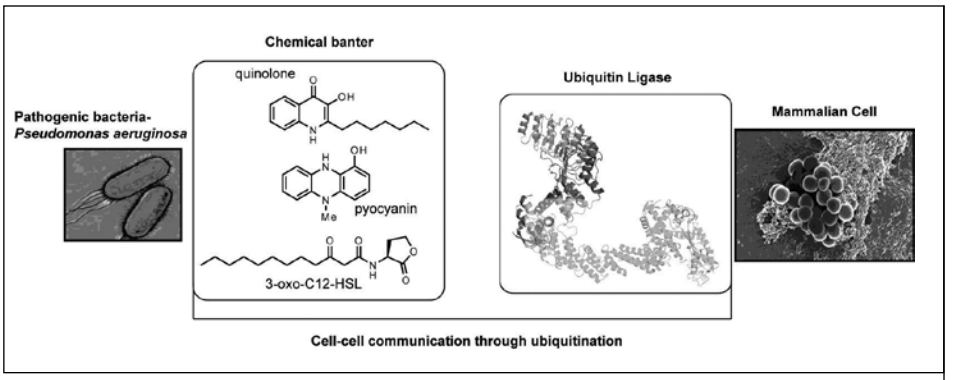
Polyamines are important components of many pharmaceuticals and biologically active molecules. They can be utilized as probes for the study of disease pathways, function as small molecule RNA inhibitors, and serve as ligands for transition-metal asymmetric catalysis or act as chelates for metals in biomedical or environmental applications. Good general and efficient methods to install multiple C-N bonds or to access highly substituted polyamines in enantioenriched form are limited. Projects in this area will focus on the development of new catalysts and oxidants capable of installing multiple C-N bonds in a single step, the construction and ring-expansion reactions of unusual strained heterocycles and the design of general methods for the preparation and use of aziridinyl amines as building blocks for synthesis.

The efficient and selective oxidative cyclization of olefins is also a challenging synthetic problem. In particular, transformations of 1,3- and 1,4-dienes are plagued by oxidative cleavage and by-product formation. As 1,4-dienes are a recurring structural motif in polyunsaturated fatty acids (a renewable hydrocarbon source), new methods that can utilize these sources for synthesis are highly desirable. Our group will model and develop new catalysts containing multiple metal centers in attempts to control the selectivity and reactivity of these substrates.

Eric Strieter

RESEARCH GOALS

There are ~10^{14} microbes that live in the human body, indicating these organisms outnumber our own cells by an order of magnitude. Understanding this rich ecosystem by examining the mechanisms mediating the diverse interactions that occur is therefore necessary to better understand human biology. A majority of microbes use small molecules, i.e., quorum sensing molecules, to govern cell-cell communication and it has been shown that these molecules facilitate interactions with eukaryotic cells. As a result, the hypothesis is that intra and inter-kingdom communication is largely dictated by chemical signals. How then are these signals perceived on a molecular level and transformed into a physiological response that is either beneficial to both organisms or detrimental to one? Our laboratory focuses on examining how either endogenous or bacterially derived chemical signals/small molecules govern enzymes involved in cellular homeostasis.

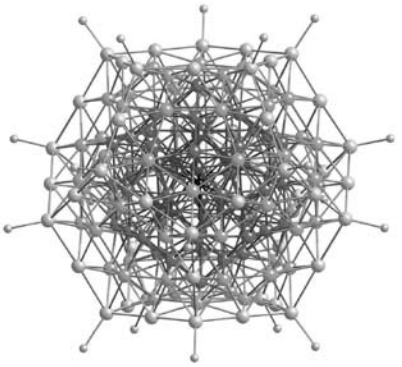


Two basic mechanisms exist for controlling cellular responses to environmental changes: transcription and post-translational modification. Transcription provides a means by which the cell guards itself from dramatic shifts in both extra- and intracellular signals. In contrast, the kinetics of proteome modification are much more rapid thereby leading to the immediate activation or inhibition of signaling pathways. These post-translational modifications typically occur through reversible protein phosphorylation and/or irreversible protein turnover. For the latter, the ubiquitin-26S proteosome system (UPS) in eukaryotes and the AAA+ (ATPases associated with various cellular activities) family of proteases in prokaryotes serve as the predominant regulatory machines. The sheer number of proteins encoded by the human genome with a proposed function involving the UPS suggests that this mode of proteome modification rivals that of protein phosphorylation. Moreover, the recent evidence implicating AAA+ proteases in the virulence of pathogenic microbes further exemplifies its physiological importance. This information presages a role for these cellular machines in directly sensing chemical signals, but this is relatively unknown. The one exception is the hormonal signaling in plants that occurs through the enzymes responsible for covalently attaching the small protein ubiquitin to client proteins that are subsequently delivered to the 26S proteasome and degraded. But do other eukaryotes employ small molecules to regulate protein turnover and have pathogenic bacteria evolved methods using chemical signals to subvert the host immune response through this pathway? To answer this question we will employ a combination of organic synthesis, biochemistry, microbiology, and molecular biology.

Major areas of study:

1) Understanding how secondary metabolites program protein degradation by the ubiquitin 26S proteasome system.
2) Define and characterize the mechanisms by which pathogenic bacteria use cyclic lipopeptides to regulate protein degradation.

Mark Wendt (PhD '99, Farrar) took over as Lab Director for Physical Chemistry in Summer 2008, replacing **Ed Turner**. Mark had been a Lecturer in the department for the previous nine years, and received the James Taylor Excellence in Teaching award for 2006. He is originally from Michigan and received his BS from Alma College



(...NOTABLE NEWS, continued from page 7)

ratories talked on "Neuronal Nicotinic Receptor Agonists for the Treatment of Pain and CNS Disorders". The Abbott Organic Chemistry Lecture was presented by Professor David Evans from Harvard University, "The Expanding Universe of Chemical Synthesis. Is it Dead or Alive?"

MCELVAIN SEMINAR SERIES

The McElvain Seminar Series allows students to take an active role in the selection and hosting of speakers from industry, academia and beyond. Dr. **David Chandler** from Sandia National Lab was the first Physical Chemistry speaker, in September, and spoke on "*Ion Imaging and the Search for the Ultra-Cold Molecule*". Dr. **Daniel Dubois** from Pacific Northwest National Labs was hosted by Inorganic students in February. The Analytical Sciences Division hosted Professor Peter Carr of the University of Minnesota in March, and Dr. **Jae Schwartz** from Thermo Fisher Scientific in April. Professor **Sunney Xie** of Harvard University presented the second Physical Chemistry McElvain seminar in March. Inorganic students hosted Professor **Karl Wieghardt** of the Max Planck Institute in April; his talk was "*Coordination Chemistry with Radicals: Where are the Valence Electrons*?". April was a busy month for talks, as the Organic Division students invited Professor *Tom Muir* from Rockefeller University; Professor Muir's talk was titled "*Turning Virulence On and Off in Staphylococci*". Students very much enjoy the opportunities for networking provided by the McElvain series.

HIRSCHMANN LECTURE SERIES

Professor **Mark Ratner** from Northwestern University gave the 2008-09 Hirschfelder Lectures. The Lectures were on the role that nanoscience can play in solving the energy problem, and in molecular electronics. Professor **Peter Wolynes** from UCSD gave the 2009-10 Lectures in October 2009, on protein folding and the glass transition. Professor Wolynes has done pioneering theoretical work in these areas.

Wisconsin Initiative for Science Literacy

During the last year, the Wisconsin Initiative for Science Literacy (WISL) has continued its programs to inform, educate and advocate for science, and added some new programs. 2009 will be the 40th year for Professor Shakhashiri's annual Christmas Lecture. Another WISL program, Conversations in Science for Teachers, will also reach a milestone, its 10th year. Among the new programs in 2008-2009 were the first-ever Concert at Chemistry and the first Science on the Square, a hands-on demonstration table at the popular farmer's market on Capitol Square in Madison. The corps of Science is Fun student demonstrators continued to provide presentations and hands-on/minds-on explorations at schools and other events of many kinds.

MISSION AND GOALS

Our democratic society has become increasingly dependent on science and technology. It is essential for the well-being of our society that all citizens develop an appreciation of science, the benefits of technology, and the potential risks associated with both. Citizens must gain science literacy. By science literacy we do not imply detailed knowledge of any branch of science but rather a broad understanding and appreciation of what science is capable of achieving and, equally important, what it cannot accomplish. Science literacy enables the public to make informed choices.

WISL seeks to boost opportunities for educational success for all students, especially those from under-represented groups, and to empower adults to participate responsibly in our cherished democratic institutions. WISL aims to enhance the development of talent for careers in science and science teaching, encourage scientists to communicate with the general public, and explore and establish links between science, the arts, and the humanities.

FORTIETH YEAR OF ONCE UPON A CHRISTMAS CHEERY IN THE LAB OF SHAKHASHIRI

Professor Shakhashiri began his Christmas Lectures 40 years ago as a tribute to the great British scientist Michael Faraday, whose annual Christmas Lectures were very popular in the 1840s. Good lecturers were the rock stars of their day, and Faraday's lectures played to enthusiastic audiences, including the Prince of Wales. Faraday sought to awaken the sense of wonder in his audiences, knowing that once a person could be made to wonder about the world, it was only a short step to studying it. Faraday gave a total of 19 Christmas lectures which Professor Shakhashiri has already more than doubled. Like previous Christmas Lectures, the 40th will play to four full houses and be recorded by Wisconsin Public Television for airing on all its stations, and an edited version will be available to all pubic television stations in the U.S. for play any time.

Music is always included in the annual Christmas Lecture. In 2008, **Leah Latorraca**, a sophomore at Madison LaFollette High School, helped with a demonstration and played a violin selection. Leah is a member of the Music Institute of Chicago's Academy program and in 2008 she won the Madison Symphony Orchestra Bolz Young Artists competition.

The UW-Madison Theatre Department has also been involved with WISL programs. The 2008 Christmas Lecture included a chemical demonstration and a song performed by **Clare Arena Haden**, a Theatre Department graduate student and TA for beginning and intermediate voice classes for actors. She performed the "milk of magnesia rainbow" demonstration, which features multiple swirling color changes in a large cylinder, and then serenaded **Bucky Badger** with "Somewhere, Over the Rainbow" (Bucky always participates in the Christmas Lecture). Clare and other theatre students have also provided training in acting techniques for the "Science is Fun" student demonstrators.

CONVERSATIONS IN SCIENCE FOR TEACHERS

The 2009-2010 school year is the 10th for Conversations in Science for Teachers. The series is open to all Dane County teachers, offering them a two-hour conversation with top University researchers. The purpose is to re-invigorate the teachers' enthusiasm for science by exposing them to cutting-edge research, and to encourage researchers to communicate with a broader audience. The series was conceived and is organized by WISL to foster significant connections between teachers and university faculty. Conversations begin at 4 PM with snacks and the teachers appreciate refreshments after a day of teaching. Each session is recorded and telecast repeatedly on local cable stations for the benefit of the Dane County community. WISL values the cooperation of the Madison Metropolitan School District and the Edgewood Sonderegger Science Center in making this Series available to teachers and the general community in Dane County. The presentations in 2008-2009 were:

OCT. 9, 2008
Self Organization: Nature's Intelligent Design
Prof. Clint Sprott, Department of Physics

NOV. 6, 2008
Biology of Sleep
Prof. Ruth Benca, UW Psychiatric Institute and Clinics

DEC. 11, 2008
Babies, Testosterone, Type 2 Diabetes and Infertility
Prof. David Abbott, Dept. of Obstetrics and Gynecology and Wis. National Primate Research Center

JAN. 8, 2009
Building the Next Generation of Biofuels
Prof. Tim Donohue, Great Lakes Bioenergy Resource Center

FEB. 12, 2009
Burning Questions About Forest Fires in the West
Prof. Monica Turner, Department of Zoology

MAR. 12, 2009
Minimally Invasive Thoracic Oncology Surgery at UW
Prof. Tracey Weigel, Chief, Thoracic Surgery, UW Hospitals

APRIL 2, 2009
Greenhouse Gas Emissions and Atmospheric Photochemistry
Prof. Frank Keutsch, Department of Chemistry

MAY 14, 2009
Science in Theater
Prof. Norma Salvidar, Director, Arts Institute

Science, The Arts, and The Humanities

Concert at Chemistry

WISL has always promoted cooperation between science, the arts and humanities, believing that the perceived differences between them are exaggerated. WISL's Science, the Arts and Humanities program showcases our faculty and students at their best in the laboratory and in the performing arts. Creativity, passion and the urge for expression and for exploration are essential human qualities that inspire science, the arts and humanities, and thus constitute a common bond between them. Music is one of the fundamental ways through which humans bond with each other. Music tickles our brains and connects with our hearts.

In the Spring of 2009, WISL conceived and organized the first Concert at Chemistry in the Seminar Hall of the Chemistry Building. Playing to a full room, the performers included Professor **Christopher Taylor**, **Paul Collins** Associate Professor of Piano at UW-Madison, and violinist **Krista Stewart** (Molecular Biology '09), who has won many music awards and played with several prestigious orchestras. The program also featured the first public performance of a Sonata for Tuba and Violin, composed by Assistant Chemistry Professor **John Berry** and played by music graduate students **Stephanie Frye** and **Kristin Ihde**. Professor Berry earned two undergraduate degrees simultaneously at Virginia Tech, a B.A. in music and a B.S. in chemistry. Professor Berry composed the piece three years ago for a Japanese musician he met at an intensive language class in Germany, and he was thrilled to hear it performed for the first time. Professor Berry also performed both a chemistry demonstration and a violin selection at a "Science is Fun" demonstration at Hilldale Mall in September, 2007 and in 2008 at Villager Mall.

The Concert at Chemistry concluded with Mozart's Quartet for Oboe and Strings in F Major performed by Music Professor **Marc Fink** (a WISL fellow) on oboe, **Krista Stewart** on violin, Professor Berry on viola, and Professor **John Yin**, UW-Madison Professor of Chemical and Biological Engineering, on cello. Professor Yin earned a dual major in chemical engineering and liberal arts at Columbia University and has also studied at Julliard School of Music. His doctorate in chemical engineering is from UC-Berkeley.

NO *Play Reading*

Putting their theater training to use, four student demonstrators performed a reading of the play *NO* by **Carl Djerassi** (PhD '45, Wilds). The play explores the funding of science by setting up a hypothetical meeting between a research chemist, a biology researcher and a venture capitalist. The scientists try to persuade the venture capitalist to fund their research into the many vital functions performed by nitrous oxide in the human body.

Perpetual Motion Concert

In February, WISL sponsored a multimedia performance at Lathrop Hall, *Perpetual Motion: Revolutions in 17th Century Science and Music.* The performance featured images from space projected on a large screen, music from the 17th century, and narration by **Dava Sobel**, noted science writer and author of *Galileo's Daughters, The Planets, and Longitude*. The music was provided by soprano **Sarah Pillow**, **Ronn McFarlane** on lute and theorbo, and **Mary Anne Ballard** on viola da gamba. The images were assembled by video artist **Marc Wagnon**. WISL helps people explore, discuss, and cultivate the intellectual and emotional links between science, the arts and humanities. A specific goal is to give musicians, artists, writers and performers present and future an appreciation of science and enable them to see and understand the connections between science and the arts.

Concert in the Park

WISL provided a Science is Fun demonstration prior to the Concert in the Park at the Old Sauk Trails business park on Madison's West side. The concert, sponsored by the Gialamas Company, featured the Wisconsin Youth Symphony.

Science, Religion And Ethics

WISL works to promote understanding between science and religion, attempting to construct a more harmonious relationship that does not need to be either atheistic or sacred. To that end, WISL sponsored lectures on science and Islam and science and Judaism. Physics Professor **Nidhal Guessoum** of the American University of Sharjah, United Arab Emirates, spoke on the topic "Science and Islam Today: From Discord to Harmony." UW-Madison Professor **Steven Nadler**, William H. Hay WARF Professor of Philosophy, spoke on "Science and Religion in Jewish Thought: Or, What Maimonides Really Meant." Both lectures were accompanied by displays in the chemistry lobby of books related to the subject, provided by the Chemistry Department Library and UW Libraries. In another lecture on "Darwinism and Intelligent Design," Philosophy Professor **Elliott Sober** addressed the arguments against intelligent design.

Research And Development

Our Senses: Light, Color, Vision and Perception

This research and development project aims to test and publish demonstrations that will help to connect chemistry with what we perceive via our senses. The demonstrations are accompanied by background material of sufficient depth to put them in a context of chemical principles as well as their relationship to one another and our senses. The project is being developed by Professor Shakhashiri along with **Dr. Jerry Bell** and **Dr. Rodney Schreiner** (MS '73, PhD '81). Among his many teaching and research positions, Dr. Bell served as Director of the UW-Madison Institute for Chemical Education (1986-89) and as Director of the Division for Teacher Preparation Enhancement at the National Science Foundation (1984-86). He has received many awards for his outstanding contributions to science education. Dr. Schreiner has worked with Professor Shakhashiri since 1981 and is Associate Director of WISL.

Already completed is the popular four volume series, *Chemical Demonstration: A Handbook for Teachers of Chemistry,* in which Professor Shakhashiri and his collaborators present a wide range of original and adapted demonstrations for displaying and

teaching about chemical phenomena in science classrooms at all levels. The series has been translated into several languages.

Science in the City

PEOPLE Program

For the sixth consecutive year, WISL provided chemical workshops for students in the PEOPLE Program (Precollege Enrichment Opportunity Program for Learning Experience) for inner city students from Milwaukee, Racine, Kenosha and other school systems. The programs seek to increase the enrollment and graduation of minorities and low-income students in institutions of higher learning, particularly at UW-Madison. Junior high students in the PEOPLE Program attend three hours of laboratory instruction each morning for three weeks and senior high students attend two hours a day for one week. The curriculum was developed by **Dr. Rodney Schreiner**. In addition to the teaching content, the PEOPLE Program helps students develop the habits and discipline to become successful college students.

Villager Mall Science Saturdays

During the 2008-2009 school year, the Science is Fun demonstration team provided eight Saturday morning workshops at Villager Mall on Madison's South Side, a program designed for minority and low-income students.

Science on the Radio

During the last year, Professor Shakhashiri continued his monthly appearances on the *Larry Meiller Show*, a call-in program on Wisconsin Public Radio, which is heard statewide. The program allows Professor Shakhashiri to talk directly with listeners about current topics relating to science, the environment and education.

Science on the Web

The Science is Fun website at www.scifun.org allows Professor Shakhashiri and colleagues to reach a worldwide audience with many features including "Experiments You Can Do at Home", and "Chemical of the Week", which contains facts about the importance of chemicals in everyday life (one of the chemicals of the week is WATER, which is about as important as they get). Other features include recommended books and websites. Professor Shakhashiri's appearances on The Larry Meiller Show are archived and available as streaming audio on Wisconsin Public Radio's web site, www.wpr.org, and can be found via links on the Science is Fun website.

Science on the Road

Student Demonstrators

During the last year, the corps of 25 undergraduate Science is Fun demonstrators provided a total of 29 demonstrations at events including Engineering Expo and Science Expeditions on the UW-Madison campus, and at other venues such as schools, Hilldale Mall in Madison and at Villager Mall on Madison's South side. They often provided both a Science is Fun stage presentation and a hands-on demonstration table.

Science is Fun demonstrators found a new venue during the summer of 2009, the farmer's market on Capitol Square in Madison. The market draws large crowds to the square on Saturday mornings and the hands-on demonstration table had constant attendance of children and their parents.

The corps of "Science is Fun" student demonstrators has been fortunate to have some very talented and dedicated participants. A four-year participant who graduated and will be sorely missed is **Amanda Turek** (BS '09) who is going on to graduate school in organic chemistry at Harvard. Amanda, from Menomonee Falls, Wisconsin, won the 2009 Iota Sigma Pi Award for Excellence in Chemistry, which is given each year to only one student in the nation. Amanda was in the enviable position of being accepted by each of eight prestigious schools including MIT and Cal Tech. Her finalists were Harvard and

California-Berkeley. Amanda says her choice boiled down to a gut feeling that Harvard's chemistry department is as great as UW-Madison's. She also likes snow and doesn't like earthquakes. Her career goal is to earn a Ph.D. and join an academic faculty.

Amanda is a very talented pianist and has taken piano performance classes throughout her four years at Madison. She has played at several "Science is Fun" demonstrations. For example, at the UW-Madison Space Place, she played Mozart's variations on "Twinkle, Twinkle, Little Star" as part of a presentation featuring the music and experiments of artists and scientists who were contemporaries in the 18th century (it's likely that Antoine Lavoisier attended a performance of Mozart's in Paris). "Some people don't think of science as being creative," she says, "but it is. You have to be creative to do good research and music teaches you how to think differently." Amanda says the traditional left brain-right brain dichotomy makes no sense. "Why can't you be good at both?" she asks. "Striving to be good at both makes you more successful at both." Amanda has squeezed 16 credits of music performance into her crowded schedule because she doesn't want to be someone who says, "I used to play". She says, "If you really like something, you can find a way to do it." Amanda plays for her own enjoyment and for family and friends. She won't actively pursue opportunities to perform in public, but adds that it would be nice if opportunities arise.

Amanda says she used to get the jitters about playing in public but making "Science is Fun" presentations has helped her overcome stage fright. "Some nervousness about performing is good," she says, "because it means that you care. But you can care without being panicked and science presentations have given me more comfort in going before audiences." She adds that scientists should do more communicating

about performing is good," she says, "because it means that you care. But you can care without being panicked and science presentations have given me more comfort in going before audiences." She adds that scientists should do more communicating of science because the public needs to be informed.

Amanda's advice for incoming freshmen is to take advantage of all that Madison has to offer and she urged everyone involved in the sciences to get involved in research early, noting that there are research opportunities even for freshmen (she worked in the lab of Professor **Tehshik Yoon**). "Don't let opportunities pass you by," she says, "or you will look back and say 'I should have done that.'"

Stacy Wittkopp (BS '08) has been deeply involved in planning and directing "Science is Fun" student presentations, and during the summer has been an intern with WISL. Stacy, a graduate of Oconomowoc, Wisconsin, High School, says a great teacher opened her eyes to chemistry. The teacher, a UW-Madison graduate, took Professor Shakhashiri's freshman chemistry classes and showed his high school classes a video of Professor Shakhashiri's Christmas Lecture. With that motivation, Stacy took Chem 103 and 104 with Professor Shakhashiri and **Dr. Rodney Schreiner**, liked it, and went on in organic chemistry, which she calls "difficult but interesting." Stacy did not start participating in "Science is Fun" until her senior year, and wishes she had heard about it earlier.

In addition to her duties with "Science is Fun" demonstrations, Stacy got independent study credit for helping determine the effectiveness of demonstrations in Professor Shakhashiri's Chem. 104 lecture. She sat in the back half of the lecture room, a different row each time, and took notes on how difficult each demonstration was to see, hear and follow. She also got feedback from students sitting nearby. Stacy made a write-up of each demonstration, with a diagram of the apparatus and a list of materials, actions and results. With this information, she created handouts to go with each demonstration which let students follow along. She found that most demonstrations were not too difficult to follow, but the project helped her think about making demonstrations enjoyable, exciting and educational for the students.

Stacy works on research projects in Professor Shakhashiri's lab and is helping **Dr. Laurens Anderson** explore variations in the "blue bottle experiment", trying to determine the exact mechanism involved in the rate of oxygen consumption in the enolization of glucose. As if this weren't enough, Stacy also volunteers once a week at Ronald MacDonald House and last summer qualified as a volunteer EMT. The certification involved an eight week course at Madison Area Technical College plus a day in a hospital emergency room taking vital signs. She now volunteers for two 12 hour shifts a month with an EMT unit in Western Dane County.

Stacy says her EMT training confirmed her desire to be a doctor. Stacy says medical school has been her goal since grade school--in second grade she talked about curing cancer. Her applications to medical schools have not been accepted. This is not unusual--one school had 7000 applicants for 200 positions. Stacy is not discouraged and will try again next year.

Like most of the student demonstrators, Stacy had no public speaking experience beyond a few classroom presentations prior to joining the "Science is Fun" crew. She says she and the other students are usually comfortable making public presentations because they are well prepared.

Stacy's favorite audience is grade school children. She says they understand what's going on but still get surprised and excited. While older groups have more knowledge, and demonstrators can go into more detail, they are not as excited and responsive.

Stacy's advice to younger students: start with required courses regardless of major if you want to graduate in four years—don't get stuck later if a required course is not offered. She also recommends studying hard from the start—it's difficult to raise a grade point average after a slow start.

Shaun West (BS Chem. Engr. '09) has been with "Science is Fun" for three and a half years, serving as a TA during the last school year. During that time he has participated in about 20 "Science is Fun" shows and about 50 hands-on demonstrations and classes. Like many other students, Shaun was turned on to chemistry by a high school teacher (at Adams-Friendship, Wisconsin). His teacher also showed videos of the Christmas Lecture, prompting Shaun to take Professor Shakhashiri's Chem. 103/104. "That made me appreciate the power of demonstrations rather than learning from a book," he says. "Students learn more easily and it's fun to share them with others." Making presentations and explaining things helps students see things from different perspectives, he says, and improves communication skills. Like most student demonstrators, Shaun had little public speaking experience beyond class presentations and a high school graduation speech. He admits to having some stage fright at the beginning, but says that has receded, though it's not completely gone.

Like other "Science is Fun" student demonstrators, Shaun says elementary school audiences are the most fun, especially for stage shows, because of their uninhibited enthusiasm. Older students often try to be cool, he says, but he adds that middle school students are very rewarding to work with, especially in hands-on programs, because they understand more and are easier for college students to relate to.

After graduation, Shaun hopes to find a job in industry. The poor economy and job market are on the minds of students, Shaun says. His roommate, an English major, has found that jobs are scarce and he may go to graduate school. Shaun says the possibility of not finding a good job looms at the back of his own mind, but he adds that Wisconsin has a good engineering school and graduates have a better chance of finding good jobs than some others. Shaun worked for GE during the summer of 2008 and he says the company is trying to go green and make safety a top priority. "This is a change for the better," he says. "There's been a huge growth in corporate responsibility and chemical engineering is focused on renewable energy." Shaun is "somewhat optimistic" that in the next 15 to 20 years there will be a major movement away from fossil fuels.

NEWS FROM THE GLASS SHOP

The glass shop has had another busy year with the addition of **Jennifer Schomaker** and **Eric Strieter**, our two newest faculty members in the Chemistry department. Welcome.

The 2009 annual scientific glassblowing symposium was held in Vancouver, Washington. Tracy's participation included a technical demonstration on sealing a glass frit into a short section of tubing, and presenting an overview of the UW–Madison glass shop. Tracy was also given an award at the annual banquet for the most outstanding technical poster presented at last year's symposium. The focus of that poster was The Design and Construction of a Borosilicate Gastrointestinal Tract Digester. **Andy Schmitt** (PhD '09, Jin) was instrumental with layout and assembly of the poster. These annual symposia are an opportunity for glassblowers to develop skills and stay current with new developments in the field of scientific glassblowing.

The semester-long class in scientific glassblowing is in its third year. It is taught on Monday afternoons during the spring semester. The class has room for five students and introduces them to the fundamentals of scientific glassblowing. It gives them the skills to repair broken glassware as well as construct simple instruments for their lab. This year's class also participated in the Chemistry Department spring open house held on Saturday, May 9. **Mandy Musch** (Berry Group), **Shane Flickinger** (PhD '06, Belshaw), **Aaron Crapster** (Blackwell Group), **Andrew Vauliquin**, and **Tulay Aygan Atesin** (PD '07-'09, Landis) spent the day giving tours of the glass shop, demonstrating techniques, and helping participants try their hand at the torch. Their help ensured the success of this event and is greatly appreciated.

Last September, Tracy was invited to give a talk and demonstration by the UW-Stevens Point student organization, SAS–Society of Artists for Sculpture. They are developing a variety of glass working areas in their sculpture lab and are interested in having a flameworking area as well. We eagerly support their endeavors.

FEATURED ALUMNUS

After a 16-year career in business, Jim Berbee returned to the University of Wisconsin and the chemistry department as a special student to fulfill the requirements for admission to medical school. Previously, he had received three degrees from the UW, two in mechanical engineering (BSME 1985 and MSME 1987) and an MBA in 1989. As a returning student, Jim took four semesters of chemistry including the two semester introductory series and two semesters of organic chemistry.

In gratitude to the chemistry department and in particular to his organic chemistry instructor Ieva Reich, Jim and his wife, Karen Walsh, set up a fund through their Berbee Walsh Foundation with the chemistry department to support undergraduate professional activities for chemistry majors and students in related areas. Money from this fund has financed outreach activities of student members of the American Chemical Society and attendance of undergraduate students at ACS and other chemical conferences.

Jim is now in his 3rd year of medical school at Stanford University and hopes to return once again to the University of Wisconsin for his residency in emergency medicine in 2011.

If you have a similar story to share, please send it to the *Badger Chemist* Editor, Matt Sanders, at 1101 University Ave., Madison, WI 53706, or email to ***msanders@chem.wisc.edu.***









DAHL **SYMPOSIUM, MAY 09'**

CHANCELLOR BIDDY MARTIN
VISIT, NOVEMBER 08'

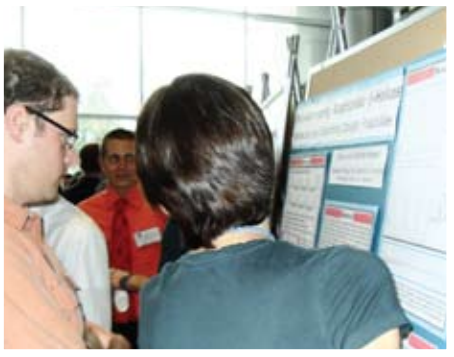


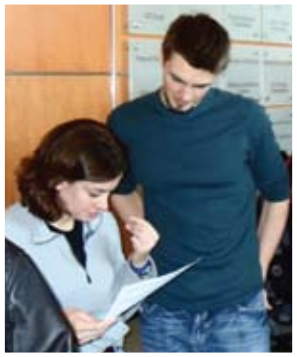


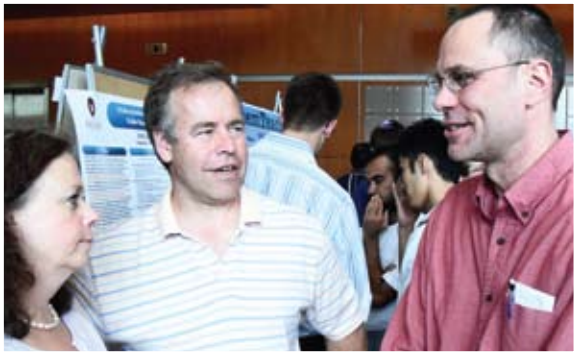

UNDERGRADUATES POSTER SESSION, MARCH 2009

A hallmark of Wisconsin Chemistry is the inclusion of numerous undergraduates in cutting-edge research.

Every year the Department sponsors a Poster Session, organized by Gil Nathanson, that highlights the research of undergraduate students.







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.

SCI EN*Count*Ers

The SCIENCountErs program continued under the guidance of ICE Outreach Specialist, **Brittland DeKorver**. This collaboration between the NSEC and Boys and Girls Clubs of Dane County provides weekly hands-on activities for students from areas with large proportions of low-income and minority students. Undergraduate and graduate students lead club members in completing the activities. The program underwent another expansion this year, adding a weekly session for K–4th graders in addition to the two sessions for 5th – 8th graders. The students completed three themed units: Food Science, Forensic Science, and Nanoscale Construction Challenges. The club members also participated in celebrations for National Chemistry Week and Nanodays.

Research Experience for Teachers

ICE and the NSEC continued to host the annual Research Experience for Teachers (RET) program. Through the program the ICE and NSEC worked with three local Wisconsin teachers and a teacher from Rockford, IL. **Jeanne Nye**, a 7th grade teacher at Lake Mills Middle School, returned for her fourth summer with the NSEC. Jeanne completed her third in a series of middle school web-based lessons. Jeanne's "Nanoparticles in Nature" has middle school students explore the environmental impacts of nanoscience research through a series of fun hands-on labs all set to a background of the story of "The Prince and the Particles." Also returning was **Jason Strauss**, a chemistry teacher at Verona High School. Jason worked with **Prof. Mahesh Mahanthappa** to help develop curriculum for connecting social and economic impacts to the history of polymers. The curriculum Jason developed will be used in his classroom and in the curriculum for Chemistry 109 and Chemistry 341. **Jeanine Gelhaus** returned for her fourth summer with ICE and the NSEC. Jeanine worked on development of a scenario based lesson that asks middle and high school students to make consumer decisions about products that include nanotechnology. The lesson will be tested in her classroom during the academic year. **Martha Rathbun** joined ICE and NSEC for her first summer. Martha worked on developing based a Web-based lesson to help teach students about modern instrumentation.

Nanoscience Teacher Workshops

ICE along with museum partner, Discovery Center in Rockford, IL, taught a third 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.

Nanoscience for Teachers: an Online Professional Development Course

Dr. Janice Hall Tomasik, (PhD '08, Landis/Moore) 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 2009 was the fifth offering of the course; it was also offered during summer 2006, spring 2007, and summer 2007 semesters. To date, 46 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.

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 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 2009. Andrew Greenberg continued to serve as director of the NSEC- and MRSEC-supported Research Experience for Undergraduates in Nanotechnology program. Andrew also directed the second year of the 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 common goal of increasing diversity of the graduate student pool. Together the two programs attracted 20 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**, **David Schwartz**, **Silvia Cavagnero**, **Mahesh Mahanthappa**, **Bob Hamers**, **Song Jin**, **Lloyd Smith**, **David Lynn**, **Shannon Stahl** and **Laura Kiessling**. REU Students worked on individual research projects under the guidance of graduate students and post docs in their assigned laboratories, graduate student and post doc volunteers included: **Milton Repollet** (Mahanthappa Group), **Ryan Weber** (Mahanthappa Group), **Maren Buck** (Lynn Group), **Joseph Kim** (Mahanthappa Group), **Michael Shortreed** (Smith Group), **Pil Seok Chae** (Gellman Group), **Kristy Kounovsky** (Schwartz Group), **Ken Lam** (Cavagnero Group), **Kacie Louis** (Hamers Group), and **James Gerken** (Stahl Group).

Activities for the summer included a weekly lunch seminar series with talks by chemistry faculty and staff **Song Jin**, **Bassam Shakhashiri**, **Hyuk Yu**, **Andrew Greenberg**, **Mahesh Mahanthappa**, **Jim Weisshaar**, **Bob McMahon**, **Fleming Crim**, and **Clark Landis**. Additional activities included a trip to Chicago with REU students from the University of Chicago, a special seminar on applying to and surviving in graduate school hosted by graduate students **Olivia Johnson** (Brunold Group), **David Michaelis** (Yoon Group), **Corinne Lipscomb** (Mahanthappa Group), and **Craig Gutman** (Brunold Group). The summer culminated with a department-wide poster session where students presented the results from their summer research.

Chem Camp

ICE again hosted its series of Fun with Chemistry summer camps for middle-school aged children. Four different sessions were offered, including the debut of Fun with Food Chemistry, developed by ICE Outreach Specialist **Brittland DeKorver**. The topics of acid-base chemistry, molecular structure, oxidation and reduction reactions, biological chemistry, and experimental design were incorporated into the food theme. Other camps offered were Fun with Chemistry, Fun with Forensics, and the Science Behind the Superhero. Over 160 students attended the camps during the month of July. Ten undergraduate students also participated as group leaders, providing direct, individualized instruction to the campers as they performed the lab experiments. The group leaders' backgrounds covered a range of sciences; many were chemistry majors. All expressed interest in increasing their pedagogical knowledge and a passion for teaching.

Another change to the program was the participation of two high school students who worked as interns. They each spent several weeks before the camps developing a lab experiment with a food chemistry theme. They also attended all four sessions of camp, helping to prepare materials and providing additional support for the group leaders.

Students Participating in Chemical Education (SPICE)

The students of SPICE, a volunteer science outreach organization, continued their efforts to become a registered student organization through the Center for Leadership and Involvement (formerly the Student Organization Office). Their executive board, led by **Tara Thieme** as president, worked to formalize and streamline the procedures of SPICE. This included taking on more responsibilities for the financial aspect of the program and electing a treasurer, **Patrick Shipway**, who led the students in multiple fundraising efforts.

SPICE continued their traditional outreach efforts, visiting schools, museums and libraries, and performing demonstration shows for student groups visiting campus. They participated in twenty events over the course of the school year, including bringing hands-on activities to schools' science fairs. SPICE hosted an Exploration Station and performed four Science Spectaculars at the annual Science Expeditions event on campus. SPICE also contributed to National Chemistry Week activities. Adding to their repertoire of demonstrations and hands-on activities, SPICE began a collaboration with Fusion Science Theater, a group of chemists and theater artists who developed an innovative method for science outreach shows. Fifteen SPICE members attended a training workshop, and then began rehearsing the show under the leadership of Sarah Schmid. They have performed the show eleven times, and each time are able to see positive learning outcomes in the audience through the data-gathering component imbedded in the show. Sarah presented these results in a poster at the Fall ACS National Meeting, and also performed the show for a group of ACS student affiliates from around the country.

SPICE is advised by ICE Outreach Specialist **Brittland DeKorver**.

National Chemistry Week 2008

The theme of National Chemistry Week 2008 was "Having a Ball with Chemistry." SPICE created several hands-on activities and demonstrations with a sports theme to incorporate into their shows. These focused on the topics of polymers and electrolytes. SPICE brought these demonstrations and activities to venues across Madison, including a party at the Madison Area YMCA.

The Wisconsin local section was also represented in the NCW poster contest. **Kristina Ekman**, of Lake Shore Middle School, won first place in the Grades 6–8 division

Journal of Chemical Education

The *Journal* has been busy since we last reported to readers of the *Badger Chemist*!

JCE Web Software was launched in February 2008 to celebrate the 20th anniversary of *JCE* Software. Web-ready titles from *JCE* Software's educational software collection have been updated and are now available via Web subscription. Institutional Web Software subscriptions are available that provide access to all faculty and students in a given department; for example, our department has such a subscription so that all general chemistry and other chemistry students have access to the entire *JCE* Web Software collection. A Web Software subscription includes many of *JCE* Software's most popular titles such as the full 8 volume set of the award-winning *Chemistry Comes Alive!* collection of chemistry videos, *ChemPages Laboratory, General Chemistry Multimedia Problems, Netorials* and many more. With Web access delivery, it's easier now than ever for students to use these great resources!

The *JCE* Software collection continues to grow! By the end of 2008 a compilation of the first 50 *JCE* Classroom Activities became available on CD-ROM. *JCE* Classroom Activities are inquiry-based, hands-on, minds-on activities that can be used in the classroom, the laboratory, at home, or in an outreach setting. This is an excellent resource for anyone interested in doing thought-provoking activities with their students or with children of any age.

Shortly after the release of the compilation CD, *JCE* published its 100th Classroom Activity in the February 2009 issue. The activity "How Heavy is a Balloon?" coordinated with the Earth Day theme "Air-The Sky's the Limit". A symposium, The *Journal of Chemical Education*: Celebrating Classroom Activities, was held at the Spring ACS Natonal Meeting in Salt Lake City to celebrate and share how others have used Classroom Activities. A second compilation CD-ROM containing the next 50 Activities is expected to be available in 2010. The editor of the *JCE* Classroom Activities series is **Erica Jacobsen**; Erica received her degree from UW–Madison in 1995.

In June, **Linda Fanis** (MS '04), a member of the *Journal* staff since 2005, assumed a new position as *JCE*'s Business Manager. She handles the day-to-day financial operations as well as continuing to manage the Outreach and *JCE* Software distribution offices. Linda has worked on a variety of projects, including *The Joy of Toys* CD-ROM, identifying *JCE* resources for high school teachers, numerous outreach presentations, and managing *JCE*'s presence at regional and national meetings.

JCE continues to collaborate with the Chemical Education Digital Library (ChemEd DL) by contributing time, effort and resources to build an online collection of chemistry resources for educators and learners. See the ChemEd DL report for more information regarding the project.

Love a good mystery...in Russian? "The Chemical Adventures of Sherlock Holmes" is a compilation of 15 stories originally published by Thomas G. Waddell and Thomas R. Rybolt in the *Journal*. The collection gained an international audience when it was translated into French in 2006 and now, with the help of **Ilia Guzei**, the stories will be available as a Russian translation by the end of 2009.

As always, the October issue celebrates National Chemistry Week with this year's theme "Chemistry—It's Elemental!" commemorating the 140th anniversary of Mendeleev's Periodic Table of the Elements. The issue has an impressive lineup of articles and activities including essays contributed by UW's Profs. **Dr. Larry Dahl**, and **John Moore**, **Mary Saecker**, **Arrietta Clauss**, **Lynn Diener**, **Erica Jacobsen**, **Juliane Ober** and **Thomas Krebs**. Thanks to **Betty Moore** for the hard work and organizational skills required to bring this issue together.

As 2009 comes to a close so does an era of the *Journal of Chemical Education*. The October 2009 issue is a laudable capstone to **John Moore's** 13-year tenure as *JCE*'s editor. During John's editorship he published 158 editorials and more than 22,700 pages to establish the *Journal* as one of the most highly respected publications in the

he will remain actively involved in teaching at the UW, as well as directing the ChemEd DL and Institute for Chemical Education (ICE). **Elizabeth Moore**, *JCE* Associate Editor throughout John's tenure, is also retiring from the *JCE* and will lend her expertise to ICE.

However, as one era closes another opens. With the November 2009 issue **Norbert Pienta** from the University of Iowa begins his tenure as the *Journal's* eighth Editor. Historically, the Journal staff would be established at the new editor's campus, but in the age of technology a new system is being implemented. The current *Journal* Staff, led by **Jon Holmes** as the Managing Editor and **Mary Saecker** as Associate Editor, will remain in the *Journal* House on Brooks Street. Norb and a small staff, including **Rob Hill**, Development Editor and **Lindsey Elliot**, project assistant will telecommute from Iowa.

The change of editors is not the only thing that will change in the *JCE*. The *Journal of Chemical Education* Board of Publication, which manages the *JCE*, voted August 15, 2009 to accept an agreement for co-publication with ACS Publications for the *Journal of Chemical Education*. Beginning January 1, 2009, the *JCE* will become part of the ACS Publications staple of excellent chemistry journals.

Chemical Education Digital Library

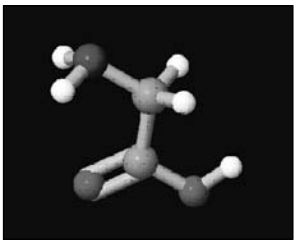
Known as ChemEd DL, the Chemical Education Digital Library is one of an elite group of NSF-sponsored projects (NSDL pathways) that are setting up repositories of digital information in all of the sciences. These projects are part of the National Science Digital Library (NSDL) program. Their goal is to make online resources for learning and teaching widely available. The UW–Madison project headed by PI **John Moore** and co-PIs **Jon Holmes, Mary Kirchhoff** *(ACS)* and **David Yaron** (Carnegie–Mellon) collects and disseminates materials for education in chemistry. The ChemEd DL has just received a second round of funding from the NSF and will use the funding for further development of its Web portal and for workshops and Web seminars designed to introduce the ChemEd DL to teachers throughout the country. You are invited to join it its activities.

ChemEd DL has been extremely active and productive in the last few years. The Web site (www.chemeddl.org) gets lots of traffic from middle school, high school, and college instructors. The site is frequently updated—if you visit it now, you will find a lot to interest you; if you come back in a month, you should find lots more. Here are a few highlights to check out.

Molecules 360

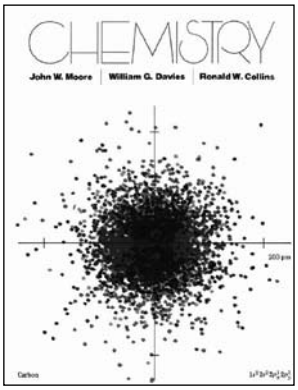
Molecules 360 is a collection of small, mostly inorganic molecules in Jmol format, which allows the structures to be manipulated using a mouse. (Try it out at http://www.chemeddl.org/collections/molecules/index.php.) Students can look at everything from bond distances and bond angles to modes of vibration. The structure of glycine shown is from this collection. Molecules 360 has seen the addition of many new molecules for a total of about 140 at present. We have also added a variety of new features for students to explore, such as molecular orbitals and the ability to display and compare two structures on the screen at the same time. Molecules 360 is being created by postdoctoral fellow **Xavier Prat-Resina** (Moore).

ChemEd Catalog



Another recent addition, the ChemEd Catalog, allows anyone with Web access to browse and discover ChemEd DL resources. Try it out at http://www.chemeddl.org/services/catalog/index.php. To get started, choose Filtered Browser and then use pull-down menus to select a domain (such as analytical chemistry), a types of pedagogy (such as inquiry-based), and other features in which you are interested. Based on your choices the catalog will display resources in a list on the screen. As of this writing, ChemEd Catalog displays only content found in the *Journal of Chemical Education*; soon it will be extended to search through all of the resources available on the ChemEd DL.

Living Textbook



We are excited to report that an entire general chemistry textbook is now available online, in wiki format—making it a truly living entity. It is Chemistry by **John W. Moore**, **William G. Davies** and **Ronald W. Collins**. The online textbook allows students the option of using a Web-based textbook instead of the more traditional paper version. The wiki format is also distinctive in that it allows faculty (and students) to make modifications. The online textbook is being used in the fall 2009 offering of Chemistry 109 in John Moore's lecture, enabling students to avoid the high cost of a typical printed textbook.

ChemPRIME

The online textbook in its wiki format is the basis for another project called ChemPRIME (http://wiki.chemprime.chemeddl.org/index.php/Main_Page) that allows students to learn chemistry through a variety of contexts. The online textbook is known as CoreChem because it is the central part of ChemPRIME. Associated with the central core are exemplars that provide different contexts for the same chemistry topic. When enough exemplars are available, students will be able to learn about chemistry topics by reading exemplars that are closely tied to their own personal interests. For example, some students are very interested in medicine, others in food, still others in geology, biology, or other sciences or non-sciences. These students can learn about a chemical topic, such as density, through exemplars in each of these areas: density in medicine, density in food science, etc. If you are interested in contributing exemplars from any area on any chemistry topic, contact the ChemPRIME PIs: **John Moore** and **Ed Vitz** (Kutztown University).

ChemPaths

Another opportunity/problem with an online text is the ability to link to a broad range of content on the Web. In fact the content is so broad that students are often led astray and have a hard time finding their way back to what they were studying. ChemPaths is being created by **Justin Shorb**, a graduate student working toward a degree in chemistry and chemistry education. It provides a way for students to meander off the beaten path to follow their interests, but at the same time have a lifeline that will return them to the task at hand. Using the online text in wiki format, ChemPaths allows a teacher to define a path through the textbook for the student while still allowing students to meander by clicking links to topics that interest them. The interface provides links to the current topic, the previous topic, and the next topic on the path, thereby keeping students from losing their place. A ChemPath can proceed through textbook chapters and sections in any desired order, which allows a teacher to re-order topics to best suit the teacher's, or students', needs and interests. Like the online textbook, ChemPaths is being used in Chemistry 109 during the fall 2009 semester.

Inorganic Partner

The ChemEd DL is a partner with IONiC, the Interactive Online Network of Inorganic Chemists, whose main project is the electronic resource, VIPEr (Virtual Inorganic Pedagogical Electronic Resource). The VIPEr community is mostly made up of inorganic chemists from small colleges. Since there is usually just one inorganic chemist at such a college, VIPEr has become a place for those individual inorganic chemists to come together in an online community, sharing ideas and resources for the effective teaching of inorganic chemistry. The Leadership Council for IONiC/VIPEr includes **Margret J. Geselbracht**, who was a postdoc in Art Ellis's lab ('91-'93) and is now on the faculty at Reed College. The project's PI is **Hilary Eppley** (DePauw University). Other members of the leadership Council are **Betsy Jamieson** (Smith College), **Adam Johnson** (Harvey Mudd College), **Barbara Reisner** (James Madison University), **Joanne Stewart** (Hope College), **Lori Watson** (Earlham College), **Scott Williams** (Claremont Colleges), and **Ethan Benatan** (Reed College). If you are interested in inorganic chemistry, VIPEr is the place to go on the Web. Visit https://www.ionicviper.org/

Spreading the Word

A major project of the ChemEd DL has been getting out there and telling people about its presence and its valuable resources. If instructors don't know about it, they can't use it. During the last year our group has attended and given presentations at the AAAS, NSTA, ACS, 2YC$_3$, ChemEd 09, MACTLAC, and other meetings. Close to home we participated in the Best Practices Conference in Baraboo WI and a workshop at the UW–Madison that was attended by people from all over the state; some came from as far as 100 miles away. In addition to face-to-face meetings we have gone online to give three Web seminars, each attended by more than 80 participants. In one of these ChemEd DL outreach coordinator **Lynn Diener** and **John Moore** were joined by **Jim Skinner** who reported on the latest theoretical research on the structure of water and provided a computer simulation of freezing. In another the subject was oxidation and reduction and **Shannon Stahl** joined us to discuss the importance of his research on oxidations and catalysis. If you participate in outreach activities or have ways to distribute outreach materials, please contact **John Moore** and we will provide you with brochures and other information about the Chemical Education Digital Library.

In Memoriam *(...continued from page 33)*

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

Harrison Inman Anthes (PhD '42, Adkins) died September 22, 2007, at the age of 92.

Howard Benton Burkett (PhD '42, McElvain) died June 15, 2009, at the age of 93.

Robert Eugene Courtney (BS '64) died May 21, 2009, at the age of 67.

William Emery Elliott (MS '61, Daniels) died April 24, 2007, at the age of 85.

David Buchanan Fordyce (PhD '50, Ferry) died February 9, 2009, at the age of 84.

James Roy Frederick (BS '50, Schuette) died July 31, 2007, at the age of 81.

Clifford Charles Hall (BA '75) died September 7, 2008, at the age of 55.

Daniel Franklin Harnish (PhD '65, West) died December 10, 2008, at the age of 69.

Robert Smith Heinze (BS '37, MS '38, Hall) died October 30, 2008, at the age of 94.

Gerald Orton Hustad (BS '68, Treichel) died February 18, 2009, at the age of 63.

Glenn Earl Irish (PhD '50, Bender) died June 21, 2007, at the age of 85.

Peter Howard Jackson (MS '47, Johnson) died December 28, 2003, at the age of 87.

Steven E. Johnson (BS '78, Yu) died May 1, 2009, at the age of 56.

Merle Eugene Jones (BS '49, Willard) died February 17, 2005, at the age of 81.

Terry Ray Krueger (BS '74) died August 8, 2007, at the age of 55.

Wilbur John Larson (MS '48, PhD '51, Meloche) died June 8, 2009, at the age of 87.

Carl E. Latschar (PhD '51, Williams) died November 16, 2008, at the age of 89.

Paul Joseph Mattern (MS '51, Cooper) died July 16, 2009, at the age of 87.

Paul George Pallmer (MS '53, Daniels) died September 23, 2004, at the age of 75.

George Donald Paul (BS '49) died April 19, 2009, at the age of 85.

Jerome Francis Saeman (BS '37, PhD '42, Sherrard) died January 21, 2009, at the age of 92.

Etsuo Saito (MS '55) died June 21, 2006, at the age of 81.

Rodney Wayne Schrader (BS '50, McElvain) died October 6, 2007, at the age of 82.

Leslie Birchard Seely, Jr. (PhD '42, Willard) died March 1, 2007, at the age of 91.

Orlando Tweet (MS '47, Schuette) died April 3, 2008, at the age of 92.

Lewis Aldro Walter (PhD '34, McElvain) died February 7, 2009, at the age of 100.

Elmer Milton Wilke (BS '51, Holt) died August 8, 2009, at the age of 88.

Faculty and Staff News

.**Professor Thomas Brunold**, a regular in the Wisconsin Ironman Competition, finished in 13th place in the 2008 event with a time of 9:20:05. He completed the grueling event by swimming 2.4 miles, cycling for 112 miles, and then running a total of 26.2 miles! Thomas has competed in the Madison Ironman since 2002 and was grateful for the support of his family, friends and graduate students who cheered him on throughout the day's events. Congratulations, Thomas!

Thomas was also the winner of the 20-mile 2009 Syttende Mai Race held in May. The course is run from the State Capitol to Stoughton and he completed it in 02:01:38! He entered the race in preparation for next year's Ironman event.

Silvia Cavagnero was pleased with the awards members of her group received this past year. She received a Vilas Award for 2009.

Undergraduate **Dan Baum** got the Andrew Dorsey Memorial Scholarship and the Ackerman Award, as part of the undergraduate Chemistry Department scholarships program. Dan received the Hilldale award to do research during the summer. And he became a member of Phi Beta Kappa, the nationwide undergraduate honor society.

David Ziehr (BS '09) received the UW Letters & Science Dean's Prize for academic achievement and commitment to community service; this is the school's highest honor awarded to a graduating senior. David received the UW Department of Chemistry Poster Award for the best poster at the Undergraduate Poster Presentation; the UW Department of English William F. Vilas Prize for the second-best essay written in an upper-level English course, the topic of which was writing in general chemistry courses; the UW Alumni Association Outstanding Senior Award, for academic and extracurricular achievement, and contributions to UW–Madison and extracurricular surrounding communities; the UW Department of Physics L.R. Ingersoll Prize for the highest achievement in Introduction to Modern Physics; and the UW Letters & Science Ralph B. Abrams Award for academic and extracurricular achievement.

Graduate student **Sarah Weinreis** was awarded a Biophysics Training fellowship, a three year award funded by the NIH for predoctoral studies in Molecular Biophysics.

Fleming Crim gave the Royal Society of London Centenary lectures in Spring 2009. The accompanying photo shows David Clary presenting Fleming the medal at Oxford. The talks were given at these institutions: University of Bristol, Bristol, England; Durham University, Durham, England; Heriot-Watt University, Edinburgh, Scotland; University of Oxford, Oxford, England; University of Sheffield, Sheffield, England; University College London, London, England. Fleming gave a number of other talks during the year, including one for the XXIII International Symposium on Molecular Beams, Dalian, China (June 2009). The trip to China was particularly interesting as they saw a great deal of sophisticated science and infrastructure. Fleming continues as co-chair of the Board on Chemical Sciences and Technology at the NAS. The group is seeing many interesting issues having to do with the health of our discipline, homeland security issues, and sustainability and the environment.

Bob Hamers received the "Surfaces, Interfaces and Nanostructures Prize" at the 12th International Conference on the Formation of Semiconductor Interfaces held in July in Weimar, Germany, where he also presented the plenary talk. The prize included a working brass-and-glass replica of "Döbereiner's Lighter", one of the first practical applications of catalysis at surfaces that was used in the early 19th century. The lighter generates H_2 gas by reacting H_2SO_4 and Zn and then uses a Pt catalyst to dissociate the resulting H_2 into atomic hydrogen and spontaneously ignite a flame. The lamp attracted a great deal of attention at the international security points but made its way to Madison intact.

From **Jim Maynard** in the Demo Lab: Many times in the past, I have opened with "The Demo Lab was very busy this year", but I feel at this point that is sort of redundant. We run at full speed most of the year, and this one was no exception. We perform 2,000 lecture experiments a year with the faculty, staff, and outreach specialists alike. The school year began with tragedy, as I lost two of my best staff to a tragic car accident [see *Badger Chemist* 2008], but the wheels still turn, and other members stepped up to help get the lab through a very trying time. I am a member of Alpha Chi Sigma, and was initiated at Alpha chapter. Two of my fraternity brothers, **Zach Nankee**, and **Kelsey Ferragen**, came to work at the lab in the last hour to make up for all that lost talent, and I am truly grateful for their assistance at such a point in my life as well; my niece **Lindsey Plank** was one of the victims. We made a lot of progress over the semester, and by the time the Christmas show arrived, we were ready for it, and it went well indeed. The evolution of the Science is Fun class continued, and we supported a new generation of future demonstrators learning how to perform in front of different audiences, and carry on the high standards of lecture demos at UW Madison. The staff and I are engaged in a great number of collaborations for a myriad of purposes. We give lecture support by way of demos and materials for The Engineering Summer Program. **Amit Nimunkar** is doing a fine job with another crop of engineers to be. I also support Chem Camps, Science is Fun summer activity camps, College for Kids, the REU program, and others, like some Madison School district science teachers, and the National Society of Black Engineers in their quest to build the perfect glider. We are building large models for Chem 108 and other general chemistry lectures, as well as Chem 341. The models are large, wooden, and held together with neodymium magnets. They are good for what they are made to do. They are patterned after the large Buckyball we made last year, which now sits in the atrium of the Shain tower until we figure out where it will go as a permanent place.

It is 1.7 meters tall, and the Chair has been inside it (Bob@c60). The major sponsor of the buckyball model, **Andrew Greenberg**, along with **Professor John Moore**, have helped me get a grant to make giant "Nanoplayground" equipment as a part of a three year grant to be built at the Children's Discovery Center in Rockford, IL. We hope to make a buckyball, a nanotube, and a grapheme sheet at the very least, along with signage to explain a bit about each "exhibit." I did a little work on behalf of the National Federation for the Blind also, with Dr. Greenberg, and anticipate more involvement soon. I have also been dabbling in a purification process for silicon, which fills in those spare moments.

I have also been working on new demos, incorporating new discoveries and new technology into demonstrations. I am really excited about one demo in particular; the folding and unfolding of a protein in water. We are using BSA (Bovine Serum Albumin). This project is a result of collaboration between the Demo Lab and **Professor Silvia Cavagnero**. We use a Naphthalene derivative to allow fluorescence in some conditions, and none in others, based on the state of the protein. I really want to incorporate modern chemical behaviors into traditional general chemistry classes.

I have also been shooting a lot of video and pictures, and have been involved in the department's entrance into making video for instructional and educational purposes. We are planning safety procedure videos, guest speaker lectures, and eventually classroom lectures. I have also shot footage for the *Journal of Chemical Education*, the National Science Digital Library, and helped with the new lab notebooks and manuals as of late. I have performed about 10 demonstration lectures in addition to supporting others, such as demos for AXE, ACS student members, the scouts, the Bucky Buddies, Marquette elementary school, and others like the Concert in the Park, and the Union Terrace. I have also shot literally hundreds of chemical reactions to remake the General Chemistry Chemical Logic Lab, which is now given digitally, instead of with droppers and beakers. We are in the final stages of bringing a version online for testing. That project has taken thousands of man hours to get this far. I have also taken many pictures for the department with respect to distinguished visitors, like the new Chancellor, **Biddy Martin**, **Bill Banholzer** of Dow Chemical, and the Larry Dahl Symposium. By the way, I archive all those photos, so if you need a copy (or a copy deleted…) I am the guy. There is no doubt in my mind I am leaving something out, but as a result of all this activity, I was also honored to give my acceptance speech for receiving the James W. Taylor Excellence in Teaching Award. I am also planning to give an invited talk at the 21st BCCE in Denton TX.. Well, that is a good accounting of what we did over the last year, and yes, I will get those DVDs done!

David Cafiso and Lloyd Smith

Bob McMahon presented invited lectures at the International Symposium on Reactive Intermediates and Unusual Molecules (Prague) and the Organic Free Radicals Conference (Ottawa). Bob continues as an Associate Editor for the *Journal of Organic Chemistry*, a member of the Executive Committee of the ACS Division of Organic Chemistry, and a member of the steering Committee of the Midwest Astrochemistry Consortium.

Cathy Middlecamp holds a joint appointment in the Integrated Liberal Studies Program, and was recently elected Chair of ILS. She is in the inaugural class of the ACS Fellows, 2009. The ceremony was held at the Fall ACS meeting in Washington, DC.

Jim Skinner was the Noyes Lecturer at the University of Rochester in November 2008. He became the Associate Editor of the *Journal of Chemical Physics*, effective July 2009. Jim will be the Vice-Chair (2011), and then Chair (2014), of the American Conference of Theoretical Chemistry.

Lloyd Smith and his friend Professor **David Cafiso** (Department of Chemistry, University of Virginia) recapitulated a hiking trip over Taboose Pass in the Sierra Nevada this summer. The first day is a hike from 5400 feet to 11,500, a rather grueling way of getting into the back country. The two photos are the same shot from 30 years ago and from this summer. The scientists appear to be holding up rather better than the sign!

In August 2008, **Bob West** with two other climbers ascended to the summit of Mount Carlyle and two companion peaks in the rugged Purcell range of British Columbia.

By September 2008, Silatronix Inc, Bob's organosilicon electrolytes company had expanded into an office and laboratory on the east side of Madison. The company produces safer, "green" electrolytes for lithium ion batteries and capacitors. Bob remains president, with Chemistry Dept. Chair **Dr. Bob Hamers** as chief technical officer.

In October 2008, Bob spoke on silylenes at the International Conference on Chemistry held in Colima Mexico, home of the famous ancient clay statue of Mayan dancing-dogs. A small conference with delightful people, and it resulted in **Dr. Adrian Pena** joining the Organosilicon Research Center.

At TRIUMF, the world's largest cyclotron, in Vancouver Canada, Bob, the muon group at Simon Fraser University, and a researcher in the Organosilicon Research Center, **Dr. Amit Mitra**, had a week of planning and muon beam-time. Unfortunately, the beam went down for most of

their allotted hours for running samples. This disappointed Bob but pleased Petey, who lives there. Nevertheless their early work on muon spectroscopy was published in *Angewandte Chemie* in December.

During November, Bob visited Israel where he spoke on muon spin resonance as an invited speaker at a colloquium in Jerusalem honoring Professor Sason Shaik. Then went to the Technion in Haifa, where he continued his ongoing collaboration with Professor Apeloig's group.

February found Bob at an international symposium in Cancun Mexico where he spoke on silylenes. This trip was a study in contrasts. First the smoothly run conference at a gigantic, elegant hotel spreading itself down a pristine beach well guarded from the outside world, where the wealthy and tanned cavorted and enjoyed luxurious buffets. Then the real Mexico where Bob and Petey had happy adventures exploring Mayan ruins with a rented car, a map, and some luck.

Bob and his partner Petey were in Korea for the month of March at Yonsei University in the gorgeous granite mountains of Wonju Korea. There Bob was appointed "World-Class Distinguished Professor" with an engraved large plaque on his office door to prove it. And he was often even introduced with these adjectives, which caused him to look a bit scared. His assignment with the Korean government is to bring Korea up to 'world class' in silicon chemistry, and he has been given 2-3 months a year for three years in which to do it. At his disposal is a glistening new Silicon Chemistry Lab, designed by Professor Myong Euy Lee of the university and superior to any he has ever seen in academia.

This first month of his first year was a fascinating experience. It felt somewhere between difficult and insane to him to teach in a country where he could neither understand the language nor recognize the alphabet - a situation, despite all his travels, that he had never been in before. It made him feel humble. He worries about how much of the secrets of silicon chemistry he conveyed, but all the students looked happy, came to every session, took notes, and, after the final lecture, one student turned in a note reading:

"Thank you sir! Your class is very actually and clear."

Petey's job was to meet with students and give seminars in conversational English. The students seemed eager and said they had never before had "western" professors. He and Petey go again for the month of October determined to be 'very actually and clear'.

TRIUMF in Vancouver again granted Bob beam-time in May to run samples from his labs as well as ones from the labs of some of his collaborators. Transporting samples is a delicate process and occasionally becomes complex. A visiting Japanese professor brought one sample from Japan to Bob in Korea. Bob then returned with it to Madison, and next carried it to TRIUMF, where it waits its turn in the beam. The last set of samples that were run have yielded some fascinating results which seem to fit no known pattern. Bob eagerly awaits his next allotment of beam-time, probably in November.

The 42nd North American Organosilicon Symposium occurred in New Jersey, June 2009. Bob has spoken at 40 of these annual symposia and was on the organizing committee for this one. It was an outstanding conference. Two of Bob's group gave invited research talks, 4 presented posters, and Bob spoke at the banquet as well as giving the closing remarks. Although he is still an instrument-rated pilot, local thunderstorms prevented him from flying himself to this conference.

Hyuk Yu continues his professional activities in writing, reviewing for journals, lecturing and technical consulting. In August of 2008, he organized Polymer Chemistry Symposium in US-Korea Conference on Technology and Entrepreneurship (UKC-2008), held at San Diego. Also, in the same month, he went to Germany to speak at the Surfactants in Solution Conference (SIS-2008) in Berlin, to give a series of talks at Max-Planck-Institute for Colloid & Interface in Golm, and a talk at Regensburg University. February and March of 2009, he spent in the physics department of Tulane University in New Orleans, interacting with its Center for Polymer Reaction Monitoring, with Prof. Wayne Reed as the director. During the same period, he also gave talks at LSU (chemistry) and University of Southern Mississippi (physics) in addition to attending American Physical Society March Meeting in Pittsburgh. Since then, he spoke at Liquid Crystal Institute of Kent State University in April, Polymer Surface Modification Conference in Orono, ME, in July, and ACS in Washington, DC in August. He continues with the semi-annual technical consulting and lecturing trips to Korea.

The size of the **Martin Zanni** group has nearly doubled in the last year with 3 terrific new graduate students joining, **Lauren Buchanan, Jenny Laaser** and **Dong Gyun Ha** along with a fabulous new postdoctoral researcher, **Sean Moran** from Columbia. People are also leaving, including **Sang-Hee Shim** (PhD '08) who is now a postdoc with **Xiaowei Zhuang** at Harvard and **Dave Strasfeld** (PhD '09) has just accepted a postdoc position with Moungi Bawendi at MIT.

Marty has been on sabbatical at the LENS institute in Florence, Italy for the past year. He has been collaborating with Roberto Righini and Paolo Foggi who are ultrafast infrared spectroscopists, as well as microscopist Francesco Pavoni. Dong Gyun Ha spent his second semester in Italy with Marty, working solely on microscopy, and will start up a new series of experiments once he returns to Madison. In the past year we have published several articles that we are particularly proud of. One article appeared in the journal Structure and was highlighted with an accompanying summary article. Structure is mostly a journal reserved for studies by NMR and x-ray crystallography, and so we were very happy that our work appear in this journal because it illustrates the unique perspective that 2D infrared spectroscopy can provide. We also published a paper in PNAS, which contains what may be one of the most detailed studies on how the amylin polypeptide that is involved in Type 2 diabetes coalesces into toxic fibers. This work has appeared on the front cover of *Chemical and Engineering News*. The journal *Physical Chemistry Chemical Physics* also highlighted some technical advances of ours on their cover as well.

Howard Zimmerman reports that at the recent Gordon Research Conference on Photochemistry, held at Briant University in New Hampshire, there were four former Z-group members—**Assoc. Prof. Igor Alabugin** from Florida State (PD '96-'00), **Prof. Andrei Kutateladze** from the University of Denver (PD '92-'95), Asst. Prof. **Evgueni Nesterov** from LSU (PD '98-'02) and Prof. **Richard Givens** from the University of Kansas (PhD '66). The first two gave plenary lectures.

In Memoriam

Edwin Norbert Becker

(PhD '53, Willard) age 86, died at his Long Beach home Feb. 23, 2009, surrounded by family. Dr. Becker was on the CSULB faculty from 1955-1983. Born in Ossian, IA, on Aug. 6, 1922, Dr. Becker earned a bachelor's degree in chemical engineering from Iowa State University and a doctorate in physical chemistry from the University of Wisconsin at Madison. He served in the Army Air Corps from January 1943 to November 1945. He is survived by Catherine, his wife of 58 years, five children, and eleven grandchildren.

Kenneth Francis Charter

(BS '49, Meloche) age 86, of Newark, passed away Jan. 11, 2009. He was born Sept. 4, 1922, in Montevideo, MN, to the late Francis Percy and Martha (Johnson) Charter. Mr. Charter earned his BS degree in chemistry from the University of Wisconsin. His career was devoted to research and development of products that created new directions for the plastics industry. He was director of plastics research and development at A.O. Smith Corp. in Milwaukee; director of plastics research for Johns-Manville in New Jersey; and senior engineer at Owens Corning Fiberglas Technical Center in Granville. After retiring from Owens Corning in 1986, he created his own desktop publishing business and taught desktop publishing at the Newark campus of Ohio State University and Central Ohio Technical College. Mr. Charter is survived by his wife of 60 years, Edith (Noel) Charter, whom he married Feb. 14, 1948; a daughter, a sister, two grandchildren, and several nieces and nephews on both sides.

Charles Edward Cottrell

(MS '65) age 66, died Tuesday, June 30, 2009. A member of St. Andrew Parish and the American Chemical Society, he received his BS and PhD degrees from The Ohio State University and his MS degree from the University of Wisconsin. He worked as a chemist in Academic Research at the Campus Chemical Instrument Center of The Ohio State University for 37 years where he was honored as a distinguished staff member. He authored and contributed to numerous publications in NMR Spectroscopy. A steadfast Buckeye fan, Dr. Cottrell is survived by his wife, Denise Cottrell, four children, his sister and brother, and numerous other relatives and friends.

Walter Keith Dean

(BS '39, Hall) age 91, passed away Saturday, January 17, 2009. He leaves his wife, Jean, to whom he was married for 67 years, four children, and seven grandchildren. Walter was born in Big Timber, MT. He and his mother moved to Whitewater, WI after his father died when he was 10. He graduated from the University of Wisconsin in 1939 and then completed a Master of Science degree from the University of Missouri at Rolla. He came to St. Louis in 1941 to work at Mallinckrodt Chemical Works where, in 1982, he was promoted to Research Fellow, Mallinckrodt's most senior technical position. For 15 years he also taught mathematics at Washington University night school. His extensive contributions to local government in Ferguson included three terms as City Councilman, founding member and President of the Ferguson Citizens Committee, and over 20 years as an election official. For his community service he received the key to the city.

Peter John Hamersley Dunlop

(PhD '55, Gosting) died on the 1st of February, 2009, in Adelaide, South Australia, three weeks before his 80th birthday. He gained his PhD in the Department of Chemistry at Madison as a Wisconsin Alumni Research Foundation Scholar, under the supervision of the late Prof. Lou Gosting in 1955. He had begun his scientific career at the University of Western Australia in 1950 as a BSc Honours student with Prof. Robin Stokes. Peter was an experimental physical chemist who made significant contributions to his field of science. He had a gift for building apparatus that yielded precise data. His work with Gosting and R.L. Baldwin saw the first verification of the Onsager Reciprocal Relations, a central theorem in non-equilibrium thermodynamics. For this theorem, and other theoretical work, Onsager received the Nobel Prize for Chemistry in 1968.

After a post-doctoral position at Uppsala in Sweden, and a second period at Madison, Peter was appointed Senior Lecturer (1959) and subsequently, Reader (1966), at the University of Adelaide, South Australia. Here he again built high precision apparatus for the study of diffusion in liquids and gases. He also investigated hybridization in Australian eucalypts using chromatographic analysis of their leaf oils, initially with the late Prof. Ross Inman of the Department of Biochemistry at Madison, also an Australian. He taught, and inspired, 16 research students at Adelaide and wrote some 161 scientific publications. Peter formally retired in 1994 but continued research as an Honorary Visiting Fellow, publishing his last paper in 2004.

Peter was a keen sportsman, excelling at field hockey. He had a life-long love of the Australian bush and cross-country skiing. He is survived by his wife Elizabeth and their sons Erik and Roald.

Herbert Jasper Dutton

(BA '37) age 92, of Cable, died Tuesday, Sept. 12, 2006. He was born May 30, 1914, to J.O. Dutton and Audrey B. Hadley in Evansville, WI. He completed high school in Galva, IL, and worked his way through the University of Wisconsin-Madison, earning his doctorate in 1940. He spent the summer of 1941 at Trout Lake near Minocqua where his infatuation with photosynthesis developed into a lifelong passion for the complex chemical process that turned sunlight into the energy that sustains living organisms. During World War II, he worked at USDA's Western Regional Research Laboratory in

Berkeley, CA, on improving the quality of dried eggs and dehydrated vegetables on a Quartermaster Corps project. After the war he transferred to the U.S. Dept. of Agriculture Northern Regional Research Laboratory in Peoria, IL, where he worked on the utilization of soybeans and received a citation from the American Soybean Association in 1979, which said, "His contributions as a creative individual researcher and as a motivating leader have helped move soy oil from a minor food oil in the 1940s to a major food oil in the U.S. and overseas." A dozen other awards from industry, the government (one personally by President Lyndon B. Johnson), and scientific societies honored his work. The two most recent were the establishment of the Herbert J. Dutton Award in Analytical Chemistry by the American Oil Chemists Society, and his election to the USDA's Hall of Fame with a plaque hanging in Washington (1996). His discovery of the high quantum efficiency of energy transfer from carotenoid to chlorophyll-a in plants attracted the interest and citation of J. Robert Oppenheimer who was studying internal conversion of energy in the uranium series of isotopes. He returned to the northwoods in 1981, after retiring as Chief of Oilseed Crops Laboratory, Northern Regional Research Lab. Even in retirement, he continued researching lipid metabolism problems with Dr. Ralph Holman at the Hormel Institute, and was named a University of Minnesota Adjunct Professor. He is survived by three daughters, five grandchildren, and four great-grandchildren. He was preceded in death by his wife, Nona.

Ralph Franz Hirschmann

(MA '48, PhD '50, Johnson) died June 20, 2009 in Lansdale, PA. He was 87. Hirschmann was an organic chemist whose long career included many contributions to the chemistry and biology of anti-inflammatory steroids; to synthetic methods in peptide chemistry; to elucidating the chemistry, biology, and structure activity relationships of hypothalamic releasing factors, especially somatostatin and TRH; to the design and synthesis of numerous pharmaceuticals; and to the field of peptidomimetics. Hirschmann and R.G. Denkewalter led the Merck & Co. team that

achieved the first in-vitro synthesis of an enzyme, ribonuclease S'. This total synthesis in solution, along with Merrifield's on solid support, demonstrated that the amino acid sequence of a small protein such as ribonuclease A determines its tertiary structure in aqueous medium. This major achievement received worldwide front page coverage in 1969. In 1971 Hirschmann became the head of the Department of New Lead Discovery at Merck and in 1978 he was named Senior Vice President for Basic Research in Chemistry at the Merck Research Laboratories. During his tenure as head of Basic Research at Merck, his teams discovered and/or developed many widely used medicines important for the treatment of infectious diseases, hypertension, and hyperlipidemia. These included Vasotec, Lisinopril, Primaxin, Mevacor, Proscar, and Ivomec. The antiparasitic drug Ivomec all but eradicated river blindness, a dreaded disease of the developing world. It is also widely used in the treatment of roundworm in livestock and the prevention of heartworm in dogs. In 1987, after his mandatory retirement from Merck at the age of 65, Hirschmann started a second career at the University of Pennsylvania where he served as the Rao Makineni Professor of Bioorganic Chemistry. During his nearly six highly productive decades as a chemist, he was inventor or co-inventor on over 100 patents and authored or co-authored approximately 200 publications. In 2000 he received the country's highest scientific award from President Clinton: The National Medal of Science. In 2007 he was inducted into the American Chemical Society's Medicinal Chemistry Hall of Fame. His research was also recognized with many other awards and honors including the Nichols Medal, the Alfred Burger Award, the Arthur C. Cope Medal, and the Willard Gibbs Medal. Dr. Hirschmann was elected a member of the American Academy of Arts and Sciences, the National Academy of Sciences, and a Senior Fellow of the Institute of Medicine of the National Academies. A native of Fürth, Bavaria, Germany, Hirschmann immigrated to the United States in 1937 and became a US citizen in 1944.

Dorothy L. Johansen

(MS '56, Margrave) professor emeritus of chemistry at Mayville State University in North Dakota, died November 13, 2006, at the age of 72. She taught at Mayville State from 1985-1997. Dorothy was born in Chester, PA, on August 22, 1934. She earned a bachelor's degree from the University of Pennsylvania in 1955, a master's degree from the University of Wisconsin in 1956, and a PhD from the University of Minnesota in 1973. During her career she taught at several small colleges. Dorothy retired from Mayville State in 1997 after suffering kidney failure. She was fortunate to receive a kidney transplant. She is survived by her husband, four daughters, and ten grandchildren.

Barbara J. Kure Klein

(PhD '80, Record) died March 31, 2009, at the age of 55. Dear wife of Andrew J. Klein; dear mother of Earthia, David and Matthew; dear daughter of Edward and Mary Jane Kure; dear sister of James, John, Mary Beth, Joanne and Cathy; dear grandmother of LaRenzo and Michael; dear aunt, cousin and friend. Barbara graduated from the University of Michigan, received her PhD from the University of Wisconsin, and was employed as a senior scientist at Singulex Inc. She was very active in her children's activities and her church, and was an avid bicyclist, skier and tri-athlete. Donations may be made to Chaminade College Prep or University of Wisconsin Women's Philanthropy Assoc.

Anita Z. Koerner

(BS '45) age 84, beloved wife of William E. Koerner for 61 years, died on March 7, 2009. She was the dear daughter of the late Frederick and Anna Ziegenhagen of West Allis, WI and the dear sister of the late Karl Ziegenhagen and aunt to his surviving son

and daughters. She was the mother of Mrs. Pamela Nordmann (Paul) and Ms. Janet E. Koerner. Anita received her BS Degree in Chemistry from the UW-Madison and subsequently a MS Degree in Biochemistry from the same university while working under Dr. Conrad Elvehjem.

Ronald Harold Laessig

(PhD '66, Blaedel) age 68, died peacefully at his home on Sunday, March 29, 2009. Ronald graduated from UW-Stevens Point in 1962 Magna Cum Laude and then attended UW-Madison where he received his doctorate in chemistry. After completing his doctorate, he did his post doctoral work at Princeton. In January of 1966, he was united in marriage to Joan Spreda at St. Stephens Catholic Church in Stevens Point. He worked for 20 years as the director of the State Laboratory of Hygiene and as a professor at UW-Madison in the Department of Pathology and Preventive Medicine. During his tenure, he received many honors with his work in Newborn Screening and Clinical Chemistry. Ronald was invited to give seminars both locally and world wide on Clinical Chemistry. He is survived by his wife of 42 years, Joan, his daughter, three grandchildren, and nieces and a nephew. Memorials may be made to Our Lady Queen of Peace School Endowment Fund or UW School of Nursing Scholarship Fund.

Joseph John Lingle

(BPH '47, Hall) died in Kenosha, WI, on June 25, 2009, at age 91. He was born on May 6, 1918, the son of Joseph and Katarina Lingl. He grew up in Kaukauna, WI. While attending Kaukauna High School, he joined a ROTC type program which he continued while attending UW-Madison. There he married his college sweetheart, Mary Jane Wastian, on December 9, 1941, (two days after Pearl Harbor). He and his new bride immediately moved to the South, where he was stationed as an Army Air Corps flight instructor. His WWII overseas service began in early 1945. Captain Lingle flew 29 combat missions over Japan while logging 431 combat hours; he was awarded the Distinguished Flying Cross. After WWII, he graduated from UW-Madison and worked as research chemist at the Wisconsin Highway Lab. In 1957 he was promoted to Commander of the 440th Tactical Troop Carrier Wing in Milwaukee, WI, where he served until 1972. He received his Brigadier General star in 1963. After 1972 he continued as a civil servant at Hill Air Force Base in Ogden, UT, until his retirement in 1984. He and his wife then moved to Eagle River, WI, until 2002 when they moved to Kenosha, WI. His wife of 67 years died on May 13, 2008. He is survived by his three daughters, three grandchildren, his sister, and numerous nieces and nephews.

Jean Connell Linton

(BPH '43, Schuette) age 86, passed away Monday, January 26, 2009 at her home in the town of Scott. Jean Connell Guthrie was born February 4, 1922 to Horace Kier Guthrie and Jennie Kingston Connell Guthrie in the town of Vernon, Waukesha County, the second of their four children. She was a chemistry graduate of the University of Wisconsin. Her husband, the late Thomas Linton, was the secretary/business manager of the Milwaukee Public Schools until 1981, when he retired and they moved to the Town of Scott. She was active in many volunteer organizations and was secretary of the Town of Scott Board of Zoning Appeals since 1987.

Merwin J. Meyer

(BS '39) died May 16, 2009, at the age of 92. He was born in Milwaukee on March 2, 1917, the son of Merwin M. and Adeline Meyer. Merwin had been employed as a chemist by the ATO Findley Company, retiring after 40 years of service. Survivors include his wife of 65 years, Marjorie, his son Elden, and his daughter Linda Oatman. Merwin's hobbies included lapidary, crossword puzzles and puns.

Karen Martha Telander Muskavitch

(BS '75, Record) passed away on January 12, 2009, after a three-year journey with brain cancer. She graduated from the University of Wisconsin in 1975, earning a BS in Chemistry and Biochemistry with Honors. She obtained her doctorate in Biochemistry at the University of California at Berkeley, where she studied genetic recombination with Dr. Stuart Linn. As a postdoctoral fellow, Karen studied plant molecular biology with Dr. Lawrence Bogorad at Harvard University. In 1984, Karen relocated to Indiana University, where she served as an assistant research scientist and an assistant professor part-time of biology, and developed an academic interest in the ethics of scientific research. Following her move to Boston College in 2000, Karen became an adjunct assistant professor of biology and the originator and coordinator of Boston College's Responsible Conduct of Research Program. Karen is remembered by family, friends and colleagues for her loving heart, keen intelligence, abiding faith, unfailing good humor, caring professionalism and outstanding community spirit.

Mary Lou Relyea

(MS '57) age 76, died April 14, 2009, at the Hospital of Saint Raphael in New Haven. She was born Sept. 22, 1932, in Walnutport, PA, a daughter of the late Allan Walter and Pearl Annie (Moser) Peters. After earning a BS in chemistry from Drexel and a MS in chemistry from the University of Wisconsin, Mary was employed at the United States Rubber Co. Research Center in Wayne, NJ, as assistant technical librarian. From 1976 to 2007, she was director of the Clark Memorial Library in Bethany. She is survived by her husband of 52 years, Douglas I. Relyea of Bethany; a sister, two sons, two daughters, four grandchildren, and two nephews. Memorial contributions in Mary's memory may be sent to Friends of the Clark Memorial Library, 538 Amity Road, Bethany 06524; or National Kidney Foundation, 2139 Silas Deane Hwy., Suite 208, Rocky Hill 06067.

Jack Glyndon Roof

(PhD '38, Daniels) research scientist, educator and world traveler, passed away on January 2, 2009 in Poulsbo, WA, at the age of 95. Jack was born on June 17, 1913 in Cleburne, TX to parents L. Clifton Roof and Mary (Brixey) Roof. He graduated high school in Cleburne, received his Bachelor of Arts in 1934 (Phi Beta Kappa in his junior year) and a Masters of Arts in 1935, both from UCLA. In 1938 he was awarded his

PhD in Chemistry from the University of Wisconsin. He was employed by Oregon State University in Corvallis, OR as an instructor in chemistry. It was in one of his chemistry classes that he met his future wife. During WWII, he worked for the National Defense Research Committee and he witnessed the atomic bomb detonations at Bikini Atoll. Later he worked for Shell Oil in Houston, TX doing research and finally at Galveston College in Texas as a college professor. He is survived by his wife of sixty-seven years, Mildred J. (Little) Roof. Together they reared and educated three children and shared a passion for both family and travel. Jack had visited 84 countries.

John Chester Safranski, Jr.

(BS '42, PhD '49, McElvain) age 88 of Midland, passed away on April 9, 2009. He was born in Kenosha, WI to the late John and Josephine (Lutzkiewicz) Safranski. He was beloved husband of Jo Ann for 25 years and loving father of John (Susan) Safranski, Stephen (Deborah) Safranski, Greg (Ally) Safranski, the late Michael Safranski, Bryan (Diane Borneman) Safranski, Julie Rice and husband Trent Garber. John graduated from the University of Wisconsin in 1942 and then went on to serve as a Major in The U.S. Army Chemical Corps in the Aleutian Islands during World War II. He then graduated from the University of Wisconsin in 1949 where he earned a doctor of philosophy degree. He retired in 1982 after 25 years with The Dow Chemical Co. as a senior project manager. John had a vast resume of accomplishments during his tenure with Dow, which includes 5 patents and many publications in professional journals. He was also a member of the American Chemical Society.

Gregory Alan Steinke

(BS '92, West) age 39, of Middleton, passed away on Saturday, December 6, 2008, as a result of an automobile accident. He was born on August 20, 1969, in La Crosse, the son of Dennis Steinke and Joyce Williams. Greg graduated from Stoughton High School in 1987. He was a 1992 graduate from UW-Madison with a degree in chemistry, and worked at UW-Madison as a teaching assistant and as a research chemist. He also worked at US Fish and Wildlife Services in La Crosse, Gilson, Inc. in Middleton, Badgerland Meat and Provisions in Madison, CHR Hansen in Stoughton and was currently employed at Pharmaceutical Product Development, Inc. (PPD) in Middleton. Greg most enjoyed spending time with his many friends. Greg is survived by his father, Dennis (Mary) Steinke of New Glarus; mother, Joyce (Ron) Williams of Des Moines, IA; two stepbrothers, Eric Jackson and Scott Jackson; aunts, Diane (Charles) Greener, Kathy Molzahn and Mary (Alan) Thompson; uncles, Michael (Frankie) Ruegg, David (Melissa) Steinke and Daryl (Maureen) Steinke; and other cousins, relatives, friends and his loving cat, Jekyl. Those wishing to make an expression of sympathy may make a memorial donation to the Dane County Humane Society, 5132 Voges Road, Madison, WI 53718.

Robert Franklin Taylor

(PhD '41, McElvain) age 93, of White Bear Lake, MN, died February 4, 2009. He was born February 7, 1915. Curious about life to the end, he combined a scientist's mind with a poet's soul. A graduate of Beloit College and the University of Wisconsin-Madison (PhD-chemistry), he was involved as a research chemist in the initial commercial production of penicillin during World War II, and the development of fiberglass reinforced pipe at 3M. In later years, he guided the Management Center at St. Thomas University through its formative years to become a significant business center. Devoted husband to Alberta (Bird), his wife of 67 years; unfailingly supportive father to his children and their spouses (Elizabeth Taylor Thomson, Robert (Jan), Katherine Galligan (David) and John (Karen); proud grandfather to 12 grandchildren (Johnathan, Mark, Phillip, James, William, Jennifer, Eloise, Paul, Samuel, Malcolm, Daniel, and Stephen). A man of strong character and quiet dignity, he led by powerful example. Memorials should be made to the University of Wisconsin Foundation – Robert F. Taylor Memorial Fund, US Bank Lockbox 78807, Milwaukee, WI 53278.

Lewis Aldro Walter

(PhD '34, McElvain) age 100, chemist, patent holder, Madison columnist, passed away on Feb. 7, 2009. Born in Rural Brushville, WI, Mr. Walter was a graduate of Ripon College and had a Ph.D. in organic chemistry from the University of Wisconsin. Walter practiced medicinal chemistry research for 40 years at the University of Wisconsin, Maltbie Laboratories and Schering Plough. He held over 30 U.S. patents and made this country's first effective sulfa antibiotic. Walter was a member of the American Chemical Society for 73 years, the Presbyterian Church of Madison and the Summit and Madison Old Guards. He wrote the Madison Eagle's "50 Years Ago" column as a volunteer for the Historical Society and was an Eagle indexer for the Madison Public Library. Mr. Walter was the husband of 69 years to the late Carrol V. Walter; father of Mary Walter, Alice Walter and late Thomas Walter. Contributions may be made to the Madison Public Library.

Joseph William Windhauser

(BPH '39, Huffman) age 92, beloved husband, father, grandfather, brother. Joseph began his life journey in Green Bay, WI, ending his journey in Scottsdale, AZ. He attended St. Norbert's College, Green Bay and graduated from the University of Wisconsin, Madison in 1939. Joe served his country during World War II as an Army Captain in the South Pacific and the Battle of Leyte Gulf in the Philippines. Joe returned to Indiana and continued his career with Standard Oil of Indiana (Amoco) as Manager of Lake Tanker and Barge Operations in 1946 where he worked until his retirement in 1976. Joe is survived by his loving wife of 63 years, Virginia Windhauser; daughters, Eileen Wilson and Joann McClure; son, Jon Windhauser; grandsons, George McClure and Joseph McClure; and brother, Lloyd Windhauser.

(continued on page 26...)

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; go to http://www.chem.wisc.edu and select "Donate" on the left side of the screen. 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

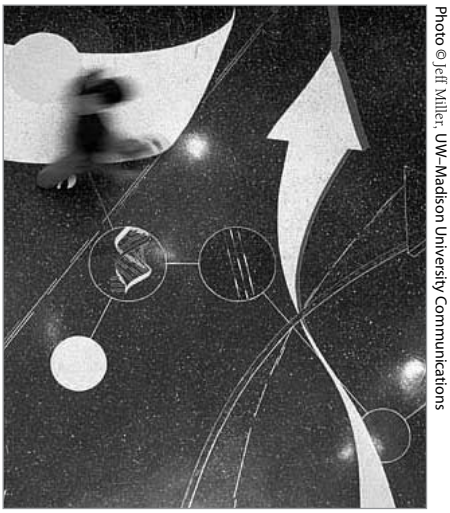


Photo © Jeff Miller, UW-Madison University Communications

A blurred figure of a person walks across "Biotechnology Waltz", a terrazzo floor in the new Biochecmistry building foyer that features biotechnology inspired images designed by artist Norie Sato. The artwork is funded by the Wisconsin Arts Board's Percent for Art Program.

UW–Foundation Accounts for the DEPARTMENT OF CHEMISTRY

OF SPECIAL INTEREST IN 2008–2009

Although we appreciate all of our donors, the following funds are of very broad application to Department activities, had some special event occur in 2008–2009.

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

Badger Chemist Fund 1222534
Provides funds to support the Badger Chemist and other Department outreach efforts.

Chemistry Building Fund 12221293
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.

Charles P. and Martha L. Casey Chemistry Fund 12226545
Provides funds for Research Excellence Awards in Chemistry, for a lectureship, and for grad student supplements. Established in 2009 by a gift from Charles and Martha Casey.

K.V. Reddy Chemistry Fund 12226660
Established in 2009 by K.V. Reddy to provide funds that can be used at the discretion of the Chair.

Karen M. Telander Undergraduate Research Fund (Undergrad) 12226515
Created in 2009 by Marc Muskavitch in memory of his wife, Karen Martha Telander Muskavitch, who died January 5, 2009 (see In Memoriam). The fund will support undergraduates in Chemistry and Biochemistry.

Lindsey Plank and Richard Putze Memorial Fund (Undergrad) 12226466
Created in 2008 to honor Lindsey Plank and Rick Putze, who died on August 23, 2008. Lindsey and Rick worked in the Chemistry Demonstrations Lab, and the intent is to support students involved in the creation of demos or experiments for outreach.

Lindsey Theresa Plank Memorial Scholarship Fund (Undergrad) 12226403
Created in 2008 to honor Lindsey Theresa Plank, who died on August 23, 2008. Lindsey was a chemistry student at UW-Madison

Richard B. Bernstein Lectureship Fund 12224951
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. The inaugural Richard Bernstein lecture was presented by Professor Raphael Levine in Spring 2009.

Robert Franklin Taylor Fund (Undergrad) 12226624
Established in 2009 by a gift from Robert Frederick Taylor in honor of his father, Robert Franklin Taylor, who died February 4, 2009 (see In Memoriam). The fund will be used for undergraduate student scholarships.

Robert O. Blau Family Fund for Chemistry 12226648
Established in 2009 by a gift from Edward C. Blau in honor of his father. The fund is to be used at the discretion of the Chair for the benefit of the Department.

STUDENT SUPPORT

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

Alfred L. Wilds Scholarship in Chemistry (Undergrad) 12220072
Undergraduate scholarship in memory of Professor Al Wilds.

Alpha Chi Sigma Alumni Endowed Scholarship Fund (Undergrad) 12224506
Established in 2006 for the purpose of providing scholarship support for undergraduate students in the Chemistry, Biochemistry, or Chemical Engineering Departments.

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

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Supports graduate students in Chemistry.

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Undergraduate scholarship in memory of Don Brouse.

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Supports undergraduate students in Chemistry.

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Supports women graduate students in Chemistry research.

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Supports undergraduate students in Chemistry, especially women.

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Established in 2004 by William G. and Virginia Hendrickson. First awarded Fall 2007.

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Hach Scholarship Fund to Develop HS Chemistry Teachers 12224870
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Supports graduate students in Organic Chemistry.

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Supports Undergraduate students in Chemistry, in memory of Ralph Firminhac's parents, Henry Firminhac and Eleanor Firminhac.

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Provides funds for awards to the best students in the Fall Chemistry 108 and Chemistry 109 courses.

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Supports undergraduate research with an annual award.

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

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Established in 2005 by a gift from the estate of Pei Wang, to be used for fellowships for students in the Chemistry Department.

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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.

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Graduate Fellowship in Analytical Chemistry, in memory of Roger Carlson.

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Supports undergraduate students from Wisconsin high schools with GPA above 3.0.

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Supports undergraduate students, with preference for students of Asian descent.

Wayland E. Noland Undergraduate Research Fellowship 12222191
Established by Professor Wayland E. Noland to support summer or academic year research by undergraduates.

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

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

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

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Awards an annual Prize to an internationally prominent scientist to recognize outstanding work in Theoretical Chemistry.

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

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Organic Synthesis Fund 1222548
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Established in 2002 and first awarded in 2003, this provides an endowed fund to support awards to outstanding teachers in the Chemistry Department.

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Provides funds to support an annual prize, a lectureship, or other support of science education.

SERAPHIM Fund 12220404
Supports computer applications in Chemical Education.

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

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Provides funds to support endowed chairs in the Chemistry Department.

H. L. and M. L. Goering Visiting Professorship Fund 12222391
Provides funds to support a Visiting Professor in Organic Chemistry.

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Established in 2006 with a gift from Irv Shain for a permanent professorship in the Chemistry Department.

John D. Ferry Lectureship in Macromolecular Science 12222793
Provides funds to support a Lecturer in Macromolecular Sciences.

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

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Supports the ongoing seminar series organized and run by graduate students in the Department of Chemistry.

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Funds a Visiting Professor in Organic, Bioorganic or Physical Organic Chemistry.

V. W. Meloche-Bascom Professorship 1222889
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V. W. Meloche Lectureship 1222825
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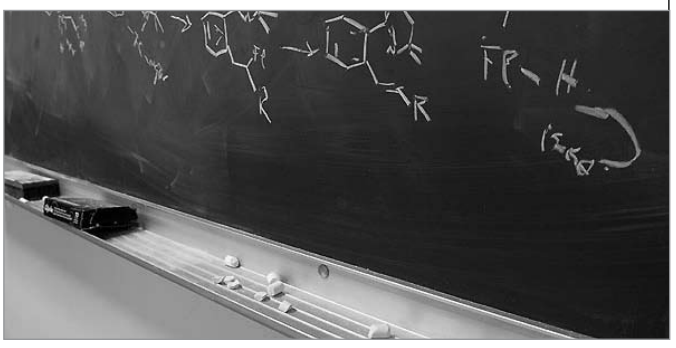

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These funds provide key support for specific purposes or for our new initiatives.

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

Dr. Norbert Barwasser Chemistry Fund 32225010
Benefits the Department of Chemistry research and programs.

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

Hall-Fisher Separation/Purification Processes Using Polymers 12226335
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.

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Irving Shain Chemistry Colloquium Series Fund 12224514
Established in 2006 in conjunction with the ceremony honoring Irv Shain with the naming of the "Irving Shain Research Tower".

Jean Irene Love Fund 12223870
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.

John and Caroline Dorsch Fund 12220322

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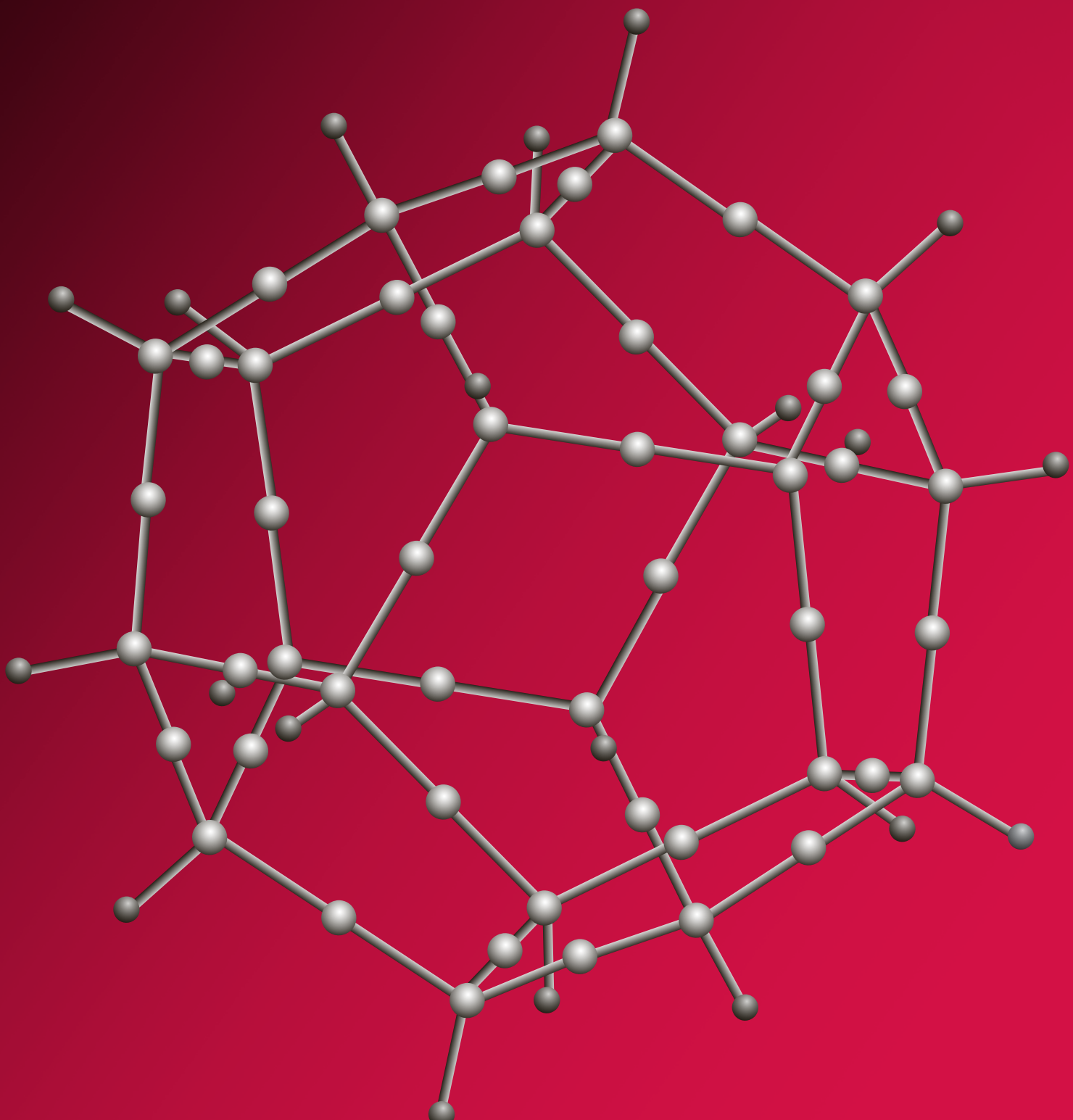

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