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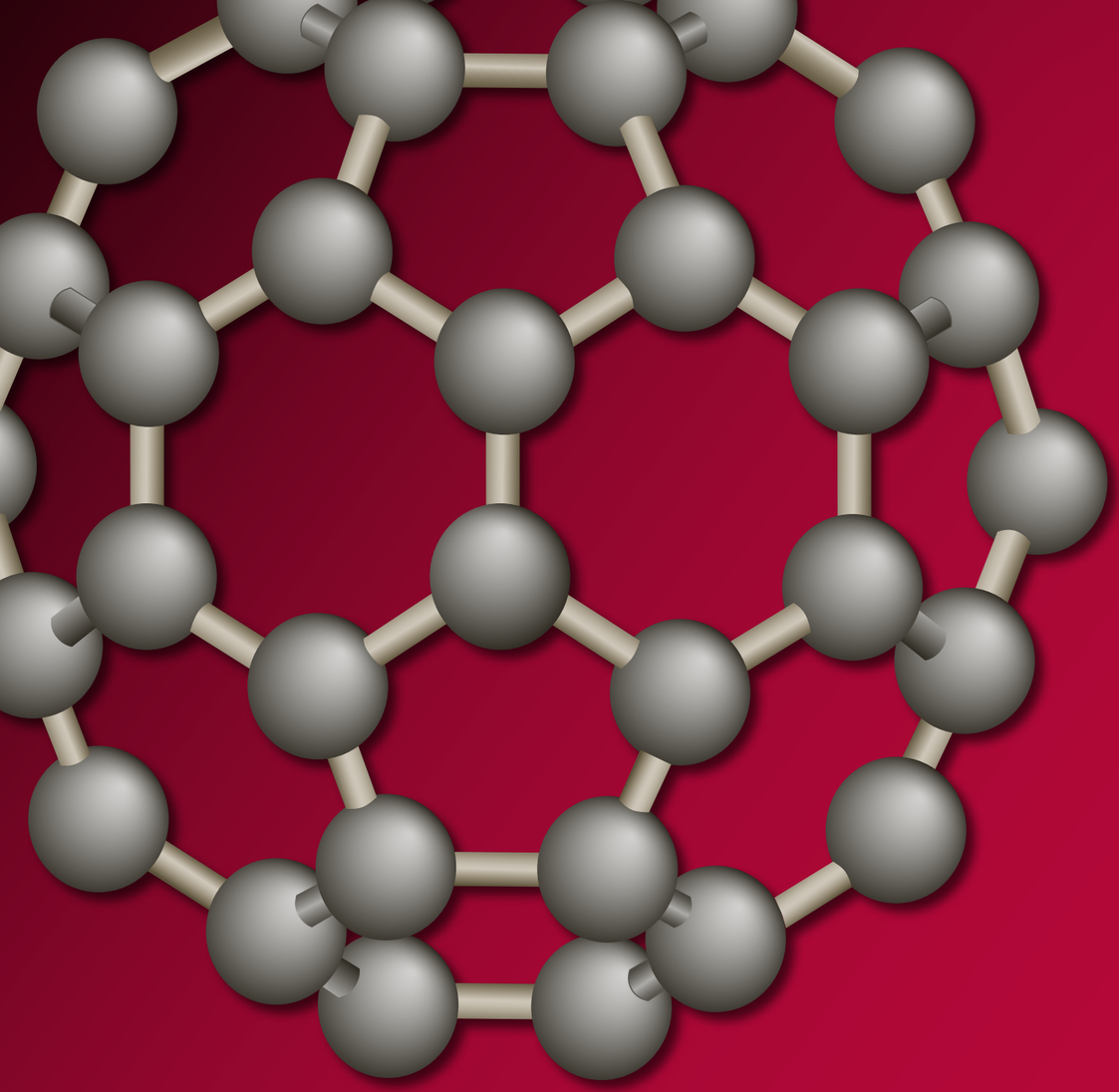
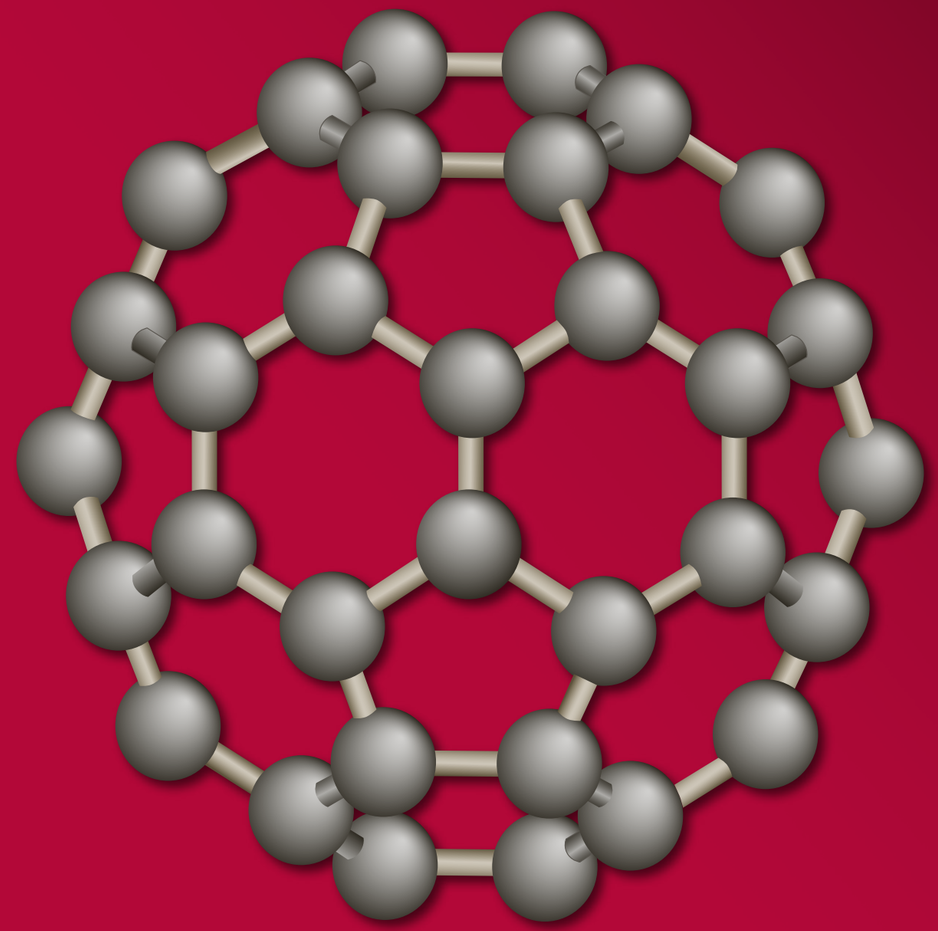
2011

Badger Chemist





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THE NEWSLETTER OF
THE UNIVERSITY OF WISCONSIN–MADISON

CHEMISTRY DEPARTMENT

THE NEWSLETTER OF THE UNIVERSITY OF WISCONSIN–MADISON

CHEMISTRY DEPARTMENT

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2011 BADGER CHEMIST

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2011

From the Chair

Fall 2011

Dear Badger Chemists:

The *Badger Chemist* and the Department website (www.chem.wisc.edu) are the best ways for you to stay in touch with UW–Madison Chemistry. Again this year, Matt Sanders has served as BC's editor-in-chief, collecting news from around the Department and the world for your enjoyment and edification.

The Department continues to be recognized for excellence in research, teaching, and service to the community. Over the past year, our faculty won three national ACS awards: the Irving Langmuir Award to Jim Skinner, the Award in Colloid and Surface Chemistry to Bob Hamers, and the James Flack Norris Award in Physical Organic Chemistry to Hans Reich. Bassam Shakhashiri was elected President of the ACS. I am very proud that our departmental co-workers won four Staff Excellence Awards from the College of Letters and Science: NMR director Dr. Charlie Fry, Organic Division Coordinator Ms. Kat Myhre, Machinist Ed Vasiukevicius, and Departmental Administrator Rosana Pérez-Ellmann. Near-Dr. Brian Esselman, a senior graduate student in the McMahon group, just won the UW–Madison Teaching Assistant Award for Innovation. It has been highly rewarding working with these and the many other talented colleagues around the Department.

Two longstanding and outstanding colleagues have retired: Ed Vedejs (who spent the past 12 years at U. Michigan after 32 years in Madison) and Howard Zimmerman (with 51 years of service). Both celebrations were a wonderful chance for alums to return to Madison and tell stories about their adventures here in decades past.

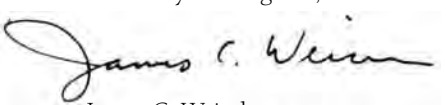
We've hired two new faculty. Assistant Professor Randy Goldsmith is a physical-inorganic-materials chemist who will apply single-molecule methods to a variety of interdisciplinary problems. Full Professor Kyoung-Shin Choi will join us from Purdue in Summer of 2012. She uses electrodeposition to create fascinating new mixed-metal electrode surfaces that have a bright future in solar energy conversion. Both are outstanding individuals who will carry our traditions forward for many years to come.

The inaugural meeting of our Board of Advisors occurred in October. This is a group of national leaders from the chemical and pharmaceutical industries who will lend us their advice and expertise as we work to better connect faculty and students with our partners in industry.

Finally, the plan for a new Chemistry Instructional Facility at the corner of Mills Street and University Avenue was ranked the top building priority by the Campus Planning Committee. Bob McMahon and Fleming Crim led the design effort. We're very excited about the possibility of adding new lecture halls and modern undergraduate laboratories to the complex. We'll update you on further progress as the plan goes to the UW System for evaluation.

In spite of budgetary challenges, the Department remains a vibrant place in which to teach and do frontier science. Please continue to send us news of what you are doing out there in the world. I hope to meet many of you at our UW–Madison Chemistry Open House event at the ACS national meeting in San Diego in March. Best wishes for a great 2012!

With very best regards,



James C. Weischaar

James C. Weischaar
Chair, Department of Chemistry
chair@chem.wisc.edu

New Badger Chemists

PHD

AUGUST 2010

Tamas Benkovics *(Yoon)*
Oxaziridine-mediated functionalizations of hydrocarbons

Maren Emily Buck *(Lynn)*
Covalent layer-by-layer assembly of reactive thin films fabricated from poly(2-alkenyl azlactone)s

Susan Marie Brastad Burden *(Nathanson)*
Investigation of proton exchange reactions between acidic gases and protic solvents containing dissolved ions

Nicola Jean Burrmann *(McMahon/Moore)*
Synthesis of precursors to and spectroscopic characterization of highly unsaturated carbenes and diradicals and development and implementation of a web-based stereochemistry tutorial

Jessica Dawn Gardner *(Brunold)*
Spectroscopic and computational studies of heme and nonheme iron-dependent enzymes: nature of substrate/active site interactions and mechanistic implications

Li Guo *(Gellman)*
Enantioselective organocatalytic Michael reactions: synthesis and application of new gamma-amino acids in the design of gamma-peptide foldamers

Andrew John Huisman *(Keutsch)*
Measurements and modeling of glyoxal: insights into rural photochemistry and secondary organic aerosol production

Smita Jha *(Kuech)*
Synthesis of narrow band-gap III-V semiconductors using metal-organic vapor phase epitaxy

Suzanne Elizabeth Kulevich *(Smith)*
Hydrophobic modification of peptides to enhance electrospray ionization mass spectrometry analysis

Yun Ling *(Zanni)*
Efforts toward elucidating hIAPP aggregation pathway by 2D IR spectroscopy

Jessica Lynn Menke *(McMahon)*
Computational and matrix-isolation spectroscopy studies of cyanocyclobutadienes

Diane Loretta Nutbrown *(Burstyn/Moore)*
Sensing ethylene with Ag(I)-bound fluoroionophores and development and assessment of "Fun with Chemistry" camps

Keewook Paeng *(Ediger)*
Molecular mobility in thin polymer films probed by reorientation of fluorescent molecules

Kristin Nicole Plessel *(Reich)*
A. Addition of Organolithium Reagents to Carbonyl Compounds
B. Chelation Strength in Organolithium Reagents

Ye Sun *(Ediger)*
Stability and stabilization of amorphous organic solids : crystal growth mechanisms and drug solubility in polymers

Jeannine Robin Szczech *(Jin)*
Nanomaterials of silicides and silicon for energy conversion and storage

Xiaoyu Wang *(Hamers)*
Mechanistic studies of photochemical reactions on the surfaces of group IV semiconductors

Katherine Windsor *(McMahon)*
Cycloaromatization studies of $C_{10}H_4$ ene-tetraynes and their derivatives

Junshu Zhao *(Ediger)*
Dynamics of polymers in miscible blends and mixtures

DECEMBER 2010

Kristin Anne Briney *(Crim)*
The influence of vibrational excitation on the photoisomerization of trans-stilbene in solution

Daniel Keith Burden *(Nathanson)*
The role of chain structure and functional group on HCl entry into surfactant-coated sulfuric acid

Karen Sue Conrad *(Brunold)*
Spectroscopic and computational insights into the transport and utilization of B12 in biological systems

Colin Jeremy Ingram *(Weisshaar)*
Probing the cytoplasm of Escherichia coli with time-resolved flourescence anisotropy

Lingyin Li *(Kiessling)*
Synthetic surfaces to control cell fate

Margrith Eileen Mattmann *(Blackwell)*
Design, synthesis, and evaluation of small molecules for the modulation of quorum sensing in Pseudomonas aeruginosa.

Richard Edwin Ian McDonald *(Stahl)*
1. Development of palladium-catalyzed aerobic oxidative amination of alkenes
2. Enantioselective hydroformylation of N-vinyl carboxamides, allyl carbamates, and allyl ethers using chiral diazaphospholane ligands

Elizabeth Margaret Moscato-Goodpaster *(Landis)*
Information-rich investigations into catalytic olefin polymerization: technique development and mechanistic studies

Peerasak Paoprasert *(Gopalan)*
Tailoring organic/inorganic interfaces by surface grafting molecules

Christopher Joseph Shaffer *(McMahon)*
Synthesis and photochemistry of reactive organic molecules of relevance to astrochemistry

Joseph Robert Stringer *(Blackwell)*
Design and construction of small-molecule macroarrays for the discovery of antibacterial compounds : development and implementation of new design strategies for the generation of discretely folded peptoids

Avery Lamar Watkins *(Landis)*
Synthetic and Mechanistic Studies of Rhodium-Catalyzed Asymmetric Hydroformylation with Diazaphospholane Ligands

Xuan Ye *(Stahl)*
Mechanistic studies of palladium-catalyzed "Wacker-type" intramolecular aerobic oxidative amination of alkenes and development of safe and scalable continuous-flow methods for palladium-catalyzed aerobic oxidation

Jihua Zhang *(Stahl/Gellman)*
The development and study of functionalized nylon-3 polymers toward biomaterials

MAY 2011

Christopher John Annessley *(Crim)*
Increasing the complexity of vibrationally mediated reactions: Multiple channels and new systems

Amanda Susan Case *(Crim)*
Vibrational Predissociation of the Ammonia Dimer

Nattawan Decharin *(Stahl)*
Mechanistic studies of the oxidation of reduced palladium complexes by benzoquinone and molecular oxygen

Jeremy M. Higgins *(Jin)*
Synthetic Development of Metal Silicide Nanowires for Thermoelectric and Spintronic Applications

Ruomu Jiang *(Sibert)*
Predissociation Dynamics of Methanol Dimer: Optimal Representation

Manjui Violet Lee *(Coon)*
Characterization and Development of Quantitative Proteomic Methods for Systems-Level Interrogation of Dynamic Stress-Induced Changes in Saccharomyces Cerevisiae

Stephen Andrew Morin *(Jin)*
Dislocation-Driven Synthesis and Bioinspired Assembly of Functional Nanomaterials

Michael Nippe *(Berry)*
Synthesis and Characterization of Heterometallic Trinuclear M=M...M'Frameworks and Investigations of Unusual Dinuclear Compounds Containing Metal-Metal Multiple Bonds

Doug Phanstiel *(Coon)*
The development and application of quantitative proteomic methods for the analysis of human embryonic and induced pluripotent stem cells

Nickeisha Antoinette Stephenson *(Stahl/Gellman)*
Catalytic transamidation reactions

Craig Daniel Wenger *(Coon)*
Advanced data acquisition and analysis strategies for mass spectrometry-based proteomics

Matthew Alan Windsor *(Gellman)*
Development of a beta-Peptide Retroaldolase and Efforts Toward Other Catalytic Foldamers

Yuzhuo Zhang *(Li)*
Neuropeptidomic studies in crustacean via multi-faceted mass spectrometric techniques

Lei Zhu *(Lian Yu)*
Molecular mobility and physical stability of amorphous organic solids

MS

AUGUST 2010

Craig Thomas Gutman *(Brunold)*
Purba Asha Mukerjee *(Weibel)*

DECEMBER 2010

Brenda Sue Basile
Rachel Dao *(Schomaker)*
Olga L. Dykhno *(Yoon)*
Ross Charles Lovely *(Wright)*
Kelsey Nicole Mayer *(Gellman)*
Beau Louis Monnot *(Mahanthappa)*
Stephen James Snider *(Strieter)*
Fei Wang *(Xudong Wang)*
Marilyn Elissa Weiss *(Ediger)*

MAY 2011

Teresa Marie Jacinta Beary *(Blackwell)*
Thomas William Draxler *(McMahon)*
Maitreya Dutta *(Crim)*
Victor Ariel Jaffett *(Burke)*
Terese Ann Kreifels *(McMahon)*
John C. Lukesh *(Raines)*
Dagmara Marston *(Schocmaker)*
Aaron Michael McCoy *(Mecozzi)*
Christopher Anthony Sichmeller *(Jin)*
Patrick E. Sims *(Fredrickson)*
Nuru Ghalib Stracey *(Landis)*
Olivia Eve Watkins *(Brunold)*
Andrew Yan *(Landis)*

BS & BA

AUGUST 2010

August 2010
Simon C. Golde
Hope Noel Linden
Howard Thomas Schlichting
Elizabeth Rose Solom
Colleen Chrystal Sylvester
Justin Tat Hin Wong

DECEMBER 2010

Justin Saadiah Frisch Cherniak
Zachary James Ebben
Terry Allen Eichhorst
Ho Ting Fung
Zachary James Kerner
Brittany Marie Lamb
Matthew John Markiewicz
Erin Marie Much
Troy Daniel North
Corey Nathan Olson
Sung Chul Park
Thomas Joseph Reigle Jr.
David Leigh Roehrich
Rachel Sigrid Schiller
Paul Taylor Straus
Sam Toan
Daniel Michael Tremmel
Stephen Paul Utschig-Samuels
Pee Yang

MAY 2011

Leah Oberhauser Alstad
Steven Mark Banik
Amanda Elizabeth Baum
Daniel Lawrence Baum
Eyrusalam Kifylew Bedasso
Lauren J. Borja
Christopher Patrick Boyd
Lynnea Jill Braden
Sarah Esther Brendzel
Kaleen Dorothy Burton
Tyler John Campbell
Lucina Cervantes
Pan San Chan
Benjamin H. Ellis
Adam Ross Hahn
Lu Han
Timothy Robert Hodges
Andrew James Jasniewski
Kirsten Faye Johnson
Tanya Lynn Katzman
Timothy Merlin Ketelboeter
Alexander Robert Kleven
Tyler Daniel LaDuc
Shannon Marie Lange
Christopher Lee
Yan Ching Lo
Daniel Christian Lynch
Andrew Richard Martens
Kyle McElhinny
Maimuna Mohamed Mohamud
Steven Michael Molinarolo
Matthew Nathan O'Brien
Brock Lane Peterson
Matthew Brian Plutschack
Matthew Robert Regner
Neil Gregory Rumachik
Max Stinson Rusek
Megan Alyssa Severson
Chun Pong Tam
Zhi Xu Tan
Scott Douglas Tonelli
Ying-Tang Tsai
John Frederick Wieting
Renyuan Yu
Andrew James Zganjar

Our Awards

UW Chemists continue to garner significant awards

FACULTY AND STAFF AWARDS

Two new Fellows of the American Chemical Society were elected from our Department—**Professor Robert McMahon** and **Emeritus Professor Tom Farrar**. This is an honor bestowed upon members of ACS for their contributions to the Society, science and technology.

Last year, Professor **Bassam Shakhashiri** was elected to be President of the American Chemical Society. Bassam has served as ACS president-elect in 2011, will be president during 2012, and immediate past-president in 2013. Bassam becomes the thirdUW–Madison faculty member to serve as ACS president. **Farrington Daniels** (1953) and **Charles Casey** (2004) were past presidents.

The Analytical division's **Professor Lingjun Li** won the 2011 Pittsburgh Conference Achievement Award for her work in biological mass spectrometry. The award, sponsored jointly by the Pittsburgh Conference and the Society for Analytical Chemists of Pittsburgh, recognizes individuals who have made outstanding achievements within ten years after completion of their Ph.D. work. Professor Li was recognized for the number and depth of her contributions in the field of mass spectrometric study of neuropeptides and functional peptidomics. The award was presented during the Pittcon event in Atlanta in March of 2011. Professor Li's primary appointment is with the Pharmacy Department at UW–Madison.

Professor James Skinner won the 2011 ACS Physical Chemistry Division Award in Theoretical Chemistry. This was only the third such award, placing Jim among the foremost theorists in the nation. Prof. Skinner received the award and gave a plenary lecture at the Telluride School on Theoretical Chemistry during the summer.

The Department was pleased to learn that **Professor Martin Zanni** was elected as a Fellow of the American Physical Society. This was simply a continuation of Marty's remarkably steep upward trajectory in the field! In that same vein, **Professor Zanni** was notified that he received the NAS Award for Initiatives in Research for "revolutionary advances in multi-dimensional spectroscopies, which are enabling discoveries in biological, medical and condensed matter chemical systems." Supported by Alcatel-Lucent Bell Labs, the award recognizes innovative young scientists and encourages research likely to lead to new capabilities for human benefit.

The 2011 Arthur F. Findeis Award for Achievements by a Young Analytical Scientist was presented to **Professor Joshua Coon** of the Chemistry and Biomolecular Chemistry Departments. Josh was honored at the August ACS meeting in Denver.

The Department was delighted to present awards to **Professor Laura Kiessling** and **Dr. Allen Clauss**—the James W. Taylor Award for Excellence in Teaching. The James W. Taylor Award was established through the efforts of **Emeritus Professor Jim Taylor**, and funded by Pharmacia/Upjohn, Professor Taylor and other benefactors, as a way of recognizing excellence in teaching within our department. In addition to cash awards, Laura and Allen were given the opportunity to present brief talks on what makes them such effective teachers as part of our Teaching Award Ceremony during the spring semester.

Professor Martin Zanni was also pleased to win the 2011 Raymond and Beverly Sackler Prize in the Physical Sciences. This award was presented to Marty for his seminal contribution to the field of ultrafast spectroscopy and the applications to quantum coherent energy transfer and exciton dynamics in biophysics and materials science through the development of multidimensional electronic spectroscopy. He visited Tel Aviv in May to accept the award.

In December 2010, **Professor Bassam Shakhashiri** was awarded the 2011 Van Hise Outreach Distinguished Teaching Award. This UW–Madison award focuses on outreach efforts, and Bassam has excelled in his outreach activities.

Professor Lian Yu of Chemistry and Pharmacy was awarded the 2011 David Grant Award in Physical Pharmacy by the American Association of Pharmaceutical Scientists. This is a major award with a $10,000 prize, and is testament to Professor Yu's pioneering work.

John Moore was selected as an Honored Instructor by students in University Housing for the fall and spring semesters. Student comments included "an instructor who really took the time to get to know his students", and "finds a way to make a 50-minute chemistry lecture interesting and fun."

Professor Bob Hamers will receive the ACS Award in Colloid and Surface Chemistry at the Spring 2012 ACS National Meeting in San Diego. At the same meeting, **Professor Hans Reich** will receive the James Flack Norris Award in Physical Organic Chemistry, and **Professor Jim Skinner** will receive the Irving Langmuir Award in Chemical Physics.

Five Madison scientists were elected as Fellows of the AAAS in the Section on Chemistry. They include **Helen Blackwell**, **Mark Ediger**, **Lloyd Smith** and **Shannon Stahl** of Chemistry; and **Nicholas Abbott** of Chemical and Biological Engineering. This is a great honor bestowed upon the top scientists in the country for their contributions to science and technology.

Chuck Casey won the 2011 ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry and presented an award address entitled "Design Evolution Leading to the Discovery of Iron Catalysts for Chemoseletive Ketone Hydrogenation" at the ACS Meeting in Anaheim in March 2011. The talk traced work back to the 1970s that led to the most recent work on iron catalysts. **Clark Landis** organized an award symposium that included talks by faculty colleagues **Shannon Stahl**, **John Berry** and **Hans Reich**; and from former

Casey group members **Morris Bullock** (Pacific Northwest National Lab, PhD '84), **Tim Clark** (U. San Diego, PD '07), **Ross Widenhoefer** (Duke, PhD '94), **Bob Hembre** (Eastman Chemical, MS '78), **Greg Whiteker** (Dow, PhD '89), **Rich Jordan** (U. Chicago, PD '83), **Joe O'Connor** (UC-San Diego, PhD '84), **Jon Tunge** (U. Kansas, PD '02), **Hairong Guan** (U. Cincinnati, PD '07), **Neil Strotman** (Merck, PhD '05), and **Paul Fagan** (DuPont, PD '82).

Chuck Casey also won the 2011 Oesper Award sponsored by the University of Cincinnati and by the Cincinnati Section of the ACS. He presented two talks in October 2011 in connection with the award. The award symposium also featured talks by **Rustem Ismagilov** (CalTech, PhD '98, Nelsen), **Clark Landis**, **Melanie Sanford** (U. Michigan), **Jon Tunge**, **Ross Widenhoefer**, and **Chae Yi** (Marquette, PhD '91).

Congratulations to **Professor Tehshik Yoon** upon receipt of a prestigious Eli Lilly Grant in Pharmaceutical Chemistry, one of only three recipients nationally. The award includes $100,000 in unrestricted funds over two years. Tehshik was also featured in an issue of *C&E News*.

Kristi Heming won a College of Letters and Science Classified Staff Excellence Award in the Administrative Support category. Kristi serves as the Inorganic Division Coordinator and has worked for the department for over 15 years. Kristi received a cash award and was honored at an awards ceremony held in the spring. This is a clear recognition of the excellence and dedication that our staff bring to the department.

Dr. Charlie Fry was the recipient of the 2011 Chancellor's Award for Excellence in Research: Critical Research Support. Only one award is given in this category each year. Nominees areUW–Madison Academic Staff, another illustration of the high quality of staff in Chemistry!

The GSFLC (Graduate Student-Faculty Liaison Committee) presented Outstanding Mentor Awards to graduate student **Alexis Johnson** (Nathanson) and staff member **Dr. Charlie Fry**.

Dr. Jeanne Hamers was inducted as a Teaching Fellow in the UW Teaching Academy. Professor Ned Sibert nominated Jeanne for her outstanding devotion to students and dedication to the department's educational mission.

Dr. Tammy Lam, General Chemistry Lecturer, was recognized as an Honored Instructor by Students Living in University Housing. This designation is given to instructors for their excellence in teaching and is well deserved! The group also recognized **Ángel Abruña-Rodríguez** for his contributions; this is Ángel's third such award!

STUDENT AWARDS

Student scholarships and research awards are made possible by generous donations from alumni, friends, and companies that recognize the value of awards allowing both graduate and undergraduate students to spend more time on research, one of the strengths of this institution. Gifts like these from alumni, faculty, and friends of the Department allow us to make a difference in the academic and professional lives of our students.

Teaching awards come from both Departmental and campus sources, and recognize the Department's second fundamental mission—exceptional teaching at both the undergraduate and graduate levels. In this section we salute not only the fine students who have worked hard to earn these honors, but also the donors who have made them possible.

The department was notified during the summer of 2010 that eight of its undergraduates had won prestigious Hilldale Undergraduate/Faculty Research Fellowships for 2010-2011. Each award included $4000 for the student and $1000 in supplies funds. Recipients (and their faculty mentors) were: **Matthew Scheske** (Burstyn), **Nicholas Harris** (Fredrickson), **Weicheng Zhang** (Gellman), **Chun Pong Tam** (Stahl), **Zhi Xu Tan** (Stahl), **Ruihua Ding** (Jin), **Mark Tervo** (Coon) and **Roger Diehl** (Record). These awards demonstrate the quality of undergraduate research carried out in the department, as well as the dedication of the faculty mentors involved.

Outstanding TA Awards were presented in April 2011 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 **Mary Beth Anzovino** (Moore), **Josh Carr** (Skinner), **Helen Dauer** (Landis), **Brian Esselman** (McMahon), **Tyler Greer** (Li), **Aaron McCoy** (Mecozzi), **Eleanor Rolfe** (Landis) and **Adam Schmitt** (Mahanthappa). Congratulations to these outstanding teaching assistants . . . their efforts and accomplishments within the department are much appreciated by students, faculty and staff!

The department regularly recognizes graduate and undergraduate research excellence. Fellowship/Awards Committee members include Chair **John Moore**, **Cheri Barta**, **Pam Doolittle**, **Jeanine Batterton**, **Mahesh Mahanthappa**, **Claude Woods** and **Rosana Pérez Ellmann**. Their efforts in selecting students for the various awards were greatly appreciated. Awards and scholarships were distributed at the department's annual Student Awards Ceremony held on May 6, 2011. Parents and family members 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 Department. The event was videotaped and was available to family members who were unable to attend the ceremony. It is our hope that news such as these awards reaches a wider audience!

Undergraduate research support was provided during summer 2011 from the following sources: **Dana Jackson** and **Chau Minh Phan** received the Eugene and Patricia Kreger Herscher Scholarship. **Chau Minh** was also the recipient of the Eugene and Patricia Kreger Herscher Scholarship for the fall semester. Additional summer funds awarded included **Greg Budoff**, **Jack Collins**, **Michael Kerins** and **Andrew Maza's** receipt of Ackerman Scholarships; **Nigel Becknell** and **Nicholas Harris**, the Edwin M. and Kathryn M. Larsen Award; and **Andrew Schaefer** and **Wenting Cai** were supported by funds provided by the Walter W. and Young-Ja C. Toy Scholarship. **Rebecca Li**, **Jacob Brummond** and **Tyler Wadzinski** were pleased to accept funds from the Student Support in Chemistry Scholarship.

Support for undergraduate students during Fall 2011 included the following awards: Receiving the Ackerman Scholarships were **Nicholas Harris**, **Robert Hetue, Andrew Maza, Alan Meis** and **Tyler Wadzinski**. The Andrew Dorsey Memorial Scholarship was given to **Nicholas Harris.**

Funding from the Lindsey Plank and Richard Putze Scholarship were awarded to **Carol Wu Lam**. In addition, the Lindsey Theresa Plank Memorial Scholarship was given to **Anna Fleischman**. **Rebecca Li** was fortunate to receive support from the Margaret McLean Bender Scholarship, while **Jack W. Collins** was provided funds from the Richard Fischer Scholarship.

The Wayland Noland Undergrad Research Fellowship was presented to **Zeeshan Ul Haq**; **Jacob Brummond** and **Andrew Schaefer** were both recipients of support from the Student Support in Chemistry fund.

The Martha Gunhild Week Scholarship was presented to **Yufan Wu**. Edward Panek Memorial Scholarship funds were awarded to **Greg Budoff**. **Wenting Cai** was the recipient of funds from the Mabel Duthey Reiner Scholarship. Both **Lauren Buckley** and **Clara Chow** were recipients of the Henry and Eleanor Firminhac Chemistry Scholarship for the Fall semester. Finally, **Joshua Tessner** 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 **Emily Schmitt** and **Ryan Denu** (Analytical), **Nicholas Porubsky** (Inorganic), **Matthew Dustrude** and **Ryan Crass** (Organic), and **Jacob Oberman** (Physical). **Christine McInnis** was also recognized for her exemplary service to the Wisconsin Section of the ACS.

The Alpha Chi Sigma Alumni Scholarship was awarded to **David Gedymin**. Other undergraduate awards include the Hypercube Scholar Award, which went to **Wenting Cai**.

Excellence in General Chemistry classes is recognized with several sets of awards. **Kimberly Dinh, Caroline Hintz**, **Isaac Plant** and **Huanchen Zhang** were presented the John and Betty Moore Awards for Excellence in Chemistry 109. Francis Craig Krauskopf Memorial Awards given to **Axel Adams**, **Ryan Birschbach**, **Tze Kai Brian Ip**, **Alexander Moeser**, **Evan Murawski** and **Thomas Stadelman** provided financial support for outstanding achievements in freshman chemistry classes. Nominated by respective professors and endorsed by the selection committee, these students represent the best of our freshman students!

Berbee-Walsh Awards for Excellence in Organic Chemistry were presented to **Matthew Mazur**, **Nicholas Porubsky** and **James Ning Luo.**

Graduate fellowships and awards play a vital part in the support of the department's graduate members. The "Charles and Martha Casey Excellence in Research Awards" were presented to the following students: **Aaron Ledvina** (Analytical—Coon Group), **Aaron Smith** (Inorganic —Burstyn Group), **Corinne Lipscomb** (Materials—Mahanthappa Group), **Ben Bratton** (Physical—Weisshaar Group) and **Michael Ischay** (Organic—Yoon Group). **Rachel Selinsky** (Jin) received the Leah Cohodas Berk Research Excellence Award. Each of the graduate students was given the chance to present a brief talk at the awards ceremony held on May 6th.

Melissa Galloway (Keutsch Group) was recognized for her outstanding work as the recipient of the Roger J. Carlson Graduate Award. The Farrington Daniels Ethical Leadership Fellowship was given to **Milton Repollet-Pedrosa** (Mahanthappa Group) for both his leadership in the research group and standards shown throughout his career at UW–Madison.

Kem (Winter) Sochacki (Weisshaar) was awarded the Gary Parr Memorial Award, established in memory of **Gary Parr** (PhD '73, Taylor), who died in 1993. A generous donation from his family made this award possible.

Both **Juana Du** (Yoon) and **Brian Esselman** (McMahon) were pleased to accept awards provided by the Goering Organic Fellowship Fund. Recipients of the Ralph F. Hirschmann-Daniel Rich Awards in Bioorganic Chemistry included **Tianning Diao** (Stahl), **Daria Fedyukina** (Cavagnero) and **Shane Mangold** (Kiessling).

The Harry and Helen Cohen Graduate Research Award was presented to **Lisa Johnson** (Gellman), and **Tianning Diao** received the Abbott Award in Synthetic Chemistry.

A new award presented at the ceremony was made possible by the generosity of **K.V. Reddy** (PhD '77, Berry). Both **Ye Sun** (Ediger) and **Wei Xiong** (Zanni) were recipients of this scholarship.

The final presentations were made to **Michelle (Cooperrider) Benson** (Hamers) and **Kacie Louis** (Hamers Group, pictured with Mike's parents, Bill and Sue McCoy)—the **Michael W. McCoy** Memorial Scholarship.

Mike, a graduate student in the Hamers group, died in the spring of 2010. Mike was a friend to and confidant of many in the department and is deeply missed. We thank his family—parents Bill and Sue, and brother Chris—for their generosity!

Graduate Poster Awards for 2010-2011 were given to **Shakeel Dalal** (Ediger group), **Fu Li** (Skinner group), **Samira Musah** (Kiessling group), and **Lu Wang** (Skinner group). Lu Wang was one of the winners of the PChem poster award at the Anaheim ACS meeting. Congratulations, Lu!

New NSF Fellowships were awarded to seven Wisconsin Chemistry graduate students, including **Nitasha Bennett** (Kiessling group), **Amanda Corcos** (Berry group), **Jennifer Knapp** (Keutsch group), **David Korasick** (Strieter group), **Randy Mehlenbacher** (Zanni group), **Sara Moyer** (Schomaker group) and **Janelle Steves** (Stahl group). Continuing NSF Fellows include **Lauren Buchanan** (Zanni), **Matt Faber** (Jin), **Jennifer Faust** (Nathanson), **Jennifer Laaser** (Zanni), **Travis Powell** (Lian Yu), **Eleanor Rolfe** (Landis), **Chris Rose** (Coon), **Danielle Stacy** (Blackwell), **Vivian Trang** (Strieter), **Ryan Weber** (Mahanthappa), **Gene Wong** (Landis), and **Joe Yeager** (Hamers). This is an extraordinary number of NSF Fellows for the department!

Samira Musah, graduate student working with Laura Kiessling, was named the winner of the Cool Science Image Contest by The Why Files. The winning image shows a muscle cell that was derived from human embryonic stem cells.

The Chadbourne Residential College selected **Nathan Connell** (Schomaker), **Ben Dunnington** (Schmidt), **Randy Mehlenbacher** (Zanni), **Hannah Bowman** (Burstyn), **Will Tucker** (Mecozzi) and **Ryan VanHoveln** (Schomaker) as Honored Instructors for their excellence in teaching.

Mary Beth Anzovino (Moore group) was selected as a 2011 Letters & Science Teaching Fellow and will present talks about her experiences during the Fall 2011 training sessions for new teaching assistants.

In Memoriam *(...continued from page 36)*

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

Joseph George Baldinus (BS '43, MS '47, PhD '49, Schuette) died March 16, 2011, at the age of 89.

George William Bethke Jr. (BS '52, Daniels) died September 11, 2007, at the age of 77.

Robert Otto Bremner (MS '67) died December 5, 2010, at the age of 67.

Richard Evarts Dilgren (PhD '59, Goering) died April 4, 2009, at the age of 75.

Robert Wayne Friedell (BS '47) died January 22, 2011, at the age of 90.

William Goldberg (MS '71, Cornwell) died October 10, 1989, at the age of 46.

Eugene Nicolaus Hetzel (BS '35, Meloche) died March 19, 1998, at the age of 85.

Takuzo Inouye (MS '51, Daniels) died December 28, 2010, at the age of 86.

Seymour Leonard Isenberg (BS '49, Larsen) died July 9, 2010, at the age of 82.

Gordon Leroy Johnson (BS '43, Hall) died August 4, 2010, at the age of 88.

Arunas Valentine Kavaliunas (MS '68) died August 15, 2007, at the age of 67.

Dale Philip Kober (BS '61) died February 11, 2008, at the age of 68.

John Arthur Korth (MS '40, Schuette) died February 11, 2008, at the age of 94.

Richard Earl Laramy (MS '59, Leussing) died September 27, 2008, at the age of 77.

William Dean Luker (PhD '55, Schuette) died March 2, 1996, at the age of 75.

Keith Stuart McCallum (BS '42, PhD '50, Meloche) died February 7, 2010, at the age of 90.

Rudd Andrew Meiklejohn (BS '41, MS '54, Meloche) died September 23, 2010, at the age of 90.

Irving Mendelson (BS '43, Schuette) died December 3, 2006, at the age of 86.

Seymour Howard Mirkes (BS '64) died July 27, 2010, at the age of 67.

Harold Arthur Murock (BS '50, Schuette) died December 31, 2006, at the age of 81.

Robert Duane Nelson (BS '51) died March 28, 2011, at the age of 83.

John Harris Norman (PhD '54, Meloche) died October 17, 1995, at the age of 66.

James John Panos (BS '49, Blaedel) died November 6, 2010, at the age of 86.

William Paul Schneider (MS '46, PhD '50, Johnson) died April 18, 2009, at the age of 88.

Edward Selke (BS '58, Daniels) died February 7, 2008, at the age of 78.

Albert Frederick Spoehr (BS '42) died February 27, 2005, at the age of 87.

Verner Lorenzo Stromberg (PhD '49, Johnson) died September 21, 2007, at the age of 87, in St. Louis.

William Henry Taylor Jr. (BS '36, Meloche) died March 21, 2011, at the age of 95.

Notable News

DEPARTMENT LECTURE SERIES

Announcements of Departmental seminars and other events are listed at *http://www.chem.wisc.edu/all_upcoming_events*. Some of the named and special seminars held at the department in the preceding year are featured below, but many other fascinating talks were given each week by faculty, students and guests of the Department.

The Chemistry Building at the University of Wisconsin-Madison is pictured on June 10, 2010 from the roof of the Atmospheric, Oceanic and Space Science Building.

MCELVAIN SEMINAR SERIES

The McElvain Seminar gives graduate students a chance to select and invite seminar speakers from both industry and academia, and to organize their visits. Frequently the divisional committees will select one academic speaker and one industrial speaker.

The Analytical Division and Materials Chemistry Program hosted **Dr. Dennis Wesolowski** of the EPA Regional Office in Chicago, in October. Students and faculty posed interesting questions to Dr. Wesolowski and a spirited discussion followed his talk.

Professor Bob Bergman (UC–Berkeley) presented the first Organic Chemistry McElvain seminar for 2010-11. **Dr. John Tallarico** of Novartis presented the industrial Organic McElvain seminar in April 2011.

Inorganic students hosted **Professor Phil Powers** of the University of California, Davis. His talk was informative and students appreciated the opportunity to meet and talk with him during his visit.

Chemistry Building & Chemistry Research Tower Photos on this page courtesy UW–Madison, University Communications

Professor Carolyn Larabell (UC–San Francisco) was a Physical Chemistry speaker, in February 2011. **Professor Donald Truhlar** (U. Minnesota) spoke in March.

HIRSCHFELDER PRIZE

Professor Daan Frenkel of Cambridge University was recognized as the winner of the 2011-2012 Hirschfelder Prize in Theoretical Chemistry. Professor Frenkel is well known for his pioneering theory and development of simulation methods, with applications to crystal nucleation, phase diagrams, and other problems. Professor Frenkel visited the department during October 3-5, 2011, and delivered three Hirschfelder Lectures during that period.

OTHER LECTURE SERIES

Professor David Tirrell of the California Institute of Technology delivered the Ferry lectures during the second semester. **Professor Carl Lineberger** (U. Colorado-Boulder) was the Willard Lecturer in January. **Professor Donald Hilvert** of ETH Hönggerberg gave the Hirschmann Organic Chemistry lectures in April 2011.

DEPARTMENT COLLOQUIA

The first Department Colloquium of 2010 featured **Dr. Katie Hunt** of Dow Chemical Company, a former ACS President. Dow has generously supported our department over the years, and her talk was well attended.

Professor Clark Landis, a member of the Inorganic Division, presented the second Department Colloquium in early November. The following month, **Professor Pupa Gilbert** of UW–Madison's Physics Department gave a talk. Professor Gilbert is a frequent collaborator with the Physical Chemistry division faculty, as well as the Materials Program.

In early February, a department colloquium featured **Deborah Blum** of the UW's Department of Journalism and Mass Communications. She is the author of *The Poisoner's Handbook: Murder and the Birth of Forensic Medicine in Jazz–Age New York*.

K.V. Reddy (PhD '77, Berry), founder and president of Printel, Inc., delivered a colloquium address in April 2011. Also in April, **Professor Mildred Dresselhaus** (MIT Depts. of Physics and Electrical Engineering) spoke "*On the Impact of Graphene*". Millie also gave an Analytical/Materials Seminar while she was here.

The Shain Colloquium is made possible by generous donations from **Professor Irv Shain** and his many friends. In April of 2011, **Professor Barry Sharpless** of the Scripps Research Institute presented the Shain Colloquium address, after delivering the Abbott Lecture earlier in the week.

MAJOR NMR FACILITY UPDATE ON ORDER

The department's NMR Facility has recently contracted with Bruker Biospin to provide major upgrades to three of our core instruments. Nuclear magnetic resonance provides very detailed atomic resolution information about molecules that allows chemists to verify synthetic targets. The technique can observe many different nuclei (specific isotopes) in compounds -hydrogen, carbon, phosphorus are common examples; tungsten is one of many important, but less common nuclei that can be observed. The mechanisms by which reactions proceed are often monitored by NMR. On these occasions, it is useful to work at low temperatures to slow the reaction to allow better characterization. There are many other important aspects of NMR—e.g., it is the parent technique of magnetic resonance imaging (MRI). Over half the department's graduate students utilize the NMR facility, and many undergraduates utilize these instruments in their undergraduate course work and research training. We are excited to announce these major updates that will occur in spring 2012, vastly improving our core research capabilities.

A new 400 MHz spectrometer will provide rapid access to high quality NMR data. This spectrometer will be equipped with a robot that can run over 500 samples in a single session (e.g., during an overnight run). Bruker will also upgrade both of our 500 MHz spectrometers. One spectrometer will provide the best available sensitivity for observation of carbon-13, a crucial nucleus in chemical research. The other 500 will gain state-of-the-art capabilities for observation of most other nuclei (including 31P, 19F, and all NMR-detectable metal nuclei), as well as for temperature control during kinetic and mechanistic studies.

We gratefully acknowledge funding from NSF for the 400, and from a generous gift from Paul Bender that is providing funds for the 500 purchase.

THE UNITED WAY—PARTNERS IN GIVING CAMPAIGN

DEPARTMENT OF CHEMISTRY HAS WON THE EVENTS AWARD

The annual Partners in Giving Campaign offers department members an opportunity to make a difference in the lives of people in the local community and around the world. In the bestUW–Madison tradition, the Chemistry Department met the challenge by organizing a Silent Auction. The event, held at the Harrison Parlor of Lathrop Hall, was well attended, raising $2,997! This amount was in addition to the contributions of faculty, staff and students. Committee members solicited donations of food or gift certificates from local vendors and received wholehearted participation from both the department members and business community.

The committee members received special recognition for their efforts at the annual United Way Luncheon. The Partners in Giving—Special Events Award was presented to **Jeff Burkett**, **Kristi Heming**, **Cheri Stephens**, **Bruce Goldade**, **Sue Martin-Zernicke**, **Rosana Pérez-Ellmann** and **Ieva Reich**. (Ieva is missing in the picture below.) Only two awards were given to the entire university. The committee accepted the plaque at an awards ceremony on August 25th, 2011. We want to thank **Matt Sanders** for nominating the committee. Plans are already underway to make this an annual event. Thank you to everyone in the department for your participation!

This N' That

Morris Bullock (PhD '84, Casey) is now Director of the Center for Molecular Electrocatalysis at Pacific Northwest National Laboratory in Richland, WA, a Dept of Energy EFRC (Energy Frontier Research Center). The goal of the center is to develop a comprehensive understanding of molecular electrocatalysts that efficiently convert electrical energy into chemical bonds in fuels, or the reverse, convert chemical energy from fuels into electrical energy.

Mark Cesa (PhD '79, Casey) from INEOS Nitriles was elected Vice President of IUPAC (the International Union of Pure and Applied Chemistry), effective January 1, 2012. He will succeed as President in 2014.

James K. Crossfield (BS '70) has served as the program coordinator for Geomatics Engineering at California State University, Fresno for twenty years since 1991 and served as chair of the Department of Civil and Geomatics Engineering for seven years, 2002-2009. He entered the U.S. Army with an ROTC commission in 1970 and served in Germany until 1974. After three UW Engineering degrees punctuated by 2 years teaching at Arkansas (Fayetteville) he began teaching at Fresno in 1984. There as the director of the Engineering Research Institute he had an interesting opportunity to use his chemical knowledge. A state agency needed to pay the final installment on a water treatment research contract. The work had been completed but the agency balked at the final payment. The sticking point concerned a chemical equation showing Methane as a by-product. An agency engineer claimed "I don't smell any Methane." Remembering that methane is colorless and odorless, Dr. Crossfield straightened out the uninformed agency engineer and his supervisors in a one on four meeting. The agency paid the half million dollars. The save is credited toUW–Madison Department of Chemistry!

Amanda Jones (PhD '07, Reich) is writing to share the news of my 'recent' move. After a postdoc at Caltech, my husband Jon Eilbes (BA '01, Behavioral Science and Law) and I moved to North Carolina where I began a post as Assistant Professor at Wake Forest University. I am starting my second year and enjoying teaching and developing a research program in mechanistic organometallic chemistry. October of last year Jon and I also welcomed our son Ender into the world. Future Badger class of 2033?! Former Badger Chemists surround us—I have enjoyed getting reacquainted with **Lindsay Comstock-Ferguson** (PhD '05 Pharmacy, Rajski) who is also a member of the department here. We took Hans Reich's Organic NMR course together! I am also pleased to have met fellow department member **Al Rives** (PhD '81, Fenske) and Emeritus Professor **Wally Baird** (PhD '63, Dahl). Finally, I became friends with **Kimberly Petersen** (BS '00) while at Caltech, and am pleased to have her as a "neighbor" - she just started a position at UNC-Greensboro! Jon and I are looking forward to a return visit to southern California to see **Hans Reich** accept the ACS James Flack Norris Award at this year's spring meeting and hope to see you there!

David Shaw (PhD '75, Treichel) retired after 36 years of teaching at Madison Area Technical College. He is continuing his affiliation with the department as an Honorary Fellow.

Marie-Laure Viriot (PD '71-'72, Zimmerman) wrote "I am very proud to tell you that next Saturday November 13, 2010, I will receive a high distinction. I will be "Chevalier de la Legion d'Honneur". I was very surprised when I was informed of this distinction. It represents for me a gratitude for my work for the state as a researcher and especially as a woman chemist."

Pengfei Wang (PhD '02, PD '02-'03, Zimmerman) was promoted to Associate Professor with tenure at the University of Alabama. Another of Pengfei's papers was just selected by JOC as a Featured Article and will be on the cover of JOC's August issue. Now we have to show talent to make a nice piece of artwork for the cover.

This picture of **John Zhang** (PhD '93, Ellis), **Seth Marder** (PhD '85, Casey) and **Laren Tolbert** (PhD '75, Zimmerman) was taken outside of their offices at Georgia Tech, where they are all professors.

New Assistant Professor Randy Goldsmith

Assistant Professor Randy Goldsmith joined the Chemistry Department in early fall 2011 as a member of the Physical Division. Randy completed his undergraduate work at Cornell, his Ph. D. at Northwestern, and a post-doctoral position at Stanford University under W.E. Moerner. We warmly welcome Randy to the department and look forward to his successes in research, which is described in the next section on research.

RESEARCH

Performing measurements on individual molecules, single-molecule spectroscopy, opens a profoundly informative window into the behavior and properties of chemical systems by revealing heterogeneity in molecular properties and critical unsynchronized dynamics that are obscured in ensemble measurements. We aim to develop new single-molecule techniques and apply them to outstanding and socially relevant problems in chemistry, materials science, and biophysics. Research targets will include novel mechanistic studies of homogeneous catalysts, investigation of electronic properties of conjugated polymers relevant for organic photovoltaic devices, and analysis of protein conformational dynamics. Our efforts will employ creative combinations of fluorescence microscopy, nanophotonics, and chemical synthesis to find the best means of studying our chemical systems of interest.

Watching individual homogeneous catalysts in action

Homogeneous catalysis relies on an intricate series of bond breaking, electron transfer, and bond forming reactions. Production of more active, selective, and easily recyclable (ie., "greener") catalysts is necessary for the availability of next generation drugs, fuels, and materials. Mechanistic study informs the design of better catalysts, and single-molecule spectroscopy is a powerful tool for mechanistic study because it allows unsynchronized or rare processes to be directly observed. We will look for dynamic and static heterogeneity in the catalyst population, behavior that has been previously seen in enzymes. Organometallic catalysts cycle through states of variable activity and selectivity, likely due to a changing coordination environment. These changes are unsynchronized across the catalyst population and many cannot be observed in ensemble-averaged experiments. We will search for this heterogeneity, quantify transition kinetics, and vary ligand and substrate properties to establish structure-behavior relationships. The goal is to build a detailed understanding of the microscopic events in homogeneous catalysis through revolutionary new observations of individual catalysts in operation. We will observe reaction intermediates that have so far been only speculated upon or indirectly inferred and quantify the lifetimes of those intermediates in active catalysts, not analogs.

Mapping the energy landscape in organic photovoltaics

Optical characterization of single molecules is nearly universally attained via fluorescence. However, fluorescence has many disadvantages, including the reliance upon covalently bound dye molecules with limited photostability, experimental artifacts associated with dyes, and the loss of information about the fascinating molecular photophysics that precede fluorescence. These deficiencies are particularly hindering in the study of organic materials for molecular electronics and organic photovoltaics, where a molecule or molecular assembly optimized for functional charge transfer will generally not be fluorescent. We will fabricate and develop nanophotonic tools to characterize the energy landscape of organic electronic materials, ultimately pushing toward single-molecule resolution. These tools will be employed to characterize structural and electronic heterogeneity in individual organic chromophores and charge transporting polymers to learn how conformation affects wasteful charge trapping in organic photovoltaics. By varying polymer globule size and composition, electronic heterogeneity can be studied at the many important length scales of a functioning organic photovoltaic device.

Conformational dynamics of proteins in crowded environments

In their cellular environment, proteins must perform their function in the presence of dissolved macromolecules exceeding 200g/L, a condition that is ignored in most biochemical assays. These macromolecules can have significant effects on protein dynamics and activity, mainly due to the excluded volume created by the macromolecules. Molecular crowding has been shown to increase enzyme-substrate binding efficiencies, affect drug pharmacological response, and increase the rate of misfolding of prion proteins and the rate of aggregation of proteins implicated in Alzheimer's disease. However, a protein's individual folding trajectory, which contains crucial information about its energy landscape that is lost in ensemble experiments, is also expected to change significantly in the presence of crowding agents. We will examine protein folding and enzyme activity at the single-molecule level under crowded conditions. Critical to this approach is avoiding surface-attachment, a common single-molecule technique, as this practice has been shown to alter protein folding dynamics and may dominate the crowding effect. We can avoid this difficulty, while still observing the molecule for long enough times to capture full folding trajectories, with a specialized microfluidic device that uses electroosmotic flows to cancel Brownian motion of single fluorescent molecules in solution. We have recently used this device to observe single solution-phase proteins for over 1s without immobilization. Our trajectories will provide unique information about how crowding influences protein behavior, improving the picture of in vivo function, signaling, and pathological misfolding.

Chemistry News

DEPARTURES

Allen Clauss left the Department in August 2011 to pursue a position with a startup company in Middleton founded by **Jim Hamilton** (PhD '94, Wright), a professor at UW–Platteville. Allen first came to the Department as a Lecturer in Summer 2000, held positions as Assistant Organic Lab Director and Organic Lab Director, then returned as a Lecturer in Fall 2008. Allen will continue to have an Honorary Fellow appointment in Chemistry.

Pat Houtsinger retired in Spring 2011 after many years as the Physical and Theoretical Chemistry Divisional Coordinator. Pat was a calming influence in this sometimes chaotic Department, and we wish her all the best in her retirement.

Dianne Mitchell retired in early March 2011 after 30 years working for Chemistry! She was replaced in the Business Office by **Chad Skemp**. Only a month later Dianne died after struggling for several years with serious health issues (see In Memoriam for a complete obituary). A celebration of her life was held in Cottage Grove and was attended by many from Chemistry. The department was fortunate to have her dedication and eternal optimism—and her smiling face each day. Dianne was an inspiration to all of us!

Elena Ungur left the Chemistry Department in Spring 2011 to pursue a more responsible position on campus. Elena was a grants specialist who had started with us in 2008.

ARRIVALS

Dr. Desiree Bates was hired as the new Computational Chemistry Leader for the department. After we interviewed numerous candidates, Desiree was the top choice of both the Computer Committee and a panel of graduate students. She is now responsible for interacting with a wide cross-section of graduate students and faculty and introducing computational techniques into their research. Desiree received her PhD under the advisement of Gregory S. Tschumper at the University of Mississippi. She studied weakly bound, non-covalent clusters using sophisticated electronic structure methods and developed new methods. Desiree resides here in Madison with her husband, Paul and one year old son, Nolan.

April Leslie started with the Department in April, 2011, replacing **Pat Houtsinger** as the Physical Chemistry and TCI divisional coordinator. April originates from Wausau, WI. She received her BS in Communication at UW–Stevens Point. She was a Sergeant in the United States Army Reserve for 8 years, and was deployed overseas in support of Operation Iraqi Freedom. Prior to coming to the Chemistry Department she worked on a political campaign.

The department welcomed **Chad Skemp** back to the business office as part of the purchasing team! Chad was an LTE almost two years ago, moved to the Bursar's Office, and returned to Chemistry to work with delegated purchasing agent **Reba Ames.**

FACULTY& STAFF NEWS

Chuck Casey was the 2011 Chair of the Chemistry Section of the American Association for the Advancement of Science (AAAS). He helped to arrange for six symposia at the AAAS national meeting to celebrate the 2011 International Year of Chemistry. **Seth Marder** (PhD '85, Casey), who is now Director of the Center for Organic Photonics and Electronics at Georgia Tech, organized an exciting symposium on "Frontiers in Organic Materials for Information Processing, Energy and Sensors" at the meeting in Washington, DC, in February 2011. Chuck and Martha Casey are enjoying their retirements and are taking advantage of the increased opportunity to travel. Their latest adventure was a safari to Tanzania. They are delighted to be able to support the annual Charles and Martha Casey Research Excellence Awards given to graduate students completing their PhDs.

From the lab of **Silvia Cavagnero**: Senior undergraduate researcher **Dan Baum** received an Outstanding Poster Award at theUW–Madison Chemistry Department's undergraduate poster session in May; Dan recently started graduate school at UC Berkeley. Senior undergraduate researcher **Peter Culviner** was awarded the Dean's Prize. Junior undergraduate researcher **Yufan Wu** received a Hilldale Research Award for her studies on protein folding/aggregation energy landscapes. Graduate student **Dasha Fedyukina** received aUW–Madison Chemical Biology award for her studies on protein folding on the ribosome; she also received the Ruth Dickie Research Scholarship to support this work. **Karla Esquilin Lebron** from the University of Puerto Rico received an IBS-SRP Summer Research Fellowship to carry out studies on protein folding in the cell in the Cavagnero group. In February, **Senapathy Rajagopalan** (PhD '06) and Scientist **Nese Kurt** published a cover article in the Biophysical Journal on the High Resolution Conformation and Backbone Dynamics of a Soluble Aggregate of Apomyoglobin-119. In November 2010, undergraduate researchers **Jennifer Kraninger** and **Anders Knight** won "The Same and Not the Same" contest on Chemical Chirality by the Wisconsin Initiative for Science Literacy. In September 2010, Dasha Fedyukina and coworkers published a cover article in the Biophysical Journal on the Contribution of Long-Range Interactions to the Secondary Structure of an Unfolded Globin.

During the last year, **Mark Ediger** gave talks at MIT, Princeton, Johns Hopkins, Yale, and several other universities, and spoke at conferences in Germany, France, Scotland, and the Netherlands. Mark was selected by his students in Chemistry 561 as a University Housing Honored Instructor. He was also elected a Fellow of the American Association for the Advancement of Science (AAAS) in 2010.

Bob Hamers has been working with the Wisconsin State Legislature as part of a "Special Legislative Committee" formed to examine the human health and environmental concerns related to the manufacture, use, and disposal of nanomaterials and to

develop strategies to facilitate the development of nanotechnology to create and retain jobs in Wisconsin. The committee held a number of all-day meetings with a range of interested stakeholders and national experts. The committee developed draft legislation to be submitted to the Wisconsin State Legislature, including a recommendation of state funding for a "nano clearing house" to provide information about safe handling of nanomaterials to Wisconsin industries.

Bob has been enjoying an "in-place" sabbatical after completing his term as chair. The last year has been used getting caught up on papers, pushing research projects forward, and some time spent with Silatronix, the spin-off company founded by Bob Hamers and **Bob West** in 2008. Silatronix is combining the materials science and electrochemistry expertise of Bob Hamers with the synthesis expertise of Bob West to make safer lithium-ion batteries and has a R&D lab on the east side of Madison near the airport. The last year has been very good, with Silatronix securing research and development contracts from the US Navy, NSF, WARF, and from private investors.

Bob Hamers is one of the 3 principal organizers of the European Conference on Diamond. The 2010 meeting was held in Budapest with almost 300 participants.

Bob McMahon traveled to China in Fall 2010, presenting lectures at Peking University, Shanghai Institute of Organic Chemistry, East China University of Science and Technology and Changchun Institute of Applied Chemistry. Within 15 minutes of his arrival in Beijing, Bob was greeted by **Robin Choi** (PhD '08, Gellman), who, by sheer coincidence, was traveling through Beijing from his home in Singapore en route to meet with a research collaborator in Dalian. During the past year, Bob also traveled to conferences and meetings in Darmstadt, Honolulu, Vancouver, and Victoria, Canada. In Honolulu, Angela and Bob enjoyed the gracious hospitality of **Seol Kim** (PhD '05, McMahon) and his family. Seol is currently a postdoc at the University of Hawaii. Bob was inducted as ACS Fellow at the ACS National Meeting in Denver. Bob continues as an Associate Editor for the Journal of Organic Chemistry, a member of the ACS Committee on Chemical Abstracts Service, and a member of the steering Committee of the Midwest Astrochemistry Consortium.

In 2011, **Cathy Middlecamp** was reappointed Editor-in-Chief for Chemistry in Context, a project of the American Chemical Society. At the 2011 spring meeting of the ACS in Anaheim, she also received an award from the Committee on Environmental Improvement for incorporating sustainability into the chemistry curriculum. In Fall 2011, Cathy moved to the Nelson Institute for Environmental Studies with tenure as an associate professor. Her joint appointment in the Integrated Liberal Studies program continues, where she holds the endowed Howe Bascom professorship. In addition, Cathy has an affiliate appointment in Chemistry.

John Moore was active as usual during the past year. In addition to numerous presentations, symposia, and workshops he edited a symposium volume and co-authored two papers in it, continued developing an online textbook for the ChemEd DL (see ChemPaths elsewhere in this Badger Chemist), obtained support for his work from the NSF, the Camille and Henry Dreyfus Foundation, the Spectroscopy Society of Pittsburgh, and the Society for Analytical Chemists of Pittsburgh. Much of his work had to do with building up the collections and services of the Chemical Education Digital Library and getting this online chemical education resource transferred to the ACS. (See p.15 for more information about ChemEd DL.) Transferring this major online collection of chemistry teaching resources to the ACS was a major undertaking that lasted roughly four months. John led workshops on the Chemical Education Digital Library at the MACTLAC 2010 meeting and at the Wisconsin Society of Science Teachers in March 2011. He organized a symposium on the National Science Digital Library (the parent organization of ChemEd DL) at the AAAS meeting in Washington, DC in February 2010, and presented a paper there along with five other NSDL leaders from the fields of physics, mathematics, biological science, computational science, and materials science. He gave two presentations and a poster paper (co-authored by then graduate student **Justin Shorb** (PhD '11, Moore/Skinner)) at the NSDL annual meeting in November 2010. John also presented two papers on ChemEd DL at each ACS National Meeting.

John collaborated with **Robert Belford** (University of Arkansas, Little Rock) and **Harry Pence** (SUNY at Oneonta) to edit an ACS Symposium Series book: *Enhancing Learning with Online Resources, Social Networking, and Digital Libraries*. In addition to 15 chapters by experts in the fields delineated in the title, the book contains a summary introduction by the three co-editors. John also was co-author of two chapters: *The ChemPaths Student Portal: Making an Online Textbook More than a Book Online*, with **Justin Shorb,** and *Site Under Construction: Designing a Successful Online Course*, with **Janice Hall Tomasik** (PhD '09, Moore/Landis).

John was featured speaker at the Milwaukee ACS Local Section High School Day in May. During the past year he has worked with 14 UW–Madison undergraduates, two graduate students, two postdoctoral fellows, and numerous staff on various chemical education projects. The idea that stepping down as editor of the *Journal of Chemical Education* would provide more free time appears to have been a misconception!

Frank Weinhold went to Germany in October to receive an honorary doctorate degree from U. Rostock. He gave six lectures, in the Chemistry and Physics Departments as well as at the degree ceremony, while he was there. **Prof. Ralf Ludwig** (PD, Farrar) is spearheading the event. Frank and **Clark Landis** have a new book, "Discovering Chemistry with Natural Bond Orbitals" in production at Wiley, and they are starting work on a third book together.

Bob West's research group on the 6th floor of the chemistry building continues to be highly international. His students are from seven different countries and are doing research on a diversity of topics: Synthesis of silylenes and germylenes; Muon spin resonance of low-coordinate silicon, germanium and carbon compounds; Silicon-containing anticancer and anti-inflammatory drugs; and Organosilicon electrolytes for lithium ion batteries. Silatronix, Inc., the company Bob founded to make these electrolytes, now has six employees, who work in a large laboratory and offices on the east side of Madison. Research on organosilicon medicinals is being carried out together with chemists at the University of Colima in Mexico. The Colima U. mascot is a loro (parrot), so this joint endeavor is called the "Collaboracion Badgers y Loros". Spring of 2011 marked the end of Bob's three-year contract with the government of South Korea, where he was a Distinguished Visiting Professor with the assigned mission of advancing silicon chemistry in South Korea to world-class. Time will tell how well he achieved this mission but he has deep respect for what is being done there. In February, Bob's partner

of over 40 years, Dr. Petey Young, was diagnosed with advanced lymphoma, but has had six months of chemotherapy and is again writing, traveling and laughing. In October 2011 Bob attended the Wacker Silicone Prize ceremony in Munich, where **Matthias Driess**, his postdoctoral student of some 20 years ago and present-day colleague, was the recipient of this year's Award. Bob, who won the prize in 1989, was the first non-German to be so honored. Driess is now Professor at the Technical University of Berlin, Germany.

Marty Zanni is now serving as a senior editor of the *Journal of Physical Chemistry.* 2010-11 was a year which saw Marty receive the Raymond and Beverly Sackler Prize in the Physical Sciences and the National Academy of Sciences Research Initiatives Award. He was named a Fellow of the American Physical Society, and he received a Romnes Faculty Fellowship from the University.

Howard Zimmerman organized the Pacifichem 2010 meeting. Speakers with Wisconsin connections included **Andrei Kutateladze** (PD '92-'95, Zimmerman), **Laren Tolbert** (PhD '75, Zimmerman), **Pengfei Wang** (PhD '02, PD '02-'03, Zimmerman), **Rich Givens** (PhD '67, Zimmerman), **Igor Alabugin** (PD '96-'00, Zimmerman), and **Bob McMahon** (Wisconsin Professor).

THE YEAR IN DEMOS

Things never stop changing in the Department, and nowhere is this more true than the demo lab. New technologies are being used in the departmental lectures for general chemistry as we try out the iclicker technology. We have gone from using the interactive classroom response system in two lectures to ten in just a year using the software, bases and pads. I am of course, the new iclicker guy. We also are in the midst of upgrading the Seminar Hall projection system, from wires on up to new projection technology, and we are putting the first smart board in the building in room 3219. We are also making new demos out of chemistry for the Christmas lecture, as well as attempting to put in demos that reflect new uses for chemistry, and demos representative of the new fields emerging in the science.

As adviser of Alpha chapter of AXE, I can say that the frat has never been larger in terms of active membership, and we seem to be getting through this unprecedented growth with a minimum of discomfort. We are working with the department to help sell lab manuals, notebook, goggles, and the occasional T shirt. There is a lot of enthusiasm for chemistry, service, and the (ahem) college experience! We have taken many photos for the department and even filmed Bucky Badger performing elephant's toothpaste for the office of student life.

I was elected to the Academic Staff Executive Committee this year, and I am trying to help the UW redesign its personnel system in new and innovative ways, without violating any statutes, or changing it from a civil service system into anything else.

The demo lab has its own washer and dryer now, fallout from the unfortunate circumstances surrounding the mysterious loss of two or three whole laundry bags full of dust mitts, which we use to clean the boards between classes. We are trying to finish up the nano playground equipment started a couple of years back, and we are nearing completion on two pieces. As usual, the demo lab has supported nearly every outreach event that we do here, such as the PEOPLE program, REU, WISL, SPICE, and a host of other acronyms. The recipients of the Lindsey Plank and Richard Putze scholarships were both well qualified students; **Carol Wu Lam** has graduated and gone on to pharmacy school, while **Anna Fleischman** still works in my lab, and is finishing up her studies in the field of Neuroscience with a hope of getting into Medical School. In the face of the large budget cuts endured by the UW system, and UW Madison campus, we have still maintained the high standards expected at a department like this; one of the best in America. —**Jim Maynard,** Lecture Demonstrator

NEWS FROM THE GLASS SHOP

This year, the American Scientific Glassblowers Society held their annual symposium in Alexandria, Virginia. **Tracy Drier** presented a poster on a project submitted by **Runhui Liu** (Gellman). It was an all-glass 81-well plate for sample stirring. This was a great idea that was worth sharing because it has potential uses in other areas of science and research. At the symposium, Tracy received an award, sponsored by Wale Apparatus, for presenting the best poster at last year's symposium. It was titled: "Sublimation Glassware for the Study of Low Energy Glasses" and was based on a research project of **Lei Zhu** (Lian Yu, Pharmacy). **Rachael Selinsky** (Jin) was extremely helpful with assembling both posters and did an outstanding job!

This year's regional scientific glassblowers meetings were held at the chemistry departments at the University of Iowa in Iowa City and Northern Illinois University in DeKalb. Tracy presented a talk on the Belgian Glass Shops visited during his European Symposium visit a few years back, and demonstrated a 90 degree bend inside of a bend. These events are an opportunity for glassblowers to learn and develop skills, and stay current with new developments in the field of scientific glassblowing.

The Wisconsin Firewagon made a few appearances during the year. Most recently, Tracy did a demonstration at the Wisconsin Science Festival at the Wisconsin Institute of Discovery in mid-September. The Firewagon is a portable self-contained glass blowing podium for the purpose of education and outreach. The Firewagon is used in area classrooms and other public venues to demonstrate the chemistry and physics of glass, as well as basic technical and artistic glassblowing techniques. The Institute of Chemical Education provided a grant to build the Firewagon.

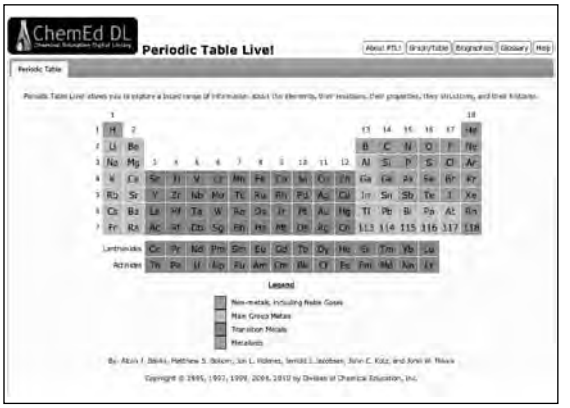
In June, Tracy was invited to participate in "Light on the Prairie: The Greater Cooksville Outdoor Neon / Illuminated Art Exhibition" organized by **Steve Feren** and the UW Art Department, and hosted by the Oak Lawn Farm. 50 artists from Wisconsin and across the nation installed their art for two nights on the prairie, combining art and nature. Tracy is also continuing his collaboration with the Madison Children's Museum, and was involved in the "Art and Science Fusion" Summer Camp held there in July.

Ryan Weber (Mahanthappa) was one of this year's scientific glassblowing students. He is shown below working on his final project.

Chemical Education Digital Library Activities

The Chemical Education Digital Library (ChemEd DL) is the place on the web to find great chemistry resources. Last year's Badger Chemist described most of them, and all of them can be viewed on the web at *http://www.chemeddl.org*. We won't go into detail now, but here is a brief summary.

Periodic Table Live! is an online, interactive periodic table designed for pedagogical use. In addition to the usual data for each element, PTL! provides videos of reactions, interactive Jmol structures for each element, and facilities for plotting numeric data and sorting data either alphabetically or numerically. Each element also has its own Facebook page.



ChemEd Courses is based on the Moodle course management system and provides a way to create your own collection of ChemEd DL resources with your own text to guide students to appropriate resources.

Models 360 is a collection of more than 700 molecules together with facilities for displaying molecular vibrations, molecular electron-density distributions, molecular symmetry elements, and molecular orbitals. There is a also a collection of crystal lattice models. Everything is in Jmol format so that it can be manipulated in 3-D.

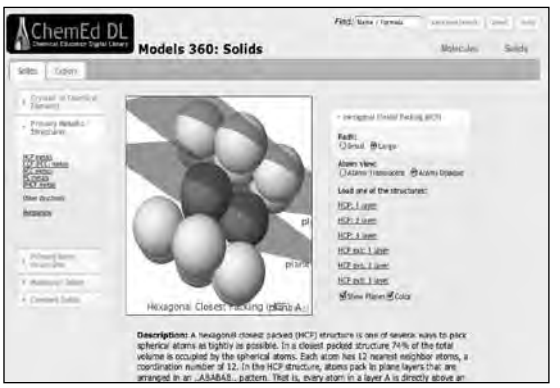
Organic Stereochemistry Tutorial teaches stereochemistry by allowing students to choose their preferred method for visualizing structures and then be tutored in using that method to solve stereochemical problems.

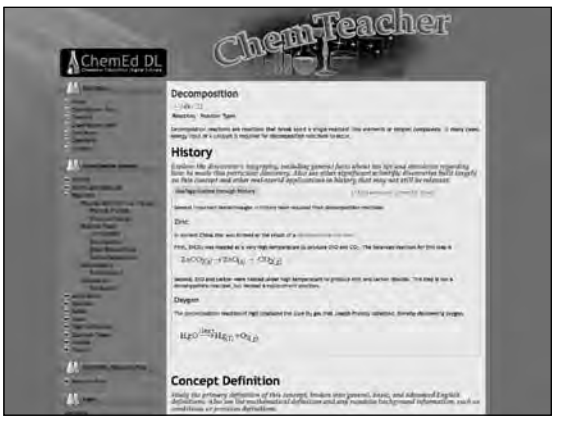
TIGER (Textbook Integrated Guide to Educational Resources) allows teachers and students to use the tables of contents of published textbooks to find online resources relevant to each chapter and section in the book of their choice.

Question Banks for Quizzes and Exams are available for general chemistry, organic chemistry, and physical chemistry in the Collections area of the ChemEd DL.

ChemTeacher is especially useful to secondary school teachers and students. Resources range in level from introductory to Advanced Placement. Find reliable, quality videos, articles, demonstrations, worksheets, and activities, all searchable by topic and by science standards. The Periodic Table Resource Pack, for example, includes everything teachers and students need to investigate and learn about the periodic table.

ChemPRIME is a wiki textbook to which anyone can contribute. It consists of a standard general chemistry textbook as well as exemplars for each topic within the textbook. For example, the topic of density contains exemplars from physics, everyday life, geology, and seven other areas in which students might be interested.





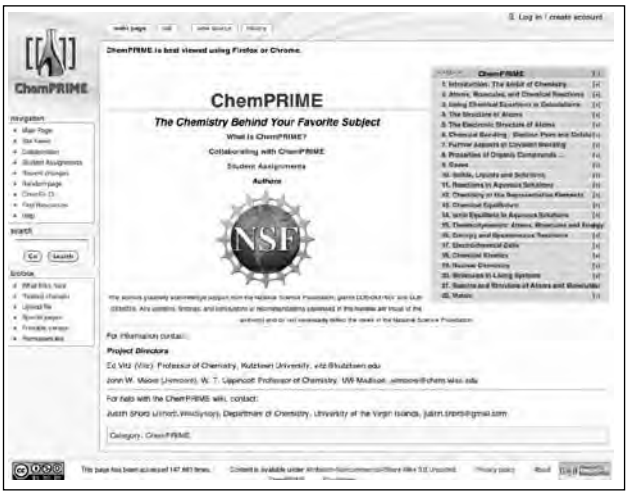
ChemPaths provides a means for organizing and presenting to students the content of ChemPRIME. Would you like to design your course in a different way? Use ChemPaths to design your own order of presentation and students will be able to access it free on the Web.

ChemEd DL is a marvelous collection of online materials. During the past year ChemEd DL staff members have carried out more than two dozen presentations/workshops helping others to learn about how ChemEd DL can aid their teaching and their students' learning. Invariably the workshop leaders are met with praise for the excellence of the collection. The most extensive of our workshops is described in the next section.

Summit Conference on ChemEd DL/ChemEd Research

This summer, in collaboration with the Education Division of the ACS, the Chemical Education Digital Library (ChemEd DL) co-sponsored the Summit Conference on ChemEd DL/Chem Ed Research July 11-15, 2011 in Washington, DC on the campus of the Catholic University of America (CUA).

The goals of the Summit Conference were two-fold: First, to provide participants with an opportunity to learn about online resources from the ChemEd DL and, with the guidance of Summit Conference leaders, to combine those resources to create their own online learning materials. Second, to enable participants to plan, execute, and analyze a chemical education research project to test the effectiveness of their materials in improving student learning. Attendance was highly selective:



Out of more than 80 applicants, 15 participants were selected from throughout the country, representing a variety of two- and four-year colleges. The program began a month before the participants and leaders assembled at Catholic University, with online assignments provided through the ChemEd Courses section of the ChemEd DL. Because of this prior preparation, a great deal was accomplished during the July 11-15 residential workshop on CUA's campus. Participants got a good start on creating educational materials for their courses, and they continued to work on their projects after the Summit ended. Participants will be able to consult with CUA's chemical education research group throughout the 2011-2012 academic year, which will provide additional support and consultation for their research projects.

Participants were selected based on the learning resource they planned to create and the chemical education research project they planned to carry out. The participants were: **Jeff Schwehm**, Lakeland College, Sheboygan, WI; **Darcy Mack**, Pasadena City College, Pasadena, CA; **Don Storer**, Southern State Community College, Hillsboro, OH; **Jason Fuller**, Eastern Kentucky University, Richmond, KY; **Tammy Gummersheimer**, Schenectady County Community College, Schenectady, NY; **Weslene Talmadge**, Gannon University, Erie, PA; **Alline "Rie"** Somlai, Delta State University, Cleveland, MS; **Fred Garces**, Miramar College, San Diego, CA; **Lisa Smith**, North Hennepin Community College, Minneapolis, MN; **Phil Janowicz**, California State University, Fullerton, CA; **Mark Wathen**, Snow College, Ephraim, UT; **Rich Roberts**, Des Moines Area Community College, Ankeny, IA; **Larry McGahey**, The College of St. Scholastica, Duluth, MN; **David Carter**, Angelo State University, San Angelo, TX; **Colleen Conway**, Mount Mary College, Milwaukee, WI.

During the week-long Summit, participants spent their days (and evenings!) creating their own online instructional units with support from the UW's ChemEd DL staff: **Lynn Diener** (Mount Mary College), **Linda Fanis**, and **Justin Shorb** (the group's most recent graduate, now at the University of the Virgin Islands). By the end of the summit, participants had created a variety of instructional units for both organic chemistry and general chemistry courses which are being integrated into their lectures, laboratories, and POGIL curriculum. Specific topics include stereochemistry, nomenclature, molecular polarity, molecular structure, intermolecular forces, dimensional analysis, and real-world applications of chemistry.

Participants also learned the basics of chemical education research from the chemical education research team led by **Dr. Diane Bunce** of CUA. With their guidance, participants wrote research questions and developed methodologies for investigating how their newly created units affected student learning. Their research projects are being carried out in their classes during the 2011-2012 academic year.

Participants have the opportunity to present their ChemEd DL project and chemical education research data at a symposium during the summer Biennial Conference on Chemical Education (BCCE) 2012 at Penn State University. Additionally, upon completion of their project, each participant's learning resource will be added to the ChemEd DL repository (http://www.chemeddl.org) for other educators to use.

ChemEd DL Becomes ACS Service

On July 27, 2011 a major change occurred in the ChemEd DL, but our hope was that users of the Web site would not notice at all! The change was that ChemEd DL is no longer using server computers in Madison, but its technical aspects are now handled by the American Chemical Society's IT staff. The servers are now everywhere and nowhere, because ACS elected to make the ChemEd DL their first excursion into "cloud computing". The servers are provided by Amazon.com, so ChemEd DL is now in "the Amazon cloud". We hope there are no storms!

The changeover required months of preparation by staff both in Madison and in Washington. It took about a month before every one of the more than 150 items on the list of problems was crossed off. A new problem crops up about once a week, but usually less than a week is required to solve it. We can now say that the transfer has occurred very successfully. We thank the many people, in Madison, Washington, and several other places, who worked very hard to make this transfer happen.

The ChemEd DL is now assured of long-term sustainability through the American Chemical Society. The ACS Education Division is building a program by which it can provide resources to teachers, and ChemEd DL will be a cornerstone of that project. Make sure that you and any others you know explore its many resources, and rest assured that they will continue to be available to enhance teaching and learning for many years.

People

The ChemEd DL has been very lucky to have an excellent staff and many fine students who have contributed to its success. Here are the main contributors during the past year, with their current affiliations if they are not located in Madison. PI: **John Moore**; co-PIs: **Jon Holmes**, **David Yaron** (Carnegie-Mellon University), **Mary Kirchhoff** (ACS Education Division), **Theresa Zielinski** (Monmouth University, Emerita); evaluator: **Diane Bunce** (Catholic University); visiting faculty: **Lynn Diener** (Mount Mary College), **Justin Shorb** (University of the Virgin Islands); lecturer: **Ieva Reich**; undergraduate students: **Gerad Bandos**, **Sarah Brendzel**, **Robert Hetue**, **Brandon Korf**, **Adam Hahn**, **Peggy Linzmeier**, **Yiqing (Claire) Liu**, **Yan Luo, Dana Palma**, **Greg Sovinski**, **Tyler Wadzinski**, **Tyler Wied**, **Zeeshan Yacoob;** staff: **Robert Anglin**, **Rachel Bain**, **Linda Fanis**, **Elizabeth Moore**, and **David Pieper.**

WISL Activities

In February and March of 2011, Bassam traveled to Belgium in celebration of the International Year of Chemistry; he appeared at Technopolis, the Flemish science center.

Bassam Z. Shakhashiri was voted 2011 ACS President-elect and will serve as President in 2012 and immediate Past President in 2013. He is the third Wisconsin faculty member to be elected ACS president, after **Farrington Daniels** in 1953 and **Charles Casey** in 2004. ACS was chartered in 1876 by the US Congress and is the world's largest scientific organization, with over 163,000 members in the United States and abroad, and is one of the world's leading sources of authoritative scientific information. Bassam joined the UW-Madison faculty in 1970 and is celebrating his 50th year as an ACS member and 42nd year as a member of the Wisconsin Section. In January he participated in the U.S. launch of the International Year of Chemistry at the Chemical Heritage Foundation in Philadelphia and then traveled to Belgium where he gave over a dozen presentations in 10 days at Flemish Science Center Technopolis and throughout the Flemish and French speaking parts of Belgium and in the Netherlands. He was joined by Belgian Minister of Innovation **Ingrid Lieten**, and together they witnessed students set a record for conducting the largest student experiment.

With Flemish Minister of Innovation Ingrid Lieten, February 2011

In April, Bassam received the 2011 UW-Madison Van Hise Outreach Distinguished Teaching Award. Also in April, Bassam gave the 20th Annual Charles Fisher Lecture at Roanoke College where **Jack** (PhD '84, Wright) and **Gail** (PhD '83, Gaines) **Steehler** are on the faculty. He was honored to make this a return engagement, having been the inaugural Fisher Lecturer in 1991. His travels also took him as an invited speaker to numerous ACS local sections, regional meetings, and other professional society conferences across the country.

Bassam presents HRH Princess Chulabhorn Mahidol of Thailand with a copy of *Chemical Demonstrations Volume 5* at the 43rd IUPAC World Chemistry Congress, August 2011.

With C&E News Senior Editor Linda Wang, who took Prof. Shakhashiri's introductory chemistry course at UW-Madison in 1996. *Photo courtesy of Rudy Baum, C&E News; taken at the ACS National Meeting, Anaheim, CA, March 2011.*

Bassam organized symposia at national and international meetings. In August, at the 43rd IUPAC World Chemistry Congress in Puerto Rico, the "Chemistry and Culture" speakers included **Nancy B. Jackson** (2011 ACS President), **Amal Al-Aboudi** (University of Jordan), **Liliana Mammino** (University of Venda), **Michael Weisberg** (University of Pennsylvania), **Deborah L. Blum** (UW-Madison), **Daniel Rabinovich** (University of North Carolina at Charlotte), **Peter Atkins** (Lincoln College, Oxford), **Roald Hoffmann** (Cornell University), and **Theodore Gray** (Wolfram Research, Inc.).

Jerry Bell

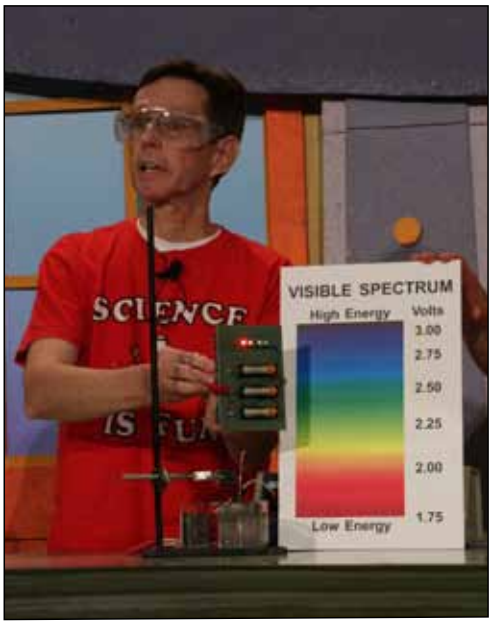
At the ACS Fall National Meeting in Denver, WISL Senior Scientist **Jerry Bell** was honored with a symposium on the occasion of his 75th birthday, titled "Jerry Bell and the Joy of Chemistry." Speakers included **Dr. Rodney Schreiner**, **Ron Perkins** and **Prof. John W. Moore** from UW-Madison, as well as Jerry himself. Also at the Denver meeting, Bassam initiated and moderated a "Communicating Chemistry to the Public" symposium.

December 2010 was a busy month for Bassam because of two big events. First came the 41st annual *Once Upon a Christmas Cheery,* In the Lab of Shakhashiri. Visits from **Santa Claus** and **Bucky Badger** were once again a hit, but a performance from the Madison Youth Choirs added a special musical flair to all four shows this year.

Bucky performs the Vapor-Phase Oxidations demonstration at the 41st annual *Once Upon a Christmas Cheery, In the Lab of Shakhashiri.*

The "Elephant's Toothpaste" demonstration is always a hit!

Isabella Oehme of the Madison Youth Choirs works with aldehydes: Formation of a Silver Mirror.



Dr. Rodney Schreiner shows the Christmas Lecture audience the Light Emitting Diodes: Voltage and Temperature Effects demonstration from Volume 5 of *Chemical Demonstrations.*

The children sang selections by chemist/composer **Alexander Borodin**. The next event, the grand opening of the Wisconsin Institutes for Discovery, came just a week later. Bassam, with the help of **Dr. Rodney Schreiner** (PhD '81) and **Stacy Wittkopp** (BS '08), put on a Science is Fun Extravaganza that included two demonstration shows in the forum, several exploration stations throughout the building, and a concert from the Science is Fun Quintet: WISL Fellow and Professor of Music **Marc Fink** on oboe, **Eleanor Bartsch** on violin, **Benjamin Seeger** on violin, the department's own **Prof. John Berry** on viola, and **Taylor Skiff** on violoncello.

When UW-Madison played host to the National Science Olympiad in May, Bassam and Rodney were part of that grand opening as well. They played to a packed house at the Kohl Center, bringing some signature experiments to a new crowd and getting the competitors excited for the weekend's events. Then in September at the Wisconsin Science Festival, they led workshop presentations for festival attendees.

In what's become a summer tradition, Bassam once again brought his Science of Fireworks show to the Memorial Union Terrace to celebrate Independence Day. In addition to demonstrating how chemicals make fireworks possible, the show included **Prof. Mike Leckrone** and members of the UW Band, who joined the fun and added some music to the festivities. This summer Bassam also once again oversaw the chemistry section of the PEOPLE program, which serves economically disadvantaged students from several Wisconsin communities, teaching them the process of scientific discovery.

Throughout the year Bassam has worked in various ways to reach new audiences and make science more accessible to everyone. He continued his appearances on the Larry Meiller Show on Wisconsin Public Radio. And as head of the Wisconsin Initiative for Science Literacy he hosted several talks. Deborah Blum from UW's Department of Journalism and Mass Communications spoke about her bestselling book, *The Poisoner's Handbook*; **Eric Scerri** of UCLA talked about "The Origins and Significance of the Periodic Table"; and most recently, **Rudy Baum** of *Chemical and Engineering News* discussed why "'Sustainable Growth' Is An Oxymoron." WISL also continued its sponsorship of young chemists by encouraging graduate students to include a chapter in their thesis that communicates their research to a general audience. Their reward is not only learning how to better explain their work to their non-chemist friends and family (and in the future, to politicians, reporters, funding agencies and more), but also a $500 cash award from WISL for submitting their chapters for display on the website at *www.scifun.org*. So far, 12 Ph.D. students have earned the award, with more to come.

Anders Knight (BS '14) and **Jennifer Kraninger** (BS '10) received autographed copies of *The Same and Not the Same* by Roald Hoffmann as prizes for their winning entries in a WISL contest that dealt with chirality and mirror images, developed by WISL Fellow Ron Perkins. Jim Maynard (BS '00), not pictured, was also a winner.

The research group that collaborated to complete Volume 5 of *Chemical Demonstrations: A Handbook for Teachers of Chemistry,* which was published this February by UW Press, is continuing the work that was begun with Volume 5. The group members, led by Bassam and including Dr. Rodney Schreiner, Dr. Jerry Bell and Ron Perkins, are developing chemical demonstrations that will help connect chemistry with what we perceive via our senses. This most recent publication dealt with light, color, vision and perception. The current research focus is on another sense—hearing—with plans to work on touch, taste and smell in the future.

Vedejs Reunion • Events 2011

Congratulations on the spectacular career you have had in academic teaching and research. The many contributions you have made to chemistry have helped shape the basic foundation of this area of science. Of equal significance has been the effort you have unselfishly given to help your former associates be successful chemists.

Thank you for the patience, support, and tremendous help that always came exactly when I needed it the most. In your group I learned how to design and perform research, run a group, and supervise students. Your example always inspired me.

Zimmerman Group attendees at the retirement celebration included: **Chris Abelt** (BS '78), **Diego Armesto** (PD '75-'77), **Robert Boettcher** (BS '66, PhD **Givens** (PhD '67), **Kurt Hoffacker** (PhD '96), **Alexey Ignatchenko** (PD '95-'98), **Richard Johnson** (PD '77-'79), **Gil Jones** (BS '69, PhD '75), **Gary Keck** **Patrick Mariano** (PhD '69), **Ron McKelvey** (PhD '71), **Jim Meyer** (BS '66), **Jeff Moore** (GS '78,'80-'88), **Michael Morrissey** (BS '82), **Ronald Morse** (PD '67-'69), **Reuben Rieke** (PhD '66), **Joachim Schantl** (PD '66-'68), **Forrest Schultz** (GS '91-'92), **Grigoriy Sereda** (PD '99-'02), **Valeriya Smolensk** **Anthony Tantillo** (PhD '87), **Laren Tolbert** (PhD '75), **Greg Wagner** (BS '68), **Jianbo Wang** (PD '94), **Pengfei**

Howard E. Zimmerman, age 85, passed away unexpectedly on Sunday, Feb. 12, 2012. He was an Emeritus Professor of Chemistry at the University of Wisconsin-Madison, where he began teaching in 1960. Howard was born on July 5, 1926, in New York, N.Y. His remarkable career began at Yale University when he graduated first in his class with a Bachelor of Science degree in Chemistry in 1950. He received his Ph.D. from Yale University in 1953 and carried out a post-doc fellowship at Harvard. Professor Zimmerman taught for seven years at Northwestern University prior to coming to the UW. The family requests donations be made to the Howard E. Zimmerman Memorial Fund in the Department of Chemistry, managed by the University of Wisconsin-Madison Foundation.

Your legacy in the field of chemistry is accomplished fact. These accumulated tributes are testimony to your legacy as a mentor. I thank you for the unfailing support you gave me at Wisconsin and in my early career. You never stopped telling me I could do anything I wanted to and I absolutely always knew if I needed help you would be there.

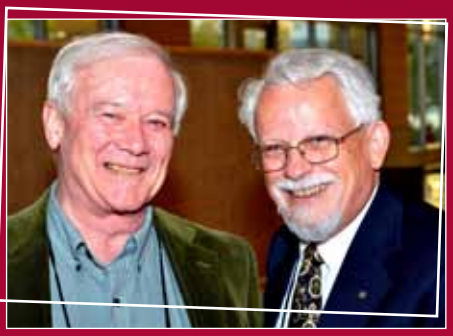
It is hard to imagine organic photochemistry without your critical contributions. Everyone who has worked in this field in the past 50 years, including me, owes you a deep debt of gratitude.

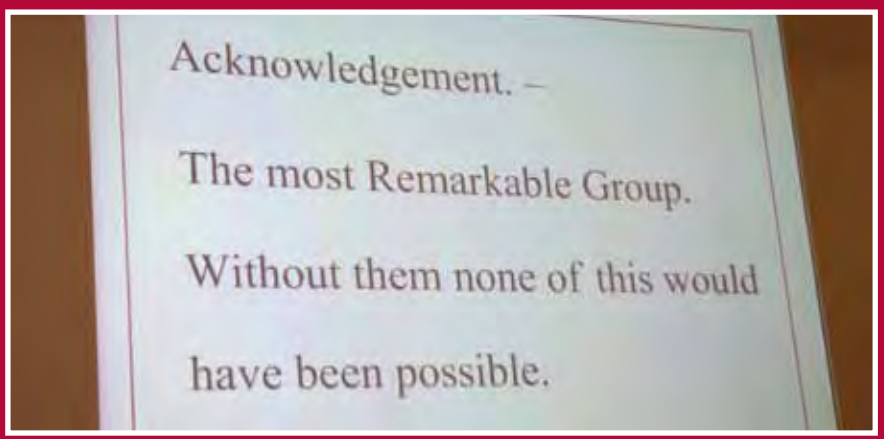
'72), **Richard Bunce** (PhD '81), **David Crumrine** (PhD '71), **John Dodd** (PhD '70), **Steven Fleming** (PhD '84), **Thomas Gannett** (PhD '79), **Richard** (PhD '75), **Reinhart Keese** (PD '62-'64), **Russell King** (PhD '85), **Andrei Kutateladze** (PD '92-'95), **Dan Little** (PhD '74), **Charlie Markus** (UG '11-'12), (PhD '68), **John Munch** (PhD '66), **Evgueni Nesterov** (PD '98-'02), **John Nuss** (PhD '86), **John Penn** (PhD '81), **Jim Pincock** (PD '71-'72), **Albert Pratt aya** (PD '97-'02), **Lynn Sousa** (PhD '71), **Mark Steinmetz** (PhD '77), **Stuart Staley** (PD '63-'64), **Eric Strieter** (BS '00), **John Swenton** (PhD '66), **Wang** (PhD '02, PD '02-'03), **Mitch Winnik** (UG '00), **Zhaoning Zhu** (PhD '94), **Gary Zimmerman** (PhD '65).

Zimmerman Group 2011

Events 2011

Zimmerman Reunion





FEATURED ALUMNUS

When one reaches a certain age of maturity, the arrival of echoes from the past, such as the *Badger Chemist*, no longer are dealt with by reflexive addition to growing piles of old, unread magazines, but rather become sentimental stimulants of fond reminisces of long-past experiences that greatly influenced and shaped the personal and professional profiles that now represent who you are. Such was my reaction to a recently received *Badger Chemist*, which has motivated me to share with you, quite briefly, my fond memories and appreciation of my years at UW:

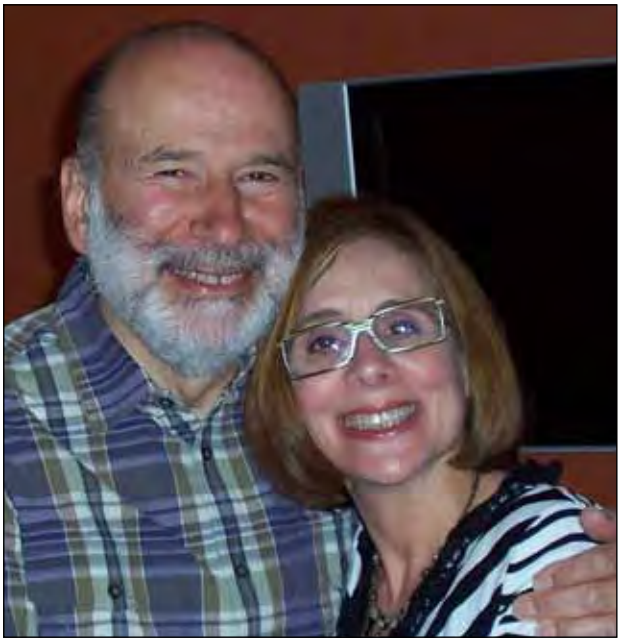
I was an undergraduate at Madison from 1964 to 1968. Those were politically and socially tumultuous years for our nation and the world; years which coincided with my own personal development. This circumstance created many challenges for my generation, as we struggled to shape our own identities, frequently based on conflicts between our "inherited" and "acquired" personal values, often strongly influenced by family circumstances, and the more global political and social environment in which we became immersed as college students with new found freedom and heightened awareness of a broader social responsibility beyond ourselves. I was no exception, as I struggled to reconcile the oft opposing influences of these powerful forces. Over time, and with the help of several outstanding faculty role models and advisors, I was able to develop a broader and healthier social conscience (thank you UW), while also receiving a stellar educational experience that allowed me to develop as a student and to mature as a young man (thank you UW). In 1968, I graduated with a BS in Chemistry and a BA in History. For the sake of brevity, there is much detail I omit in this four year extraordinary personal odyssey. Suffice it to say that from 1964 to 1968 UW was the crucible in which my collective experiences were melded, providing the foundation for shaping me into the person who I am today. Following Madison, I went on to graduate school at Yale, earning a PhD in Biophysical Chemistry. My years at Yale also were important in shaping me both personally and professionally, but that story is for another audience. After a year and a half as a NIH postdoctoral research fellow at Berkeley, I accepted a faculty position at Rutgers University, where 37 years later I continue my research, teaching, and service. My current professional titles are in the footer below and reflect the benefits of my UW experience. Not shown in the footer are my equally, if not more, important personal titles of husband to Sherrie Schwab and father to Danny and Jordan Breslauer, not to mention "father" to my poodle "Shmutz Punim."

I look forward to continuing to stay in touch with my roots through the *Badger Chemist*. Fond regards and gratitude to all that UW gave me as a young man.

Ken Breslauer

Dr. Kenneth J. Breslauer
Linus C. Pauling Professor
Department of Chemistry & Chemical Biology
Dean and Vice President, Life & Health Sciences
Rutgers, The State University of New Jersey

Wisconsin State Journal, , Sunday, October 3, 1965



Ken and Sherrie, 2011

ICE
Institute for Chemical Education

The Institute for Chemical Education (ICE) directed by **John Moore** has been even more active than usual this year. We continue major outreach programs in schools, for children in ChemCamps, and through the UW-Madison Nanoscale Science and Engineering Center (NSEC). Our SCI ENCountErs program for children in Boys and Girls Clubs is expanding, we are collaborating with Fusion Science Theater to provide children's theater with a science message, and we are developing an entirely new concept: playground equipment that models structures such as fullerenes, nanotubes, and graphene.

Carbon Playground

What if your children or grandchildren could learn about buckyball, graphene, and carbon nanotubes while climbing and hanging from a jungle gym or monkey bars? That's what the Carbon Playground is all about. This entirely new approach to science outreach involves bigger than life-sized models of allotropes of carbon!

There is a lot of excitement among ICE staff this fall as two of three planned models of carbon allotropes are slated for installation in October on the playground at the Discovery Center Museum in Rockford, Illinois. All of this has been made possible through a grant from the Camille and Henry Dreyfus Special Grant Program in the Chemical Sciences and with support from the National Science Foundation through the UW-Madison Nanoscale Science and Engineering Center.

Chemistry Lecture Demonstrator **Jim Maynard** has designed models of three carbon-based structures, buckyball, graphene, and a single-walled carbon nanotube, that are strong enough and safe enough for children to climb and play on. He and a crew of undergraduates are finishing construction of a buckyball about two meters high, and a graphene sheet about 1.5 m × 3 m is currently leaning against a wall outside the chemistry building while each carbon atom is carefully molded in place on bolted and welded intersections of steel "bonds". Everything is being done to scale, with all bond angles and lengths carefully measured. The models will replace more prosaic play equipment at the Rockford museum, and will be installed in accord with all safety regulations so that children can play on them safely. The buckminsterfullerene model will be fastened to the ground and will serve as a jungle gym where children can get inside the structure and climb on it. The graphene sheet (monkey bars) will be mounted horizontally at an appropriate height so that children can swing from one carbon-carbon bond to another. Both of these will be installed this fall. The carbon nanotube will be constructed from rope so that children can crawl through it. It will be installed later in the academic year.

The Story Behind the Carbon Playground

The idea of scaling up molecules came to Jim Maynard when he was taking the crystallography course taught by **Larry Dahl** and **Ilia Guzei**. Ilia showed him a program that could scale up actual crystallographic data, which led to the idea of making enormous models—big enough to sit in a buckyball or climb around a single-walled nanotube. Jim made a prototype buckyball using wood, experimenting to get the angles to agree with crystallographic data and then getting the pieces glued together. The model has been in the Shain atrium for some time. **John Moore** and **Andrew Greenberg** got the idea that such larger-than-life models might be used as playground equipment or as sculpture and wrote a proposal to the Camille and Henry Dreyfus Foundation to support such an effort.

The proposal was funded and we were committed to making the idea of nano playground equipment a reality! Designing and constructing a piece of playground equipment is a much bigger challenge than building a large scale model. We decided to use a scale of 27 cm/Å, to use stainless steel for bonds, and to somehow mold

spheres around the bond intersections. It was essential to comply with federal, state, and local regulations on the design of playgrounds and to obtain specific approvals from the Discovery Center Museum and the Rockford Parks Department.

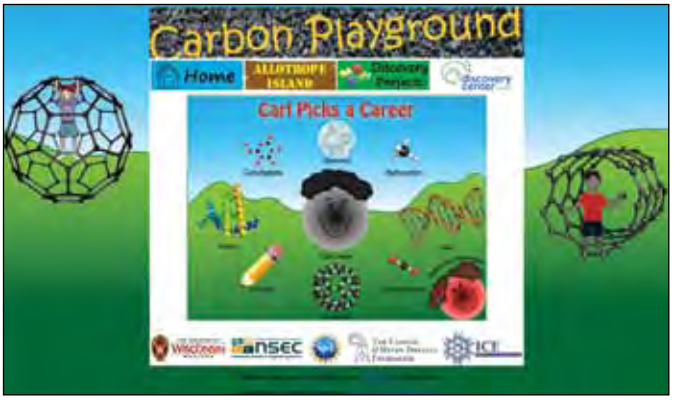
A good example of the design considerations is the buckyball. It required about 150 feet of stainless steel tubing cut to precise lengths, marked for identification, flattened at each end, meticulously drilled, smoothed and polished, and then bolted to two other rods. Two young women, **Brittany Ardrey** (BA '10) and **Ashley Hellenbrand** (UW-Oshkosh '10), did most of this exacting and time-consuming work. For safety, each bond is padded with rubber steam hose, which is covered with shrink-wrapped red vinyl. To provide adequate rigidity, each joint was welded. To maintain the proper shape while welding, the model had to be carefully suspended so that its own weight would not distort the angles. (Chemical bonds apparently are better than bolted steel at maintaining a structure!) Welding was done by Jim Maynard and **John S. Putze**. Spheres to represent the atoms were made from high density polyurethane foam molded to each intersection of bonds. Based on Jim's specifications, stainless steel molds were designed and constructed by **Matt Martin** and **Edward Vasiukevicius** in the Chemistry Machine Shop. Once the polyurethane cured, it was coated with black pigment. Because of the way the structure of buckminsterfullerene was determined, there is a slight compression of the molecule that affects its symmetry. The playground piece maintains this slight distortion.

At this writing, the graphene and buckminsterfullere C60 pieces are welded and most of the atom spheres are molded and coated. These two pieces will soon be installed and children will be playing on them. The single-walled carbon nanotube will be made from one-inch diameter nylon rope woven into a hexagonal net pattern and supported by steel rings. The rings are being made by an outside company and we await their completion before we can weave the rope and affix atom spheres to each intersection.

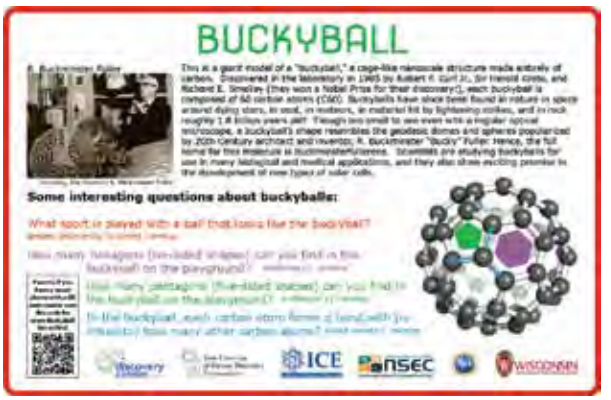
Complementing the Carbon Playground

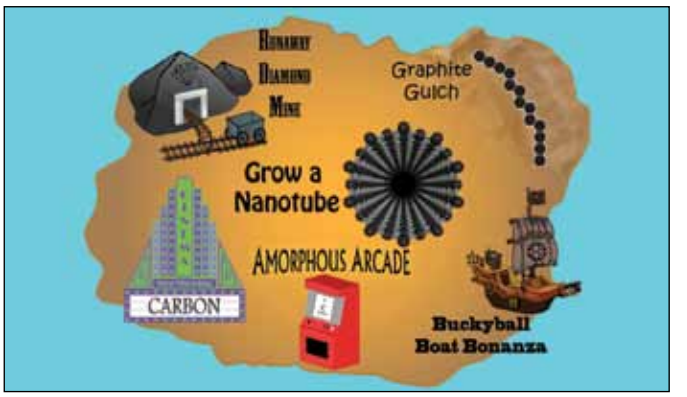
Postdoctoral fellow **Angela Jones** is creating a Web site to accompany the playground installation, developing activities for children that are related to each structure, and creating signs that will explain to parents and children that they are playing on models of carbon structures that are 2.7 billion times larger than the actual molecular structures. **Martha Rathbun**, a middle-school science teacher in Rockford, has developed curriculum materials for the carbon playground during her three summers as a participant in the ICE/NSEC Research Experiences for Teachers program. We expect that a number of schools may be interested in creating their own carbon playgrounds; if a school in your area would be interested, contact John Moore (jwmoore@chem.wisc.edu).

The Carbon Playground is a complete package for the museum. Interesting and informative signs, such as the one shown for the buckminsterfullerene jungle gym, give fuller meaning to each piece (allotrope structure) and a fourth sign gives an overview of the three forms of carbon that make up the playground. The signs have been developed and are awaiting final approval by the museum staff before they are installed on site. Each sign includes a QR code that can be used by those with smart phones to access the Carbon Playground Mobile Web site. In addition, the museum will have a kiosk where a computer will display the full Web site for all visitors to see.



Angela is creating an interactive and engaging Website design, which you can view at (http://carbon.chem.wisc.edu/). A visitor to the Web site will first meet Carl, a curious carbon atom, on a quest to complete a class assignment to figure out what he wants to be when he grows up. In the storybook, Carl interviews his relatives and neighbors to learn more about their exciting "careers." His mother, Mayor of Elementasia, works in the diamond building, and his father is lead engineer at the graphite plant. Other carbon characters "work" in hydrocarbons, DNA, a protein, and other molecules. Next, the Website visitor will be whisked away to Allotrope Island, a virtual carbon allotrope amusement park. On the island they can play a variety of arcade-style games while they learn about diamonds, graphite/graphene, buckyballs (C60), carbon nanotubes, and amorphous carbon.





In addition, the Web site describes Discovery Projects that parents and children can do at home to explore the uses and structure of carbon. To date we have developed projects that show the electrical conductivity of graphite, uses of activated carbon as filters, isolation of graphene sheets from pencil lead using Scotch Tape, a graphene hopscotch court, and more fun activities for kids of all ages. A few of the more advanced activities were tested during a workshop for National Science Olympiad (NSO) participants this past May. **Nate Safron**, a graduate student in materials science and engineering in **Michael Arnold's** group, and **Joe Yeager,** fourth year graduate student in **Bob Hamers's** group, were instrumental in the success of the NSO "Fun with Carbon" workshop.

NSEC Outreach Activities

Led by **John Moore** (Director) and **Andrew Greenberg** (Outreach Coordinator), ICE continued its role of organizing and leading the education and outreach activities of the Nanoscale Science and Engineering Center (NSEC) —one of the most innovative education/outreach programs of any NSEC. NSEC is in its second year of a five-year, $14 million renewal with funding from NSF. The project has four interdisciplinary research thrusts and has faculty participants from 14 departments in four colleges: L&S, Engineering, CALS, and Pharmacy. The University of Minnesota and the University of Puerto Rico-Mayaguez also collaborate with the NSEC. ICE heads the education and outreach group that connects students and the general public with the NSEC's central theme of self-assembly at the nanoscale. This 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 the ICE infrastructure. Chemistry graduate students and staff participate in all the NSEC education outreach programs.

Research Experience for Teachers (RET)

ICE and the NSEC continued to host the annual Research Experience for Teachers (RET) program, working with three local Wisconsin teachers and a teacher from Rockford, IL. **Jeanne Nye**, a seventh grade teacher at Lake Mills Middle School, returned for her sixth summer with the NSEC. She continued to work on her fifth in a series of Webquests. In this Web-based lesson (yet to be titled) middle-school students explore careers in nanotechnology. **Jason Strauss**, a chemistry teacher at Verona High School, was another returning teacher. This summer he worked with Andrew Greenberg to adapt an iPod touch for use as a tool for blind and visually impaired students so they could work independently in a chemistry laboratory. **Jeanine Gelhaus**, back for a sixth summer with ICE and NSEC, developed and published a self-guided nanotechnology course for middle-school students. The course will be evaluated in two classrooms during the coming academic year. In her third summer with ICE and NSEC, **Martha Rathbun** helped teach our annual Nanoscience Teacher Workshop and developed curriculum to accompany the Carbon Playground that is being installed at the Discovery Center Museum in Rockford, IL (see previous section).

Nanoscience Teacher Workshops

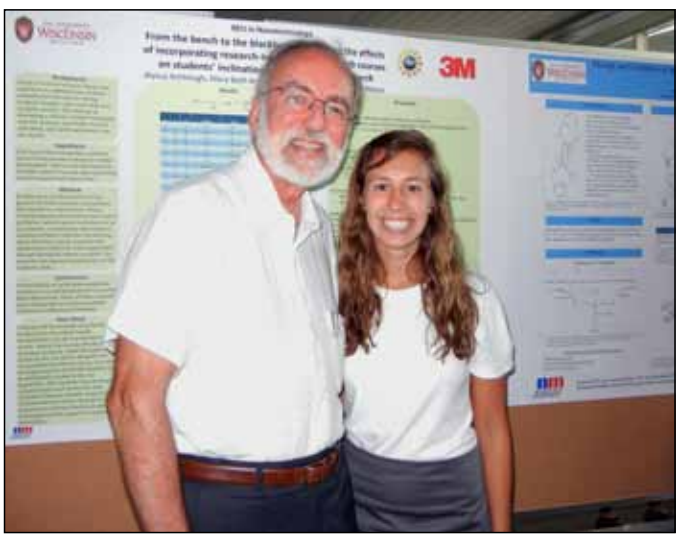
With our museum partner, Discovery Center Museum in Rockford, IL, ICE taught a fifth round of our successful teacher workshop on integrating nanoscience in the middle and high school curriculum. The workshop, which was taught by our RET participant **Martha Rathbun** (see above), was developed by NSEC and ICE teacher fellow **Jeanine Gelhaus**, a 2008 winner of a Presidential Teacher Award. The workshop attracted 18 teachers from the Rockford and Madison areas.

Research Experience for Undergraduates (REU)

ICE was host to three Research Experience for Undergraduates (REU) programs during summer 2011. **Andrew Greenberg** continued to act as director of two continuing REU programs supported by NSEC and MRSEC: REU in Nanotechnology and REU in Chemistry and Chemical and Biological Engineering. Added to these programs was a newly funded REU in the Chemistry of Materials for Renewable Energy. All three programs participated in the Graduate School's Summer Research Opportunities Program, a consortium of 13 summer research programs on the UW-Madison campus that have the common goal of increasing the diversity of the graduate student pool.

The three REU programs attracted 32 students from the United States and Puerto Rico who spent ten weeks doing research in labs on the UW-Madison campus. Because of the REU programs, the Chemistry Department was able to host 14 students in department research labs. Faculty hosts included; **Sam Gellman**, **David Schwartz**, **Mahesh Mahanthappa**, **Bob Hamers**, **Song Jin**, **John Wright**, **Padma Gopalan**, **John Berry**, **Jim Skinner**, **John Moore**, **Tehshik Yoon**, **Frank Keutsch** and **Laura Kiessling**. REU students worked on individual research projects under the guidance of graduate students and post docs in these laboratories.

Activities for the REU participants included a weekly lunch seminar series with talks by chemistry faculty and staff: **Andrew Greenberg**, **Mahesh Mahanthappa**, **Bob West**, **John Wright**, **Song Jin**, **Padma Gopalan** and **David Schwartz.** Additional activities included a trip to Summerfest in Milwaukee and a special seminar on applying and surviving in graduate school hosted by graduate students. The summer culminated with a department-wide poster session where students presented the results from their summer research. The photo shows one REU participant, **Alyssa Ashbaugh**, Macalester College, at the poster session with her faculty mentor, **John Moore.**



Alyssa Ashbaugh and John Moore

ICE Outreach Activities Chem Camps

Two hundred students ranging from 5th – 8th grade attended the ICE Chemistry Camps during summer 2011. Ten UW-Madison undergraduate group leaders, led by **Brittland DeKorver**, guided the campers through the activities. **Sandy Walejko**, the ICE secretary and student workers **Dana Palma** and **Tyler Wied** helped keep the ChemCamps well organized.

Campers who attended the Fun with Inventions Chemistry Camp explored nanotechnology, electricity, and heat and temperature, then used their new knowledge to compete in a contest to design and market their own inventions. Their week of camp culminated when they presented their own inventions, which spanned a wide range: gecko-like gloves, food containers with built in thermometers, and a new design for pencil sharpeners.

In Fun with Forensic Chemistry, campers learned about the science behind gathering evidence to solve crimes. Guest speakers from the Madison Police Department's CSI unit, the UW Police department, and the Department of Pathology and Laboratory Medicine at UW-Madison shared their experiences with the students. At the end of the week, the campers worked together to solve a crime, questioning members of the Chemistry Department who played the roles of suspects and witnesses.

Students Participating in Chemical Education (SPICE)

The students of SPICE, a volunteer science outreach organization, pursued its mission of bringing educational, entertaining, and interactive chemistry presentations to the public by visiting schools, museums, and libraries, as well as by participating in events on campus. SPICE hosted an Exploration Station and performed four Science Spectaculars at Science Expeditions, an annual Spring campus event. The SPICE students contributed to Explorando las Ciencias, a bilingual outreach event held at UW Space Place, performing a bilingual version of "The Boiling Point", a short play about the science of phase changes, and hosting a hands-on activity. SPICE also hosted a workshop at the National Science Olympiad tournament in May.

SPICE was led by presidents **Katie Wichman** and **Won Hong** and advised by ICE Outreach Specialist, **Brittland DeKorver**.

SPICE continued its collaboration with Fusion Science Theater (FST), a group of chemists and theater artists from the Madison area who apply drama techniques to demonstration shows, creating interactive plays where "the science is the story". SPICE debuted "The Way the Ball Bounces", an investigation about why some things bounce featuring a Happy/Sad Ball demonstration, in February of 2010 and continues to perform two other FST shows. One of these, "The Burning Question", was performed by **Andrew Killeen** (SPICE) and **Chris Babiarz** (FST) at the Wisconsin Science Festival in the Forum of the new Wisconsin Institutes for Discovery. We expect that the SPICE/FST collaboration will continue for some time, because Fusion Science Theater has recently received a sizable grant from the NSF to support its program; **John Moore** serves on the advisory board for FST.

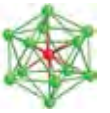
National Chemistry Week

The theme of National Chemistry Week 2010 was "Behind the Scenes with Chemistry". This theatrical presentation theme was fitting for SPICE, because through its collaboration with FST the group now has several shows that incorporate theater! In addition to performing Fusion Science Theater shows at schools and libraries throughout October, SPICE undergraduates used theater as a context for demonstrations such as Instant Snow and dry ice.

SCI ENCountErs

The SCI ENCountErs program continued under the guidance of Brittland DeKorver and Angela Jones. This collaboration between the Nanoscale Science and Engineering Center (NSEC) and Boys and Girls Clubs of Dane County provides weekly hands-on activities for children from areas with large proportions of low-income and minority families. In the fall, Boys and Girls Clubs children learned about intermolecular forces, separating mixtures, and solutions. They did so by studying familiar things: eggs, milk, candy, and bread. The winter semester featured a new set of activities co-authored by **Doris Pun**, a postdoctoral researcher in **Shannon Stahl's** research group, on topics relating to green chemistry. Students learned about the 12 Principles of Green Chemistry through activities such as making recycled paper, setting up compost bins, making hydrogen generators, and doing experiments with polymers and enzymes.

We seek to expand SCI ENCountErs beyond the UW–Madison campus and are working with Professor Scott Hartsell at UW–Eau Claire to develop a program with the Boys and Girls Club of the Greater Chippewa Valley. If you, or someone you know, would like to collaborate with us in this effort, please contact John Moore (*jwmoore@chem.wisc.edu*).



In Memoriam

John Martin Anderson

(BS '40, Spielman) 92, of Hudson, died Tuesday, September 8, 2009 at his home after a brief illness. He was born in Osceola, WI, son of the late Martin and Edna (Flipse) Anderson. John graduated from Colfax, WI, High School in 1935 and from the University of Wisconsin, Madison in 1941 with a degree in Chemistry. After briefly working for Kimberly Clark, John worked for Lake Ontario Ordinance as part of the WWII war effort. He then worked as an analytical chemist for DuPont Chemicals in Niagara Falls for 39 years. John and his wife Vivian had been long time active members of the Bacon Memorial Presbyterian Church in Niagara Falls prior to moving to Hudson where they joined the First United Methodist Church in Hudson. John was deeply involved with his church and multiple community groups including Scouting, Youth Sports, and Red Cross Volunteers.

Peter Fredrick Arvedson

(PhD '64, Larsen) died July 14, 2011, at the age of 74. Peter received his BS in Chemistry at University of Illinois and PhD in Inorganic Chemistry from UW-Madison; Master of Divinity from General Theological Seminary, New York City. He served as Episcopal priest in parishes in Effingham, IL, Okinawa, Japan, Madison, WI and Buffalo, NY, where he retired from St. Andrew's Church in 2002. He was active in the Society for Ordained Scientists. Since he and Joan moved to Elm Grove, he continued teaching and ministering in many ways at Trinity Church, Wauwatosa. He was a docent, researcher, and active supporter for restoration projects at the Pabst Mansion.

James Arthur Bain

(BS '40) Professor Emeritus of Pharmacology at Emory University and a former president of the American Society for Pharmacology and Experimental Therapeutics, died of natural causes in Atlanta on June 5. He was 93. Dr. Bain served as senior executive associate dean of Emory Medical School, conducted studies in a variety of fields-including cellular physiology, biochemical pharmacology, carcinogens, tumors and heredity, and authored or co-authored dozens of research papers and reviews. Dr. Bain was Druid Hills Golf Club's senior men's golf champion in 1986 and 1988. He received the Thomas Jefferson Award in 1988, among Emory's highest honors for faculty and staff. The award's donor specified that "the personal and professional qualities of the recipient should resemble those Thomas Jefferson considered essential to the intellectual, social and political advancement of society." He was also honored in 1988 with the Torald Sollman Award, presented by the American Society for Pharmacology and Experimental Therapeutics "for significant contributions over many years to the advancement and extension of knowledge in the field of pharmacology."

James Arthur Bain was born in Langdon, North Dakota, on May 22, 1918. Advised by his father to study law, he chose a different path, earning a B.S. in Chemistry at the University of Wisconsin in 1940 followed by a Ph.D. in Physiology from the same institution in 1944. After two years' shipboard service as a Navy radar officer he returned to Wisconsin on a Rockefeller Fellowship for postdoctoral work in physical chemistry. From 1947 to 1952 he served on the research and teaching staff of the University of Illinois College of Medicine. He accepted the position of professor of Pharmacology at Emory in 1954, served as chairman of Pharmacology from 1957 to 1962, and was director of the university's Division of Basic Health Sciences from 1960 until 1976. Among his other honors were the Distinguished Medical Achievement Award, presented by the Medical Alumni Association of Emory, and the Distinguished Emeritus Award, given by Emory's Emeritus College.

Harry Robert Billica

(PhD '48, Adkins) 89, of Fort Collins, passed away on June 24, 2009. He was born in Spokane, WA on July 14, 1919 to Harry J. and Vera (Behling) Billica, the eldest of 3 children. Harry grew up in San Mateo, California and moved to Muncie, IN, where he graduated from Ball State High School. He graduated with honors in chemistry from the University of North Carolina in 1941 where he was Phi Beta Kappa and belonged to the Phi Kappa Sigma fraternity. During WWII, he was stationed at the Naval Research Center developing protective clothing for gas warfare and was discharged as a Chief Petty Officer. Harry then proceeded to earn a PhD in organic chemistry from the University of Wisconsin in 1947. He met Ruth Guthier while at the university and they married July 6, 1946. Harry spent most of his career with the DuPont Company, initially at the Experimental Station in Wilmington, DE, then a brief time in Chattanooga,TN, and finally at the new Dacron Polyester plant in Kinston, NC. Harry found the key catalyst to make Dacron polyester, the first polyester fiber, and his name is on the patent. He lived in Greenville, NC for 28 years while working as director of chemical fibers surface research for DuPont. He pioneered the use of scanning electron microscopes in industry and his first microscope is now in the Smithsonian Institute. After retiring from DuPont, he continued to consult around the world and was on several United Nations consulting trips for textiles to India, China, and other countries. Harry was an avid Boy Scout having earned his Eagle as a boy. Harry served in many positions as a Volunteer Scout from Scoutmaster to the National Committee and earned many awards including the Silver Beaver and Silver Antelope awards from the National BSA for his extensive work. He was instrumental in developing the Bonner Scout Reservation for East Carolina Council in North Carolina. Another interest for Harry was orchids and botany. He was an avid boater and loved the Outer Banks of North Carolina. After retir-

ing from DuPont, he moved to Hilton Head Island, SC for 10 years from 1980 to 1990. From there he moved to Spring Hill, Florida, where he lived until moving to Fort Collins, Colorado in 2006. While in Florida, he was able to pursue his life-long interest in rock hounding and lapidary with more travels and stone cutting and polishing work. Also, while in Florida, he taught digital photography and computer classes to local groups. Other interests included golf, walking, and world travel.

John Merle Black

(BS '42) age 90, died on Wednesday, Jan. 5, 2011, at the Alexian Health and Rehabilitation Center. He was born in Bayfield, Wis. In 1938 he attended and later graduated from the University of Wisconsin and then served in the U.S. Army. Returning from WWII, he resided most of his life in Oregon, WI, where he raised his family while working as a research chemist at the U.S. Forest Products Laboratory in Madison. John was an avid golfer and bowler, member of the Optimist Club, served on the Oregon library board and school board, delivered Meals on Wheels and loved to sing in the church choir at the First Presbyterian Church in Oregon.

Hans Breuer

(BA '47, MS '48, Ihde) 81, of State College, died Friday, Oct. 29 at his home. He was a member of Temple Brit Shalom in State College. A 1941 graduate of Lincoln High School in Milwaukee, MN, he obtained his bachelor of arts in 1947 and his master in 1948 from the University of Wisconsin. He retired in 1986 as a senior research manager for the Carter-Wallace Company, Cranberry, New Jersey. He was a member of the American Institute of Chemists, the American Chemical Society and the Society of Cosmetic Chemists.

Bernard B. Brody

(BS '43, Schuette) age 89, died peacefully in his sleep on September 2, 2011. He had an illustrious career starting at an early age. After obtaining a Chemistry degree at the University of Wisconsin at age 20, he worked on the Manhattan Project, first at the University of Chicago, and then at Monsanto in Dayton, OH. He moved to Rochester in 1949 to attend the University of Rochester Medical School. While doing his residency training in Internal Medicine, he was drafted to serve in the Korean War. After completing his military duty and residency, he established his private practice. Approximately 10 years later, he was asked to head the Clinical Laboratory at The Genesee Hospital and later was appointed as the Senior Vice President for Medical Affairs. In addition to his busy career in medicine, he held board positions with the Gannett Foundation, and later with the Freedom Forum, whose mission is to promote freedom of the press, speech and media around the world. As a part of this work, he became one of the founding directors of the Newseum in Washington, DC.

Donald William Buchta

(BS '48, Meloche) of Neenah, WI and Sanibel Island, FL, died peacefully at Theda Clark Medical Center in Neenah on Wednesday, June 8, 2011, at the age of 87. Donald was born September 15, 1923 in Chicago, IL, the son of Frank and Adela (Voss) Buchta. The family moved to Milwaukee, where Don attended high school. Following his graduation from Wauwatosa High School, he attended Carroll College for two years, after which he entered the U.S. Army Signal Corps. He spent three years in the Corps in this country and at the end of World War II in France and North Africa re-establishing communications. Don entered the University of Wisconsin on the GI Bill and finished a degree in chemistry. There he met the love of his life, Phyllis Jacobson, whom he married on June 26, 1948, after his graduation. Following graduation, Don began his career at Marathon Corporation in Neenah. He later joined his father's company, Textile Kraft Corporation. In 1966 Don and his business partner, Robert Dunsirn, started Mid America Tag and Label Company in Neenah. Don was active in the Tag and Label Manufacturers Institute where he served as the president of the association. Don retired shortly after the sale of the company to Menasha Corporation in 1985. Don was involved in his community, serving on the boards of Neenah West National Bank, Theda Clark Medical Center, as chairman of the United Way in Neenah, as a deacon at First Presbyterian Church, a volunteer through the Optimist Club, and as a member and president of the Neenah School Board. Throughout his life, Don enjoyed sailing, hunting, skiing, playing tennis, musky fishing, golf and working in his gardens.

Bryant Ray Dunshee

(MS '49, PhD '49) 87, died peacefully in Durham, N.C., April 24, 2008, after a long and full life. After attending Carleton College and the University of Michigan, Bryant received his Ph.D. in chemistry from the University of Wisconsin, where he met his wife, a fellow chemist. He came to Minnesota to teach in the University of Minnesota Medical School, but soon began a career of 31 years as a food research chemist at General Mills. Bryant and Marilyn made their home in St. Anthony Park for 38 years, on Hillside Avenue. Bryant was active at St. Anthony Park United Methodist Church, and in the St. Anthony Park Men's Association, where he organized the Fourth of July celebration for three years. He sang tenor in church choirs, with the Fireside Fellows and the Northstar Barbershop Chorus. He camped extensively with his family and was troop leader for Boy Scout Troop #17 for eight years. He loved to backpack, sail and ski, and was active in the Sierra Club and the North Star Ski Touring Club. He had a special love for the Voyageurs National Park area and the family cabin on Lake Kabetogama. He enjoyed his passion, photography, until the end.

Ralph Hamilton Gee

(BS '59, Daniels) Ralph Gee died last night, surrounded and held by his family. These are final sending words for a good man. But who reads obituaries? Those who knew the man and yearn for some closure, sweet melancholy reminiscence, succor, even some reassurance; and those who never met the man. For those of you who knew Ralph, you knew him to be a man of honest generosity, a man of old fashioned honor, a fun man with a potentially devious sense of humor, a man who loved a good argument, and a man who did right by those he loved - always. Although not a tall man, we all looked up to him. He wasn't a saint or superhero. He was just a truly good and humble man. A man who was a real life hero to his loved ones—the kind of man you want to be like

when you are in your best mind. He will be deeply and dearly missed.

Ralph grew up fatherless in Appleton - an only son with four sisters. His father died from acute appendicitis the year before sulfa drugs were discovered. His mother worked for the Appleton newspaper. After high school he joined the Marines and was a company clerk on the island of Okinawa. Ralph married Carol Busch in 1959 and raised three children with her—Kathy, Nancy, and David. He worked his adult life selling chemicals to paper companies—a job he didn't love, but he respected work, so he did it well. At the end of his life, after Carol passed, Ralph met and married Rita, whom he enjoyed his final months with, and who lovingly stayed by his side till the end.

In the end we are our stories. One that particularly represents Ralph, though he wouldn't admit it, comes from the cottage days at Moshawquit Lake. Ralph rented a cottage that came with a small skiff. A terrible storm blew up one afternoon, and someone capsized a sailboat in the middle of the lake. Ralph was the only one who braved the storm to help the intrepid sailors. That was the way he was. He was an example for all of us that real heroism is about fiercely caring for your loved ones every day, making sacrifices, and doing the right thing even when no one is looking.

Harold Olaf Larson

(BS '43, Wilds) age 86 of Northfield, passed away Saturday, November 3, 2007 at the Northfield Hospital. He was born to Melvin and Frieda (Christenson) Larson of Port Wing, WI on May 27, 1921. He graduated from Ondossagon Union High School in Ashland, WI where he played on the basketball team and was class Valedictorian. He went on to study chemistry at the University of Wisconsin in Madison, graduating in 1943 with High Honors. In 1944-45 he trained and served as a Pan American AVG Navigator based in Berkley, CA, and flew 1200 hours on Pacific and Atlantic routes to bring home servicemen. He had seen the world and would work as a research chemist until getting his masters in 1947 from Purdue and his Ph.D. in organic chemistry from Harvard University in 1950. He then taught, worked in industry and continued post-doctoral research for a few years. A fellow grad from Purdue invited him to apply for a position at the University of Hawaii in Honolulu. He was accepted and stayed 38 years, becoming a Professor of Chemistry in 1972 and retiring in 1990. In 1996, he finally moved back to the mainland, to Northfield where his sister still lives. He felt welcome here and was known for his Hawaiian shirts, Norwegian sweaters and his loyalty to the Badgers and Packers. He had moved into the Northfield Retirement Community in 1997 and lived there until his death.

Robert Edward Lyle Jr.

(PhD '49, McElvain) 85, died Sunday, March 20, 2011, after a long illness. He was born Jan. 26, 1926 in Atlanta, Ga., to the Rev. Robert E. Lyle Sr. and Adeline (Cason) Lyle, who preceded him in death. He was married to Dr. Gloria (Gilbert) Lyle from 1947 until her death in 1996. He was educated at Oxford College and Emory University with a bachelor's degree in chemistry (1945) and a master's degree in chemistry (1947). He attended graduate school at the University of Wisconsin, where he received his doctorate in organic chemistry in 1949. He would remain a staunch Badger football fan for his entire life. Robert had a long academic career starting as an assistant professor with Oberlin College in Ohio (1949-1951); assistant professor (1951-1953), associate professor (1953-1957) and full professor of chemistry at the University of New Hampshire, Durham (1957-1976). He served as professor and chairman of the department of chemistry at The University of North Texas, Denton (1977-1979). In 1979, he became vice president of the division of chemistry and chemical engineering at Southwest Research Institute, where he remained until his retirement in 1991. During his retirement, Robert served as vice president of GRL Consultants (1992-2007). He was a visiting professor at the University of Virginia, Charlottesville (1973-74) and the University of Grenoble, France (1976). He also was a special postdoctoral fellow at Harvard University and Oxford University, England (1965-66). He served as an adjunct professor at Bowdoin College, Brunswick, Maine (1975-79), and the University of Texas at San Antonio (1985-present). He served on the editorial board of Index Chemicus and was editor of the Alpha Chi Sigma publication, The Hexagon, for several years. He was a member of Phi Beta Kappa, Alpha Chi Sigma, Sigma Xi, and The Royal Society of Chemistry. He was a 60-plus year member of the American Chemical Society. He worked as a visiting scientist and for the College Chemistry Consultants Service of the ACS Division of Chemical Education and as chairman, chairman-elect, board of directors and as director of operation interface (1971) of the ACS Northeastern Section. He served on the National Academy of Sciences, National Research Council Committee for NSF Postdoctoral Fellowships (1961-64). He was a member of the San Antonio Local Section of the ACS, where he established the Dr. Gloria G. Lyle Memorial Scholarship Fund. He was the recipient of the Massachusetts Institute of Chemists, Section of American Institute of Chemists, Honor Scroll (1971) and the Harry and Carol Mosher Award (1986). Robert had many students of whom he was extremely proud. They ranged from high school teachers to industrial chemists to university professors to a university president and a president of the American Chemical Society. He published more than 100 papers in collaboration with his students, and was the holder of several patents.

Lawrence Delbert McCory

(MS '62, Margrave) 72, of Brownstown, died unexpectedly on Thursday, Jan. 21, at Schneck Medical Center, Seymour. He was born April 13, 1937 in Jackson County to the late Foster and Ruby McCollum McCory. On June 13, 1959, in Brownstown, he married the former Judy Robertson, and she survives. Mr. McCory had owned and operated Logos Enterprises for the past 16 years. A 1955 graduate of Brownstown High School, he earned a BS degree from Franklin College in 1959, graduating summa cum laude. He was a member of Phi Beta Kappa. While at Franklin College he studied in Austria his junior year. He earned an MS degree from the University of Wisconsin in 1961. He had served on the Brownstown school board and Fairview Cemetery board. He was a member of The Crossing at Columbus.

Patricia McFerren

(BS '44) a long-time resident of Palo Alto died Tuesday, January 11, at her home following a brief struggle with cancer. Born in Chicago in June 1923, to William and Marjorie (Welles) McFerren, she grew up in the small farm town of Hoopeston, IL, with her parents, brother and sister. Little did she know back then that she would have the opportunity to travel the world during her lifetime. After graduating from the University of Wisconsin with a degree in Chemistry, her first job was working with "V-mail," in which letters written to soldiers were photographed and the "light-weight film" letters were sent overseas. Next, she worked for 50 years with the Kodak Company, first in Rochester, NY, then in San Francisco, before moving to Palo Alto with the Kodak lab. She became known as "The Kodachrome Expert," and attended the Olympics in Calgary and Seoul to develop Kodachrome film for the press. After retiring, she remained with Kodak as a consultant. One of her greatest passions in life was her horses. Since 1959, she has been a fixture at the Stanford University Red Barn where she rode daily and cared for her various horses-Yancy, Mother, Jackie, Bud, and most recently, Frank. Last year, at the age of 86, following a broken leg and later a broken arm, she finally gave up riding, but continued her daily visits to the barn. She was a Lifetime Bridge Master.

Francis Sherwood Meade

(BPH '35, Schuette) 92, of Rock Island, died Monday, Jan. 10, 2005, at Trinity Medical Center, West Campus, Rock Island. Mr. Meade was born April 20, 1912, in Madison, to Dr. Frank S. and Lucy Wood Meade. He graduated from the University of Wisconsin, Madison in 1935, with a degree in chemistry. Mr. Meade married Cecelia Spear June 17, 1938, in Madison. After moving to Rock Island in 1942, he was employed as a research chemist at the Rock Island Arsenal Laboratory where he worked for more than 30 years. He was instrumental in establishing the technical requirements for a number of military specifications covering fuels and lubricants. He obtained two patents including one covering a solid film lubricant used on the M16 rifle during the Vietnam War. Mr. Meade loved his work and took great pride in it. His work took him to many parts of the country to chair two Department of Defense Working Groups. He was awarded several Department of the Army Certificates of Achievement. Mr. Meade retired from the Arsenal in 1972. For the next eight years, he worked as a research chemist for Sandstrom Products Company, Port Byron, continuing to develop economical lubricants used on large Naval guns. In his spare time, he enjoyed his family, his home, travel and his library.

Dianne Kay Mitchell

Dianne K. Mitchell, age 55, of DeForest, passed away Friday, April 15, 2011, after struggling for many years with several health issues. She was born March 25, 1956, in Beloit, to Kenneth and Delores Mitchell. Dianne worked for the Chemistry Department at the University of Wisconsin-Madison for 30 years. Dianne was the first and only one of her siblings to earn a bachelor's degree (history) at UW-Madison. She loved reading and all things cats. She enjoyed spending time with family and friends, always remembering special days in their lives.

Jack Clifford Norman

(PhD '65, Haskin) 72, passed away on Oct. 29, 2010, with his family by his side. He was born June 16, 1938, in Taunton, Mass., to the late Chet and Marjorie (Owen) Norman. The eldest of three sons, he graduated from North Haverhill Academy in North Haverhill, NH, in 1956, and then attended the University of New Hampshire. He graduated from UNH with a degree in chemistry in 1960, and then received his Ph.D. in chemistry from the University of Wisconsin, Madison, in 1965. Jack was a post-doctoral researcher at the University of Washington, Seattle, and then taught at the University of Kentucky, Lexington, before moving to the University of Wisconsin, Green Bay, in 1968. He retired from UWGB in 2002 as a full professor. Jack greatly enjoyed teaching several generations of students as well as conducting research related to nuclear chemistry, paper chemistry and environmental-related concerns. Outside of his professional pursuits, Jack enjoyed traveling with his family, particularly in western and northern Europe. He also took pleasure in gardening and spending time outdoors. The family requests that donations be made to the Jack Norman Memorial Fund of The UNH Foundation at the University of New Hampshire.

Melvin Martin Olson

(MS '39, PhD '50, McElvain) 95, of Onalaska died Thursday Aug. 11, 2011, at Gundersen Lutheran Medical Center in La Crosse. The oldest of eight children, he was born in Bangor in 1915 to Adolph and Amanda (Selbrede) Olson. He spent part of his childhood growing up on a farm in Gill's Coulee, where he attended country school and later West Salem High School. He went on to earn a Bachelor of Physical Sciences degree at the La Crosse State Teacher's College in 1938. On June 9, 1941, he married Ruth Irene Mulder at the Cargill House in La Crosse. Melvin taught high school chemistry in Cumberland, Wis., from 1939 to 1940 and taught junior college chemistry in Maquoketa, Iowa, from 1941 to 1942. During World War II he served his country as a naval officer aboard a ship in the Pacific Theater. After the war, he earned a Ph.D. in Organic Chemistry at the University of Wisconsin, Madison in 1950. He taught college chemistry in Wausau, Wis., before moving his family to Milwaukee, where he worked for the Pittsburgh Plate Glass Company. In 1954 Melvin and Ruth moved with their three children to Richfield, Minn. Employed by the 3M Company, Dr. Olson rose to the highest research position. He had a distinguished career, holding multiple U.S. patents. After his retirement in 1982, Melvin and Ruth returned to the Coulee Region to live in Onalaska. He was an active member in Christ Covenant Church, PCA where he served as an elder.

Russell Wilbur Peterson

(BS '38, PhD '42, Walton) former Delaware governor known for his environmental efforts, died Monday evening at age 94. His most memorable effort came in the Coastal Zone Act of 1971, for which he was known worldwide. He also was known globally

for his efforts to protect coastlines beyond Delaware. Peterson advised Presidents Nixon, Ford and Carter on environmental policy, and later became president of the National Audubon Society. He suffered a stroke Monday morning and his system gave up. Sen. Tom Carper, like Peterson a former governor of Delaware, remembered his friend fondly late Monday. "Just after his 75th birthday, Gov. Peterson came to see me in the governor's office and said, 'We ought to do something about the riverfront along the Christina River.' I said, 'Will you help me?' He said, 'You bet!' And he did. The rest is history. At an age when most people are ready to push back and take life easy, Russ Peterson just kept picking up speed. He married his wife, June, who proved to be the wind beneath his wings. Her love and enthusiasm enabled him to pack more into the last 15 years of his life than anyone I've ever known. What a giant. God knows I'll miss him. We all will." Peterson was no stranger to controversy. He had a fearless willingness to confront problems during his 26 years as a research chemist and manager with the DuPont Co., those who knew him said. Some of the highlights of his career include:

- Peterson's first official act as governor was to send the National Guard home after 10 months of duty in Wilmington, where they had been deployed by Gov. Charles Terry after rioting that followed the 1968 assassination of the Rev. Martin Luther King Jr.
- Peterson reshaped Delaware's government by eliminating more than 100 commissions and boards, called "fiefdoms" by some observers, and forming an 11-man Cabinet.
- He did away with Delaware's scourge —Red Hannah—the nation's last whipping post.
- He defended Delaware's coastline from Shell Oil Co.'s expansion plans—first ordering a moratorium on coastal development, then working tirelessly for passage of the Coastal Zone Act. The landmark 1971 law outlawed heavy industrial development on the state's coasts, infuriated many in Delaware's business and political communities, and spawned similar efforts around the world.
- He appointed the first black member of the University of Delaware's board of trustees—Arva Jackson, insisted on recruitment of the first black members of the Delaware State Police, and pressed for the state's open housing law.

Peterson's son, Peter, is said to have launched his father's global trajectory as a defender of the environment. When Peter was 9, he showed great interest in birds, observed them carefully on family hikes, and could identify them by their songs and explain the distinctions between several species. Soon, Peterson's late wife, Lillian, was urging him to take their two boys—Glen and Peter—on a bird watching trip to the Everglades. Many birding trips followed, and in his 1999 memoir "Rebel With A Conscience," Peterson describes an increasing zeal for seeing how many species they could identify within a 24-hour period, a quest that led them up and down the Delaware coast, to wetlands, bays, swamps, farmland and all sorts of habitats.

Peterson wrote. "Over the years, we saw fewer ospreys on our outings, then finally no ospreys at all." Defending the environment became a lifelong mission for Peterson. After leaving Delaware's top elected office in 1973, he went on to advise environmental policymakers in Washington. He carries a global reputation as an environmental guardian, and received dozens of awards and honors, among them a gold medal representing the highest award of the World Wildlife Federation.

Peterson was skilled at identifying problems and rallying the community around issues of justice, even unpopular issues like prison reform. Problems in Delaware's prisons caught his eye when he was part of the Social Action Committee at the Unitarian church he attended. He was among those who interviewed inmates, tracked them for two years after they were released, and discovered that most returned to prison. They also discovered that many prisoners were incarcerated because they could not repay their debts and had enormous problems finding traction in the community when they were released. He built a coalition called the Three-S Citizens Campaign—which stood for Salvage People, Save Dollars, Shrink the Crime Rate—and it soon became a statewide network with more than 6,000 members. They were among the hardest workers in his campaign for governor and in subsequent political battles in Legislative Hall. Peterson's leadership skills prompted Henry B. du Pont to recruit him for the executive committee of the Greater Wilmington Development Council. Peterson told the council that the city's biggest problem was poverty in the black community. Soon, he was in charge of the Neighborhood Improvement Program. He recruited James Gilliam from Maryland and Gilliam later founded the Metropolitan Wilmington Urban League. After ousting Terry in 1968, Peterson left his $75,000-a-year DuPont job for the $35,000 governor's post. The Coastal Zone Act was signed in 1971, but his political capital was lost that same year, when the state wound up with a $5.3 million budget deficit. Peterson identified the problem publicly and administered hard medicine that—coupled with the controversy over the Coastal Zone Act—produced enormous resentment. Though the state had a surplus by the end of fiscal 1972, the damage was done. He lost his bid for re-election.

In a 1973 Philadelphia Bulletin article, writer Harry G. Toland described Peterson's reputation this way: "If you're looking for a public servant to do the right thing, to set a proper example, to lay his body on the line, then Russell Wilbur Peterson is your man."

Gregory Michael Polzin

(PhD '00, Burstyn) of Norcross, Georgia, passed away on Wednesday, August 3, 2011 in Atlanta, GA. He was 41 years of age. Gregory Michael Polzin was born on January 11, 1970 in Saginaw, MI to Michael and Linda (May) Polzin. He married Sheila Grifka on July 18, 1998 at St. Mary Cathedral in Saginaw. She survives him. Gregory graduated from Douglas McArthur High School in 1988. In 1993 he graduated with his Bachelor's Degree from Saginaw Valley State University and later Gregory attended the University of Wisconsin-Madison, receiving his PhD in 2000. He was employed as a Research Chemist with The Center for Disease Control and Prevention. Gregory was a member of Mary Our Queen Catholic Church in Norcross, GA and a former member of St. Thomas Aquinas Catholic Church. He enjoyed water sports, fishing, golfing and Badger football.

James Fraser Rankin

(BS '60, Williams) 76, died Wednesday, December 22, 2010 at his home in Ripon, California, following a courageous battle with lung cancer. Born and raised in Seymour, Wisconsin, the son of William and Mildred Rankin, he was a resident of Ripon since 1976. After graduating from high school, Mr. Rankin served in the United States Air Force from 1952 to 1956. After leaving the Air Force, he moved out to California where he met and married Lynne Norman, his lifelong companion. The two moved back to Madison, Wisconsin, where Mr. Rankin completed his Bachelor of Science in Chemistry from the University of Wisconsin. Having had enough of the cold winters, Mr. Rankin moved back out to California, where he would remain for the rest of his life. Mr. Rankin was a man of many interests, who lived a full and wonderful life. A pilot, farmer, avid golfer, chemist, historian, geologist, astronomer, son, husband, father, grandfather, brother and friend to all, he was truly a man of many talents. Always generous, Mr. Rankin was there for any family or friend who needed a helping hand in life. His life was too short for all the things that he accomplished, and we will miss him forever.

Donald Elwood Rosen

(BS '42) 90, of Port Charlotte, FL, passed away peacefully at home with his family by his side on Sunday, September 4, 2011, the day after sharing his 69th wedding anniversary with his wife, Mary Franklin Rosen. Don was born Jan 19, 1921 in Janesville, WI to Peg and Ray Rosen. In 1942, he graduated from University of Wisconsin with a BS degree in Chemistry and served in the US Army during WWII. He worked as a bio-agricultural chemist with E.I. du Pont de Nemours and Co for 35 yrs in Wilmington, DE. He was a member of the Masons since 1964 and earned the certificate of Past Most Wise Master from Wilmington Chapter of Rose Croix, 18 degree, as a presiding officer from 1979 to 1980.

Karen A. Rulland

Age 70, passed away on Sunday, Feb. 27, 2011, at UW Hospital in Madison. She was born on Jan. 10, 1941, in Rhinelander, the daughter of Sigmund and Helene (Angell) Rulland. The family moved to Waupun in 1951. Karen graduated from Waupun High School in 1959. She then moved to Madison where she graduated from Madison Business College. Karen worked for the University of Wisconsin Chemistry Department until she retired in 2000.

John Shovers

(BS '39, Spielman) of Glendale, died on April 17 at the age of 97. Born in Racine, Shovers earned a degree in chemistry from the University of Wisconsin-Madison in 1939. He worked as a research chemist for Pabst Brewing Company and Pfizer Chemical, both in Milwaukee. Following his retirement from Pfizer, Shovers applied his expertise in enzyme research as a SCORE (Service Corps of Retired Executives) volunteer to assist in Brazil's rising cheese industry. He also worked on enzyme development projects in Costa Rica. A member of Congregation Emanu-El B'ne Jeshurun for more than 50 years, Shovers enjoyed playing golf and cards, walking, painting and cartooning.

Martin Frank Sloan

(PhD '60, Goering) 74 of Garnet Valley, PA, passed away on September 2, 2009. He was born in St. Louis, MO on October 9, 1934. Martin attended Washington University in St. Louis receiving a Bachelor of Science degree with honors in 1956. He also graduated from Wisconsin University with a PhD in Organic Chemistry. He was employed at Hercules, Inc., in Wilmington, DE for 38 years as a Research Chemist, then as a Patent Agent, and retired in 1998. He was a member and on the board of Congregation Beth Emeth, American Chemical Society, Hercules Men's Club and active in the Concord Township Democratic Party.

Jay Eugene Taylor

(MS '43, Mathews) 90, passed away peacefully Thursday evening, January 15, 2009, at the Regency Hospital of Ravenna surrounded by his loving family. Jay received his undergraduate degree from Oregon State University, his Masters from the University of Wisconsin, and his doctorate from Purdue University. He began his career as an industrial chemist at Rayonier, Inc. in Tacoma, Washington. While completing his graduate work, he had a temporary position at the University of Wisconsin where he met Carol, his wife. Following that, he held appointments as an assistant professor at Miami University in Oxford, a post-doctorate associate at the Ohio State University, and an assistant professorship at the University of Nebraska in Lincoln. He came to Kent State University in 1960 as an associate professor and was later promoted to full professor. After retirement in 1984, Jay continued his research at Kent State University until June, 2008. Dr. Taylor was a member of the American Chemical Society, Sigma Xi, Phi Lambda Upsilon, Pi Mu Epsilon, and Tau Kappa Epsilon. He is the inventor of the precision stirred-flow reactor and the wall-less gas-phase reactor, which was used to study oxidation reactions. He authored two laboratory manuals and numerous publications. Jay has been listed in the Who's Who of America. Aside from his professional involvement, Among his church commitments, Jay was a teacher of an adult Sunday school class and, with Carol, was an adult leader of the senior high Methodist Youth Fellowship. Jay was a member of the Kent Historical Society. He was born February 2, 1918 in Stayton, Oregon to Charles E. and Elisa J. Taylor. Contributions can be made to the United Methodist Church of Kent or to the Dr. Jay E. and Carol I. Taylor Graduate Scholarship in Chemistry Fund of the Kent State University Foundation Endowed Scholarship.

Richard William Thoma

(BS '47) 88, died Aug. 5, 2010. He was born in Milwaukee and moved to St. Lucie Village and Fort Pierce in 1984. He was a former resident of Oak Park, Ill., and Bridgewater, N.J. He was a graduate of University of Chicago and earned a doctorate in bacteriology from the University of Wisconsin. He was a veteran of World War II, serving with the Army in the Philippines and Japan from 1951 to 1982. He was associated with Bristol Myers Squibb (formerly ER Squibb & Sons) North Brunswick and Lawrenceville, N.J., where he was conducting research and development in fermentation and antibiotics. He published extensively in the field of biochemical research and held many patents. In 1982, he retired from Squibb as a director

of microbiology process development. From 1982 until 1984, he was associated with New Scientific in Edison, N.J. He was a St. Lucie Village alderman, member of the St. Lucie County International Airport Study Group and member of St. Andrew's Episcopal Church, and he served as safety officer for Harbor Branch Oceanographic Institute.

Aldo Egino Trameri

(BPH '50, Ihde) died on Dec. 25, 2010, at age 88. A true Madison native, Aldo grew up proud of his heritage as a resident of the Greenbush neighborhood. He graduated from Madison West High School and went on to heroically serve his country in World War II with the US Army 70th Infantry Division "Trailblazers" from 1942 to 1946 as a medic deployed overseas serving in the Battle of the Bulge in Germany. He was a member of the Disabled American Veterans. He attended Brigham Young University while in the service and completed a degree from UW-Madison in chemistry. He formulated paints as a long time employee of Mautz Paint before becoming employed as a State Patrol chemist, eventually branching out as an expert witness in alcohol analysis cases. He was a brilliant man with a hearty laugh, and love for family plus anything outdoors and anything Italian.

Frank Henry Verhoek

(MS '30, PhD '33, Daniels) age 101, passed away peacefully in Granville, Ohio, Tuesday evening, September 7, 2010. He graduated from Harvard University, S.B. cum laude, Phi Beta Kappa in 1929. He earned an MS and the PhD in Chemistry from the University of Wisconsin and the D.Phil (1935) at Trinity College, Oxford University, where he was a Rhodes Scholar (1933-1936). There also he was a member of the Oxford Bach Choir. After a year of postdoctoral study at the University of Copenhagen, he began a long career as professor in the Department of Chemistry at The Ohio State University, becoming Emeritus Professor of Chemistry in 1977.

During that period he also continued postdoctoral study at Stanford University, and held sabbatical and consulting positions at the General Electric Company, Argonne National Laboratory, Olin-Mathieson Chemical Corporation, Liberty Mirror Division of Libbey-Owens-Ford Glass Company, U.S. Naval Weapons Center, China Lake, California, University of Florida, and was a lecturer with the Chemical Bond Approach Project for the National Science Foundation from 1959-1968. Among other publications and presentations, he is co-author of several textbooks and laboratory manuals, in multiple editions, on general chemistry. He enjoyed photography, travel and horticulture.

Robert H. Wandel

(BS '51, Van Tamelen) age 81, of Cottage Grove, passed away on Sunday, Jan. 2, 2011. He was born on April 4, 1929, in Milwaukee, the son of Herman and Elizabeth (Chicantek) Wandel. Robert graduated in 1947 from Washington High School, in Milwaukee. He then received a B.S. degree in chemistry at UW-Madison. Robert was united in marriage to Rita Sikhart on Aug. 11, 1956. He was employed as a research scientist for Oscar Mayer for 38 years, retiring in 1988. Robert was a member of Immaculate Heart of Mary Catholic Church. He was an avid bowler and a member of the Oscar Mayer Tuesday Night Three-Man Bowling League for more than 50 years. Robert also golfed on the Oscar Mayer Golf League for more than 35 years.

Alvin Carl Wiese

(BS '35) age 97, was born Aug. 13, 1913, in Milwaukee to Alvin and Clara Wiese. He was married to Hazel Kuntz Aug. 19, 1944, in Monmouth, Ill. Alvin received a bachelor of science degree in 1935, a master of science degree in 1937 and a doctorate in 1940 from the University of Wisconsin. His major was biochemistry and nutrition. He was an instructor in chemistry at Oklahoma State University from 1940 to 1942. In February 1942, he accepted the position of research associate in the Department of Chemistry at the University of Illinois.He was research assistant in the Department of Animal Nutrition at the University of Illinois from 1945 to 1946. He became professor and head of the Department of Agricultural Chemistry at the University of Idaho, where he worked from 1946 to 1963. He was head of the Department of Biochemistry and Soils from 1963 to 1972, and professor of biochemistry in the Department of Bacteriology-Biochemistry from 1972 to 1978, all at the University of Idaho. He was a partner in Wiese-Jackson Associates from 1958 to 1970. He retired in 1978 but continued consulting until 1986. He was author or co-author of some 63 articles pertaining to his research. Alvin was a fellow of the American Association for the Advancement of Science, American Institute of Chemists, member American Chemical Society, Washington-Idaho Border Section since 1948, American Institute of Nutrition, Poultry Science Association, Society of Experimental Biology and Medicine, Sigma Xi, Phi Lambda Upsilon, Phi Sigma and Gamma Alpha graduate fraternity. Alvin was a member of Moscow First Presbyterian Church, where he was an elder and served on various committees including many years on the finance committee. He was a member of Lions Club International for 60-plus years, where he served as both president and secretary. He was also a member of the Moscow Elks Club for years. He was a charter member of Moscow Bowlerama, where he bowled for 31 years, and also enjoyed golfing. Al enjoyed his graduate students and continued to hear from many of them through the years. Al and Hazel traveled and spent many years after his retirement seeing the world, visiting friends and becoming acquainted with people and their cultures.

Robert Edward Wilfong

(BS '41, MS '42, PhD '44, Daniels) 91, passed away Thursday, May 5, 2011 at the Mayflower Health Center. He was born in Rinard, Illinois and received his PhD. in physical chemistry from the University of Wisconsin. He was a successful scientist and business leader at DuPont for almost forty years and managed the start up operation of the world's first polyester manufacturing plant. While at DuPont he also helped create and commercialize a variety of innovative man-made fibers and materials including Kevlar. Dr. Wilfong was conscripted by the government during WWII and worked on various classified projects including bazooka propellants and deep water sonar. He received a personal letter of commendation from President Roosevelt for his contributions to the war effort. He was a devout Christian and lifelong member of the Church of the Nazarene serving as its Chairman for several years.

Milton Don Glick

Milton Don Glick (PhD '65, Dahl) 73, loving husband, father and grandfather, 15th president of the University of Nevada, Reno and nationally respected figure in higher education, whose academic career spanned more than 50 years, passed away Saturday, April 16, 2011, in Reno. Dr. Glick was born July 30, 1937, in Memphis, Tenn., to Lewis Glick and Sylvia Kleinman Glick. He married Peggy Porter on June 22, 1965, after a long courtship at the University of Wisconsin in Madison, Wis., where the two had met while Dr. Glick was pursuing his doctorate degree in chemistry and Peggy was pursuing her degree in mathematics. The couple had two children. Of all the accomplishments in his life, Dr. Glick said he was most proud of his family. Dr. Glick grew up in Rock Island, IL. He graduated with a bachelor's degree in chemistry from Augustana College in Rock Island in 1959. He earned his doctorate in chemistry from the University of Wisconsin in Madison, WI, in 1965. After two years of post-doctoral studies at Cornell University in Ithaca, NY, Dr. Glick joined the chemistry faculty at Wayne State University in Detroit. He remained at Wayne State for 17 years. During this time, he became a leader of the Faculty Senate, and during his final five years there served as chair of the Department of Chemistry. In the initial phase of his academic career, Dr. Glick was a noted researcher in the field of X-ray crystallography. His work was funded for 15 consecutive years by the National Science Foundation, and he published 99 research articles during this time. Dr. Glick's first senior administrative position was Dean of the College of Arts and Science at the University of Missouri in Columbia from 1983-88. As Dean, Dr. Glick was responsible for many advances, including a writing-across-the-curriculum program that became a model for other universities. He then spent three years, 1988-91, as Provost at Iowa State University in Ames, Iowa, serving as interim president of Iowa State for the final eight months. Dr. Glick served 15 years as executive vice president and provost at Arizona State University in Tempe, Ariz. During his tenure at Arizona State first as senior vice president and, later, as executive vice president and provost Arizona State experienced unprecedented success, enjoying a 20 percent improvement in its freshman retention rate, a 15 percent improvement in its graduation rate and a doubling of the number of minorities enrolled. The Tempe campus became the largest in the United States in terms of enrollment, and the number of National Merit Scholars rose from about a dozen to more than 500. Funding for sponsored research tripled, and ASU recruited 10 faculty with prestigious national academy memberships and one Nobel Laureate. ASU President Michael Crow said Milt Glick was one of America's great educators. He fought his entire career for all to have access to a great university and lived his life for that purpose. He helped ASU to achieve that goal with 15 years of service and leadership, and we are of greater service because of his leadership, intellect and drive. Dr. Glick was appointed president of the University of Nevada, Reno in May 2006 and took office in August 2006. During his five-year tenure as president of the state of Nevada's oldest institution of higher learning, Dr. Glick led the campus to historic institutional and reputational milestones in areas ranging from student success to campus expansion to research capacity. Under Dr. Glick's direction, the University of Nevada, Reno increased its number of National Merit Scholars from a handful to 38 during the 2010-2011 academic year, a record for the state of Nevada. For these efforts, the university was named a prestigious National Merit Scholarship sponsor school. In 2010-2011, the university set all-time records for enrollment and graduation. In addition, freshman retention rates reached 80 percent, also an institutional record. In fall 2010, for the first time in the university's history, the institution was named a Tier I school in U.S. News & World Report's annual rankings. Dr. Glick stressed the value of creating a dynamic campus setting where both the student body and the community are engaged and excited, and with the opening of key buildings such as the Joe Crowley Student Union, Mathewson-IGT Knowledge Center, the Center for Molecular Medicine and the Davidson Mathematics and Science Building, he was able to markedly strengthen the connection between the campus and the community it serves. Nevada System of Higher Education Chancellor Dan Klaich said, Milt was an outstanding leader and has left an indelible mark on the University of Nevada, Reno and the state. Milt had a wonderful sense of humor and an engaging, enthusiastic style. He poured his energy and his love of life and education into the university and our state, and that commitment should long be a source of pride and gratitude for all Nevadans. U.S. Sen. Harry Reid said, Dr. Glick was a breath of fresh air on campus with his trademark hat and great sense of humor. He was loved by faculty and students alike. Milt fostered a culture of excellence at the university by increasing graduation rates, growing the schools capacity as a research university and building a more diverse student body by opening the doors to a college education for more Nevada students. Dr. Glick was a renowned scientist, teacher and leader, and Nevada will miss him dearly. In addition to his body of work as an administrator, researcher and teacher, Dr. Glick also was a nationally prominent figure in the use of technology in public higher education. He was a technology consultant and senior fellow of the EDUCAUSE Center for Applied Research and presented often on the roles and implications of information technology in higher education. Dr. Glick's family requests donations be made to the Dr. Milton D. Glick Memorial, University of Nevada, Reno Foundation, Mail Stop 0162, Reno, Nev., 89557.

Chemistry Department Support

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