

Department Of Chemistry

IOWA STATE UNIVERSITY



ALUMNI NEWSLETTER FALL 2002

CHEMIST, TEACHER, SCHOLAR, MENTOR

To Iowa State's Valerie Sheares, the value of having and being a mentor is priceless.

Valerie V. Sheares, an assistant professor at Iowa State University's department of chemistry in Ames, interviewed for both academic and industry positions before she joined the university in 1996. "When you begin a career in chemistry, academia is the more daring of the two possibilities," she says. "Industry seemed more comfortable to me, but I chose academia. Making that choice was largely inspired by my graduate school mentor, Joe DeSimone. He taught me the things that I needed to know in order to have this career."

Sheares, 36, was born and raised in Clayton, N.C. She got her bent for chemistry from her father, who was a secondary math and science teacher. After taking chemistry in high school, Sheares knew that she wanted to study the subject in college. "When I went to college, there was no question that I would major in chemistry," she says. Sheares earned both a B.S. and a Ph.D. in chemistry from the University of North Carolina, Chapel Hill.

After graduating with her bachelor's degree, Sheares took a summer position in agricultural and organic chemistry at Rhône-Poulenc in Research Triangle Park. She loved the experience.



Assistant Professor
Valerie Sheares Ashby

Knowing then that she wanted to pursue a graduate degree, she applied to UNC's graduate program and returned to school.

DeSimone has had a profound impact on her

Continued on page 6

RESEARCH SWITCH

Richard Larock's, University Professor of Chemistry, research is heading in a new direction.

"This isn't what I've been doing with my entire career, but we're sure having fun with it now," Richard Larock says. "I would say

that at least 95 percent of my research at Iowa State has actually been in other areas."

Larock's major research interest over the nearly 30 years he has been on campus has been in the development of new synthetic or-

ganic chemistry methods utilizing palladium as a catalyst to prepare a wide variety of organic compounds, particularly those possessing unusual structures or interesting biological activity.

continued on page 3

INSIDE THIS ISSUE:

NEW LEADERSHIP	2
LAS OUTSTANDING TEACHER AWARD	2
THIEL HONORED AS DISTINGUISHED PROFESSOR	2
STUDENT HONORS	4
ZHAO JOINS ISU	4
FACULTY HONORS	5
ACS AWARDS FOR ISU ALUMNI	6
LINDAU MEETING	7
CHEMISTRY GIFTS	8
NEW ALUMNI ENDOWMENTS	8
THANK YOU	9
TRIFECTA	9
NOTE FROM THE CHAIR	10



Gordon J. Miller
Professor and Chair
Department of
Chemistry

NEW LEADERSHIP

Gordon Miller, professor of chemistry, has been named Chair of the Department of Chemistry, effective Aug 1.

An Iowa State faculty member since 1990, Miller succeeds Patricia Thiel, Distinguished Professor of Chemistry.

A former research scientist with the Max-Planck-Institut in Stuttgart, Germany, Miller is also affiliated with the U.S. Department of Energy's Ames Laboratory. He has been a visiting professor at ETH in Zurich, Switzerland and received an Exxon Faculty Fellowship in solid state

chemistry in 1995.

His research efforts couple theory and experiment to tailor new inorganic materials that will who interesting chemical and physical properties.

www.chem.iastate.edu/faculty/Gordon_Miller/

LAS OUTSTANDING TEACHING AWARD



William S. Jenks
Associate Professor of
Chemistry

LAS Outstanding
Teaching Award

Recognizing a faculty member who has an outstanding teaching career with distinguished achievement in undergraduate education.

William Jenks teaches classes at both ends of a wide spectrum within the Department of Chemistry from advanced graduate level courses to a large service course for non-majors. Jenks wants each of his students to "think like scientists...to learn to

observe, confront inconsistency, deduce, induce, conclude." That philosophy has allowed Jenks to be recognized numerous times for his excellence in teaching at Iowa State including the 1998 Wilkinson Teaching Award from the Department of Chemistry. He has also been named a Cottrell Scholar by the Research Corporation and received a National Science Foundation CAREER Award,

both based on highly selective nationwide competitions requiring a teaching component that recognizes the importance of education as well as research.

To learn more about Dr. Jenks' research and his research group visit the Department of Chemistry website at www.chem.iastate.edu/faculty/William_Jenks/

THIEL HONORED AS DISTINGUISHED PROFESSOR

The title of Distinguished Professor is the highest academic honor bestowed by Iowa State. It recognizes a faculty member for exemplary performance in at least two of the following areas: teaching and advising; research, scholarship, or artistic creativity; and extension, university service, or professional practice.

An expert in the chemistry and physics of surfaces, Patricia Thiel has made pioneering contributions in investigating the interactions of water molecules with metal

surfaces, and has contributed to further understanding the evolution and growth mechanisms of metal surfaces and nanostructures. She has served as a site reviewer for the National Science foundation (NSF) and has been a member of the advisory council of the Office of Basic Energy Sciences for the U.S. Department of Energy (DOE).

At Iowa State, Thiel serves as director of the Materials Chemistry Program of the

DOE's Ames Laboratory and has just completed a three year tenure as Chair of the Department of Chemistry. Her numerous awards and honors include the NSF Presidential Young Investigator Award, the ISU Foundation Award for Outstanding Achievement in Research, and the DOE's Award for Outstanding Scientific Accomplishment in Materials Chemistry.

www.chem.iastate.edu/faculty/Patricia_Thiel/



Patricia A. Thiel
Distinguished Professor
of Chemistry

Research Switch

Continued from page 1

This chemistry has wide utility in the agricultural, chemical, and pharmaceutical industries.

“Our methodology is presently being used by three of the largest pharmaceutical companies in the world to prepare indoles useful as migraine headache drugs,” said Larock.

Larock has written four books on organometallic chemistry and organic synthesis including *Comprehensive Organic Transformations*, a 2,600-page book and classic reference work in organic synthesis in its second edition.

These days however, Larock’s research group has become actively involved in another interesting area. As part of the Center for Crops Utilization Research, Larock, Valerie Sheares Ashby, assistant professor of chemistry, and Fengkui Lei, a postdoctoral research associate, are developing unique, new plastics based on soybean oil.

“The products we’ve developed range from very rubbery to good, hard plastics,” Larock said.

Larock’s interest in the project actually started about six years ago when another postdoctoral fellow, Mark Hanson, discovered that he could make reasonable-looking plastics based on soybean oil.

“The program didn’t really take off until Dr. Li came along (in 1998).” Larock said.

“He has a Ph.D. in polymer chemistry and physics, and he has really made things happen for us on this project. Our goal is to make useful plastic materials. We’ve already found some interesting thermal and mechanical properties for our plastics.”

The researchers have found that the soy plastics have good sound and vibration dampening properties that could allow them to muffle noise and vibrations for a wide variety of appliances and machines.

The materials that Larock’s group have developed also exhibit good shape memory properties. Shape memory plastics can be heated, re-shaped and cooled to produce new shapes, but when you reheat them they return to their original shape. Plumbers could find this property attractive when connecting two different diameter pipes.

“Most petroleum-based plastics don’t do these things,” Larock said.

The Iowa Soybean Promotion Board, which has funded Larock’s research for the past five years, recently funded a study to determine the economic feasibility of the soy-based plastics. That market opportunity analysis has identified potential industrial partners and a number of promising features of this technology.

These include the fact that the materials ranging from tough elastomers to rigid composites can be produced; polymerization is done at relatively low temperatures

and pressures; a capital intensive process is not required to produce the materials; and the properties of the plastics can be varied over a wide range.

However, the ready availability of soybean oil and its low cost are probably the most attractive features. Soy oil is 17 cents per pound, while many petroleum-based materials commonly used in plastics are 25 cents a pound or higher. With 60 billion pounds of synthetic plastics produced each year alone in the U.S. alone, the use of soybean oil in plastics could be a huge economic benefit for soybean farmers.

The ISU Research Foundation has received a patent on the work and the Center for Advanced Technology Development is working closely with the Larock group to try to find an industrial partner to market and produce the various soy plastics including Archer Daniels Midland. Funding has also come from the Iowa Energy Center and the Consortium for Plant Biotechnology Research.

Soybean oil isn’t the only oil that Larock and his researchers feel can utilize this process. Reasonable plastics have been produced from corn, fish, tung, peanut, sunflower, walnut and a number of other natural oils.

“This is a very general process,” Larock said. “The advantage of soybean oil is that it’s the largest commodity oil available and is quite cheap. One of the real attractive features of this project is the

fact that the starting materials are so readily available and biorenewable and there are many potential uses for the bioplastics. There are lots of very promising directions we can go in.”

www.chem.iastate.edu/faculty/Richard_Larock/

“Our methodology is presently being used by three of the largest pharmaceutical companies in the world to prepare indoles useful as migraine headache drugs,” said Larock.



Richard C. Larock
University Professor of
Chemistry

CONGRATUALIONS TO OUR UNDERGRADUATES

Academic Achievement Awards: Suzan Cox, Ryan Steele, Samuel Keasler, Kari Shields, Tessa Calhoun, Ellen Fisher, Kandice Harper, Peter Thayer, Jovin Hasjim, Erin Campbell, Amanda Knutson, Sanja Pudar, Kara Bjur, Chad Whitman, Daniel Hummer, Sassan Sheikholeslami, Kimberly Schwartz, Steve Brokman, Shana Streeter, Brian Bower

ACS Division of Analytical Chemistry Award for Achievement in Analytical Chemistry: Kara Bjur

Merck Index Award for Achievement in Undergraduate Research: Steve Karlen, Kimberly Schwarz

CRC Press Freshman Chemistry Achievement Award: Suzan Cox

GRADUATE STUDENT ACHIEVEMENTS

ISU Teaching Excellence Award: Satoshi Matsuzaki, Jie Ding, Melissa Murphy, Haiming Zhang, Meera Desai, Laura Dutca, Cheng-Yu Lai, Cory Gross

ISU Research Excellence Award: Kyle Casperson, Gang Xue, Marino Campo, Mark Freitag

Alpha Chi Sigma Award: Nebjosa Milovic

Cotton-Uphaus Award: Dawei Yue

Arthur P. Hellwig Award: Jonathan Bentz

Sleight Graduate Student Chemistry Scholarship: Christine Aikens

Women in Science Award: Jamie Rintelman

Dupont Fellowship: Guangxiu Dai

Phillips Petroleum Fellowship: David Keller

Mary K. and Velmer A. Fassel Fellowship: Andrew Pris

Joseph F. Nelson Chemistry Scholarships: Kevin McWilliams, Paul Vecchi, Guangxiu Dai

Henry Gilman Fellowship: Haiming Zhang

"WE APPLY THE UNDERLYING PRINCIPLES IN BIOLOGICAL SYSTEMS TO DESIGN AND SYNTHESIZE NOVEL MOLECULES, POLYMERS, AND MATERIALS THAT HAVE UNIQUE AND SUPERIOR PROPERTIES."



Yan Zhao
Assistant Professor
of Chemistry

PROFESSOR YAN ZHAO JOINS ISU

Yan Zhao joined the faculty this past August as an assistant professor. He received his Ph.D. in 1996 from Northwestern University and was a Postdoctoral Fellow from 1996 to 1998 at the University of Illinois. He comes to the Department from his position as a Senior Scientist at the Procter and Gamble Company.

Dr. Zhao's areas of interest are organic, polymers and materials chemistry. Zhao describes his research as the following:

"highly interdisciplinary, bridging organic chemistry, inorganic chemistry, polymer chemistry, and material science. We apply the underlying principles in biological systems to design and synthe-

size novel molecules, polymers, and materials that have unique and superior properties.

Using functional organic polymers to direct the formation of inorganic nanostructures, we prepare polymeric nanocomposites by a process similar to biomineralization. These materials have properties very different from extremely large interface. In a related area, we are developing a general strategy to organize nanoparticles in a three-dimensional array with long-range orders. We use block copolymers as templates to tune the distance and interactions between nanoparticles dispersed in a polymeric matrix. Accurate control of these parameters is a prerequisite to the realiza-

tion of future nanoscale electronics.

In a separate project, we are synthesizing a class of novel amphiphiles that can assume different conformations in different environments, as some peptide hormones and toxins do in nature. Our synthetic analogues have conformational flexibility and distinct hydrophobic/hydrophilic functionalities. As a result, they are expected to transport both water-soluble drug molecules across nonpolar cell membranes and water-insoluble ones through an aqueous solution such as blood."

To learn more about Dr. Zhao and his research go to www.chem.iastate.edu/faculty/Yan_Zhao/

FACULTY HONORS

Daniel Armstrong

- Chicago Land Chromatography Discussion Group (CCDG) Merit Award, 2001

John Corbett

- Iowa daVinci Award and Recognition, 2001
- Honorary Professor with the Fujian Institute of Research on the Structure of Matter at the Chinese Academy of Sciences, 2002

Mark Gordon

- Awarded a Fulbright Fellowship, 2002
- Among the Institute for Scientific Information (ISI) list of top 100 most highly cited chemists for the period of 1981 to 2000.

Mei Hong

- Research Corporation: Research Innovation Award, 2001

- Alfred P. Sloan Fellowship, 2002

William Jenks

- LAS Award for Outstanding Teacher, 2002

Dennis Johnson

- ISU James Huntington Ellis Award for Excellence in Undergraduate Introductory Teaching, 2002

Jacob Petrich

- Iowa daVinci Award and Recognition, 2001

Marc Porter

- LAS Mid-Career Award for Excellence in Research or Creative Activity, 2002

Klaus Ruedenberg

- ACS Award in Theoretical Chemistry, 2002

Valerie Sheares Ashby

- Promoted to Associate Professor with tenure
- Named one of 12 leading American women chemist by the ACS, 2002
- LAS Master Teacher, 2001-2002

Patricia Thiel

- Awarded the title of Distinguished Professor, 2002

Edward Yeung

- ISU Outstanding Achievement in Research Award, 2002
- International Prize of the Belgian Society of Pharmaceutical Science, 2002
- 2001 R & D Award, this is Dr. Yeung's fourth R & D Award
- Most Promising New Technology by the editors of *R&D Magazine*



Daniel W. Armstrong
Caldwell Chair
of Chemistry

IN MEMORIAM

ARCHIE S. WILSON,
B.S.'46
June 6, 2000

F. MONTE EVANS
M.S.'59, PH.D.'62
January 8, 2002

FRANK J. MOORE
PH.D.'40
July 2, 2001

CALVIN RAYBURN
B.S.'72
January 29, 2001

ACS AWARDS FOR ISU ALUMNI

Michael P. Doyle

Ph.D. '68

**George C. Pimentel
Award in Chemical Education**,
*Sponsored by the Dow
Chemical Company.*

Presented by the Division of
Chemical Education



Michael P. Doyle

Galen D. Stuckey

Ph.D.'62

**ACS Award in the Chem-
istry of Materials**

Presented by the Division of
Inorganic Chemistry



Sheares Ashby in the
her group lab.

“VALERIE’S CAREER SO FAR EPITOMIZES THE BALANCE OF TEACHING, RESEARCH, AND SERVICE THAT IS OFTEN CITED AS THE IDEAL FOR A FACULTY MEMBER IN A LARGE PH.D. GRANTING DEPARTMENT.”

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AROUND LAS
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C & E NEWS

Chemist, Teacher, ...

Continued from page 1

development. Since her graduate school days, Sheares says, she has relied on him to truthfully assess her abilities and provide her with sound advice. DeSimone gave Sheares the opportunity to substitute teach for him and introduced her to key aspects of academic work, such as writing and reviewing papers and grants. “it was critical that he was part of my education, and I have an obligation to be a mentor because of Joe,” she says.

While at UNC, Sheares herself served as a mentor through the minority affairs office. Later, she says, “I easily fell right into mentoring at Iowa State,” where she now acts as a mentor in ISU’s McNair Scholars Program. The program aims to increase graduate enrollment in fields in which low-income students and minorities have traditionally been underrepresented. Sheares is also a mentor for ISU’s Program for Women in Science & Engineering, a summer research program for high school students and undergraduates.

Prior to joining ISU’s chemistry department., Sheares was a National Science Foundation postdoctoral fellow and NATO postdoctoral fellow at the Institute of Organic Chemistry at Johannes Gutenberg University, Mainz, Germany. She undertook research in synthesis of ABC block copolymers, a completely different area of polymer chemistry than her

area at UNC, where she had focused on synthesis and characterization of thiophene-based poly(arylene ether sulfones)s. This postdoctoral experience was important to Sheares for the change in research direction. It also taught her how to adapt to a new environment far from home, making the move to Iowa an easy adjustment.

Sheares’ current polymer research is moving on three fronts; synthesis of new high-performance block copolymers from functionalized dienes; free-radical polymerization of soybean oil to make value-added products from agricultural commodities; and studeies leading to new high-temperature polymer/quasicrystal composites.

At ISU, Sheares is widely known for her organic chemistry class, which is required for premedical and preveterinary students and chemical engineers, as well as for biology and chemistry majors. According to her ISU colleague, chemistry professor Kathleen M. D. Trahnvosky, “Valerie’s career so far epitomizes the balance of teaching, research, and service that is often cited as the ideal for a faculty member in a large Ph.D. granting department.”

“Find a mentor,” Sheares responds when asked what advice she has for young chemists. She believes she wouldn’t be where she is now if she hadn’t had a good mentor. “Mentors help guide undergrads and prepare them for graduate work. Undergraduates should try to have

as much research experience as possible, including summer internships, so that they can determine where their interests lie.”

Graduate students need mentors even more, because “honest feedback is unbelievably important,” she says. Ph.D. students should strive to be outstanding, Sheares stresses. “They should learn as much as they can and get as much as they can out of their graduate years.”

Sheares married recently, On Aug. 3. She will be changing her name to Valerie Sheares Ashby. She has extended her love of teaching into her church, where she is the director of the Sunday school.

Sheare’s recent awards include Master Teacher and Teacher of the Year for 2001, from ISU, College of Liberal Arts & Sciences; the 3M Young Faculty Award; and Outstanding Professor recognition by ISU’s department of chemical engineering undergraduate students. She holds three patents.

This profile was written by C&EN Editorial Assistant Nick Waffle as part of a series of profiles of the top 12 women chemists cited by C&EN.

To learn more about Professor Valerie Sheares Ashby’s research visit www.chem.iastate.edu/faculty/Valerie_Sheares_Ashby/

LINDAU MEETING

Ames Lab student hobnobs with Nobel Laureates

As fall semester begins and students return to class, there's almost always a certain amount of "catching up" that must take place. Whether it's over coffee, dinner or drinks, people will be bringing roommates and friends up-to-date on their summer activities. But of all the activities undertaken this summer, there are none in the state of Iowa that duplicate or even come close to Christine Aikens' adventure.

Aikens, a student associate working with Mark Gordon, program director of Applied Mathematics and Computational Sciences, spent July 1-5 at the 52nd Meeting of the Nobel Laureates in Lindau, Germany. Since 1951, the Nobel Laureates have convened annually in Lindau to have open and informal meetings with students and young researchers. Aikens was one of 37 students nationwide who traveled to Lindau as part of an annual program administered by the Oak Ridge Institute for Science and Education. ORISE administers the program for the U.S. Department of Energy and Oak Ridge Associated Universities. Those students selected to participate are U.S. doctoral students whose current research at their respective universities is funded by the DOE or the National Institute of Standards and Technology. Gordon nominated Aikens to be considered

for the trip based on her research potential. She was the only nominee from ISU to be selected for the program.

The Nobel Laureate meetings rotate by discipline each year. This year's event focused on chemistry and is interested in electronic structure theory method development. "I was exposed to a number of areas of chemistry, such as atmospheric chemistry, that I may consider for future research projects," she says. "I saw how different all of the Nobel Laureates were, in particular their varying perspectives on science and its relationship to politics—it was eye-opening. They also discussed issues within their own areas of research and the need for better science education."

Besides sitting in on the five days of conferences and roundtable discussions with the Nobel Laureates, Aikens and the other students from the U.S. and around the world were able to visit with them more informally at various lunches and dinners throughout the week. "One of the highlights of the trip was dining with Nobel Laureate Paul Boyer," says Aikens. "He was very interested in meeting the students at his table and getting to know them. I was very impressed that he remembered details about us to other people."

(Paul D. Boyer was named 1997 Nobel Laureate in Chemistry for elucidation of the enzymatic mechanism underlying the syn-

thesis of adenosine triphosphate, or ATP.)

An event that became a special trip highlight for Aikens and the other students in the U.S. delegation was an unexpected but welcome reminder of home. "The British students planned and hosted a dinner for us on the Fourth of July," she says.

One of the major benefits of the trip, according to Aikens, was the networking opportunities it provided—especially with the other students. "It was interesting to talk with some of the students from Europe and compare their education systems or hear their perspectives on the United States," she says. "I developed friendships with many students from the United States and from around the world, and these are the people I'll be seeing at professional conferences for years to come."

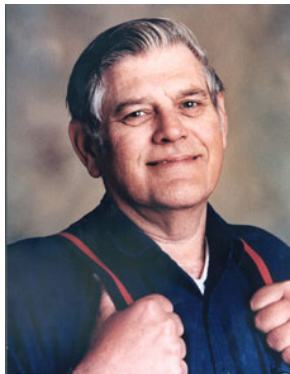


In addition to attending the 52nd Meeting of the Nobel Laureates, Christine Aikens found some time to shop for souvenirs. She brought this beer stein home for her husband, Christopher, a third year student in Chemical Engineering.



Christine is a third year graduate student in Professor Mark Gordon's group. Originally from Boise, Idaho, Christine completed her B.S. at the University of Oklahoma, Norman in the Spring of 2000. Christine has a National Foundation Fellowship and is also a Miller Fellow from the Iowa State University Graduate College.

Christine Aikens (far left corner) says one of the biggest highlights of her Landau trip was dining with Nobel Laureate Paul Boyer (far right).



Calvin Rayburn

CHEMISTRY GIFTS

A pair of gifts will enhance different areas in the Department of Chemistry.

Cal Rayburn was largely unknown to the faculty of the Department of Chemistry. That can't be said for the Hach Scientific Foundation. That Foundation has long been a supporter of the academic department. Despite their individual level of familiarity, both Cal Rayburn and the Hach Scientific Foundation have attracted a lot of attention recently from the Department of Chemistry.

Rayburn, an Iowa State chemistry alumnus, died in January 2001 and left half of his estate to the Department of Chemistry. The gift will total almost \$400,000.

RAYBURN, AN IOWA STATE CHEMISTRY ALUMNUS, DIED IN JANUARY 2001 AND LEFT HALF OF HIS ESTATE TO THE DEPARTMENT OF CHEMISTRY. THE GIFT WILL TOTAL ALMOST \$400,000.

Rayburn's estate, given via the ISU Foundation, also provided generous support to WOI Radio and Iowa Public Television.

The Department of Chemistry plans to utilize the Rayburn funding to establish an endowment, with the proceeds to be used in two ways. The first will be used to establish the Cal Rayburn Junior Faculty Scholar which will be awarded to a non-tenured professor until they receive tenure. The balance of the gift will be used to establish the Cal Rayburn Chemistry Internships for graduates, and possibly undergraduates students at the DCI.

The Hach Scientific Foundation has also pledged to con-

tinue its support of chemistry at Iowa State. The Foundation will increase its annual donation for the undergraduate scholarships in chemical education by \$15,000 a year until an annual grant amount of \$75,000 is reached. The founder of the Foundation, Clifford Hach, graduated with a BS from Iowa State in 1947.

These contributions correlate with the "Investing in People" initiative, a two year effort of the University and the ISU Foundation to raise private funds for undergraduate scholarships, graduate fellowships and faculty support at Iowa State.

NEW ALUMNI ENDOWMENTS

The following are new endowments and gifts to the Department of Chemistry from alumni that have made a wish to provide opportunities for future graduates of ISU.

Paul C. Oksnee Chemistry Scholarship

The scholarship will be awarded to an undergraduate student majoring in Chemistry.

After high school graduation, Paul began working with a local company that produced animal supplements, specifically, preventative antibiotics in animal feed. It was during this time he became interested in earning

his college degree in Chemistry. Paul's passion for becoming a chemist helped him through the tough courses at both Grand View College and Iowa State University. After earning his degree from ISU, he began working at Abbott Laboratory in Illinois. He spent nearly 30 years as a Chemist for Abbott.

Frank J. Moore and Thoreen Beth Moore Scholarship Fund

The scholarship of Fellowship shall be made to undergraduate or graduate students entering or attending ISU and studying in the Department of Chemistry.

Frank Moore obtained his B.S. from Drake University in 1936 and became an instructor at ISU while obtaining his Ph.D. Upon graduation, he started with Texaco in Port Arthur, Texas in the refining fuels laboratory. In about 1945, he went to Texaco's Beacon Research Lab in Glenham, N.Y. After becoming Director of the Fuel Group in Beacon in 1960, he was then appointed Director of the Gent Research Laboratory in Gent, Belgium. In 1972 he returned to Houston where he retired from Texaco's Corporate Office. Dr. Moore passed away in July of 2001 and was preceded in death by his wife Betty.



Thoreen Beth Moore and Frank J. Moore

THANK YOU

Abbott Laboratories Fund, Astra-Zeneca, Bridgestone/Firestone Trust Fund, Caltech Industries, DaimlerChrysler Corp. Fund, Dow Chemical Company Foundation, Dow Corning Corp., Michael and Janice Doyle, Adrian Daane, Robert and Elizabeth Angelici, Anthony Moye, Benjamin Plummer, Bruce Foxman, Charles Myers, Clarence and Marlene Habermann, Dale Margerum, David Henderson, David Lawson, David and Emily Bohlen, Douglas Denton, Thomas and Charlotte Strom, Ernest Zych, Eugene Paschall, Monte and Alice Evans, Francis Burke, Fredrick

Miller, Gary Molander, Gilbert Eian, Horace Brown, James Brown, James Koerner, James Smith, James Hershberger, Jean Merrick-Mack, John Paxson, John Benson, Joseph Beckman, Joseph Schoeb, Julian Honeycutt, Kenneth and Susan Mattes, Kenneth Pratt, Kent Neuschwander, Lawrence Dahl, Leslie Carpenter, Martha Russell, Neil Danielson, Patricia Thiel, Paul Oksnee, Peter and Jennifer Rabideau, Peter and Kathryn Hansen, Clifton and Susan Bailey, Richard Kriens, Richard Palmer, Richard Gingerich, Richard Phillips, Robert and Sally Todd, Robert Kinney,

Robert Rolih, Roger Strassburg, Sachio Yamamoto, Samuel Anderson, Susan Zawacky, Thomas DeVore, Thomas Kistenmacher Thomas Webb, Timothy Reiners William Fellows, William and Pamela elaney, William James, Equistar Chemicals LP, Exxon Mobil Foundation, Goodrich Foundation Inc., Hach Scientific Foundation, IBM Corporation, Minnesota Mining & Manufacturing Co., Allan Childs, Fred and Wanda Plagens, Ronald and Barbara Vredeveld, Arthur Wahl, Ben Hallaway, Calvin Rayburn Estate, Craig Foxhoven,

Donald Morgan, Dwight Eaton, Ivan and Marian Schwabbauer, Jed Keller, John Richard, John Bablin, Jon Isenhardt, Laurence Hoad, Neal Adams, Richard McDonald, Robert Harris, Robert Jackson, Steve O'Brien Steven Richter, Robert Schwandt, Bernice Paige, Celia McClinton, Jean Taylor, Leona Smidt, Martha Mackin, Nancy Spencer, Osram Sylvania Inc., Pharmacia, Phillips Petroleum Foundation, PPG Industries Foundation, Procter & Gamble Co., Shell Oil Co. Foundation.

TRIFECTA

Chemistry's Mark Gordon hopes to work on three different projects while away from campus as a Fulbright Scholar.

Mark Gordon has a plan for his four-month stay in Australia—a plan which some would call ambitious. “That’s me,” the Distinguished Professor of chemistry said. “I have been working like this for the past 30 years, so much so that it’s become a way of life.”

Gordon’s way of life, is trying to cram as much as he can in a short period of time. This time, Gordon will spend four months at the Australian National University as part of a Fulbright Award. There Gordon will collaborate on research with two colleagues, Leon Radom and Michael Collins. Each professor conducts similar types of research in theoretical chemistry. “I have been collaborating with Professor Radom for several years and a recently concluded NSF travel grant to

Australia resulted in a paper we published,” Gordon said. Gordon’s collaboration with Radom currently revolves around developing new quantum chemistry methods. He says they have proven the new method they have developed as reliable, but...

“Now we need to show that the method is broadly applicable as well,” Gordon said. “That would never happen while he’s in Australia and I’m here in Ames.”

Gordon says the same thing about his work with Collins. He spent three weeks last winter working with Collins, who has developed a computer code that works with Gordon’s GAMESS applications.

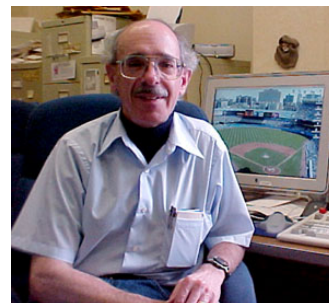
GAMESS (General Atomic and Molecular Electronic Structure System) is a general ab initio quantum chemistry package that contains a popular electronic structure suite of programs. It includes an

extensive graphics program and can compute wavefunctions with at least several levels of sophistication.

“I hope we can finish merging codes of these applications,” Gordon said, “and show others that it will work.”

Gordon’s third project while in Australia will focus on scalable computing, a project he is collaborating on with Alistair Rendell in ANU’s computer science department. Like Collins, Rendell is working with Gordon on improving GAMESS. “He’s interested in developing more parallel code in GAMESS, trying to make it as scalable as possible,” Gordon said.

These three collaborations won’t be all that Gordon plans on accomplishing while in Australia. During his stay Gordon will give a series of lectures at ANU as well as at several other Australian universities including Sydney



Mark Gordon,
Distinguished Professor
of Chemistry

University, University of Melbourne and others. He also hopes to travel to South Korea to continue another collaboration.

“We all tend to be very focused on what is important to you as a researcher, but it’s also important that you expand your horizons and see how others in the world approach science.”

IOWA STATE UNIVERSITY

1605 Gilman Hall
Iowa State University
Ames, IA 50011

Phone: 515-294-6343
Fax: 515-294-0105
Email: rmharris@iastate.edu

NOTE FROM THE CHAIR

Dear Friends,

Here in Ames, the leaves are changing color, the days and nights are getting cooler and the hallways and classrooms of Gilman are once again invigorated and energized by new students. We have an outstanding new class of 36 graduate students getting ready to embark onto new research directions and 29 freshmen undergraduate chemistry majors preparing for their future careers. The Department also has a new chair – I began this position August 1, 2002 and look forward to enhancing our tradition of excellence over the next few years. Looking toward the future, our Department is actively searching for the brightest young scientists and scholars as well as discussing with other parts of the University about the possibility of a new chemistry building.

As I write this note, we are in the midst of Homecoming Week activities on campus and two of our Chemistry community will be recognized by the Alumni Association: John Jiansheng Tang (Ph.D.'94, Verkade) is receiving a Distinguished Achievement Citation and Prof. Kathleen Trahanovsky (Ph.D.'69) is being awarded an ISU Faculty Citation. Our Department is proud of their accomplishments and thrilled that they are being recognized this week.

Our faculty continues to make great strides in research activities and teaching effectiveness. Mei Hong was awarded an Alfred P. Sloan Fellowship for her advances in NMR spectroscopy applied to biological systems. Valerie Sheares Ashby was recognized as one of twelve leading women chemists in the nation by the American Chemical Society (see article on page 1) and was a College of Liberal Arts and Sciences Master Teacher last year for her mentoring of undergraduate students. Dan Armstrong and Mark Gordon were identified as being among the top 100 cited chemists over the 20-year period from 1981-2000. Ed Yeung and Marc Porter were recognized for excellence in research by the University and William Jenks received the LAS Award for Outstanding Teacher. Finally, Dennis Johnson, who retired from our faculty in June, received the highest award from the University for Excellence in Undergraduate Introductory Teaching, the James Huntington Ellis Award. Although his faculty colleagues and students miss seeing Dennis around Gilman Hall, we wish Doris and him all the best.

Other developments in the Department include the near completion of the renovation of air handling and conditioning systems in Gilman Annex, the planned renovation of two General Chemistry laboratories through the help of Hach Chemical Company, and plans to get the 18th Biennial Conference on Chemical Education underway, which will take place in Ames in the summer of 2004. This conference will bring together thousands of science educators to discuss curricula and instructional approaches. We will also conduct the second summer of our three-year NSF-funded Research Experiences for Undergraduates program in 2003.

All in all, the Department is active and flourishing. If you have the chance to come to Ames, please stop by our Department – I look forward to meeting you and showing you our activities first-hand.

Best wishes,

Paul T. Miller