Department Of Chemistry
IOWA STATE UNIVERSITY

ALUMNI NEWSLETTER WINTER 2007

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ROBERT ANGELICI RECOGNIZED BY THE AMERICAN CHEMICAL SOCIETY

With more than 370 publications, countless research grants to his name and major contributions to inorganic chemistry, Robert Angelici, Distinguished Professor in Liberal Arts and Sciences and Professor of Chemistry, has more than enough credentials to be recognized by the American Chemical Society (ACS). But Angelici feels it is a contribution he made early in his career that was an important factor in his receiving the ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry.

This contribution is his laboratory text, *Synthesis and Technique in Inorganic Chemistry*. As a young assistant professor at Iowa State in the mid-'60s, Angelici discovered that the inorganic laboratory course for juniors and seniors was in dire need of a textbook.

"At the time, the students were taught in a way that required them to make starting compounds for the chemistry research groups," Angelici said. "I thought the course didn't give students a broad understanding of techniques in inorganic chemistry. I looked for experiments that gave them skills they would need to become functioning chemists."

Now in its third edition, *Synthesis and Technique in Inorganic Chemistry* remains a primary textbook for college inorganic chemistry labs throughout the nation.

Robert Angelici
Distinguished Professor of Chemistry

Angelici has also been active within the ACS, serving on a number of committees, including chair of the Division of Inorganic Chemistry. He has received numerous other awards, including several teaching awards from Iowa State. He was a fellow of the Alfred P. Sloan Foundation and also a Royal Society Guest Research Fellow in England.

Angelici is the third Iowa State chemistry professor to receive the ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry since 2000. Previous recipients were John Corbett (2000) and James Espenson (2004), both Distinguished Professors of Chemistry.

"It is remarkable that three ISU faculty members have received this award within an 8-year period. No other university, including the very top chemistry departments in the country, has three recipients of this award in the past 25 years," Angelici said.

The $5,000 award, sponsored by Strem Chemicals, Inc., recognizes individuals who advanced inorganic chemistry by significant service in addition to performance of outstanding research.

The ACS award comes as a capstone to Angelici's career since he plans to retire in May 2007.

"It's a nice kind of recognition for a lifetime of contributions to inorganic chemistry," he said. "It would have been better if it had come five years sooner, because recipients of this award in the past are pretty much assured that their next NSF (National Science Foundation) grant application will be funded. But I'm not writing any more NSF grants at this stage of my career."

That doesn't mean that Angelici's research group isn't still active. He spent this past summer writing eight papers on the group's latest research. And he plans to continue his writing even after his retirement, although his lab's research activities will come to a close this May.

Angelici's research has involved many different areas of organometallic chemistry including the interaction of biodiesel, peptides, and buckybowls with transition metals – elements that "most people don't worry about too often."

"My research has gone in many different directions," he said. "I've very much enjoyed generating new ideas with the goal of creating new research opportunities in chemistry."

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FORMER STUDENTS DEDICATE TEXTBOOK TO CHEMISTRY'S JOHN CORBETT

In a fitting tribute to his mentor, a former "student" has dedicated a textbook, *Inorganic Chemistry in Focus III*, to John Corbett, Distinguished Professor in Liberal Arts and Sciences, Professor of Chemistry and Ames Lab senior chemist.

Actually, it was a group effort as all 21 chapters of the book are written exclusively by Corbett's former graduate students and postdoctoral associates from throughout the world, and all of whom entered academia.

The book, published earlier this year by Wiley-VCH, was edited by Gerd Meyer, Dieter Naumann and Lars Wesemann. Meyer, a professor of inorganic chemistry at the University of Cologne, Germany, worked with Corbett in 1980 as a visiting scientist and dedicated the book to Corbett in honor of his his mentor's 80th birthday on March 23, 2006.

"This book is about passion. A passion for chemistry…a passion and admiration for John's way of conducting research in solid state chemistry and for the way he passes his vast amount of accumulated knowledge to his students, post-doctoral associates and the community as a whole."

Meyer said in his dedication, "John Corbett is a truly outstanding solid state inorganic chemist, an individual of immense and different talents, who has influenced not only his discipline but, in many ways, has led the renaissance in solid state chemistry over the past several decades."

The dedication, co-authored by Kenneth Poeppelmeier, Professor of Chemistry at Northwestern University and another of Corbett's students, highlighted Corbett's career and contributions. It also contained a number of "Corbett Quotables" pulled from some of the many articles published during his lengthy career.

"John's energy and enthusiasm for chemistry have not diminished over 50-plus years of active service but, on the contrary, appear to be on the increase," Poeppelmeier said. "We wish John a very happy birthday and look forward to many more 'Corbett Quotables' in the years to come."

While Corbett found the dedication "very touching," he is most proud of the accomplishments of his many students.

"The most rewarding for me is seeing all these students develop into experts in the field in their own right," he said. "I'd also like to thank my very old friend Gerd Meyer for all his work in coordinating all those authors and articles."

COLLEGE OF LIBERAL ARTS AND SCIENCES ACADEMIC DEPARTMENT AWARD FOR MICHAEL DOYLE

Michael Doyle
Professor of Chemistry
University of Maryland

Ph.D., 1969
(W. Trahanovsky)

A long-time advocate of undergraduate research in chemistry, Michael Doyle has been described as a "guru of the field." Whenever he's given the opportunity, he is quick to promote the value of engaging undergraduates in research that makes genuine discoveries and advanced the frontiers of scientific knowledge.

Doyle has done just that at each of his stops in his academic career. First at Hope College where he rose to full professor in just six years and then at Trinity University in San Antonio, Texas, as the Dr. R. Semmes Distinguished Professor of Chemistry.

After several successful years at Trinity, Doyle moved to the University of Arizona where he eventually became the president of Research Corporation and a professor of chemistry. Since 2003, he has served as professor and chair of the Department of Chemistry and Biochemistry at the University of Maryland.

He has received numerous honors given by the American Chemical Society in education, the George C. Pimentel Award and the Arthur C. Cope Scholar Award.

Doyle has written or co-authored ten books, including *Basic Organic Stereochemistry*, and 20 book chapters. He is the co-author of more than 250 journal publications of which more than 120 of those had undergraduate students as co-authors.

L to R:
Walt Trahanovsky, Professor of Chemistry, Michael Doyle, and Dean of Liberal Arts and Sciences, Michael Whiteford

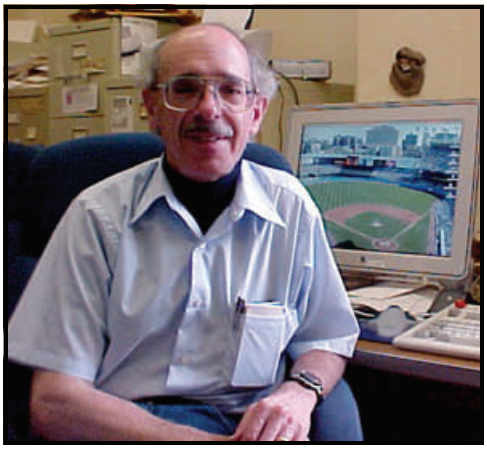
MAREK PRUSKI RECEIVES ADJUNCT APPOINTMENT

Marek Pruski received his B.S. from the Nicholas Copernicus University in Torun in 1977 and his Ph.D. from the same university in 1981. Following postdoctoral work at Iowa State University with Prof. Bernard C. Gerstein, he joined the staff of the Ames Laboratory where he currently is a Senior Scientist. He served as visiting professor at the University of Lille in 1998 and 2000, and at the University of Caen in 2003. Dr. Pruski currently serves on the editorial board of *Solid State Nuclear Magnetic Resonance* and is a member of the American Chemical Society.

Pruski's group develops and applies transient techniques in solid-state nuclear magnetic resonance (NMR) to probe the chemical and physical properties of materials involved in heterogeneous catalysis, surface science and materials science. The work on catalysts, which in recent years constituted most of the research effort, focuses on studying the properties of surfaces, as well as the molecular structure, dynamics and reactions of the adsorbed species. Development of new solid-state NMR methods for these studies is his second major research area. Current efforts include the development of techniques based on multiple-quantum magic angle spinning (MQMAS) NMR, homo- and hetero-nuclear correlation experiments for spin-1/2 and quadrupolar nuclei, methods utilizing ultrafast MAS and methods for measuring internuclear distances in solids.

Marek Pruski
Adjunct Professor of Chemistry

CHEMISTRY PROFESSOR NAMED FIRST CRAIG CHAIR



Mark Gordon
Frances M. Craig Chair
Distinguished Professor of Chemistry

Mark Gordon, Distinguished Professor of Liberal Arts and Sciences and Professor of Chemistry, has been named the Frances M. Craig Chair. He is the first individual appointed to this position.

The Craig Chair was established from portions of proceeds of a $12 million gift made by late Iowa State alumna Frances Craig, a 1949 home economics graduate.

This latest gift, in combination with past family gifts, makes up the Craig Family Fund. Earnings on the endowment are directed to strategic priorities at the university president's discretion. The fund will allow the president to put special emphasis on faculty support.

"It is very meaningful that the university has chosen to recognize me in this way. It's a validation of what I have accomplished at Iowa State and it's also a little humbling because there are so many good people here," Gordon said. "The recognition is extremely important to me as member of the faculty, but at the same time, the additional funds provide important flexibility in my research."

Gordon studies theoretical and computational chemistry and is well-known for his contributions in this field.

"When other institutions want to recruit someone of Mark Gordon's stature, they're going to offer endowed professorships," said Michael Whiteford, LAS dean. "We were able to respond to early initiatives with a position positively, forcefully and quickly, I am very pleased we were able to provide this recognition for him."

PRESIDENTIAL LECTURER FOR 2007

Dr. Nathan Lewis, 2002 George L. Argyros Professor of Chemistry, has been on the faculty at the California Institute of Technology since 1988, and has served as Professor since 1991. He has also served as the Principal Investigator of the Beckman Institute Molecular Materials Resource Center at Caltech since 1992.

From 1981 to 1986, he was on the faculty at Stanford, as an Assistant Professor from 1981 to 1985 and a tenured Associate Professor from 1986 to 1988.

Dr. Lewis received his Ph.D. in Chemistry from the Massachusetts Institute of Technology. Dr Lewis has been an Alfred P. Sloan Fellow, a Camille and Henry Dreyfus Teacher-Scholar, and a Presidential Young Investigator. He received the Fresenius Award in 1990, the ACS Award in Pure Chemistry in 1991, the Orton Memorial Lecture award in 2003, and the Princeton Environmental Award in 2003.

He has published over 200 papers and has supervised approximately 50 graduate students and postdoctoral associates. His research interests include light-induced electron transfer reactions, both at surfaces and in transition metal complexes; surface chemistry: photochemistry of semiconductor/liquid interfaces; novel uses of conducting organic polymers and polymer/conductor composites; amd development of sensor arrays from these polymers that use pattern recognition algorithms to identify odorants, mimicking the mammalian olfaction process.

The Presidential University Lecture Series highlights faculty excellence in learning, discovery, and engagement. The president invites Iowa State faculty of international preeminence to present lectures from their own areas of expertise on topics of interest to the general public, designed to stimulate high-quality, intellectual discussion among faculty, staff, students, and community members.

Nathan S. Lewis
George L. Argyros Professor and Professor of Chemistry

CARVER TRUST FUNDS TWO LAS PROJECTS

Aaron Sadow
Assistant Professor of Chemistry

The Roy J. Carver Charitable Trust has recently committed over $800,000 in grants for research at Iowa State. The funds will support three separate studies at the university, including two in the Department of Chemistry which will focus in areas of biomolecules and medicinal compounds.

These grants will support research in the following focus areas:

- **Responsive Molecules Inspired by Antimicrobial Peptides and Their Applications in Biomedical Research**, $298,871. Scientists, including Yan Zhao, assistant professor of chemistry, will focus on the design and synthesis of molecules in order to demonstrate a molecule's application in biomedical research.

- **A Class of Multi-Application Medicinal Compounds: Combining Magnetic Resonance Imaging (MRI) and Boron Neutron Capture Therapy for Cancer Treatment**, $300,000. Research by Aaron Sadow, assistant professor of chemistry, targets more effective methods for treating brain tumors that will also improve both the length and quality of life for brain tumor patients.

"These research projects will not only have an important impact in their respective fields, but also provide students and faculty with new opportunities to make a difference in scientific arenas," said Michael Whiteford, dean of the College of Liberal Arts and Sciences. "The additional support will take this research beyond the preliminary stages and assist in the development of new information and knowledge".

Yan Zhao
Assistant Professor of Chemistry

NEW CALDWELL PROFESSOR

Nicola Pohl
Caldwell Professor
Associate Professor of Chemistry

Nicola Pohl, associate professor of chemistry, has been named the new Caldwell Professor of Chemistry at Iowa State University.

A member of the Plant Sciences Institute, Pohl's laboratory is developing new tools to make carbohydrates and the proteins that build carbohydrate structures much easier to study.

She is an Alfred P. Sloan Research Fellow and has previously received a five-year, $510,000 Faculty Early Career Award from the National Science Foundation to pursue further understanding into carbohydrates.

She has been a member of the Iowa State faculty since 2000.

To contact ISU Foundation:
www.foundation.iastate.edu

Meet us at the 233rd ACS National Meeting & Exposition
March 25 - 29, 2007
Chicago, IL
more to follow…

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RESEARCHERS RECOGNIZED FOR WORK TO INHIBIT METH PRODUCTION

George Kraus, left, and John Verkade, University Professors of chemistry at Iowa State University, discovered that adding calcium nitrate to anhydrous ammonia tanks makes the corn fertilizer useless as an ingredient for methamphetamine.

Iowa State University researchers George Kraus and John Verkade walked up the west steps of the Iowa Statehouse Monday, Oct. 9, to a round of applause.

The Iowa State chemists and their team of graduate students discovered a way to make anhydrous ammonia fertilizer useless as an ingredient for methamphetamine. All it takes is some calcium nitrate - a common fertilizer compound - added to the anhydrous ammonia and the yield of meth drops from 42 percent of total ingredient weight down to 2 percent or less.

The discovery was made about four years ago and has since been subject to rounds of testing by the state's Division of Criminal Investigation, the U.S. Drug Enforcement Administration and the U.S. Department of Transportation.

Iowa Gov. Tom Vilsack and other state leaders stood in front of an anhydrous ammonia tank bearing a "STOP METH" sign to announce the discovery, thank Congress for funding the research that led to it and say all testing had been successfully completed.

"The message today to all those interested in manufacturing meth is simply, 'Don't bother,'" Vilsack said.

Later, after hailing the chemists' discovery as "another advancement in the war against meth," U.S. Sen. Tom Harkin called Kraus and Verkade, both University Professors of chemistry, up the steps and in front of the cameras and microphones.

Verkade said the two had tested "dozens and dozens" of compounds before finding one that worked.

"This was an accidental discovery," he said. "That is really what research is all about."

Verkade later explained to reporters that the researchers had a lot of compounds they thought would inhibit meth production. But they didn't work.

"So we took the Edisonian approach," he said. "You try everything you can to make the light bulb work. And we finally found a compound that worked very well."

And, said Marvin Van Haaften, the director of the Governor's Office of Drug Control Policy, "We're thankful for that accident."

Calcium nitrate can now be added to anhydrous ammonia tanks on a voluntary basis. The state estimates that treating all of the state's 26,000 anhydrous ammonia tanks twice a year would cost ag retailers about $1.2 million annually.

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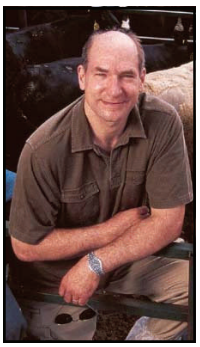
A NOTE FROM THE CHAIR

Jacob W. Petrich



Dear Friends of Chemistry and Iowa State University,

The Fall semester in the Department has been exciting and full of activity. I am pleased to announce that we have assembled a campaign committee to lead and to coordinate the fundraising efforts for the new Chemistry facility. Dennis Banasiak (Ph.D. 1977 with Tom Barton) has graciously agreed to chair the committee. The other members who have generously volunteered their time and resources to this effort are: Loren Barber (Ph.D. 1969 with Orville Chapman); Michael Doyle (Ph.D. 1968 with Walt Trahanovsky); and Bruce Hach (Hach Company and Hach Scientific Foundation). The faculty members of the committee are: Bob Angelici, former Chair and Distinguished Professor; John Corbett, former Chair, Distinguished Professor, and member of the National Academy of Sciences; George Kraus, former Chair and University Professor; and Ed Yeung, Robert Allen Wright Chair and Distinguished Professor in Liberal Arts and Sciences Professor of Chemistry.

We have been granted five million dollars to plan the new facility and have been working with the architectural firm of Ellenzweig Associates, Inc. intensively since August. The new facility is scheduled to be located northwest of Gilman Hall next to Spedding Hall. This planning stage includes not only the new facility but also renovations that will need to be done to Gilman Hall, which will continue to be essential to our research and teaching mission.

Finally, on November 10th, Kathy Trahanovsky and I will have the honor of accompanying our 6 undergraduate Hach Scholars to Ft. Collins, Colorado 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