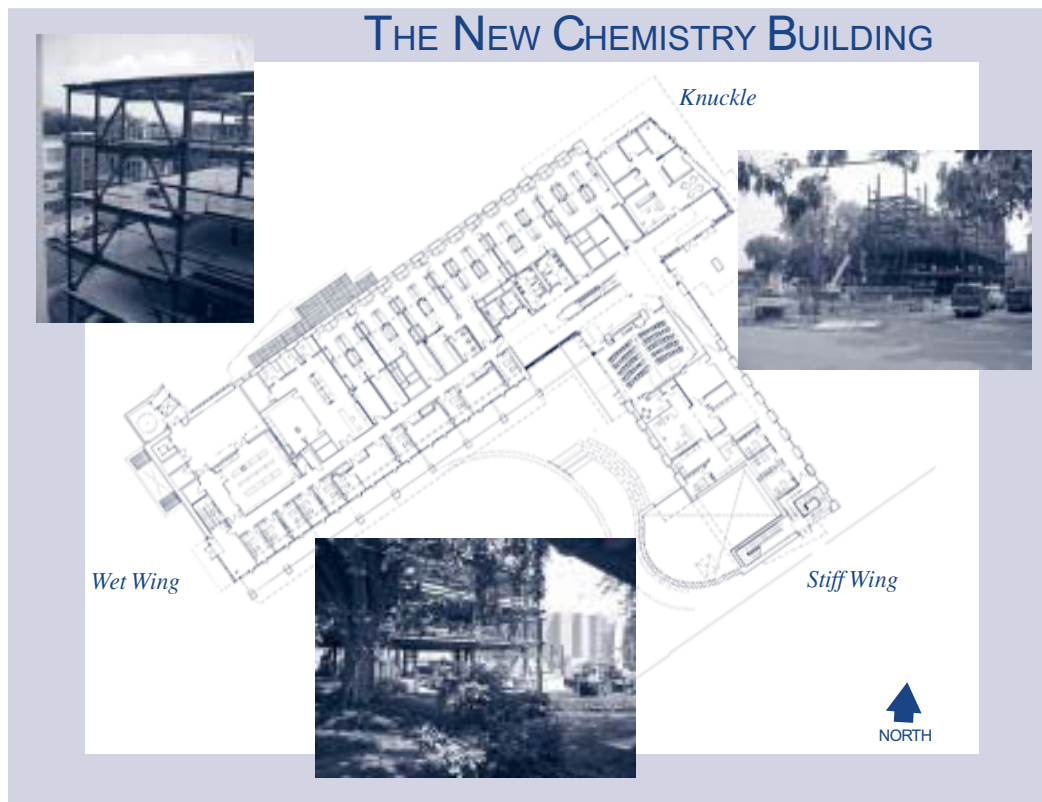




IN THIS ISSUE

- 2 FROM THE DEPARTMENT HEAD
- 3 NOTABLE NEWS
- 4 FEATURED RESEARCH
- 6 NEW FACULTY
- 9 OUTREACH
- 10 AWARDS
- 12 CURRENT NEWS
- 15 COMMENCEMENT
- 16 ALUMNI NOTES
- 18 DOCTORAL DISSERTATIONS AND MASTER'S THESES
- 19 DONORS
- 20 UNDERGRADUATE PROGRAM
- 22 IN MEMORIAM
- 23 FROM THE EXECUTIVE OFFICER



THE NEW CHEMISTRY Building is becoming a reality. Each day truckloads of steel beams and concrete arrive at the job site and construction is on schedule for a completion date of December 2003. The L-shaped building is going up in three sections with the wet wing first, followed by the knuckle and then the stiff wing. These names were used informally in the numerous planning meetings and remain in use during the construction phase.

Recently Barbara Garrison, Chair of the Building Planning Committee, was able to tour the construction site with one of the Project Managers and she filed the following report.

Wet wing (will house synthetic and biological chemists): The steel is complete to the penthouse. While many people would like offices in the penthouse it is reserved for mechanical systems. The concrete decking between floors has been poured to the third floor. Ventilation system ductwork is going into the basement along with the two-foot diameter pipes for chiller water and aqua colored acid resistant pipes. Mechanical systems have been started on the first floor. The views from the south side offices look out at the cottages and trees in the courtyard. The views from the gathering spaces on the west end are outstanding. One can look up and down Boucke Mall.

Knuckle area (for offices): The steel framework has begun and should be completed by late summer. The concrete decking is poured to the second floor.

Stiff wing (for measurement chemists): The last sections of the basement wall are finished. The outline of the space for the high-resolution magnets in the NMR suite is now visible.

Visit the Chemistry web site (www.chem.psu.edu) for the latest pictures and updates on the building.

FROM THE DEPARTMENT HEAD



DR. ANDREW G. EWING
HEAD
DEPARTMENT OF CHEMISTRY

GREETINGS FROM THE Penn State Department of Chemistry. As always, we would like to begin by saying we hope you are enjoying life with good health and having fun in and out of chemistry. The last year has again been marked by growth and advancement in the Department that makes us all very proud. I summarize some of this year's events below.

I have now been Department Head for three years. Wow! I only signed on for three, but the Dean, the Department and I have agreed to extend this by two years to five. So you will be hearing from me again! Although being Department Head provides many distractions and additional work, it is not all bad. I have had extraordinary support from the Department office staff including Jim Broyles, Theresa Peters and Amy Bucha. In addition, this is clearly a great department and great place to be. We have an outstanding faculty and staff to serve and work with some of the best students anywhere. I thank all these people for permitting me the honor and privilege to act as Department Head.

The last year saw the development of another department strategic plan for the future and this process made it clear we are moving ahead with a very positive slope in excellence. This Department is one of the premier departments in the country, consistently ranked in the top ten in external funding nationally and currently second in the Big 10. In traditional rankings of faculty excellence, the Department frequently appears in the top 20 nationwide and our faculty members have received many prestigious awards and honors. While maintaining strong sub-disciplines (e.g. synthetic chemistry), the Department has built strengths in general areas of chemistry and science that will have high impact on society in the twenty-first century including materials science, health science, energy and to a smaller degree in environmental chemistry. We have true strengths to build on in nanoscience and materials chemistry, polymer chemistry, analytical chemistry and cluster chemistry. In addition, we have the potential to be a top ten department in the

areas of enzymology, protein and antibody engineering, neurochemistry and molecular dynamics theory of surface and biochemical reactions. Although the true strength of any department is usually judged by its research faculty and graduate research, the Chemistry Department at Penn State also provides a first-rate undergraduate education. Here, the Department has initiatives and strengths in course integration and curriculum expansion, a one-of-a-kind instrument room and resource center, a cadre of dedicated laboratory directors and has begun a new Professional Masters Degree in Mass Spectrometry.

As part of developing the strategic plan for the Department, we made a short list of the research done by students and faculty in the department with direct and significant impact on society. This partial list of recent and current research is indeed impressive and exceeded even my expectations, hence I decided to share it in this newsletter. One example of past work that many of you know about already is the work by Russell Marker in the discovery of natural products in Mexican yams to synthesize hormones (invention of the birth control pill). Marker's work led to the naming of Penn State as an International Historic Chemistry Landmark in 2000 and is the basis of an exhibition at the National Museum of American History, Smithsonian Institution in Washington, D. C. This highlights great past achievements in this Department; current faculty continue to make discoveries and developments at an incredibly rapid pace. Recent accomplishments and ongoing projects with high direct impact on society include (to list a few by area).

Health and Life Sciences

- New ligands to selectively synthesize chiral drugs
- Nanobarcodes useful in the development of new broad-based schemes for diagnosis of disease by molecular screening
- A potential antibiotic for anthrax
- RNA-based antiviral and anticancer agents
- Theoretical models to understand the

COVER: Main floor plan and three views of the construction in progress (clockwise from upper right); view of the knuckle, view of the courtyard, view of the Wet wing.

CONTINUED ON PAGE 21

DEVELOPMENT

DURING THE PAST year, gifts from both individuals and corporations made it possible to provide money for equipment matching funds, scholarships for students, travel funds for new faculty to attend national meetings and seed funds for new research projects. The Department also received some special gifts this year that were directed to the new building and to create new endowments that support scholarships and teaching.

An anonymous donor has created the Priestley Prize for Undergraduate Teaching in Chemistry. Each year, a \$5,000 check will be presented to a faculty member who has been judged by his/her peers to be an excellent teacher. The first award will be announced at next year's commencement reception.

Eugene Apple and his wife Jane have made a commitment to support the new chemistry building. Gene and Jane have also established the Eugene and Jane Apple Science Graduate Fellowship. Gene was honored as an Alumni Fellow in 1987.



Cathy Lindermuth, left, recipient of the first L. Peter Gold scholarship with Diane Gold Toulson and faculty member Bob Minard.

The family and friends of the late Peter Gold have endowed a scholarship in Peter's memory. Peter was a beloved member of the Chemistry faculty (see In Memoriam) and this award recognizes the achievements of an undergraduate chemistry major. Preference will be given to a student who has transferred to University Park from a Penn State Commonwealth campus or college. The first winner of the L. Peter Gold award, Cathy Lindermuth, received her award at this year's commencement reception.

Reed Izatt ('54 Ph.D. Chem) has established the Reed Izatt Graduate Fellowship in Chemistry in memory of Dr. W. Conrad Fernelius, Department Head from 1949 to 1960. Chemistry graduate students who exhibit academic excellence will be eligible for the Izatt Fellowship.

Louis A. Martarano ('76 B.S. Chem) has made a five year pledge in support of the new chemistry building. Lou, chairman of the Eberly College of Science Campaign Committee, has also established a career development professorship in the Eberly College and an endowment to support cooperative education assignments abroad for undergraduate science students.

Thomas P. North ('47 B.A. Journ) has established the Norma Robinson North Chemistry Scholarship in memory of his wife, Norma Robinson North ('49 M.S. Chem). The North Scholarship will support chemistry students who have achieved superior academic records or who manifest promise of outstanding academic success; first preference will be given to female chemistry students. ■

THE BENKOVIC GIFT



Stephen and Patricia Benkovic

STEPHEN BENKOVIC, Evan Pugh Professor of Chemistry, and his wife Patricia have given more than \$700,000 to the Eberly College of Science and the Department of Chemical Engineering in support of protein engineering research.

Through their gift, the Benkovics want to foster a collaborative research effort between relevant faculty in the Eberly College of Science and the Department of Chemical Engineering. Protein engineering uses the tools of molecular biology and chemical engineering to synthesize and isolate new proteins for many uses, including therapeutics, biosensing, catalysis and as structural elements.

Steve, who is also a holder of the Eberly Family Chair in Chemistry, joined the Penn State faculty in 1965. Steve is

widely recognized for his work on DNA replication via polymerases, protein dynamics and catalysis as well as for the development of new antibiotics by rational mechanistic means.

Pat and Steve Benkovic are partners in all phases of life, professional and non-professional. When the Benkovics are not working, they are familiar figures swimming or biking in and around State College. ■

FEATURED RESEARCH

Reprinted with permission from *Chem. Eng. News*, June 25, 2001, 79(26), p 13. Copyright 2001 American Chemical Society

THE OL' SWITCHEROO COMES IN A NEW SIZE

BY MITCH JACOBY



PAUL WEISS
PROFESSOR OF CHEMISTRY

BUILDING COMPUTERS or other high-tech devices out of molecules may sound like creative science fiction, but based on new findings at Pennsylvania State University and Rice University, such futuristic inventions are moving toward reality.

Researchers have demonstrated that individual molecules can function as the active elements in electronic switches and that the molecules can remain switched on or switched off for hours at a time [*Science*, 292, 2303 (2001)]. In addition, the Penn State-Rice team has discovered key factors that govern the switching rate and has made progress in understanding the switching mechanism.

Switches are among the most basic components of memory and logic devices, says Penn State chemistry professor Paul S. Weiss, a coleader of the research group. Accordingly, it is essential to understand what causes switching in single molecules if molecule-based technologies are to play a role in reducing the size of today's computer circuits.

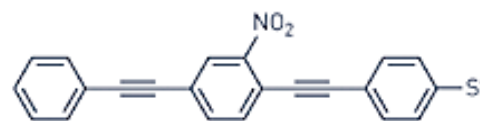
To probe the switching process, the scientists examined the relationship between order in the environment surrounding the molecules and the switching rate.

"Essentially, we tightened the noose around individual molecules and showed that once their motion was reduced, the switching rate went way down," Weiss explains. Specifically, the researchers used scanning tunneling microscopy (STM) to study phenylene ethynylene oligomers embedded in self-assembled monolayers of dodecanethiolate.

In well-ordered monolayers, the conjugated molecules switch slowly between a strongly conducting "on" state and a nonconducting "off" state. But when isolated in a less ordered matrix, the molecules are seen to switch rapidly. Due to the physics of STM

imaging, molecules that are switched on appear as bright protrusions. In the off state, they appear darker and approximately 3 Å shorter. The researchers conclude that switching results from conformational changes in the oligomers. These motions are hindered in densely packed and well-ordered matrices.

The group reports that one of the molecules investigated, a nitro-derivatized phenylene ethynylene (shown), can be switched from on to off states by applying an electric field to the molecule. But so far the reverse operation has been difficult to control.



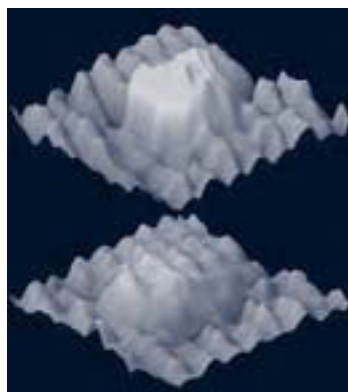
Phenylene ethynylene oligomer

The study was conducted by Weiss and several Penn State colleagues including chemistry and materials science and engineering professor David L. Allara, graduate students Zachary J. Donhauser and Brent A. Mantooth, postdoctoral associate Kevin F. Kelly, and others. Also part of the team are chemistry professor James M. Tour and others at Rice University.

Tomihiko Hashizume, a senior research scientist at Hitachi's Advanced Research Laboratory in Japan, notes that a number of steps need to be taken for the field of molecular electronics to produce usable, large-scale integrated circuits.

Included on the list is measuring properties of individual molecules and studying switching characteristics of individual molecular-scale devices. A third requirement is being able to control microscopic circuits by applying current or voltage.

Hashizume points out that some of the key steps have already been reported in earlier



ON/OFF Isolated in an alkanethiolate matrix, a single phenylene ethynylene oligomer appears tall and bright when switched into a highly conducting "on" state and dull and short when switched "off."

CONTINUED ON PAGE 20

BIOMATERIALS IMAGING

THE WINOGRAD GROUP

FOR THE LAST FEW years, Nick Winograd has been obsessed with an experiment in materials imaging. In collaboration with his students and colleagues, he has developed an instrument capable of focusing energetic ion beams to a diameter of less than 100 nanometers. When focused on the surfaces of carbon-based materials, the ion beams remove non-volatile molecules from the matrix and these secondary ions can then be captured in a time-of-flight mass analyzer for chemical analysis.



SUN AND BERRY

Copper grid over indium foil and a 100 micron field of view.

Nick draws an analogy between his research and a billiards game: “Suppose a player racks the balls on the table and shoots the cue ball into the rack. The balls bounce all over the place, slow down and stop. The player leaves the room and a second player enters. He tries to figure out how the balls were arranged before the first person broke them.”

The information that is obtained using these techniques can help solve several science problems. To take advantage of these solutions, Winograd has formed collaborations with several other faculty members. With Andy Ewing and Stephen Benkovic, Winograd is working to determine where single cells localize drugs like cocaine upon ingestion. This research involves coupling a mass spectrometer to a cryogenic system

to allow cells to be studied using a freeze-fracture technique with the goal of mapping the chemical composition of cells and identifying binding sites of pharmaceutical agents. These experiments aid in the understanding of nerve cells which is important to understanding nervous system disorders such as schizophrenia and Parkinson’s disease as well as allergic reactions and cancer.

The interaction of metal atoms with surface organic functional groups is being examined by the groups of David Allara and Nick Winograd. Understanding the reaction of metals at organic surfaces is important in the development of composite devices that incorporate organic interlayers. Organic monolayers offer exceptional control over structure, functionality and optoelectric properties of device components.

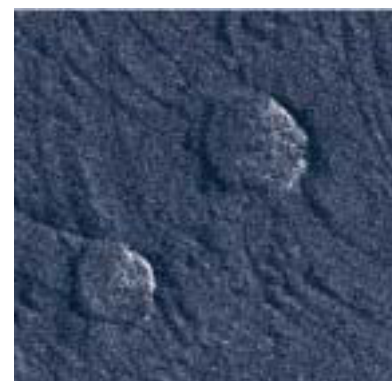
The Winograd group also collaborates with Barbara Garrison’s group to compare molecular dynamics computer simulations produced by Garrison’s group with velocity and trajectory measurements obtained by Winograd’s group through multiphoton excitation. The synergism between experiment and theory will be used to create a set of diagnostic signatures for pinpointing the importance of specific mechanisms that might be associated with a specific class of molecules.

The results of the Winograd group’s experiments also have further application in combinatorial chemistry, astrophysics, biology, fusion reactor design and pharmaceutical research.

Of his research, Nick says, “I feel the most satisfaction from providing an atomic and molecular view of what happens when energetic particles interact with solids...It’s satisfying that the fundamental work has led to applied ideas.” ■



NICHOLAS WINOGRAD
EVAN PUGH
PROFESSOR OF CHEMISTRY



Bioimaging of single cells.

For more information, visit Nick’s web site at <http://nxw.mri.psu.edu/nxw>

CHRISTINE DOLAN KEATING

ASSISTANT PROFESSOR OF CHEMISTRY

B.S., SAINT FRANCIS COLLEGE OF LORETTO, PA 1991

PH.D., PENN STATE UNIVERSITY, 1997



FUNCTIONAL ARCHITECTURES ON THE NANO- TO MESOSCALE

CONTROLLING THE COMPOSITION of matter at the nanoscale and mesoscale can lead to materials with entirely new and tailorable optical, electronic, and structural properties. Chris Keating's research focuses on the construction of functional materials from the bottom up by controlling their nano- and mesoscale features. Such materials can find applications in medicine, biotechnology, sensors, nanoscale electronics and in a variety of other fields. Three projects represent the Keating lab's current interests: synthesis of artificial cells, barcoding metal particles and DNA-directed assembly of metal nanowires.

Chris is designing an entirely new class of synthetic cells to mimic not only the plasma membrane but also the cytoplasm and internal structure found in biological cells. This work is motivated by research implicating the cytoplasm itself as a key element in spatial localization and control of functionality within cells. The cytoplasm is 30% by weight proteins and nucleic acids; volume exclusion leads to dramatic changes in the thermodynamic activities of dissolved proteins. It is anticipated that the volume exclusion effects will play an important role in the spatial ar-

range of macromolecules, interior vesicles and the polymerizable proteins of the cytoskeleton.

A second project involves developing tiny barcodes for use in bioanalytical chemistry. The barcode pattern is built into metal rods during their synthesis via template-directed electrochemical deposition. Because the striping pattern can be readily determined via optical reflectance microscopy, striped metal rods can be used as uniquely identifiable substrates for bioanalysis. In principle, the number of distinguishable barcode rods that can be prepared is staggering, making these particles extremely interesting for multiplexed bioanalytical applications. Key areas of fundamental investigation involve characterization of the metal-metal interfaces, development of surface attachment chemistries and investigations of the optical properties of these particles.

A third project of the Keating group is to use the high selectivity of biomolecular recognition to direct assembly of striped nanorods into predetermined architectures. DNA hybridization is used to assemble segmented metallic rods onto surfaces and in solution. The advantages of DNA as glue include its exquisite selectivity, reversibility and the essentially limitless number of different sequence possibilities. Segmented metal nanorods are an ideal building block in that they are simple to prepare, monodisperse and can be synthesized in a wide variety of sizes, aspect ratios and compositions. In addition, these particles are amenable to thiol modification and have tunable electronic and optical properties. One potential application of such structures is as nanowiring in nanoscale electronic devices. ■

Optical microscope image of 300 nm x 6 micron barcoded particles (400 nm illumination). Bright segments correspond to Ag, and dark segments to Au.



DAN SYKES

DIRECTOR, ANALYTICAL AND PHYSICAL INSTRUCTIONAL LABORATORIES

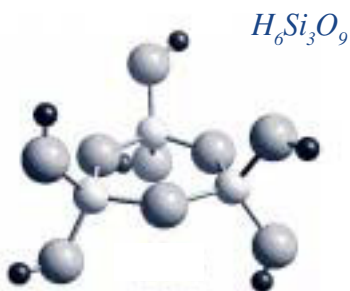
B.S., UNIVERSITY OF OREGON, 1985

PH.D., UNIVERSITY OF ALBERTA, 1990

GLASS SCIENCE, ENVIRONMENTAL CHEMISTRY

AS DIRECTOR OF the Instructional Labs, Dan Sykes is active in the development of inquiry-based research projects for the analytical and physical chemistry laboratory courses. These courses are adapted from the literature and thematically coupled to the core laboratory exercises.

In cooperation with several research groups, he has developed a suite of experiments to introduce a biophysical module in the physical chemistry laboratory. Experiments include inversion of DNA and/or sucrose, melting and the glass transition in the systems DNA/sucrose-water, temperature-gradient gel electrophoresis of DNA and proteins, NMR relaxation (T_1 and T_2) in DNA and water-protein systems, DNA/elastomer stretching, and the characterization of secondary structures in proteins using FTIR and NMR. All of these experiments involve measuring or understanding the thermodynamic and kinetic properties of systems of biological relevance.



A symmetric oxygen-breathing mode in this ring structure gives rise to the 606 cm^{-1} peak in the Raman spectrum of silica glass.

Other initiatives include the introduction of a phase diagram module, in which students measure cooling curves for several compositions along the naphthalene-p-dichlorobenzene binary and construct the binary phase

diagram; measure the heats of fusion, combustion and vaporization for naphthalene and predict the heat of sublimation; and construct the unary phase diagram. Dan is currently working on the introduction of a Materials module.



The structure of the aluminum hexa aquo cation.

Along with chemical education, Dan's research interests lie in silicates. His research efforts combine theoretical and spectroscopic methods to investigate the structure, properties and volatile solubility mechanisms in silicates and silicate glasses and characterize the dynamics of exchange mechanisms between aqueous/organic-rich fluids and mineral surfaces. His main focus is a class of chemicals that plays a central and fundamental role in a variety of topical scientific issues, including fate and transport of inorganic/organic species in soil systems, the production of novel zeolite catalysts, dynamical and petrological processes within the earth's interior and the development of innovative methods for nuclear waste immobilization.

The fundamental goal of his investigations is to elucidate the correlation between the important macroscopic properties of these materials with microscopic interactions at the molecular and atomic levels. ■



MARY BETH WILLIAMS

ASSISTANT PROFESSOR OF CHEMISTRY

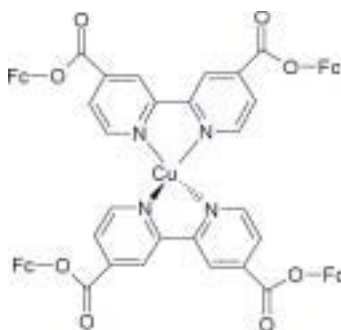
B.A., S. JOHN FISHER COLLEGE, 1994

PH.D., UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, 1999



DIRECTING AND MEASURING ELECTRON AND MASS TRANSPORT IN NANOMATERIALS

CONTROLLING THE RATES and directions at which electrons and mass are transported is important to applications ranging from molecular electronics and solid-state batteries to drug delivery. The Williams group is broadly interested in the design and synthesis of materials in which these processes may be manipulated and controlled and the simultaneous development of analytical measurement techniques to monitor the efficacy of synthetic design.



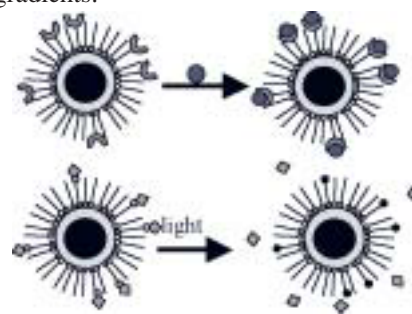
Cu bis(bipyridine) complex with four pendant ferrocene sites.

Mary Beth has undertaken two separate projects under this general heading: transport in solid-state redox materials and the selective (mass) transport and patterning of functionalized inorganic nanoparticles.

Measuring electron transport in solvent-free materials is experimentally challenging and, as a result, little is known about the fundamental aspects of how charge moves in these systems. Researchers prepare model electroactive complexes with well-defined electron transfer distances and pathways by encapsulating individual molecules with polymerized shells or by tethering together redox moieties with secondary binding sites.

The Williams group primarily relies on modified electrochemical and time-resolved spectroscopic methods to interrogate dynamical solid-state properties. They have recently found that magnetic fields may be employed to attenuate transport kinetics, with potential applications in magnetic field based redox switching of solid-state devices.

The second focus is the preparation of functionalized metal and semiconductor nanoparticles whose placement – on surfaces or in solution – is controllable. By surrounding ferromagnetic metal cores with Au shells, Mary Beth has prepared a series of magnetic nanoparticles that are able to be derivatized using alkanethiol protective ligands. The magnetic susceptibility of the particles is tunable based on size and composition, permitting controlled transport within magnet field gradients.



Schematic representation of chemically functionalized magnetic nanoparticles for analyte-specific recovery (top) and delivery (bottom).

The particles are derivatized for site and temporally-specific delivery and recovery of targeted analyte. Another goal is to similarly functionalize semiconductor nanocrystals (quantum dots) to enable their attachment to motor proteins, which carry the particles in a discrete direction and are monitored using fluorescence microscopy methods. ■

THE DEPARTMENT OF CHEMISTRY has continued its strong commitment to outreach education through Project FLASK (Fun Learning Activities in Science for Kids) and participation in the Action Potential Science Experience, an outreach program of the Eberly College of Science. Project Flask works in a partnership with educators in our local school district to develop curricula



Graduate student Jeff Plante and third graders from Park Forest Elementary are Chemical Detective Agents during a project FLASK program.

that will augment their current science units. This year over 400 fifth and sixth grade students were brought to University Park to carry out experiments in the general chemistry laboratories. This allowed students to visit and work in a real chemistry laboratory and increased volunteer graduate and undergraduate students and faculty participation.

Fifth grade students with their teachers and university student interns participated in an oil spill activity. Students created a simulated ocean environment that became contaminated with oil. They were asked to clean up the oil using a variety of materials and in the process learned about environmental clean-up methods.

Sixth grade students participated in two hands-on experiments designed to demonstrate physical and chemical transformations and physical properties. The students popped popcorn and predicted whether or not this process resulted in

a physical or chemical change and were asked to build a hydrometer out of a drinking straw and clay to investigate the density of a series of sugar water solutions.

The Chemistry Department again participated in Action Potential, one-week summer day programs for students in grades 5-8. The program, entitled "Environmental Science," allows young investigators to explore the chemistry of the environment. The students explore topics such as recycling, acids and bases, the properties of water and solar and nuclear energy. The week's activities include cooking in a home-made solar oven, sampling and testing the water from the HUB aquarium and visiting the Breazeale Nuclear Reactor.

In addition, this year we have coupled the science experience to a kindergarten through eighth grade educators science workshop. The workshop is designed to provide educators with information and hands on activities to better help their students understand some of the important topics in the environmental science curricula. The workshop format is unique because it allows each educator to work with a group of students and an undergraduate science mentor to carry out many of the lab ac-



Andrew Greenberg working with State College Area High School students on a sports materials project.

tivities. The educators test the curriculum while interacting with students; the students' feedback helps the teachers tailor the activities for their own classrooms; the educators have the opportunity to interact with Penn State faculty who are actively carrying out research in the topic areas covered by the workshop.

Faculty involved in this year's outreach include: Jackie Bortiatynski, Dan Jones, Joe Keiser, Chris Keating, Tom Mallouk, Bob Minard, Karl Mueller, Roy Olofson, Sue Swope and Dan Sykes. Post doctoral and graduate students involved in outreach include: Andrew Greenberg, Jeannie Jeong, Mandy McElwain, Amy Parente and Chris Szakal. ■



King Poseidon (emeritus faculty member John Lowe) and second graders at Manorville Elementary exploring some of the mysteries of chemical reactions.

AWARDS

FACULTY & STAFF

DAVE ALLARA has received the 2003 Arthur W. Adamson Award for Distinguished Service in the Advancement of Surface Chemistry. This award, created in 1991 by Occidental Petroleum Corporation, recognizes Dave's extensive contributions to Surface Chemistry. Dave was presented with a medallion at the Boston meeting of the American Chemical Society in August 2002.

ANNE ANDREWS received an American Parkinson's Disease Association Award. Anne also was selected for the Eli Lilly Outstanding Analytical Chemist Award.

STEVE BENKOVIC, Even Pugh Professor of Chemistry and holder of the Eberly Family Chair in Chemistry, has been elected to membership in the American Philosophical Society. Founded by Benjamin Franklin in 1743, the American Philosophical Society is the oldest society in the United States established for the advancement of scientific and scholarly inquiry. Current members of the prestigious society include 742 scholars in 141 countries.

PHIL BEVILACQUA was an invited speaker at the Nucleic Acids Gordon Conference at Newport, R.I. Phil continues to receive support as a Camille Dreyfus Teacher-Scholar and is an Alfred P. Sloan Foundation Fellow.

MARY JO BOJAN received a Special General Education Block Grant to study the effect of Multimedia supplements in General Chemistry.



CONNIE BOOB, Manager of Undergraduate Programs, received the 2001 Eberly College of Science Staff Award for Excellence.

WILL CASTLEMAN was appointed as a National Academy of Sciences representative to the National Academy of Sciences-National Research Council Board on Chemical Sciences and Technology.

DANA COVAL-DINANT, Manager of Graduate Programs, received the 2001 Chemistry Staff Excellence Award.

DORI EAKIN, a Staff Assistant in the Graduate Programs Office, received a Certificate of Excellence from the Eberly College of Science.

ANDY EWING received a two-year creativity extension from the National Science Foundation (2001–2003).

JUDY FLYNN, the Department's Financial Manager, received a Certificate of Excellence from the Eberly College of Science.

BARBARA GARRISON was appointed Shapiro Professor of Chemistry in the Eberly College of Science. Barbara also was selected to be Vice-Chair of the Physical Division of the American Chemical Society.

SHARON HAMMES-SCHIFFER was appointed a senior editor of the *Journal of Physical Chemistry* and also has been invited to serve as an advisory editor for *Theoretical Chemistry Accounts*.

PETER JURIS delivered the Archer Lecture in Organic and Medicinal Chemistry at the Department of Chemistry in the Rensselaer Polytechnic University. Peter was elected Vice-Chair of the Gordon Conference "Computer Aided Drug Design."

JOHN LINTNER, an Assistant Research Engineer in the NMR Facility, was awarded a 25 Year Service Award.

MARK MARONCELLI received a John Simon Guggenheim Memorial Fellowship.

AYUSMAN SEN is a member of the Editorial Advisory Board for *Organometallics*. Ayusman was the keynote speaker at two international conferences on methane/natural gas conversion.

SUE SWOPE was awarded a mini-grant from the Eberly College of Science to help students visualize and gain a better understanding of chemical concepts.

STEVE WEINREB has been elected President of the International Society of Heterocyclic Chemistry (2002–2003).

PAUL WEISS was selected as the Faculty Escort for Student Marshall (valedictorian) Suzanne Bisceglia for the Eberly College of Science spring commencement.

GREG WERT, Supervisor of the Chemistry Stockroom, was awarded a 30 Year Service Award.



ERIC YOUNKEN, left, an Assistant Research Engineer in the Research Instrument Facility, was awarded a 15 Year Service Award and a Certificate of Excellence from the Eberly College of Science.

XUMU ZHANG was awarded The Cope Scholar Award by the American Chemical Society. Xumu also received the Young Innovation Award of ChiTec (Chinese High Tech) in chemistry, 2001.

STUDENT

TREVOR BROWN received an NIH predoctoral research service award. Trevor is a graduate student in the Lecomte and Bevilacqua groups.

DAN CLARK was awarded a Department of Defense Predoctoral Fellowship. Dan is a graduate student in Blake Peterson's laboratory.

GARRY CROSSON, a graduate student in the Mueller laboratory, was awarded an Alfred P. Sloan Scholarship.

ANDREW GREENBERG received a Graduate Assistant Outstanding Teaching Award. He is actively involved in the FLASK outreach projects to local schools and the Science Action Potential Summer Program, as well as working on curriculum improvements and student guidance.

DAN HARKI, a graduate student in the Peterson research group, received an American Heart Association Predoctoral Fellowship.

NICHOLAS HARTMAN, a chemistry undergraduate student, has been awarded a summer research fellowship from the Woods Hole Oceanographic Institution. His current research centers on studying coral reef ecosystems via the Penn State HUB-Robeson Aquarium.

MICHAEL HOFFMAN was awarded a full, one-year Dalalian Fellowship providing tuition, stipend and a monetary award. Michael is a Ph.D. candidate in the Allcock group.

GREG KAUFFMAN, a graduate student in Peter Jurs' group, won a CCG Excellence Award from the ACS Division of Computers in Chemistry for travel to the April 2001 ACS meeting in San Diego, CA.

MICHELLE KIMBLE, a graduate student in the Castleman group, has won a Na-

CONTINUED ON PAGE 17

OTHER STUDENT AWARDS

GRADUATE STUDENT RESEARCH AWARDS provide partial support and are specific to certain areas of chemistry.

Pratul Agarwal	Hammes-Schiffer	Apple Fellowship
Xiomaria Perez	Andrews	Apple Fellowship
Tom Roddy	Ewing	Apple Fellowship
Penelope Lewis	Weiss	Braucher Scholarship
Gregory Long	Sen	Braucher Scholarship
Raymond Schaak	Mallouk	Braucher Scholarship
Rachel Smith	Weiss	Dalalian Fellowship
Gerald Artman	Weinreb	Dalalian Fellowship
Ron Aungst	Funk	Dalalian Fellowship
Jim Fuchs	Funk	Dalalian Fellowship
Dan Harki	Peterson	Dalalian Fellowship
Paul Jones	Glass	Dalalian Fellowship
Greg Kauffman	Jurs	Dalalian Fellowship
Susan Mattingly	Mueller	Dalalian Fellowship
Robert Morford	Allcock	Dalalian Fellowship
Angela Perkins	Feldman	Dalalian Fellowship
Joe Raker	Glass	Dalalian Fellowship
Berkeley Shorthill	Glass	Dalalian Fellowship
Michael Trakselis	Benkovic	Dalalian Fellowship
Brent Mantooth	Weiss	Geiger Fellowship
Guoying Chen	Mallouk	Miller Fellowship
Nedialka Iordanov	Hammes-Schiffer	Miller Fellowship
Xichen Lin	Weinreb	Miller Fellowship
Nathan McElroy	Jurs	Miller Fellowship
Christina Pecore	Desjarlais	Miller Fellowship
Jiyun Xu	Winograd	Miller Fellowship
Eric Wisniewski	Castleman	Miller Fellowship
Yaraslova Yingling	Garrison	Miller Fellowship
Tzvetlelin Iordanov	Hammes-Schiffer	Roberts Fellowship
Natia Tsomaia	Mueller	Roberts Fellowship
Bettina Schrick	Mallouk	Weyenberg Award

DAN WAUGH MEMORIAL TEACHING AWARDS are presented annually to chemistry graduate students who have demonstrated superior dedication and ability in fulfilling their instructional responsibilities as reflected in both faculty and student evaluations. The following students received awards for 2000–2001.

Lauren Mangeney	Keating
Tiffany Matthews	Andrews
Carolyn McQuaw	Winograd
Ellen Moody	Bevilacqua

CURRENT NEWS

FACULTY & STAFF

DAVE ALLARA was an invited speaker at four conferences on molecular electronics, including one delivered at the International COE Symposium of the Institute for Molecular Science (IMS) in Okazaki, Japan. Dave is leading a research consortium that was awarded \$1.5 million for a study entitled "Quantum Computation Using Self-Assembled Molecular Spin Arrays."

HARRY ALLCOCK delivered seven invited talks in the areas of biomaterials and polymers. His ongoing research resulted in 16 articles in referred journals two books and two books chapters. In 2001, Harry filed his fiftieth patent.

JIM ANDERSON gave invited talks at the 3rd IMACS Seminar on Monte Carlo Methods in Salzburg, Austria; the Euro Winter School on Quantum Simulations of Complex Many-Body Systems in Kerkrade, Netherlands; the Sixth World Congress of Theoretically Oriented Chemists in Lugano, Switzerland; and the 23rd International Symposium in Whistler, British Columbia.

ANNE ANDREWS was invited to speak at the Federation of Analytical Chemistry & Spectroscopy Societies on serotonin neurochemistry and at the Pittsburgh Conference where she gave a talk entitled "What Can Measuring Serotonin In Vivo Tell Us About Anxiety?"

STEVE BENKOVIC delivered two of the Broadbent Lectures at Brigham Young University. Among his ten other invited talks was a trip to Noordwijkerhout, The Netherlands for the NRSCC/GBB Bioconference where he spoke about "Perspective on Biocatalysis." Steve was also the Distinguished Scientist Speaker at the Diagnostics Division of

Abbott Laboratories in Chicago. During 2001, Steve's research generated 25 articles in referred journals.

BOB BERNHEIM serves as a member of the Associateship and Fellowship Programs Advisory Committee of the National Research Council's Policy and Global Affairs Division. He is also Chairman for the Chemical Sciences Associateship Panel of the National Research Council.



Barbara Garrison at the Ground Breaking Ceremony for the new chemistry building.

PHIL BEVILACQUA gave an invited research talk on RNA at the Swiss Institute for Experimental Cancer Research (ISREC) near Lausanne, Switzerland. Phil was also an invited speaker at the FASEB Summer Research Conference on Nucleic Acid Enzymes: Structures, Mechanisms and Novel Applications at Saxton's River, VT. Additionally, he was an invited speaker at the Reversible Associations in Structural and Molecular Biology Gordon Conference at Ventura, CA.

EVELYN BRADLEY was promoted to the position of Manager of Network and Information Systems. Evelyn and her staff oversee all network, web site and software applications.

AMY BUCHA has been promoted to Staff Assistant VII. Amy works in Davey

Laboratory and is Staff Assistant for Andy Ewing, Jim Broyles and Theresa Peters.

WILL CASTLEMAN was co-organizer of several meetings in the cluster field this year. Among these was the APS 2002 Meeting in Indianapolis, Indiana and the Symposium on Novel Materials: From Clusters to Nano-Structures in Jekyll Island, Georgia. He also delivered a series of lectures on cluster science at seven German universities as part of his Jost Memorial Lectureship Award. Will was appointed to the editorial board for the *Journal of the American Chemical Society* and to the editorial advisory board of *Nano Letters*. Will's work in the area of cluster science was featured as an invited cover issue article in the June issue of *The Journal of Physical Chemistry*.

JULIE B. EALY at Lehigh Valley-Berks campus has continued to work on a clock reaction using glyoxal. Handheld technology is used in this research: the LabPro, interfaced with a graphing calculator and pH sensor. Jessica Stephens, a first year student, helped verify previously obtained times and made modifications to the reaction. Julie also began pedagogical research in the assessment of molecular modeling in first year chemistry.

ANDY EWING spoke at PittCon on "Probing Zaptomole Events at Single Cells: How Small Can We Go?" Among his other talks were trips to the 9th International Conference on In Vivo Methods in Dublin, Ireland; the International Symposium on Microchemistry and Microsystems in Tokyo, Japan; and LACE 2001 in Santiago, Chile. Andy continues to serve on the advisory boards of *The Journal of Capillary Electrophoresis* and *The Journal of Separation Science*.

BARBARA GARRISON gave an invited lecture at the 15th International Conference on Ion-Surface Interactions, ISI-2001 in Zvenigorod, Russia where she presented "Computer Simulation of Sputtering of Organic Molecules." Read Barbara's progress report on the new chemistry building in this issue of the newsletter.

SHARON HAMMES-SCHIFFER was a keynote speaker at the Maria Goeppert Mayer Interdisciplinary Symposium in San Diego, CA and gave two invited talks at the American Chemical Society National Meeting in Orlando, FL. She traveled to Europe to give an invited talk at the International Workshop on Quantum Dynamical Concepts in Dresden, Germany and at the CECAM workshop. Sharon gave a number of invited talks at conferences, including the Great Lakes Regional Meeting of the American Chemical Society in Minneapolis, MN; the Gordon Research Conference on Computational Chemistry in New London, NH; and a workshop on Condensed Phase Dynamics in Telluride, CO. Sharon was appointed the vice-chair elect for the Theoretical Subdivision of the American Chemical Society, was invited to serve on the Advisory Board for *Theoretical Chemistry Accounts* and became a Charter Member of the BBKA NIH study section.

JOANNIE HOSBAND has been promoted to Staff Assistant VI. Joannie joined the Department in 2001 and works in Chandlee Laboratory.

PETER JURs traveled to Barcelona, Spain to attend the 11th meeting of ADME/Tox Prediction from Molecular Structure, Combinatorial Chemistry Consortium. Peter coauthored a general chemistry textbook that was published in 2002: *Chemistry: The Molecular Science*, J.W. Moore, C.L. Stanitski, P.C. Jurs, Harcourt College Publishers, Fort Worth, TX.

TOM MALLOUK is the chair-elect for the 2004 Gordon Research Conference on Electronic Materials and is on the editorial advisory boards of *Journal of Solid State Chemistry*, *NanoLetters* and *Advanced Functional Materials*. Tom was one of the co-organizers for a workshop at the 2001 Pittcon meeting: "Analytical Instrumentation for the New Millennium – Materials." He was invited to deliver numerous talks on the topics of nanowires, combinatorial catalysis, solid-state chemistry, environmental remediation and photonic bandgap materials, including four presentations at the April 2001 ACS meetings. Tom's collaborative work with Christine Keating on the DNA-directed assembly of nanowire circuits was featured in *Science* and *Business Week*.

MARK MARONCELLI took a full-year sabbatical last year, funded in part by a fellowship from the Guggenheim Foundation. He split time between Penn State and UT Austin, where he was working with Peter Rossky on theoretical problems related to alkane-perfluoroalkane interactions and supercritical fluid solvation.

KENNIE MERZ returned from a two and one half year leave of absence spent in the private sector with Pharmacopea. He started a company, QuantumBio (<http://qbiodb.chem.psu.edu>) that is working on a quantum mechanically annotated database of protein and DNA structures. Kennie delivered lectures in Europe and the USA and also attended a meeting in Havana, Cuba. "It was a small meeting and I was very impressed by the skill level of the Cuban scientists and students. The most memorable meeting was one I co-organized with Ken Dill and Tom Cheatham for my former post-doctoral advisor, Peter Kollman, who sadly passed away in May 2001. It was held at UCSF and it did justice in honoring a wonderful scientist, mentor and human being."

THERESA PETERS has been promoted to Administrative Assistant IV. Theresa has assumed significant and permanent increases in her responsibility for budget and staff oversight.

GIRIJA SUBRAMANIAM, Hazleton campus, spent summer 2002 at the University of Minnesota MRSEC with student Bryan Rhoads. A fellowship program supporting faculty-student research allowed Girija to collaborate with David Norris in making photonic crystals.

STEVE WEINREB gave approximately fifteen invited lectures during the past year including a plenary lecture at the 50th Anniversary Meeting of the Korean Pharmaceutical Society in Seoul and was the R.B. Miller Lecturer at the University of California-Davis. He is currently editing two volumes of a new reference work entitled *Science of Synthesis* to be published by Georg Thieme Verlag.

PAUL WEISS gave talks at the 4th International Conference on Biological Physics, Kyoto, at the Tokyo Institute of Technology, at Kyocera Corporate Headquarters and was an invited speaker at the 9th International Colloquium on Scanning Probe Microscopy in Atagawa, Japan. Paul traveled to Grenoble, France for an invited talk at the 4th European Community Conference on Nanotechnology and was an invited speaker at a special National Academy of Engineering Meeting on Engineering Thin Films at the Nanoscale in Raleigh, NC. Along with Haiwon Lee, Paul organized and hosted a binational meeting on advances in nanofabrication. The meeting took place at Hanyang University, Seoul, where Lee is head of the chemistry department. Read more about Paul's research on page 4.

NICK WINOGRAD is currently spending a sabbatical year developing novel ion

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beam sources for application to bioimaging experiments in his laboratory. His efforts have taken him to various laboratories around the world including those in Russia, China, Japan, Germany, England, France and Austria. Nick's research is featured on page 5.

XUMU ZHANG delivered numerous invited talks throughout North America and China on the topic "Developing a Chiral Toolbox for Asymmetric Catalytic Reactions." During the past year, Xumu's laboratory generated ten publications and eleven patents. He is a founder of Chiral Quest, a company that specializes in inventing a diverse set of novel chiral ligands and combining them with transition metals as effective enantioselective catalysts.

STAFF ARRIVALS

JENIFER HOFFMAN began in July of 2001 as Staff Assistant to Barbara Garrison, Mark Maroncelli, Anne Andrews, Sharon Hammes-Schiffer, Evelyn Bradley, Bill Steele and Albert Rozo.

AMY RISER is Manager of Services and Facilities and provides administrative support to Research Instrumentation, Glassblowing, Maintenance, NMR and Mass Spectrometry. In this position she works with Shari Miller to provide administrative and financial support for the facilities.

TAMMY SAUTER began in October 2001 as research Staff Assistant to Andrew Ewing.

RETIREMENT

Richard Henry has retired from the Eberly College of Science. Here are some comments he made at the Chemistry Commencement Reception.

"The first thing that I appreciated about Penn State Chemistry was the open,



Richard Henry

friendly reception that I received from faculty as I came back into teaching from a career as an industrial analytical chemist. I won't mention names because I might leave someone out, but everyone knew that I needed advice and helped me when I requested it.

I also appreciated being part of the original 'Gang of Six' who focused on excellence in undergraduate teaching. The Gang is now many more than six, but it is still a vigorous forum for debate and exchange of ideas about good teaching. Our goal of becoming an excellent undergraduate program nested within an excellent research program has largely been realized, even though there will always be room for progressive, new initiatives from younger Gang members. The real beneficiaries are the undergraduates who are getting a start in chemistry that rivals any program that I know about. Graduate students also benefit by being part of the course program as teaching assistants, where they typically learn as much or even more than the undergraduates.

Finally, I appreciated the very high quality of undergraduate and graduate student that is attracted to Penn State. Good students and good faculty challenge and motivate one another to greater achievement. That is what is going on at Penn State right now."

ALUMNI

GAIL FOLENA-WASSERMAN (Ph.D. '82) was promoted to Senior Vice President, Development, of MedImmune, Inc. in February of 2002. Gail's new responsibilities include oversight of cell culture and purification process development, clinical manufacturing, analytical methods development and quality control for investigational products. Gail earned a Bachelor's degree in biology and chemistry from Montclair State College in New Jersey and a Master's degree in biochemistry and a Ph.D. in chemistry, both from Penn State.

LLOYD HUCK (B.S.'43) and his wife Dorothy were honored by the University as Philanthropist of the Year. The award recognizes those who have demonstrated exceptional generosity in the promotion and support of Penn State, helped to shape the University's future and improved the quality of life for the student body, faculty and staff. The Hucks recently donated \$7 million to the Grand Destiny Campaign, adding to their earlier donation of \$7.5 million. Their funds support three student aid funds, a biotechnology innovation fund, a dean's discretionary fund in the College of Medicine and scholarships in the Schreyer's Honors College as well as the construction of the new Life Sciences Building on the University Park campus. Lloyd was formerly a Penn State trustee and Chairman of the Board of Merck & Co. He currently serves as a member of the steering committee of the Grand Destiny Campaign. Dorothy is currently a member of the Grand Destiny Campaign's College of Health and Human Development committee and has volunteered in Penn State's libraries as well as HHD. The Hucks reside in Morristown, NJ.

JOSEPH A. MILLER (Ph.D.'66) was named Executive Vice President and Chief Technology Officer of Corning Incorporated in March of 2002. Joseph joined Corning in July of 2001, after re-

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ANNUAL COMMENCEMENT RECEPTION

SPRING 2002



Some of the participants in our second annual Commencement Reception.

ALUMNI

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tiring from his position as Senior Vice President of Research and Development and Chief Science and Technology Officer at Dupont de Nemours, Inc. He began his career at DuPont in 1966 as a research chemist in Polymer Science. Joseph is also a member of several science and technology organizations, including the National Science Board, National Academy of Engineering, American Association for the Advancement of Science and the Industrial Research Institute.

CHAD A. MIRKIN (Ph.D. '89) received the 2001 Leo Hendrick Baekeland Award, presented by the North Jersey Section of the American Chemical Society. The award is awarded biennially in recognition of accomplishments in pure or industrial chemistry. Chad was recognized for inventing and developing dip-pen nanolithography and developing a fundamental understanding of

the structure versus function relationships for nanoparticle-based architectures formed from biological constructs. Chad is George B. Rathman Professor of Chemistry and Director of the Institute for Nanotechnology at Northwestern University.

ALAN SCHRIESHEIM (Ph.D. '54) co-chaired a daylong workshop on criteria for evaluating federal R&D programs sponsored by the National Academies. The workshop was held in Washington, D.C. in February 2002 at the request of the White House Office of Management and Budget. Attendees included top administration officials, leaders of federal R&D agencies, key congressional staff and academics. Alan is a member of the prestigious Committee on Science, Engineering & Public Policy and director emeritus of Argonne National Laboratory.

CAROL TRAYNOR (Ph.D. '91) cofounded Cincro in 1996 with her husband, John Ko. Cincro's Zanvas (Zoomable Canvas), a client-server interactive interface software system, allows users to interact instantly online, enabling them to share any file on their computer easily and securely. The Zanvas browser allows interactive, instant WYSIWYG authoring. Users can zoom, pan and scale content, eliminating the limitations of a traditional Web page. Carol was featured in the May 2002 issue of Wired magazine.

OWEN W. WEBSTER (Ph.D. '55) received the 2001 International Award of the Society of Polymer Science, Japan in recognition of cooperative research with Japanese polymer scientists. Owen traveled to Osaka, Japan in May of 2001 to give a talk on Group Transfer Polymerization at the annual meeting of the Society. ■

ALUMNI NOTES

'30 **STELLA (ALBERT) MacDONALD**, at 93 years old, recently started a successful bridge group at her retirement village. She says they don't play for money, yet!

'41 **JOSEPH HAMER** just celebrated 60 years of wonderful marriage to Mildred.

'42 **JOHN MACINDOE** retired from the U.S. Army as a Colonel in 1972 then spent 10 years as a political/military consultant with "think tanks." He then began to grow and exhibit roses, becoming a consulting rosarian and horticultural rose judge and since last year, a Judge Emeritus.

'46 **HAROLD HART**, Professor Emeritus at Michigan State University, is looking forward to his 80th birthday. He has an article in the *Journal of Chemical Education* describing the use of pottery in teaching stereo chemical principles.

'47 **ALAN BENTZ** retired in 1996, but is still consulting. In 1999, he co-authored (with PSU Professor Andre Boehman) "The Effects of Thermal Barrier Coatings on Diesel Engine Emissions" in *ASME Journal of Engineering for Gas Turbines and Power*.

'47 **DAVID HELPER** retired from the DuPont Company in 1985.

'50 **ROBERT BROWN** retired from Special Metals, Inc. in 1981.

'51 **HARRY DIEHL** begins his 20th year of retirement from the DuPont Co., where he worked in a variety of areas including development, new product releases, dye production and environmental projects. His hobby of genealogy has resulted in a published book on the Diehls of York and Adams Counties in Pennsylvania.

'56 **GEORGE HADWICH** reports he is semi-retired but still working in air per-

mit assistance and emission testing to enable facilities to comply with Clean Air Act Amendments.

'57 **FRED BENDER** retired in 1994 and will celebrate his 50th wedding anniversary next year in April. He met wife Barbara, a classifieds manager at the Centre Daily Times while at Penn State. One of their daughters graduated from Penn State in 1987.

'61 **HERMAN ZIEGER** reports that since he graduated from Penn State he has been teaching organic chemistry at Brooklyn College.

'63 **GERALD HURAYT** is retired from Delphi Automotive. Currently, he is a lecturer in Mathematics at Mt. Union College in Alliance, OH.

'67 **STEPHEN CUNNION** is President of International Medical Consultants, Inc. He retired as a Captain from the US Navy Medical Corp. in 1998.

'69 **RONALD DiSTEFANO**, recently retired, started the Chemical Technology Program at Northampton Community College in Bethlehem, PA and taught chemistry there for 29 years.

'73 **RICHARD NELSON** is Global Project Manager for Adventis Pharmaceuticals.

'74 **AIDA ESPINOLA** retired from the Cidade Universitária-Centro de Tecnologia, Rio de Janeiro, Brazil, but has continued her activity with graduate courses, research and thesis orientations. Her line of research is fuel cells and advanced batteries.

'77 **KEN PARTYMILLER** was awarded "Best Practice Paper" in Practice Periodical of Hazardous, Toxic and Radioactive Waste Management at 2001 American Society of Civil Engineers World Congress for "Remediation of Chromium Contaminated Soils-Pilot Scale Investigation."

'78 **C. CHARLES TING** recently joined Point Biomedical Co. as Senior Director of Chemistry.

'80 **JANE MILLER** is Coordinator of Moving Services for senior citizens in Chester and Delaware Counties, PA and New Castle County, DE.

'82 **CHARLIE TAYLOR** recently moved to Dupont's Experimental Station. He is working with organofluorines and other surface science research.

'84 **ED BRUSH** is an Associate Professor of chemistry at Bridgewater State College in Massachusetts.

'84 **SERIF KAFABI** is a Senior Research Scientist with Density Functional Technologies, Inc.

'85 **PATRICK BANNON** is attending PSU Great Valley for his MBA and is anticipating graduation in 2004. He and wife, Julia celebrated the birth of a daughter, Sydney, on Sept. 4, 2001.

'87 **MARC SILBERBUSCH** is Chief Radiologist at South Seminole Hospital working for Medical Center Radiology Group of Orlando, Florida. He and his wife, Sue, have two children.

'90 **PAUL SUTTON** is working as a Sr. R&D Scientist at Americhem, Inc. producing color and additive concentrates for plastics, which involves work in areas of analytical chemistry, predictive modeling, environmental health and safety and quality systems. He and wife Tracy have two daughters, Morgan and Jordyn.

'91 **KIMBERLY (KLINE) SOUDER** is currently a forensic scientist with the PA State Police. She recently celebrated 10 years of marriage to husband Matthew and has two sons, Chase and Gage.

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'92 **ANGELA STRZELECKI** was recently promoted to Coatings Technical Marketing Manager–Americas in the White Pigment & Mineral Products division of DuPont. See also husband Joe McCullough (Ph.D.'93).

'93 **ALICE (GROSZ) BRAWLEY-CHESWORTH** graduated in Dec. 2000 with a MS in Environmental Engineering from Arizona State University. She, along with husband Evan Brawley (B.A. Spanish '93), recently celebrated the birth of a son, Campbell Allan Brawley.

'93 **AMY BOLLINGER** is an Industry Manager for the Specialty Cleaning division for UniQema, ICI Americas.

'93 **JOSEPH MCCULLOUGH** is Global Marketing Manager in BASF crop protection division. With wife Angela Strzelecki (Ph.D.'92), they have two sons, Kyle and Ryan.

'93 **MICHAEL TERRY** is a Senior Research Chemist at the Stepan Co. in Northfield, IL. He and wife Tina have two dogs Margo and Ti and he is training for his 10th Chicago Marathon.

'95 **KIMBERLY STEVENSON** and her husband Pat celebrated the birth of a son, Sean Alexander, on May 3, 2001.

'97 **TERRANCE HOGAN** received a CEO Award from Bridgestone/Firestone and was promoted to Research Scientist.

'98 **JEFFERY BUSH** is a 2001 recipient of an NSF funded research-training grant through the Institute of Molecular Biophysics and Department of Chemistry at Florida State University. His project is "Elucidating the Structural Determinants of Substrate Specificity in Phosphagen Kinases."

'98 **JEREMY LESSMAN** was hired as an Instructor in the Chemistry Department of Washington State University. His duties involve coordinating the undergraduate Analytical Chemistry lab courses.

'01 **THOMAS PAVLOSKY** is a graduate student at Ohio State University. ■

STUDENT AWARDS

CONTINUED FROM PAGE 11

tional Science Foundation (NSF) travel award to attend NATO ASI in Spain, September 2002.

READ LANGLOIS, an undergraduate working in the Weiss group, has won two awards: the Materials Research Society Undergraduate Research Award, 2001, and an American Chemical Society and National Science Foundation Research Experiences for Undergraduates Travel Award, 2002.

BRIAN LESKIW received a Lubrizol Foundation award providing full tuition and stipend for one year. Brian is a student in the Castleman group.

MORGAN MIHOK graduated from the Schreyer Honors College in May 2002. Read more about Morgan on page 20.

MWITA PHELPS received an Alfred P. Sloan Scholarship. Mwita is a graduate student in the Allcock research group.

KERRI PRATT, a sophomore chemistry major, was awarded a prestigious Goldwater Scholarship in spring 2002.

RACHEL SMITH, a graduate student in the Weiss laboratory, won a graduate fellowship from the American Chemical Society Analytical Chemistry Division and Society of Analytical Chemists of Pittsburgh.

JASON STAIRS, a Ph.D. candidate in the Castleman laboratory, was chosen by the Department of Energy as one of 26 graduate students nationwide to participate in the 52nd Meeting of Nobel Laureates held in July 2002 in Lindau, Germany. Jason also won first prize for the Physical Science and Mathematics Division of the 17th annual graduate research exhibition at the Pennsylvania State University.

WENJUN TANG, a student in the Zhang laboratory, was awarded a full, one-year

Dalalian Fellowship providing tuition, stipend and a monetary award.

ERICA UNGER won a travel award from the Alzheimer's Association to present at the World Alzheimer's Congress in Stockholm, Sweden. Erica is a graduate student in the Andrews laboratory.

ERIC WISNIEWSKI was awarded 2nd place for the Physical Science and Mathematics Division of the 17th annual graduate research exhibition at the Pennsylvania State University. Eric received his Ph.D. in May 2002 for work that he did in Will Castleman's laboratory.

RIEKO YAJIMA, a student in Phil Bevilacqua's laboratory, received a graduate fellowship from the National Sciences and Engineering Research Council of Canada. ■

DOCTORAL DISSERTATIONS AND MASTER'S THESES

2001-2002

PRATUL K. AGARWAL, "Quantum Effects and Protein Motion in Enzymatic Catalysis." (Ph.D.) S. Hammes-Schiffer

ANN MARIE BULLION, "Application of the Allenylsilane Imino Ene Reaction to an Enantiospecific Total Synthesis of (-)-Ibogamine." (M.S.) S. M. Weinreb

GINA LYNN EGAN, "Porous Polymer and Metal Replicas: Preparation of Materials and Exploration of Applications." (Ph.D.) T. E. Mallouk

SHARON ELYASHIV-BARAD, "Transition Metal Mediated Polymerizations of Polar and Non Polar Olefins." (Ph.D.) A. Sen

DAVID ADAM FLOSSER, "A Simple Conversion of Alcohols to Alkyl Fluorides: Cause of the High Anionic Reactivity of Hexaalkylguanidinium Salts." (Ph.D.) R. A. Olofson

JAMES MITCHELL GIBSON, "Determination of the Molecular Structure of Biololecules and Glasses Utilizing Solid-State-Nuclear-Magnetic-Resonance Spectroscopy." (Ph.D.) K. T. Mueller

ROBERT GREGORY GRANUCCI, "A Novel Class of Naphthyl Calixarenes." (M.S.) T. E. Glass

ROBERT JOHN GREGG, "Effort Towards the Closure of the Western Macrocyclic Ring of Madangamine A." (M.S.) S. M. Weinreb

APRIL DIANNE HENNIS, "Polymerization of Polar and Nonpolar Olefins via Transition Metal Catalysis." (Ph.D.) A. Sen

MICHAEL ANDREW HOFMANN, "Design, Synthesis and Characterization of Ionically Conductive polymer-Based Systems." (Ph.D.) H. R. Allcock

JENNIFER JO JACKIW, "Exploration of Nanoscale Structures and Properties." (Ph.D.) P. S. Weiss

GREGORY WAYNE KAUFFMAN, "The Development of Predictive Models for Physical and Biological Properties from Molecular Structure and the Analysis of Data from a Conducting Polymer Chemiresistive Array." (Ph.D.) P. C. Jurs

EDWIN CLAY KELLAM III, "The Synthesis and Applications of Phosphazene-Containing Polymers." (Ph.D.) H. R. Allcock

JULIE ANNE LAPOS, "Electrophoretic Separation-Based Sensors on Microchips for Application to Cellular Analysis." (Ph.D.) A. G. Ewing

MIN LIN, "Design, Synthesis and Applications of Chiral Ligands for Asymmetric Catalytic Reactions." (Ph.D.) X. M. Zhang

GREGORY SCOTT LONG, "Catalytic Systems for Linear and Branched Polyethylene and Imine-Carbon Monoxide Copolymerization." (Ph.D.) A. Sen

BENJAMIN ROGER MARTIN, "Self-Assembly Directed towards Electronic Materials." (Ph.D.) T. E. Mallouk

GREGORY SCOTT MCCARTY, "A Step Towards Nanoscale Electronics: Instrumentation and Characterization." (Ph.D.) P. S. Weiss

CHAD AARON MESEROLE, "Fundamental Studies of Energetic Ion Beam/Solid Surface Interactions." (Ph.D.) N. Winograd

NATALIE DAWN MORRIS, "A Study of the Photocatalytic Oxidation of Water Using Visible Light Irradiation in a Sacrificial System." (M.S.) T. E. Mallouk

KUNAL MUKHOPADHYAY, "Effect of pseudo EF-hand on Stability and Conformation in Calmodulin." (M.S.) J. R. Desjarlais

SHAWN PATRICK MULVANEY, "SERS-Based Sensing Platforms: Multilayer Thin Films, Anisotropic Nanoparticles and Core-Shell Structures." (Ph.D.) M. J. Natan and C. D. Keating

DAVID JUDE PENA, "Synthesis and Characterization of Novel Nanoparticles." (Ph.D.) C. D. Keating

SHEILA RENEE-NICEWARNER PENA, "Metal Particles for Bioanalysis: Optical Properties and Bioassay Development." (Ph.D.) M. J. Natan and C. D. Keating

AIMEE MARIE PRICE, "Synthesis and Biological Evaluation of Novel 11Beta-Substituted Steroidal Androgen Receptor Ligands." (M.S.) B. R. Peterson

JOSEPH RAKER, "Cooperative Cheosensors: Pinwheel Receptors with an Integrated Fluorescence System." (Ph.D.) T. E. Glass

JOSEPH RAMCHARAN, "De Novo Purine Biosynthesis: Interaction and Inhibition Studies of AICAR Transformylase." (Ph.D.) S. J. Benkovic

BRIAN DENNIS REISS, "DNA-Directed Assembly of Noble Metal Nanowires." (Ph.D.) M. J. Natan and C. D. Keating

JOE CHARLES SAUNDERS, "Alkylidenecarbenes Used in the Context of the Total Synthesis of Agelastatin Natural Products and Studies of Monomers Potentially Useful for the Synthesis of Highly Ordered Organic Networks." (Ph.D.) K. S. Feldman

RAYMOND EDWARD SCHAACK, "Designer Materials: Retrosynthesis of New Inorganic Solids, Nanomaterials and Thin Films with Controlled Structures and Morphologies." (Ph.D.) T. E. Mallouk

VINCENT KENDALL SHIER, "Characterization and Inhibition of an Essential Adenine DNA Methyltransferase from *Caulobacter crescentus*." (Ph.D.) S. J. Benkovic

TRENT STEVEN SNIDER, "High-Pressure Synthesis of Intermetallic Compounds and Investigations of the High-Pressure Properties of Thermoelectric Materials." (Ph.D.) J. V. Badding

PU SUN, "Part One: Studies towards the Total Synthesis of Azaspirocyclic Containing Alkaloids; Part Two: tert-Butylsulfonyl (BUS), a New Protecting Group for Amines." (Ph.D.) S. M. Weinreb

STEVEN CHRISTOPHER TIZIO, "Combinatorial Approach to Engineering Novel Proteins: Transformylase Enzymes and alpha/beta-Barrel Enzymes." (M.S.) S. J. Benkovic

NATIA TSOMAIA, "Solid-State Nuclear Magnetic Resonance Investigations of Surface Layers in Oxide Glass Systems." (Ph.D.) K. T. Mueller

ARJAN VAN DER VAART, "A Semiempirical Study of Biomolecular Solvation." (Ph.D.) K. M. Merz, Jr.

LAURA CATHERINE VAN ZANT, "Computational Modelling of Carbonic Anhydrase Gamma from *Methanosarcina thermophila*." (M.S.) K. M. Merz, Jr.

BAO-HAN CHRISTIE VU, "Preliminary Characterization of the Truncated Hemoglobin from *Synechocystis* Sp.PCC 6803." (M.S.) J. T. J. Lecomte

ERIC SCOTT WISNIEWSKI, "Investigations of Molecular Clusters: Excited State Photochemistry, Solvation Effects and High Energy Processes." (Ph.D.) A. W. Castleman, Jr.

KARIN ANNE ZEMSKI, "Group V Transition Metal Oxide Cluster Reactions: An Approach to Elucidating the Physical Basis of Heterogeneous Catalysis." (Ph.D.) A. W. Castleman, Jr. ■

JUNE 1, 2001 TO MAY 31, 2002

The individuals and companies listed on this page have generously supported the Department of Chemistry either by donating directly to the Department or to an individual faculty member's research.

INDIVIDUAL

Ms. Marie Achalabun
 Mr. Steven H. Anderson
 Mr. Harold & Mrs. Harriette Leong Atkins
 Dr. William C. Jr. & Mrs. Christie Heritage Baird
 Ms. Susan M. Beatty
 Dr. Rouvain M. & Mrs. Edna Bension
 Dr. A. Welford Jr. & Mrs. Heide G. Castleman
 Dr. Christopher M. & Mrs. Maria Perri Cimarusti
 Mr. Joseph M. Devaney
 Mr. Thomas J. Diehl
 Dr. Robert G. Doerr
 Dr. Donald W. & Ms. Evelyn Graulich Emerich
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 Dr. John & Mrs. Martha Krapcho
 Mr. Victor C. Ku
 Dr. David W. & Mrs. Catherine Tillman Ladner
 Dr. Jeffery Lear
 Dr. Mildred M. Maguire
 Dr. James E. & Mrs. Carolyn Caffey Masterson
 Dr. Karen J. Mattson
 Mr. Michael G. & Mrs. Jane M. Miller
 Ms. Jacqueline L. Naffin
 Dr. Deanna J. Nelson
 Mr. William R. & Mrs. Connie L. Nicholson
 Mr. Thomas A. Pavlosky
 Drs. John E. & Marian Romberger Peifer
 Ms. Elaine C. Robinson
 Dr. Jeffrey S. & Mrs. Elizabeth C. Ross
 Ms. Vianne M. and Mr. Bill Sakoda
 Mr. Milton E. Jr. & Mrs. Anna May Scholla
 Dr. Richard B. & Barbara Kesner Silverman
 Dr. Anthony J. & Mrs. Heand Johns Silvestri
 Miss Susan E. Strong
 Drs. Edward S. & Jean Lobrovick Tomezsko
 Dr. Frank J. & Mrs. Nancy Challenger Urban
 Dr. Glenn C. & Mrs. Kathy Vogel
 Dr. Thomas & Mrs. Louise Wartik
 Dr. Owen W. Webster
 Mr. William R. & Mrs. Candace Wilson
 Dr. Nicholas Winograd
 Dr. William H. & Mrs. Thelma A. Yanko
 Dr. Eric W. & Mrs. Marlene M. Young
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UNDERGRADUATE PROGRAM

WE CAN BE PROUD of the accomplishments of this year's graduating class. Of our twenty-eight graduates, twenty earned ACS certified degrees and fourteen were invited to join Phi Beta Kappa. Georgia Tech, Florida State, Cornell, Purdue, George Washington, Johns Hopkins, and Northwestern are just some of the institutions where many of our students will be attending graduate school in the fall. During the academic year, 38 students received academic excellence scholarships from endowment funds.

Morgan Mihok was the Chemistry Department Student Marshall at the spring commencement ceremony. Morgan was a Schreyer scholar and as her Honors Thesis she developed an environmentally-focused introductory chemistry laboratory course. Morgan will be teaching the pilot section of her course in the spring of 2003.

Thanks to the acquisition of new instruments, the laboratory instructors have been able to explore new curricula and continue to add new experiments and projects to their laboratory and lecture courses.

THE OL' SWITCHEROO

CONTINUED FROM PAGE 4

papers. For example, molecular-device characterization has been carried out previously in cases where molecules were part of monolayer films. In those cases, the single-molecule aspect was missing. "But this paper is significant," he says, "because it shows all three requirements together."

The present study builds on work published earlier this month by Tour and Mark A. Reed, an applied physics and

Dan Jones was awarded \$145,000 from the ECoS Dean's office for the purchase of high-throughput LC/MS/MS instrumentation to be used for the Profes-



Undergraduates doing the Benzene Ring

sional Master's degree program centered on bioanalytical chemistry as well as for undergraduate laboratory instruction. Additional donations of LC/MS/MS and capillary electrophoresis instrumentation from Exygen Corporation of State College will enable the program to develop instructional programs focusing on techniques used in modern drug discovery and the emerging field of proteomics. It is envisioned that the Professional Master's degree program may eventually evolve into a coordinated five year bachelor's/master's option for Penn State undergraduate chemistry majors.

electrical engineering professor at Yale University, that showed that bundles of several thousand of these types of molecules can be fashioned into functioning random access memory devices. Reed and Tour demonstrated that the tiny circuits can be switched controllably between conductivity states in a way that allows data to be written, read and erased from the bundles. This work moves the field toward the single molecule limit.

Our new 400 MHz NMR has been operational for just a semester and a half and already students have told instructors of their excitement in having the opportunity to carry out their own high-resolution NMR experiments. We are extremely pleased to provide students with this experience as it allows them to carry out variable temperature experiments and parameter optimization previously unavailable in our undergraduate laboratory courses. The availability of this new instrument has also brought more enthusiasm to the students' approach to the interpretation of NMR data. To date,

three instructors and ten graduate student teaching assistants have been trained to use the NMR since its installation.

Our undergraduate program was well represented at the 223rd National Meeting of the American Chemical Society held in April of 2002. Ten talks and posters represented our program.

Peter Jurs represented the Chemical Education Interest Group and chaired one session at the 2002 Gordon Conference on Innovations in College Chemistry Teaching. ■

Weiss stresses that his coworkers have not worked out architectural designs for single molecule computing "or anything close to that. But tackling the very small end of things has been interesting and very exciting." ■

For more information visit Paul Weiss's web site at <http://stm1.chem.psu.edu/>

processes involved in laser ablation and laser surgery

- New polymers for the microencapsulation of vaccines for oral delivery and for combination with synthetic hydroxyapatite for bone repair and bone regrowth
- Methods to screen for new drug candidates using computer and combinatorial methods
- Methods to understand the molecular basis of psychiatric and neurodegenerative brain dysfunction such as anxiety disorders, Parkinson's and Alzheimer's diseases
- Methods, described in the Encyclopedia Britannica, to arrest intermediates in fast reactions, giving new insights into reactions that are related to mutagenesis that might arise from excitations due to ultraviolet light or radiation

Materials

- Development and characterization of new materials for use in life science and energy
- Chemical design aimed at creating revolutionary new types of electronics based on molecules, such as a computer the size of a sugar cube or miniature flexible electronic devices on textiles
- Determine the ultimate limit of electronic logic and memory to be a single small molecule acting as a switch and determined the functional mechanism of such a switch
- A means of locating dopants in electronic devices at the critical dimensions of current and future devices
- New, high performance elastomers for use in the aerospace industry
- High refractive index polymers for optical switches in telecommunications equipment
- Synthesis of compounds for incorporation into common polymers and textile fibers to reduce their flammability
- Unique methods to store clusters of aluminum that might enable these to be used as additives to rocket fuel for increased thrust

Environment

- Study of molecular clusters related to atmospheric chemistry and development of a named (MASC) model of acidic reactions at ionic sites in the atmosphere
- New chemical strategies useful in the treatment of waste water
- Characterization of the uptake of radionuclides in soil, describing the chemistry that must be understood to undertake effective remediation of nuclear waste sites

Energy

- Electrochemical solar energy strategies
- Advanced solid polymeric electrolytes for use in lightweight rechargeable lithium batteries (laptop computer, biomedical, and satellite applications)
- New proton-conducting membranes for use in direct methanol fuel cells (auto, laptop computer, cell phones)
- Design of catalytically active sites in materials used in the production of gasoline

Of course, a great deal of chemistry and chemical discoveries provide the basic framework for the discoveries and projects listed above and all the projects in the Department are not listed here. We are extremely proud of all the new discoveries in the Department and the vision for the future displayed by the students and faculty. All this takes place as we increase and improve our faculty ranks further.

Last year I reported that Christine Keating, Dan Sykes and Mary Beth Williams joined the faculty ranks. In 2002, we hired Michael Green, coming from a postdoc with Harry Gray at CalTech and Erin Sheets, who was a postdoc with Barbara Baird at Cornell. Michael's research interests are in understanding enzymatic activity and he uses both experimental and theoretical calculations in his investigations. He is

particularly interested in oxidative heme chemistry and selenoproteins. Erin plans to use state of the art fluorescence imaging techniques combined with nanotechnology to understand the chemical interface between the biological cell and its environment. Adding Erin to the faculty working in membrane chemistry makes us one of the strongest groups in that area anywhere. These two dynamic hires add new dimensions to our already strong faculty.

I should mention here that during the last year *Chemical and Engineering News* ran a feature article on diversity in Top Chemistry Departments. We now have seven female faculty members out of 32 tenure-track faculty ranking us third of the top 50 departments nationally. Although we have not specifically placed special emphasis on hiring female faculty, we feel extremely comfortable that our hiring strategies are fair and our work environment is open and accommodating, leading to us being able to hire the absolute best faculty candidates we interview. This has led to greater strength through diversity.

As new faculty arrive with great to do and excitement, we usually have important people in the history of the department retiring. This year, we only saw the retirement of one faculty member, but one whose work over the years has had great impact. Dick Henry retired officially in December of last year. He truly built the analytical laboratories at Penn State and we will miss his direct input dearly. Happily, Dick has indicated that he will be around to interact and to fill in occasionally and this is greatly appreciated.

We welcome three new staff assistants who arrived last year and a computer specialist coming on board in August 2002. Amy Riser is the new Manager of Services and Facilities in the Department, Jenifer Hoffman works with fac-

IN MEMORIAM

L. PETER GOLD



died February 13, 2002, at 66. Dr. Gold earned his Bachelor of Arts degree, magna cum laude, his Master of Arts degree and his Doctorate in Chemistry from Harvard University where he also was elected to Phi Beta Kappa. His postdoctoral work was done at Columbia University where he studied under

the tutelage of Nobel Prize winners Polykarp Kusch and George Kistiakowski. He was a professor of chemistry at Penn State for 35 years, retiring in 2001 with emeritus status. As a researcher, he focused on high resolution spectroscopy of small molecules and was the author or co-author of 37 articles in various professional journals. He was past president of the Penn State chapter of Phi Beta Kappa and a member of the American Chemical Society.

He also served on Penn State's Committee on Instructional Facilities, the Faculty Senate, was an advisor to chemistry majors in the Schreyer Honors College and was acting associate dean for the Commonwealth Education Systems and Continuing Education. Known as a fine teacher and mentor, Dr. Gold was an advisor to many graduates at all levels of the Chemistry Department and was admired for his patience. ■

FROM THE DEPARTMENT HEAD

CONTINUED FROM PAGE 21

ulty in Whitmore and Tammy Sauter works with my research group and me in Davey. Mark Henderson will soon start as our newest computer specialist. Staff promotions included Theresa Peters to Administrative Assistant IV, Evelyn Bradley to Manager of Network and Information Systems, Amy Bucha to Staff Assistant VII, and Joannie Hosband to Staff Assistant VI. The staff members in this Department do a tremendous job day in and day out and we owe them our appreciation for everything they do to make this Department run smoothly.

The faculty and staff have, as always, garnered many awards to make us proud. You can read about this in the Awards section of the Newsletter. Most notable were the election of Steve Benkovic to membership in the American Philosophical Society and Barbara Garrison's appointment as Shapiro Professor of Chemistry. Additionally, Xumu Zhang received a prestigious Cope Scholar Award from the American Chemical Society and Anne Andrews received an Eli Lilly Outstanding Young Analytical Chemist Award. Among staff honored this year a special mention goes to Connie Boob

winning the Eberly College of Science Award for Staff Excellence and Dana Coval-Dinant for winning the same award in the Chemistry Department. Dori Eakin and Eric Younken received Certificates of Excellence from the Eberly College for great work as well.

Steve and Pat Benkovic made a very special contribution to Penn State during the last year. Although they have been extremely generous in the past with donations to the University and the Department, this time they made a major commitment of \$700,000 to initiate a program in Protein Engineering. This incredible gift that spans several departments and colleges will no doubt put Penn State firmly in a competitive position in this area and is unprecedented from a faculty member here. Thanks Steve and Pat!!

The building project is on schedule and we plan to move in some time around January of 2004. This is the largest project of its kind in the history of this Department and the new facilities are badly needed. We therefore look forward to moving with great anticipation. Barbara Garrison (you might ask: is she everywhere?) has provided a summary

of the current status of the building project that is elsewhere in this Newsletter.

Our gratitude goes to Barbara and Ken Feldman for their extraordinary efforts with the building project.

Finally, and sadly, I wanted to add my thoughts and prayers to the passing of Peter Gold during the last year. Last year we announced in this Newsletter that Peter had retired after 35 years at Penn State. Despite officially retiring, Peter planned to stay active and had asked to teach Physical Chemistry again. He really enjoyed interacting with students and colleagues. However, shortly after the fall semester began, Peter was diagnosed with brain cancer and he passed away on February 13, 2002. Peter was one of the most open-minded colleagues I have had the pleasure to work with; he always was in good humor and had an animated personality. I think I speak for us all when I say we will miss him. Our blessings to Peter and his family.

As you can see from all the above, through all the highs and lows, the De-

CONTINUED ON NEXT PAGE

FROM THE EXECUTIVE OFFICER

DEAR ALUMNI AND FRIENDS,

As you will see in this issue of the Newsletter, this has been a very good year for the Department of Chemistry. The construction of our new building is moving along very nicely. Our faculty members are conducting some of the best research in the world. Our graduate program continues to attract and retain excellent students. The undergraduate instructional program continues to graduate top-notch students who go on to first-rate universities and corporations. Our scientific, technical and administrative staff members continue to provide first class support of our educational and research missions.

Our alumni have played an important role in helping to maintain a strong chemistry program at Penn State and I have enjoyed meeting many alumni at national meetings such as ACS (Orlando) and CCR (Cincinnati). In addition to traveling, I have been working to develop programs at University Park that will encourage strong ties between our alumni and the faculty and students in the Department. During the past year, the Department has hosted several new events as well as planned changes for one of our annual traditions.

Our 36th annual Sponsors Days event will be held at University Park on October 8-11, 2002. Those of you who have participated in this event, either as a recruiter or a chemistry student, know that this is a wonderful opportunity for private sector companies to establish productive relationships with the faculty and students in our Department. This year we will be trying something new during Sponsors Days. In addition to the recruiting aspect, we will have a full day of research

poster presentations by students and post-doctoral fellows. This year's program will continue under the able direction of Ms. Amy Bucha and if you are interested in participating, please contact Amy at (814) 865-6553.

The Department began to hold tailgate receptions before all home football games. Thanks to the generosity of our sponsors, 50-70 students, faculty and friends were able to meet with company representatives before each game in the 2001 season. Our sponsors included: VWR Scientific Products, Exygen Research, Fisher Scientific/Fisher Safety and the local section of the American Chemical Society. We plan to continue this new tradition during the 2002 season and I invite you to join us.

Beginning this fall I will be working with Dana Coval-Dinant to design new programs that will help us remain competitive in attracting quality students to our graduate program. Our Department has many excellent qualities that make it an attractive choice for prospective students: opportunities to work on cutting edge, interdisciplinary research projects; first class core support facilities; career guidance and placement assistance. Our alumni are often our best advocates and I hope that you will be receptive if I ask for your assistance in identifying and recruiting prospective students.

I would like to thank all of the alumni and friends who have given their time and talents toward helping make this an excellent department. Please check the schedule of events on the back cover of this issue and plan on joining us at University Park. ■



MR. JAMES BROYLES
EXECUTIVE OFFICER
DEPARTMENT OF CHEMISTRY

FROM THE DEPARTMENT HEAD

CONTINUED FROM PRECEDING PAGE

partment of Chemistry at Penn State is a thriving environment for state of the art scholarship, education and research. Outstanding new hires, great new research by our students and faculty and a new building

are all driving us to increased excellence. This is a wonderful place to study and discover chemistry. Please keep in touch at <http://www.chem.psu.edu>. As always, we wish you well and appreciate your support! ■

UPCOMING EVENTS

Here are some events where you will have the opportunity to meet fellow alumni, faculty and staff. Please join us.

ALUMNI TAILGATE BREAKFAST

14 SEPTEMBER, UNIVERSITY PARK, PA

SPONSORS DAYS

08-11 OCTOBER, UNIVERSITY PARK, PA

HOMECOMING

19 OCTOBER, UNIVERSITY PARK, PA

PRIESTLY LECTURES

27-29 JANUARY 2003, UNIVERSITY PARK, PA

CCR ANNUAL MEETING

05-08 APRIL 2003, AUSTIN, TX

ACS NATIONAL MEETING

23-27 MARCH 2003, NEW ORLEANS, LA

2002 CHEMISTRY NEWSLETTER

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