



Breaking New Ground

Plans for the new chemistry building revealed

On the cover

Chemistry faculty and graduate students stand on the site of the new chemistry building with Gilman Hall in the background.
Photo by Dave Gieseke

- 3** Greetings From the Chair
- 4** News
- 15** Alumni
- 18** Giving



IOWA STATE UNIVERSITY

Jacob W. Petrich, Chair
Editor: Dave Gieseke
Design: Sheena Lara

The newsletter is published twice a year for the alumni, friends, students and faculty of the Department of Chemistry at Iowa State University, an academic department in the College of Liberal Arts and Sciences.

Please address all correspondence to:
rmharris@iastate.edu
515-294-6343
Fax: 515-294-0108
www.chem.iastate.edu

Mailing Address:
Iowa State University
Department of Chemistry
1605 Gilman Hall
Ames, IA 50011-3111



View of new chemistry building from the southeast.

- 6** A Group Tradition
Bob Angelici's retirement got a little "cheesy."
- 8** Chemistry Home Run
New device being developed by Jacob Petrich may change way mad cow disease, Alzheimer's are diagnosed.
- 9** Biofuel Novice
Research by chemistry's Emily Smith may change the face of Iowa agriculture.
- 10** Breaking New Ground
Board of Regents approve new chemistry building, fundraising campaign underway.
- 14** Virus Detectors
Iowa State researchers develop technology for early detection of viruses.

Dear Friends of Chemistry and Iowa State University,

The activity and the excitement in the Chemistry Department continue to increase!

We are delighted with the progress that is being made towards the realization of the new chemistry building. Ground-breaking is scheduled for this spring, and the president has indicated that he expects the building to be occupied in 2010.

The newsletter's cover shows some eager scientists standing on its site, with Gilman Hall in the background. Pages 8 and 9 provide drawings of the exterior. The Board of Regents has approved our schematic design. We have obtained a total of \$58.9 million from the state for this project. We have received major gifts from the Carver Trust and from Mrs. Kathryn Hach Darrow. Many of you are already contributing to this effort. So far, we have raised about \$7 million of the remaining \$15.6 million that is needed. To those of you who have already contributed, thank you very much. To those of you who have not had the opportunity yet, I hope you will consider making a contribution.

We are in the faculty hiring season. As I write this note, I have just received a letter of acceptance from Tom Holme, who will be joining us this summer as a full professor in the areas of chemical education and computational physical chemistry. Tom will be bringing the American Chemical Society Examinations Institute with him. The Institute is responsible for generating all the ACS standardized chemistry examinations that are used at the high school and university levels. We will have more to say about this in our spring newsletter.

This fall, the president of our Building Campaign Committee, Dennis Banasiak (PhD 1977 with Tom Barton) offered four seminars in a series titled, "Life Skills for the Technical Professions," that was well attended and appreciated by students in all scientific disciplines on campus. A guest lecturer in this series was Dr. Burton Christensen (BS 1952) who was inducted into the American Chemical Society Medicinal Chemistry Hall of Fame in August. Dr. Christensen also received the Citation of Merit from the College of Liberal Arts and Sciences during Homecoming weekend.

Finally, for the second year in a row, I have had the honor of accompanying our undergraduate Hach Scholars to Ft. Collins, Colo., to attend a reception and dinner hosted by the Hach Scientific Foundation.

If you have the opportunity to visit Ames, please stop by the department. I welcome the occasion of meeting you and of showing you and talking to you about the exciting developments chemistry is undergoing.

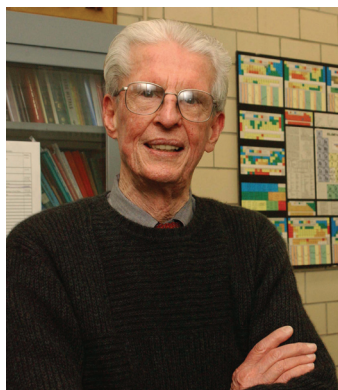
Yours sincerely,

Jacob W. Petrich
Professor and Chair



Chemistry's John Corbett receives American Chemical Society Cotton Award

John Corbett, Distinguished Professor of liberal arts and sciences and professor of chemistry at Iowa State University, has been named the recipient of the F. Albert Cotton Award in Synthetic Inorganic Chemistry by the American Chemical Society (ACS).



Corbett, who is also a senior chemist with the Department of Energy (DOE) Ames Laboratory, will receive the Cotton Award at the 235th ACS meeting in New Orleans in April 2008.

The Cotton Award recognizes distinguished work in synthetic inorganic chemistry. The \$5000 award was established in 2002 and is supported by the F. Albert Cotton Endowment Fund. Corbett is the fifth recipient of the award.

A member of the National Academy of Sciences, Corbett has been a faculty member in Iowa State's chemistry department since 1952. He has served as chair of the department and as division chief and program director in the Ames Laboratory.

Corbett's research interests revolve around inorganic solid-state chemistry emphasizing strong metal-metal bonding. He has now received all three awards in inorganic chemistry given by the American Chemical Society including the Award for Distinguished Service in the Advancement of Inorganic Chemistry. He is also the recipient of the Spedding Award, given in recognition of excellence and achievement in research centered on the science and technology of rare earths.

He is a fellow of the American Association for the Advancement of Science and has received a Senior Scientist Award from the Humboldt Foundation and two DOE Awards for Outstanding Scientific Accomplishments and Sustained Research in Materials Chemistry.

Burton Christensen

Burton Christensen ('52) was a guest speaker the Department of Chemistry's Life Skills Lecture Series held on campus this fall.

Christensen, a retired senior vice president of Merck's research laboratories, was on campus to receive the Citation of Merit from the College of Liberal Arts and Sciences during Homecoming.

During his presentation, Christensen spoke to graduate chemistry students on making the adjustment from student to professional.

The Life Skills Lecture Series was coordinated by Dennis Banasiak (PhD '77). Banasiak is the president of Banasiak Development LLC and is the former president and CEO of Certis USA. He also worked in numerous management positions for the Phillips Petroleum Company.

Banasiak is a member of the College of Liberal Arts and Sciences Dean's Advisory Council at Iowa State.



Retired faculty gather

A group of Ames-area retired faculty members from the Department of Chemistry met at Aunt Maude's this fall and heard presentations on the new chemistry building on campus. Those attending, from the left, included David Hoffman, Robert Angelici, Bernard Gerstein, Bob McCarley, Kathy Trahanovsky and Klaus Ruedenberg.



Pair named AAAS Fellows

Two members of the Department of Chemistry faculty have been awarded the distinction of being named fellows by the American Association for the Advancement of Science.

Newly named fellows from LAS are:

* Gordon Miller, professor of chemistry - for his achievements in combining theory with experiment to understand chemical bonding and electronic structure in complex, metal-rich solids.

* Jacob Petrich, professor of chemistry - for the use and development of laser spectroscopy for solving problems of broad and practical importance to society, notably food safety

Election as a fellow is an honor bestowed upon AAAS members by their peers.

This year, 471 members were awarded this honor by AAAS because of their scientifically or socially distinguished efforts to advance science or its applications. New fellows will be presented with an official certificate and a gold and blue (representing

science and engineering, respectively) rosette pin at the Fellows Forum during the 2008 AAAS Annual Meeting in Boston in February.

The AAAS is the world's largest general scientific society, and publisher of the journal, *Science* (www.sciencemag.org). AAAS was founded in 1848, and includes some 262 affiliated societies and academies of science, serving 10 million individuals.



Corbett Professor

Mei Hong, professor of chemistry, was honored in a ceremony held this fall at Iowa State University as the first holder of the John D. Corbett Professor in Chemistry.

Hong was recognized by Iowa State President Gregory Geoffroy and College of Liberal Arts and Sciences Dean Michael Whiteford. John Corbett, Distinguished Professor of liberal arts and sciences and professor of chemistry, also spoke at the ceremony.

Corbett created the professorship through his estate. A majority of the annual \$100,000 funding will go towards professional support and expenses each year including discretionary research funding, stipends, operating expenses, equipment and travel. The remaining yearly funds will be used to enhance the faculty member's salary.



Hong, a chemistry faculty member since 1999, is the recipient of the three-year professorship. "This professorship is designed to reward outstanding faculty members like Mei Hong," Corbett said. "I'm hopeful this will help in the reward and retention of current and future faculty members."

The Angelici Group Tradition - Octahedral Cheese

On the occasion of Bob Angelici's retirement this year, the faculty held an appreciation dinner to celebrate his friendship and immense impact on the department. Several former A-team group members sent messages and stories to convey to Bob at the dinner program. At the end of the program, Bob was put on the spot, in a manner not unlike an oral exam questioning, and was asked what one thing might best symbolize the discipline of inorganic chemistry. He hesitated for a bit then responded "gold!" (His latest work involves catalysis by bulk gold metal.) The dinner guests were then let in on an unusual, but lasting custom developed in the Angelici group. This story was contributed by John Matachek (PhD '84):

"There were some odd traditions that evolved in the group while I was there. I might elaborate on something called the 'octahedral cheese'. To the best of my recollection it was in the early eighties, maybe '81

or '82 when Bob went off to China for a number of weeks and left us to watch after ourselves. As you might expect we had some free time on our hands during his absence. During a group meeting we faithfully held one Friday afternoon while he was gone, a group member, I think it was Dan Plummer (PhD '83), was eating a large piece of cheese. Somehow this cheese attracted our collective attention (Dan could make anything funny), and ultimately a large chunk of the cheese, which I think was Swiss, ended up being skillfully carved into the shape of an octahedron. Of course, the octahedron is sacred to inorganic chemists, especially those who had just taken Don Martin's physical inorganic course, and been expected to be able to derive the Oh character table.

We immediately came to the conclusion that this piece of cheese was now very special and needed to be preserved and honored. In those days the inorganic teaching lab was across the hall from our research space. In that lab was a glass blowing bench that John Verkade used to teach introductory glass blowing skills to interested students. A few of us had become rather good at glassblowing and we used these skills to seal the cheese in a small argon filled glass ampoule. The cheese will last forever we mused!



Very quickly it became a tradition for all Angelici group members to carry this cheese along in a pocket when presenting a departmental seminar and most importantly into prelim orals for good luck. It was also decided that Bob should never know about this until his retirement at which time the ampoule of cheese was to be presented to him. Quite frankly I have no idea if this tradition has survived until now. I know it was still going at least 10 years after I left. We had developed quite a formal passing of the cheese ceremony from one prelim oral candidate to the next, all quite secretive. Bob unexpectedly walked into the ceremony in lab one day, when the ampoule was being passed from Norm Schroeder (PhD '85) to Hee Sook Park Kim (PhD '86). Bob sensed right away that something odd was going on, he simply turned away and said 'I don't

think I want to know what you guys are doing, I'll come back later.' As far as I know he never did know what we were doing or that the sacred A-team cheese existed.

So, if the cheese is still out there, and if it shows up relative to Bob's retirement, that is the story behind the tradition. If the cheese has vanished, well, it is still a good story. In some ways, I

think the tale is reminiscent about how we felt about Bob. In his group we all experienced traditions that we valued and hoped would persist for future A-team members, the cheese perhaps was just the metaphor. Bob was the best. I wish him a long and enjoyable retirement."

Norm Schroeder (PhD '85) had the honor of being the first recipient of the cheese and was knighted by Plummer and Matachek as "Robin Normal the Keeper of the Cheese," until it was passed off to the next person. As indicated by the honorary title, this story certainly has additional nuances.

The notorious octahedral cheese actually survived till Bob's last two students, but mysteriously disappeared before the penultimate ceremonial passing. E-mail messages were sent across continents with pleas for help. In the days preceding the appreciation dinner, a frenetic but unsuccessful search for this grail was undertaken while Bob's final student, Kevin McWilliams (PhD '07), was finishing the last of his experiments. Not to be left empty-handed and in the tradition of past departmental pranksters, a pseudo-octahedral cheese was sealed in a glass ampoule by the shop glassblower, Trond Forre.

This facsimile was ceremoniously bestowed to Bob at his appreciation dinner in honor of "passing his last prelim oral." Bob, as you know, can be quite the actor. The look on his face was truly a "MasterCard" moment!

However, Bob's first words on seeing the cheese were "You found it!," so it was clear that the gig was up. A year earlier, Moon-Gun Choi (PhD '90) was back in Ames on sabbatical with Bob. Knowing of Bob's upcoming retirement, he searched the entire Angelici labs from top to bottom and failed to locate the cheese. Figuring that the iconic piece no longer existed, he finally revealed to Bob the lost tradition. Although Bob, already knew of the octahedral cheese, he believed that he was presented with the original. On top of that, another victim was unexpectedly snared in the gag. On seeing the fake version, John Verkade admired the nicely sealed ampoule and commented on how well students had learned glass blowing from him! It was hard to confess to both of them that it wasn't the original.

As in all good tales, this one does have a happy ending. The real octahedral cheese was miraculously discovered as Bob's labs were being cleaned up a few days later. Fittingly, it was found by Aaron Sadow, the newest inorganic faculty member in the department, who at the time was looting as much as he could from the Angelici labs to equip his own group.

These types of traditions are an important part of the fabric of our department. We hope that it will inspire you to submit anecdotes from your time at ISU.

Carver Trust supports chemistry research project

The Roy J. Carver Charitable Trust, based in Muscatine, has committed \$465,000 to support two research projects in the areas of entomology and cancer at Iowa State.

Part of that funding was awarded to Emily Smith, assistant professor of chemistry. Smith will research how proteins allow cells to interact with their environment, which is vital to identifying therapeutic targets for halting the spread of cancerous growths.

The commitment from the Carver Trust was included in an overall donation of \$5 million at Iowa State this October. A bulk of that funding (\$4.5 million) will go towards the construction of Iowa State's new chemistry building (see page 13).

George Kraus to direct IPRT



George Kraus is the new director of the Institute for Physical Research and Technology (IPRT) at Iowa State University. He began his new position July 1, 2007, and works three-fourths time as director. He will also continue his faculty position in the Department of Chemistry.

Kraus has been at ISU since 1976 when he joined the Department of Chemistry as an assistant professor. In 1981 he was promoted to associate professor, in 1986 to full professor, and in 2004 he was named university professor. He has held several administrative positions, including department chair of chemistry from 1993 to 1999 and more recently as director of the Center for Catalysis (an IPRT center) and assistant director of the Bio-related Initiatives of the Ames Laboratory.

John Brighton, Iowa State's vice president for research and economic development, said he and the search committee were very impressed with Kraus' academic credentials and his leadership experience over a long period of time.

Kraus received his bachelor's degree from the University of Rochester and his doctorate from Columbia University. He has had a strong research record with interests in new synthetic reactions and their application to the synthesis of biologically active natural products, forensic chemistry, green chemistry and biobased products.

Kraus said he is honored to become the director of this unique enterprise and looks forward to building upon the solid foundation laid by Tom Barton. Barton recently returned to the Iowa State chemistry faculty after serving as director of the U.S. Department of Energy's Ames Laboratory since 1988 and IPRT since 1998.

IPRT was established in 1987 as a network of scientific research centers. In addition to performing world-class scientific research, IPRT provides a wide variety of technical assistance to Iowa companies. Its broad mission is to promote interdisciplinary research in the physical sciences and engineering and specifically to foster development of new technologies. Staffed by world-class faculty and scientists and backed by unique facilities and equipment, IPRT helps develop Iowa's economy through research, company assistance and educational programs.

Chemistry home run

New device being developed by Jacob Petrich may change way mad cow disease, Alzheimer's are diagnosed.

Subconsciously Jacob Petrich picks up the baseball sitting in his Gilman Hall office. He tosses it up and down, all the time talking about "hitting a home run."

The home run Petrich is talking about has nothing to do whatsoever with the sport of baseball. Instead Petrich's home run is a risky project that just might change the way mad cow disease and Alzheimer's are diagnosed.

"The only way to know for sure if someone has Alzheimer's is to wait until they die and then look at sections of their brain," says Petrich, professor and chair of the Department of Chemistry.

The same is true for mad cow disease. Except in this case, instead of waiting for the cow to die, the animal is slaughtered and its spinal cord and brain examined.

Petrich's research group thinks it has developed a way - the home run - of not waiting until death to determine if an animal or human has a neurological disease.

The only way to get direct access to the central nervous system in both humans and animals is through the eye. Petrich's "home run" project looks at doing retinal scans of the subject.

This can be accomplished for humans, Petrich says, in an eye doctor's office. He hopes to develop a device that can be attached to the head of a cow or sheep.

It sounds far-fetched but don't doubt Petrich. He's the same researcher who developed a device, VerifEYE™ Carcass Inspection System (CIS), that is now used to detect feces on fresh meat, the primary cause of meat contamination. He worked with colleagues at the National Animal Disease Center (NADC) to invent the device, which is used in meat packing plants around the nation.

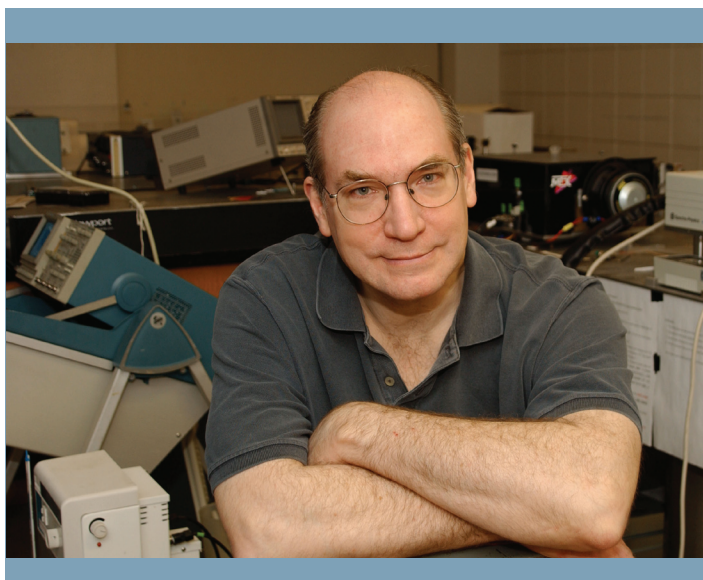
"People thought our idea was crazy," Petrich said. "They said it wouldn't work, that it would give a lot of false positives. But now it's a real product, and it makes money for Iowa State."

For his latest project, Petrich is again collaborating with colleagues at the NADC. And while funding agencies haven't yet seen the potential of the project, the chemistry department chair knows it will work - at least on animals.

That's because preliminary work has been conducted by Petrich's research team on sheep and the results are extremely encouraging.

"We can tell by looking at the retinas of sheep whether they have a neurological disease or not," he said.

The importance of finding this out is high. A few years back just one cow that was found to have mad cow disease had an enormous impact on the American economy,



particularly beef prices.

If Petrich's device is developed, he anticipates it taking only a couple of minutes per animal to determine if they have a neurological disorder.

As for Alzheimer's, Petrich says the nation's aging population will make early detection an important factor for this generation.

"I think it's a big deal," he said. "When a person loses his car keys or forgets something they will wonder what is going on. I think everyone would like to know if bad neurological things are happening."

Petrich is also working on a related problem in food safety that is more of a "sure thing" and that uses a similar type of technology. Currently, central nervous system tissue such as spinal cord, brains, or eyes is not supposed to find its way into meat products such as hamburger because it can potentially transmit infectious agents called prions that are responsible for mad cow disease or Creutzfeldt-Jakob disease.

"We have already shown in the laboratory that we can detect very small amounts of central nervous system tissue in meat products," he said. "A device based on this technology can give confidence to the consumer letting them know that the meat supply is fine."

While the device isn't finalized, Petrich has filed invention disclosures on the technology. He hopes to be able to build prototypes of the instruments within a year or two and then look for investors to market the device. **DG**

Biofuel novice

Research by chemistry's Emily Smith may change the face of Iowa agriculture.

Biofuels wasn't an area that Emily Smith had worked on before. Or for that matter, was even interested in.

As a post-doc at the University of Arizona, Smith studied how a particular protein interacts to contribute to cancer metastasis. She continued that research when she became an assistant professor in the Department of Chemistry last fall.

"After coming here, though, I realized it (biofuels) was a very wide-open opportunity," she said. "I hadn't been interested in biofuels before. But after finding out there were so many people on campus with expertise in plants, I thought this was a good area to work in."

There's also another benefit.

"While I haven't done a lot of work with plant samples, I've found that they are much easier to work with than animal cells," Smith says. "Animal cells you have to keep alive. When plants are converted to ethanol or biofuels, you don't have to keep those samples alive."

A third benefit made it logical for Smith to focus a part of her lab's energies on biofuels.

"This is a highly fundable area and should be for the next several years," she said.

Smith has already taken advantage of that funding opportunity. Her work on biofuels is jointly funded through a two-year grant from Iowa State's Plant Sciences Institute and by the Department of Energy's Office of Basic Energy Sciences. Smith is affiliated with the DOE's Ames Laboratory.

And the work may also be groundbreaking.

An analytical chemist, Smith is using Raman imaging to study plant cell structure to determine which crops offer the right combination of cell wall composition and degradation to maximize the materials' conversion to ethanol.

Raman imaging technology uses an optical microscope to direct a laser onto a plant sample. When the laser light interacts with the sample, some of it is scattered at different wavelengths compared to the original light. By analyzing the scattered light with a spectrometer, Smith

can quickly acquire information used to determine the chemical makeup of the plant material.

If her research is successful, a simplified version of the test could even be used in Iowa fields to determine if plants were at the prime stage to be harvested.

"Just like vintners monitor and test the sugar content of their grapes in the field, biofuel producers could potentially use this technology to determine if their crop was at optimal development for conversion to ethanol," she said.

Her goal is to improve ethanol yields per acre of biomass by correlating plant composition and cell wall



degradation with ethanol conversion efficiency. She also hopes to determine if a particular biofuel plant stock such as switchgrass, Miscanthus, poplar, corn or willow could become the best raw material for ethanol production. If that's the case, then millions of acres of farmland could be converted from corn to grass production.

But it's not only biofuel production that Smith's research could change. If the Raman imaging works, the technology could also be used to study other plant materials, such as those used for pharmaceuticals. **DG**

Breaking new ground

Board of Regents approve new chemistry building; fundraising campaign underway.

The three photos span almost 100 years. And except for haircuts, fashions and a little technology, not much distinguishes the images apart despite the passage of time.

“Chemistry Hall” was completed in 1914 and has been the primary teaching, research and administrative space for the Department of Chemistry for close to a century. Thousands of Iowa State students have utilized the space – particularly the chemistry lecture hall (1002 Gilman Hall) – depicted in the three images from 1915, 1954 and 2004.

As the Department of Chemistry has grown over the years, additional research and laboratory space was needed, forcing the department to expand Gilman Hall in 1964. The department has also renovated the facility numerous times over the years and has moved into other spaces on campus.

Each year, the department teaches 4000 undergraduates per semester for 40 undergraduate majors. The department also has the largest Ph.D. program on campus and obtains the most external funding.

“Today the Department of Chemistry is again poised to expand its interdisciplinary collaborations with new discoveries, faculty and students,” said Jacob Petrich, professor and chair of the department. “The key for us to meet these greater needs is the availability of highly sophisticated research laboratories.”



Gilman Hall 1915



Gilman Hall 2004

Photos courtesy of University Archives, ISU Library and University Relations



Gilman Hall 1954



New structure

For the past few years, the Department of Chemistry has been working with the College of Liberal Arts and Sciences, Iowa State University and the ISU Foundation to make a new chemistry facility a reality.

The \$74.5 million project is being planned as a three-story, 135,000-square-foot facility. The new facility will be built northwest of Gilman Hall and north of Davidson Hall, on the current site of the Industrial Educational I building and an ag engineering shed.

“Chemistry is one of Iowa State’s outstanding departments and a discipline that is critically important to our role as a leading university of science and technology,” said Iowa State President Gregory Geoffroy. “Excellence in chemistry is also central to our efforts to advance the bioeconomy in Iowa, and having a state-of-the-art facility to house our world-class chemistry faculty is one of our top priorities.”

The project has received two go-aheads from the Iowa Legislature including a \$5 million planning grant and a \$58.9 million appropriation for the project. An additional \$15.6 million will be raised through private funds, a goal which is halfway to its total.

In October, the Board of Regents, State of Iowa, approved the schematic design and budget for the new

chemistry building, giving the university the final green light to proceed with construction plans.

Groundbreaking is scheduled for May 2008 with an anticipated completion date of August 2010.

“If we are to continue to retain and recruit the very best faculty, postdocs and students we have to have a new building,” Petrich said. “This new facility will be paramount in fulfilling the integration of world-class researchers with the most advanced laboratory spaces and analytical tools available.

“If we are to maintain our high level of excellence, we need the facilities to do so.”

The first floor of the building will be dedicated to undergraduate teaching laboratories and student interaction space. The second and third floors will be dedicated to existing biomedical researchers and vacant labs that will be used to recruit new faculty to Iowa State.

The new building will contain many new features including:

- Flexible research laboratory space will allow the department to respond to changes in research teams, research topics, equipment and techniques. The building will ensure appropriate space for innovative

research. Special features include enhanced security measures and an isolated basement floor system for vibration suppression to provide proper specifications for ultrasensitive instrumentation.

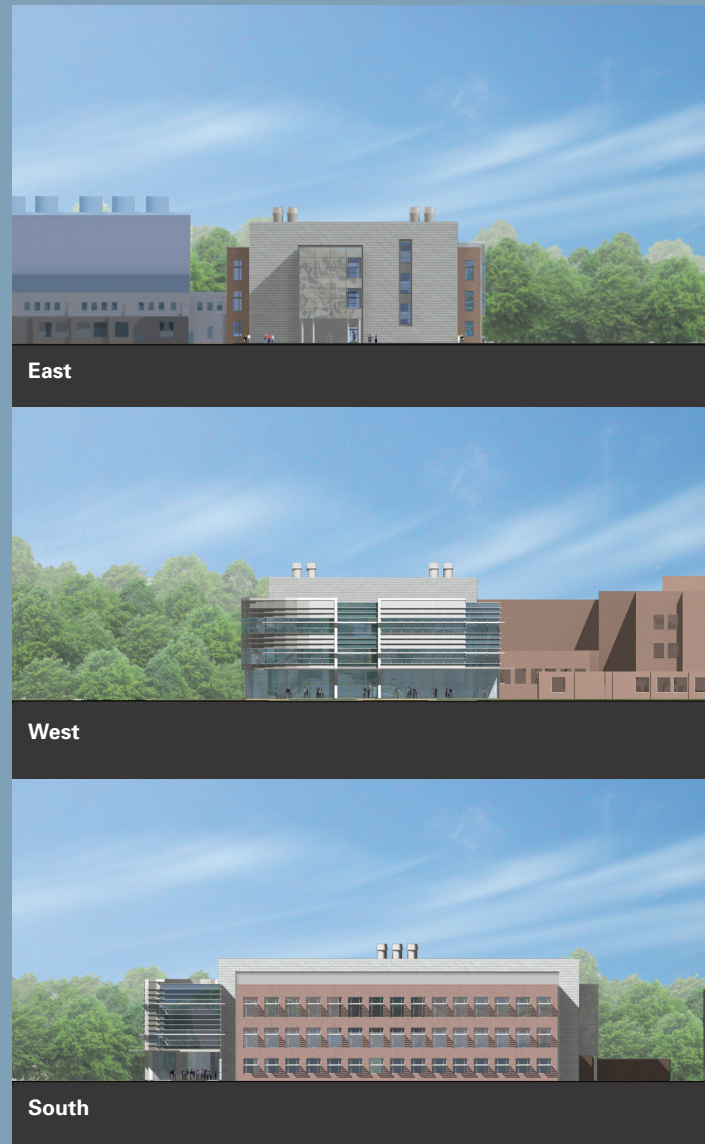
- Classrooms and interaction spaces will enhance the student experience. Several interaction or open areas throughout the building will encourage planned and spontaneous discussions, brain-storming and outreach sessions among students, faculty and staff.

- Technologically advanced teaching laboratories (wet, dry and general chemistry) are needed to promote interactive, hands-on science exploration. New students labs will be designed with spaces for modern instrumentation. Larger labs will enable group instruction and facilitate student engagement.

- Centralized service facilities such as major research instrumentation for analytical research support of ongoing programs with high-throughput capabilities and chemistry shops for fabricating custom, state-of-the-art teaching and research equipment, will be located close to laboratory suites. High-bay areas and entrances will ensure appropriate space for cutting-edge projects.

“The building is very hood intensive and will concentrate on synthetic organic and inorganic chemistry,” Petrich said. “The first floor will be dedicated to teaching labs and to instrument services. The basement will house analytical and physical chemists.

“We decided to include these in the new facility because the fume hoods in Gilman barely function and because very stable space (the basement) is required for much analytical and physical work.”



Fundraising goals

Support for the new chemistry building has been significant in the initial fundraising stages. The Board of Regents has established a \$15.6 million goal for the project. The ISU Foundation has raised \$7.5 million of that goal to date.

The largest contribution so far is a \$4.5 million commitment from the Roy J. Carver Charitable Trust, based in Muscatine.

“The Carver Trust has endorsed this project as a basis for promoting its central interest in biomedically relevant scientific research,” said Troy Ross, executive administrator of the trust. “We recognize the need for providing safe, modern facilities, both for enhancing the existing strengths of the department and as a vehicle for recruiting promising, young investigators to be the chemistry faculty of the future.”

The Roy J. Carver Charitable Trust is a philanthropic foundation in Iowa with assets of more than \$300 million and annual grant distributions of over \$15 million. It was created through the will of Roy J. Carver, a Muscatine industrialist and philanthropist, who died in 1981. The Carver Trust has been a long-time supporter of Iowa State and is one of the university’s leading donors with a total giving of \$24 million in gifts and grants.

Another significant gift has come from Kathryn “Kitty” Hach Darrow, who has pledge \$2 million in deferred commitments toward the chemistry building project. She is the widow of Clifford Hach (’47, BS, chemical technology) and retired chair of Hach Chemical Company.

The Hachs started the company in the 1940s and Kathryn served in numerous roles for the company, from virtual CEO to human resources manager to inventory clerk.

The Hach Scientific Foundation was created in 1982

and immediately began providing scholarships to students studying chemistry at several universities. The Hach Scholar Program at Iowa State currently grants four \$6,000 scholarships to gifted chemistry students with an interest in teaching chemistry at the secondary school level.

Clifford Hach invented numerous products including turbidimeters for measuring the clarity of liquids, automated analyzers for controlling water treatment and direct reading colorimeters. While at Iowa State, he worked on the Manhattan Project.

Naming opportunities are available for the new chemistry building. The opportunities range from \$25,000 to \$4 million and are listed below.

To learn more about the Department of Chemistry’s building naming opportunities contact Alsatia Mellecker, executive director of development in the College of Liberal Arts and Sciences, at 515-294-3607 or amelleck@iastate.edu.

These commitments to the chemistry building are part of Campaign Iowa State: With Pride and Purpose, the university’s \$800 million fundraising effort that was publicly launched last fall.

What about Gilman?

The new chemistry facility will not be large enough to house the entire department and only select faculty will move into the structure. Space will be reserved for new hires as well.

“Since the new building cannot accommodate everyone, many of us, including myself, will still remain in Gilman,” Petrich said. “Also, Gilman will still house most of the teaching function of the department.” **DG**

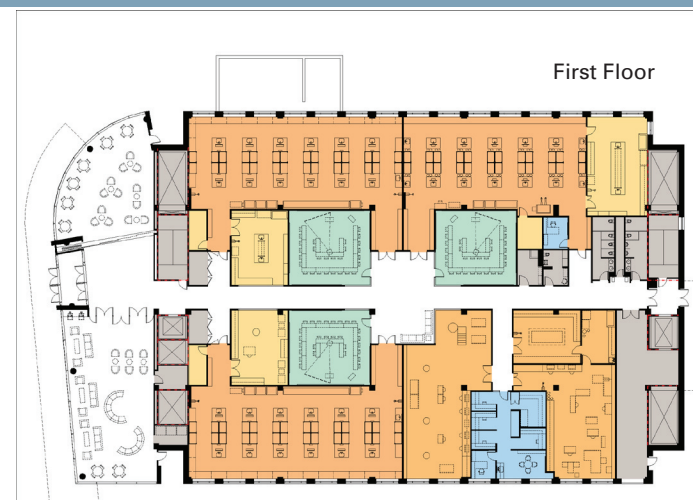
Chemistry Building Naming Opportunities

- First Floor**
\$4 million
- Second Floor**
\$2 million
- Third Floor**
\$2 million
- Lobby**
\$3 million
Naming opportunity under consideration
- Pre-Lab Classroom**
\$150,000 each – 3 classrooms available

- Write Up Room**
\$25,000 each – 24 rooms available
- 4 Person Research Lab**
\$100,000 each – 12 labs available
- 6 Person Research Lab**
\$100,000 each – 12 labs available
- Teaching Lab**
\$500,000 each – 3 labs available
- Faculty Office**
\$25,000 each – 15 offices available

- Administrative Office**
\$30,000 each – 3 offices available
- Teaching Prep**
\$100,000
- Teaching Prep**
\$150,000
- Teaching Instrumentation Room**
\$150,000
- Instrument Services Area (NMR)**
\$300,000

- Instrument Services (Mass Spec Lab)**
\$200,000
- Instrument Services (Instrument Lab)**
\$135,000
- Instrument Services (Web Lab)**
\$50,000
- Conference Room**
\$100,000 each – 2 rooms available
- Break Room**
\$25,000 each – 2 rooms available



To learn more about the Department of Chemistry’s Building naming opportunities contact Alsatia Mellecker, executive director of development in the College of Liberal Arts and Sciences, at 515-294-3607 or amelleck@iastate.edu.

Virus detectors

Iowa State researchers develop technology for early detection of viruses.

By Mike Krapfl, ISU University Relations

Iowa State University researchers have developed a technology that detects a single molecule of the virus associated with cervical cancer in women.

That's a significant improvement over the current test for the human papillomavirus, said Edward Yeung, Distinguished Professor and the Robert Allen Wright Chair in Chemistry, who led the research team that developed the new test. The current test, the Nobel Prize-winning polymerase chain reaction technique, requires 10 to 50 virus molecules for detection.

"We are always interested in detecting smaller and smaller amounts of material at lower and lower concentrations," Yeung said. "Detecting lower levels means earlier diagnosis."

The discovery by Yeung, who's also a senior chemist and deputy program director for the U.S. Department of Energy's Ames Laboratory at Iowa State; Jiangwei Li, an Iowa State doctoral student; and Ji-Young Lee, a former Iowa State doctoral student; were published in the Nov. 1 issue of the journal *Analytical Chemistry*.

Their work was funded by a five-year, \$950,000 grant from the National Institutes of Health with additional support from The Robert Allen Wright Endowment for Excellence at Iowa State.

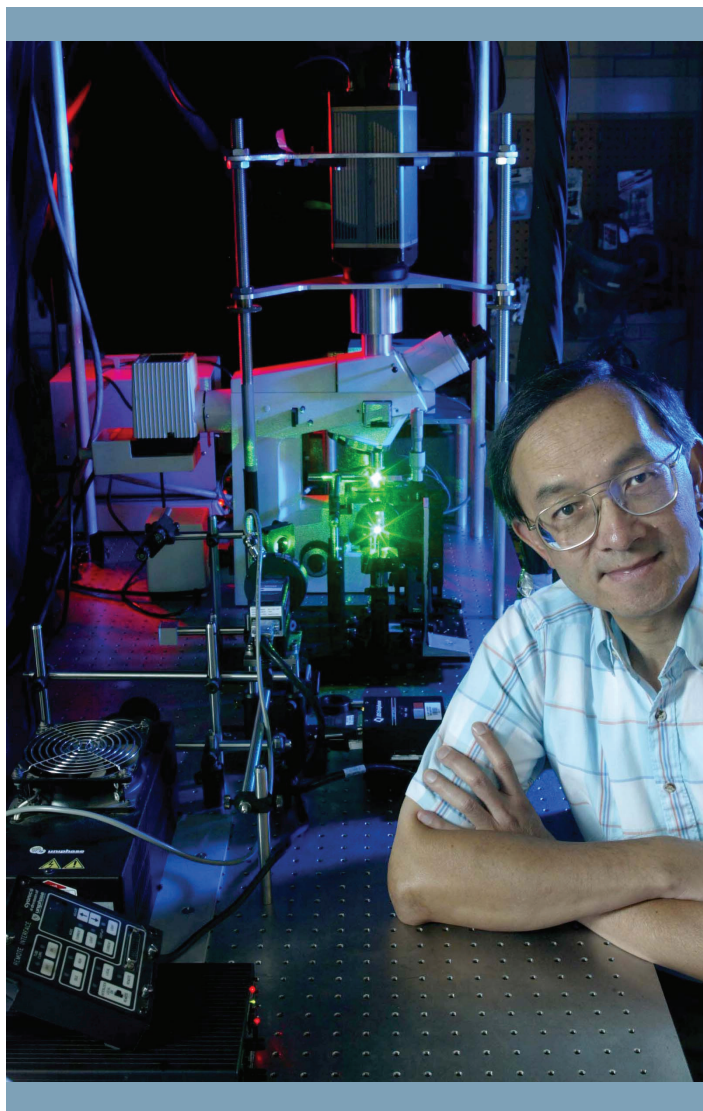
The project advanced just as human papillomavirus made national headlines. In June of 2006, the U.S. Food and Drug Administration approved a vaccine developed to prevent cervical cancer, precancerous lesions and genital warts caused by four types of the virus. The vaccine has been approved for females ages 9 to 26.

The Centers for Disease Control and Prevention reports the human papillomavirus is the most common sexually transmitted infection in the U.S. The agency estimates about 6.2 million Americans are infected every year and over half of all sexually active Americans are infected at some time in their lives.

Yeung said single molecule detection of the virus could help women and families decide to get vaccinated. He said vaccines administered after such early detection could still have time to stop the virus.

The new detection technology improves current technology by eliminating a step to amplify DNA samples for testing. Although the current test is efficient and well understood, the amplification can cause small contaminants to create test errors.

Yeung's single molecule spectroscopy technique involves creating chemical reagents that recognize and fluorescently tag the genetic sequence of the human papillomavirus.



Test samples pass through a laser beam that lights the tags. Cameras capture the images for computer analysis.

The research team tested the technique using samples from normal Pap smears. They also spiked some of those samples with the virus to make sure the tests picked up known amounts of the virus.

Although this test concentrated on detecting the human papillomavirus, Yeung said it should detect HIV, avian flu and other viruses as well.

Will the technology make it to medical labs?

Yeung, who helped start CombiSep Inc. in 1999 to develop and market chemical separation instruments for pharmaceutical and life sciences research (the company merged with Advanced Analytical Technologies Inc. of Ames late last year), said he won't be directly involved in taking the detection technology to market. But he said companies have expressed some interest in licensing and developing the technology.

As that project moves on, Yeung will continue looking for ways to detect chemical targets at the smallest limits. He said the next challenge is to figure out how to detect single molecules of proteins.

Kendle appoints Ken Hintze Vice President, Global Clinical Safety & Pharmacovigilance

Kendle (Nasdaq: KNDL), a leading, global full-service clinical research organization, has announced the appointment of Ken Hintze ('71, BS, chemistry), as vice president, Global Clinical Safety and Pharmacovigilance.

Hintze will lead the continued growth and development of Kendle's global clinical safety and pharmacovigilance business, including safety services in support of Phase I-IV trials as well as stand-alone safety projects. Hintze most recently was senior director, Global Clinical Safety and Pharmacovigilance and has been instrumental in advancing Kendle's safety organization to the global resource it is today.

"Patient safety remains among our highest priorities at Kendle," noted Melanie Bruno, vice president, Global Regulatory Affairs and Quality. "With increasingly complex safety regulations worldwide, our global network of experts ensures both regulatory compliance as well as patient health and welfare. We are very pleased to have Dr. Hintze in this important global role and look forward to his ongoing leadership and expertise as we focus on meeting our customers' needs for high-quality safety services."

Hintze brings nearly 30 years of safety and regulatory experience to this position. He joined Kendle in 2002 following 23 years at Procter & Gamble in various safety roles involving pharmaceutical and consumer products, including Section Manager, Information Systems and Data Management and North America Product Safety Surveillance; and Section Manager, Global Corporate Toxicology and Consumer Health and Safety Affairs.

Hintze earned doctorate and master of science degrees in pharmacology/toxicology from the University of Iowa and a Bachelor of Science in chemistry from Iowa State. He is a member of numerous medical and scientific societies, including the Society of Toxicologists. Hintze is a widely-published author, as well as an accomplished speaker presenting at numerous professional conferences and symposia. He is based in Cincinnati.

With more than 100 safety experts based in nine locations worldwide, Kendle offers a globally-connected



network of safety experts experienced in working within the regulatory requirements of any country. The company's safety organization develops risk management plans, coordinates global regulatory reporting - including Suspected Unexpected Serious Adverse Reaction (SUSAR) reports as well as periodic reports - and performs endpoint adjudication utilizing a new proprietary electronic endpoint adjudication system that increases both speed and accuracy.

The organization is proficient in the full spectrum of safety database systems and can maintain databases internally or within a customer's system via secure connections. The Safety organization works closely with Kendle's Medical Affairs group in reviewing adverse events to provide customers with comprehensive medical monitoring and safety services.



Members of the Chemistry Building Fundraising Campaign Committee are, front row, from the left, Robert Angelici, Distinguished Professor emeritus; Dennis Banasiak ('77, PhD, Chemistry), Urbandale, Iowa; Loren Barber, ('69, PhD, Chemistry), Lake Elm, Minn. Second row, George Kraus, University Professor; Jacob Petrich, professor and department chair. Back row, Renee Harris, graduate program coordinator.

ACS Meeting

Join the Department of Chemistry at the April 2008 meeting of the American Chemical Society.

New Orleans

Monday, April 7, 2008

6-7:30 pm.

Hilton Riverside (tentative location)

Check our web site for additional event information and location.

Hach Darrow receives degree from Iowa State

Kathryn "Kitty" Hach Darrow earned a Bachelor of Liberal Studies degree from Iowa State University's College of Liberal Arts and Sciences (LAS) at the August 2007 commencement ceremony.

Hach Darrow is the widow of Clifford Hach (BS, chemical technology, '47) and is the retired chair of Hach Chemical Company. The Hachs started the company in the 1940s and Kathryn served in numerous roles for the company, from virtual CEO to human resources manager to inventory clerk.

She was the recipient of the LAS Distinguished Service Award in 1998. That award is given to alumni, faculty and friends for their outstanding service or academic contributions that further the educational mission of the College of Liberal Arts and Sciences.

Hach Darrow's son, Bruce Hach, was the recipient of the same award in 2003.

The Hach Scientific Foundation was created in 1982 and immediately began providing scholarships to students studying chemistry at several universities. The Hach Scholar Program at Iowa State currently grants four \$6,000 scholarships to gifted chemistry students with an interest in teaching chemistry at the secondary school level.

Clifford Hach invented numerous products including turbidimeters for measuring the clarity of liquids, automated analyzers for controlling water treatment and direct reading colorimeters. While at Iowa State, he worked on the Manhattan Project.



Photo courtesy of Nirmalendu Majumdar, Ames Tribune

Kathryn "Kitty" Hach Darrow receives her Iowa State diploma from ISU President Gregory Geoffroy.

Two chemistry alumni honored by the College of Liberal Arts and Sciences

A pair of alumni from the Department of Chemistry were honored during the 2007 Homecoming celebration by the College of Liberal Arts and Sciences.

Burton Christensen ('52) was honored with the Citation of Merit, the highest alumni award from the college. Darleane Hoffman (PhD '48 & '51) received the John V. Atanasoff Research and Discovery Award. Hoffman has previously been honored by the college with its Citation of Merit award.

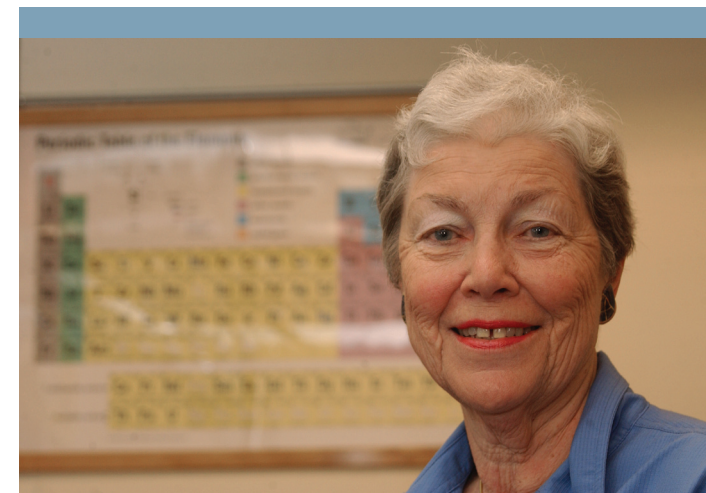
Burton Christensen 1952 BS, Chemistry Henderson, Nevada

A chemist for 36 years for pharmaceutical giant Merck, Burton Christensen retired as senior vice president of Merck's research laboratories. While at Merck, he was also the co-inventor of three antibiotics that are still in use throughout the world. One of those drugs, Fosmomycin, treats gastrointestinal infections in pre-mature infants. Before the drug was invented, 18 of 20 children who were afflicted with the problem would die. When the trial for Christensen's new antibiotic was concluded, all the children lived.

Another drug Christensen invented, Imipenem, was a new class of antibiotics that broaden the spectrum of antibiotics today. While he was at Merck, Christensen received the Thomas Alva Edison Patent Award, the Merck Directors Scientific Award, and the Chemical Pioneer Award from the American Institute of Chemistry.

After retiring in 1992, Christensen consulted for several different firms before joining Theravance, Inc., as that company's executive vice president for research. While at Theravance, Christensen has designed a drug, Telavancin, that may work three times as fast the current best antibiotic to quell a staph infection. In a middle-stage trial of the drug, it cured 96% of the patients and is currently awaiting FDA approval.

Now a pharmaceutical consultant, Christensen has served on the Department of Chemistry's Industrial Advisory Council.



Darleane Hoffman 1948 BS, Chemistry 1951 PhD, Chemistry (Nuclear) Oakland, California

Ames. Oak Ridge. Los Alamos. Berkeley. Lawrence Livermore. There's hardly a U.S. Department of Energy National Lab where Darleane Hoffman hasn't worked and been highly successful. An internationally recognized expert in the study of transuranic elements - chemical elements heavier than uranium that typically decay to lighter elements almost immediately - she was a member of the team that discovered elements 118 and 116. She has applied her expertise to the problem of nuclide migration in the environment, which led to the development of the Yucca Mountain Project, an underground repository for nuclear waste.

Currently a professor of the Department of Chemistry's Graduate School at the University of California, Berkeley, Hoffman also continues to work as a faculty senior scientist in the Nuclear Science Division at the Lawrence Berkeley National Laboratory. She worked with Nobel laureate Glenn Seaborg and was the director of the Seaborg Institute for Transactinium Science at the Lawrence Livermore National Laboratory.

Hoffman has received numerous awards in her career including the prestigious Priestly Medal by the American Chemical Society (ACS) and is the only woman to be awarded the ACS Award for Nuclear Chemistry. She is a past recipient of the ISUAA's Distinguished Alumni Award and the College of Liberal Arts and Sciences' Citation of Merit.

Thank You

Neal and Tanya Adams
Robert Angelici
Clyde Arntzen
John Bablin
Michael Bader
Peggy Beckman
Robert and Eleanor Behrmann
Robert and Abigail Benkeser
James Benson
John and Jill Benson
Kris Berglund
Donald and Vicki Berry
Richard Biddle
Laura Bliss
Paul Bloom and Beth Fatland
Steven Bolton
John and Martha Bonte
Curtis and Leona Borchers
Albert and Marjorie Bottoms
Rosemary Britson
Horace Brown
Louis Brown
Terry and Karen Burianek
Francis Burke
Dwight Burnham
Harry Burns
Susan Buzby
Joe and Vicki Caligur
Dan Carlson
Philip Carpenter
Christian Casper
Eugene and Carol Catus
Gene and Margaret Chamberlin
John and Connie Clark
John Corbett
Ivan Crane
Stephen Currie
Adrian Daane
Lawrence and June Dahl
Kathryn Darrow
Kenneth De Bruin
William and Pamela Delaney
Denise Denton
Thomas and Doreen DeVore
Daniel Divine
David Dobberpuhl
Michael and Janice Doyle
Gary Drtina
Arthur D'Silva
Gerald Dykstra
Gordon and Kathryn Eggleton
Thomas Elleman
Michael Eller
John Emerson
Charles Exley

Mary Fassel
Jeffrey Fellows
Jared Fennell
Mary Ann Ferguson
John Fiorino
Patrick and Sally Flash
Craig and Jennifer Foxhoven
Bruce and Carole Foxman
Hugo and Susan Franzen
James Fritz
Robert Frost
Douglas Fuhrman
Charles Fuller
Jessie Fuller
Robert and Mary Fulmer
Bernard and Mary Clarice Gerstein
C. Thomas Gnewuch
David and Pamela Gobran
Calvin and Marilyn Goeders
Leroy Grantham
Charles Griffith
Clarence Habermann
Bruce Hach
John Hansen
Peter and Kathryn Hansen
James Head
Roger Heckman
John and Lise Hedstrom
Robert Herold
Scott Hippen
Marvin and Darleane Hoffman
Betty Holland
Julian and Carolyn Honeycutt
Robert and Linda Houk
Camden Hubbard
Jon Isenhardt
Robert and Margaret Jacobson
William and Arlene James
Delbert and Anna Johnson
Donald Johnson
Robert Johnson
Joseph Kaczvinsky
Robert Karraker
Robert Kematick
Robert Kinney
James Koerner
Richard Kriens
Larry and Jackie Larew
David and Nellie Lawson
Bruce and Sharon Leach
Francis Lee
Melissa Leffler
Kenneth Lentz
Moi Leong

Hiram Levy
Paul and Miriam Lewis
Yi-Chun Lin
James Lloyd and Jan Nakahara
George Lucas
Abe Malae
Thomas Manz
Stephen and Audrey Marley
Kenneth and Susan Mattes
James and Sally McChesney
Celia McClinton
Richard McDonald
Thomas McGee
Clifton Meloan
Jean Merrick-Mack
Sharon Meyer
M. Mark Midland
Gary Molander
Donald Morgan
Anthony Moye
Alice Murray
Timothy Murtha
John Negley
Samuel Nelson
Diana Nevins
Leo and Judy Ochrymowycz
Katashi Oita
David and Rita Okey
Paul Oksnee
Bernice Paige
Richard Palmer
Linda Paxson
Gerald Payton
Jeffery Peters
Karl Peterson
Stanley and Vera Peterson
Jacob and Nathalie Petrich
Scott and Connie Petrich
Ronald Picht
James Pierret
Benjamin Plummer
Dale Powers
Kenneth Pratt
David and Patricia Pringle
Rochelle Rappaport
Timothy Reiners
Steven Richter
Roland Roskos
Richard and Ann Ross
Rhonda Rush
Martha Russell
Sherwood Samuels
Jeffrey and Nancy Sauer
David Schenk

Gerald and Elvera Scheppers
James Schlegel
Joseph and Virginia Schoeb
Robert and Patricia Schroeder
Ivan Schwabbauer
W. Robert and Phyllis Schwandt
Sara Scott
Harris Seidel
Thomas Sellers
Pat and Pat Shaughnessy
Paul and Ruth Sheffield
Bing-Zhi Shi
Neal Simmons and Sue-Yue Wu
Elizabeth Smith
Granville Smyser
Steven Snyder
Nancy Spencer
Gerald Spielholtz
Wayne and Ann Stensland
Steven Stensvad
Roger Strassburg
Byron and Rebecca Strom
Arthur Struss
Kenneth and Alice Sundberg
Marjorie Sutter
Edna Svec
Charles and Joan Tanger
Jean Taylor
Troy Tetzlaff and Heather Riley
Betty Lee Thompson
Joseph Thompson
Robert and Lou Thompson
Robert Tischer
Sally Todd
Orlin Trapp
William Trepka
Ronald Vredeveld
Jean Wallace
John and Karen Walters
Dongmei Wang
Jack Watson
Thomas Webb
Mark Werth
Philip and Donna Whittle
Gene and Betty Wild
Patrick Wisor
Gary and Kathryn Witt
Nicholas Wolf
Lauren Woods
Gary Wulfsberg
Siu-Yeung Yu
W. C. Zacharias
Steven and Susan Zawacky
William and Jean Zmolek

Making a Difference

The Department of Chemistry at Iowa State University is committed to providing outstanding opportunities for the university community. In order to have the resources necessary to take these programs into the future, support for the department is essential. Funding is required to aid the program in developing new opportunities in technology, continuing and advancing outreach activities, maintaining and expanding current performance and educational opportunities, and supporting students and faculty. These services are crucial as the Department of Chemistry strives to keep up with the student demand for these experiences. To help make a difference, simply fill out the form below, drop it in the mail (ISU Foundation, 2505 University Blvd, Ames, Iowa 50010-8644) and check our next newsletter.

For more information about making a gift to the Department of Chemistry or including ISU in your estate plans, please contact the College of Liberal Arts and Sciences Development Office at 515-294-3607 or Erin Steinkamp at estein@iastate.edu.
www.las.iastate.edu/giving/index.shtml

I wish to support programs in Chemistry at ISU. 07 CH8:03

Enclosed is my gift of:

\$1000

\$250

\$100

\$50

Other \$ _____

Please specify the fund that should receive your gift:

Student Scholarships

General Development

Please charge my credit card

VISA

Card # _____

Mastercard

Exp. _____

Discover

Signature _____ Date _____

Phone # and e-mail _____

I will request that my employer match my gift

My employer is _____

I have provided for ISU in my estate plans

I would like more information about including ISU in my estate planning



IOWA STATE UNIVERSITY

College of Liberal Arts and Sciences
Department of Chemistry
1605 Gilman Hall
Ames, IA 50011-3111