



SCHOOL OF  
CHEMICAL  
SCIENCES

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

# ALUMNIN<sup>NEWS</sup>

DEPARTMENTS OF CHEMICAL & BIOMOLECULAR ENGINEERING AND CHEMISTRY

FALL 2006

## SCS Creates New Products, Jobs



Groundbreaking ceremony for Obiter Research LLC. CEO and president Dr. Bill Boulanger is in the white shirt, flanked by State Representatives Rick Winkel and Naomi Jakobsson.

SCS has long been an economic powerhouse by training thousands of students who have contributed mightily to society. Often unnoticed, SCS has directly assisted in the establishment of new companies based on research conducted by faculty, staff, and students. At least 10 companies have been started based on research and techniques developed at the School. The companies—some of which have just begun and some of which have been around close to 20 years—range from chemical manufacture and NMR services to new drug therapies and novel electronic displays.

For example, Tekion, founded by Professor Rich Masel, is developing a microfuel cell battery hybrid for portable electronic devices. In the last two years, his company has raised \$12 million, created 66 jobs, and employed eight students from U. of I. A brand new company, Semprius, founded by Professors Ralph Nuzzo and John Rogers, as well as George Whitesides of Harvard, has developed high-performance, thin-film transistors on plastic substrates, leading to thin and low-cost, paper-like electronic displays.

Dean Olson, who received his chemistry PhD in 1994, started out as a post-doc for Professor Jonathan Sweedler helping develop the technology behind the company that is now Protasis/MRM. After one year, during which he split his time between the fledgling company and his post-doctoral position, Olson became the director of CapNMR installations and customer support at MRM and has been there ever since.

"I stayed in Champaign-Urbana for the work," says Olson. "There turns out to be a lot of science involved in bringing a product to market. You have to continually develop your product in a way that customers find useful and that means being in the lab."

Likewise, several former students are now working at ChemSensing, established by Professor Ken Suslick in 2002. Not only did the CEO, Matt Placek, receive his bachelor's from U. of I., but also two of the founding team members came from the chemistry department—Bill McNamara, PhD '02, and Avijit Sen, who did a post-doc with Suslick.

## Already started start-ups....

**ChemSensing** (Ken Suslick) designs, manufactures, licenses and distributes systems to detect aromas and other airborne chemicals. The systems, for example, can help doctors diagnose diseases and can help NASA determine if rocket propellant has degraded. Established in 2002. [www.chemsensing.com](http://www.chemsensing.com)

**Obiter Research** (William Boulanger) manufactures fine chemicals in kiloscale quantities and custom manufactures rare and exotic fine chemicals. Established in 2001. [www.obiterresearch.com](http://www.obiterresearch.com)

**MRM/Protasis** (Jonathan Sweedler) provides microflow NMR probes, mass spectrometry, as well as software to manage samples on line. The company has clients in eight countries and with "every pharmaceutical company you can name." Established in 1994. [www.protasis.com](http://www.protasis.com)

**Radius Health** (John Katzenellenbogen) develops drug therapies for osteoporosis and women's health, building on years of research on estrogen receptor at U. of I. Established in 2003 as NuVios. [www.radiuspharm.com](http://www.radiuspharm.com)

**Spectral Data Services** (Eric Oldfield) provides fast NMR data acquisition and analysis, both 1-D and 2-D, as well as for solids, liquids, and gases, building on SCS's strong tradition in NMR spectroscopy. Established in 1985. [www.sdsnmr.com](http://www.sdsnmr.com)

**Tekion** (Rich Masel) creates a microfuel cell battery hybrid to enable continuous operation of portable electronic devices without plug-in recharging. See Jan/Feb 2006 issue of *Small Times* on Tekion's technology. Founded in 2003. [www.tekion.com](http://www.tekion.com)

## And just starting start-ups....

**Azidex Pharmaceutical** (Eric Oldfield) develops new therapeutic compounds to fight drug resistance for medicines like AZT. Established in March 2005.

**Cbana** (Rich Masel) provides microfluidic components for homeland security, portable power, and healthcare. Established in March 2006.

**Dzymetech** (Yi Lu) uses gold nanoparticles laced with DNA to detect hazardous lead paint and other environmental contaminants using color change techniques, somewhat related to litmus paper.

**Semprius** (Ralph Nuzzo and John Rogers) manufactures high-performance, thin-film transistors on plastic substrates to produce low-cost, paper-like electronic displays. Semprius recently won the Wall Street Journal Innovation award in the semiconductor category.



## From the Director's Desk

It has been an honor and a privilege to serve as the Director of the School of Chemical Sciences over the last seven years. During this time, the Department of Chemistry and Department of Chemical and Biomolecular Engineering have maintained the tradition of excellence that defines chemical sciences at Illinois. These departments continue to offer the best of both academic worlds—achievement of private college standards and rankings with the accessibility and affordability of a public institution. We achieved this special stature because of the generous financial and moral support provided by our alumni. In these rapidly changing times, the state provides a decreasing fraction of our expenses, so it's important that we communicate to our alumni and friends how they can continue to stay involved in strengthening both departments. Through our newsletter, we aim to demonstrate that we are delivering on our obligations to our students and our society. Although much of our newsletter focuses on faculty, we are cognizant that faculty are a means to our goals—providing an outstanding learning environment for our students. In the future, we seek to broaden our horizons in the newsletter as we add stories on alumni achievements and accomplishments. I encourage our alumni to share their successes with us and with my successor in the director position, Dr. Andrew Gewirth. Please join me in welcoming Andy to his new role as director and thank you for your support.

## To reach the editor...

You can reach our office by email at [scsnews@scs.uiuc.edu](mailto:scsnews@scs.uiuc.edu) or by fax at (217) 333-3120. Please continue to send your news and also include comments on the newsletter, alumni and development programs and any questions you may have on any of the above. Have an idea for a story? We enjoy hearing from you.

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## SCS Names New Department Heads

The School of Chemical Sciences has two new department heads. **Edmund G. Seebauer** has been appointed the head of the Department of Chemical and Biomolecular Engineering and **Steven C. Zimmerman** has been appointed head of the Department of Chemistry.

Seebauer has been at the School of Chemical Sciences since 1988. He received his BS from Illinois in 1983 and his doctorate from the University of Minnesota in 1986. In 1987 he spent a year of post-doctoral work at Sandia National Laboratories in Albuquerque, N.M. His research focuses on nano-scale control of semi-conductor surface chemistry and transport. The experiments his research group conducts typically involve semiconductor thin-film synthesis by chemical vapor deposition or atomic layer deposition, characterization by ultra-high vacuum or optical techniques, and surface reactivity measurements. His research group also computes molecular

dynamics simulations and quantum calculations by density functional theory, both of which are linked to continuum diffusion-reaction equations.

Zimmerman received his bachelor's degree in 1979 from the University of Wisconsin and his doctorate from Columbia in 1983. He held an NSF-NATO postdoctoral fellowship at the University of Cambridge in England and joined the Illinois faculty in 1985. Professor Zimmerman's research interests are in bioorganic, synthetic organic, and supramolecular chemistry. A common theme in his research group is the use of molecular recognition to solve problems in biomedicine or materials chemistry. For example, can immiscible polymers be mixed at the molecular level with a small number of very strong inter-polymer interactions, or can a molecular imprint or memory be created within a macromolecule?



## "East Chem"—RAL History Revised

Oops! In the last issue of the *SCS Alumni News*, we said that the Roger Adams Lab (originally called East Chem) was built in 1947, but in fact, as our astute alumnus Eleutherios T. ("Ted") Houvouras (AM '50, PhD '53, Johnstone) notes, the project was perhaps begun in 1947 but not completed until about 1951.

Professor Westwater (see obituary in this issue) was instrumental in the design of East Chem, remembers Dr. Houvouras, particularly in designing the air conditioning system. According to the University archives, the building was originally dedicated to Professor Samuel Parr, founder of Parr Instruments.

"ChemE used to be in the basement of the old Noyes Lab and the new building, East Chem, was still being built when I came," says Dr. Houvouras. "I remember moving instruments from the basement into East Chem in 1950 or 1951." In Dr. Houvouras' day, ChemE was a much smaller department, with only four professors, including Professors Johnstone, Westwater, Drickamer, and Cummings. Houvouras was the student of one of ChemE's legendary faculty, H. Fraser Johnstone (<http://acswebcontent.acs.org/landmarks/landmarks/noyes/johnstone.html>).

Later Dr. Houvouras worked for DuPont in acetate fibers and Lycra. He then joined Allied Chemicals, Getty Oil, and finally Merrill Lynch, before retiring.

Johnstone was a close colleague of Roger Adams, "the Bulldog from Boston." Houvouras tells a story of Adams sending around a notice that if anyone forgot their key, nobody was allowed to let them into the building—no matter what. One day soon thereafter, Dr. Adams forgot his key and pounded on the door, whereupon his secretary came to the door and refused him admittance. Although Dr. Houvouras wasn't there, he says he thinks Dr. Adams eventually was allowed to enter.

# Department of Chemistry Welcomes Baranger, Hartwig



The Department of Chemistry is pleased to announce that Anne Baranger and John Hartwig have just joined the faculty.

"The hiring of Anne Baranger and John Hartwig is a major coup for the Department of Chemistry," says Steven Zimmerman, department head. "Both Anne and John beautifully complement the research areas of several of our faculty and the fit was just perfect."

Baranger's current research is focused on learning the fundamental interactions responsible for protein-RNA recognition. She hopes the results may contribute to the design of peptides and small molecules that can bind RNA. The development of such molecules will help further the understanding of fundamental biology as well as contribute to the development of new drugs (a reverse transcriptase blocker, for instance).

"Anne is a leader in the chemical biology community, doing some really exciting work in understanding how proteins recognize RNA," says Zimmerman.

Baranger, who grew up in Pittsburgh, Pa., received her bachelor's degree from MIT and her doctorate from Berkeley.

After a post-doc at Yale, Baranger joined the Department of Chemistry at Wesleyan University in 1996.

Hartwig, who received the 2006 American Chemical Society Organometallic Chemistry Award, focuses on the discovery of new transition metal chemistry and its development into practical, catalytic synthetic methods. His work in synthetic and polymer chemistry has broad implications for manufacturing processes and efficiency, the development of pharmaceutical compounds, and the petrochemical industry.

A native of Illinois, Hartwig was raised in

upstate New York. He received his bachelor's degree in 1986 from Princeton, and a doctorate in 1990 from Berkeley. After an American Cancer Society postdoctoral fellowship with Stephen Lippard, he began an appointment at Yale in 1992, where he became the Irénée P. duPont Professor of Chemistry.

"John Hartwig is one of the leading figures internationally in organometallic chemistry and the application of mechanistic principles to the development of new synthetic organic chemistry methods," says Zimmerman. "He is a deep and creative scholar, very much in the mold of some of the Illinois greats like Leonard and Marvel."



## Gift Enables Department of Chemistry to Establish Kenneth Rinehart Chair

The Department of Chemistry has just announced the creation of the Kenneth L. Rinehart, Jr. Chair in Natural Products Chemistry.

The endowed chair was created by Marlyn ("Corky") Rinehart in honor of her husband, the late Kenneth Rinehart. John Hartwig will be the first Kenneth Rinehart Chair. (See above for more information about Hartwig.)

"This gift is greater than the total salary Kenneth received over his more than 40-year career," says Tom Rauchfuss, director of the School of Chemical Sciences. "It's a wonderful reflection of the esteem that the Rineharts have for chemistry. And the feelings are mutual. University endowments are extremely powerful investments because the income helps good people do good work—forever."

Mrs. Rinehart has said she wanted to acknowledge her husband's contributions to the chemistry department, both in his research and his role early in his career of obtaining money to create one of the world's best-equipped mass spectrometry laboratories. Today the "MSL" is a multi-million dollar facility that benefits not only colleagues in chemistry, but researchers across the campus and indeed the state. The success of this facility is owed in large part to Rinehart's early and persistent leadership. Mass spectrometry is an increasingly dominant tool in the characterization of both natural and synthetic compounds.

"Endowed chairs are becoming more and more important for a top program to empower truly outstanding faculty," says Steven Zimmerman, head of chemistry.

"The income from the chair will support the pursuit of new, high-risk ideas in research and instruction. By funding this kind of work, the endowment allows Illinois to remain a leading force in the discovery of new chemistry and the training of new practitioners of this art."



**Kenneth L. Rinehart** was at the forefront of nearly every aspect of natural products chemistry for more than 40 years. Greg Girolami, professor of chemistry, described him as "the

leading investigator of biologically active natural products of marine origin."

Rinehart and his group isolated, identified, and synthesized a remarkable diversity of natural products, including antibiotics, aromatic polyketides, fatty acids,

and anti-tumor agents. Rinehart was an inspiration to more than 300 postdoctoral research associates, graduate students, and undergraduate students. A group of friends and former students has started the Rinehart Fellowship in his honor and has already raised \$100,000 in gifts and pledges. Contributions in Rinehart's memory may be made to this fund. For more information email Leslie Vermillion at [lvj@uiuc.edu](mailto:lvj@uiuc.edu) or Steven Zimmerman at [zimmerma@scs.uiuc.edu](mailto:zimmerma@scs.uiuc.edu).

## Mayrhofer: Organized, Energetic, International

Rebecca-Maria Mayrhofer came to Illinois knowing she liked chemistry in general. She left knowing she loves doing imaging work, particularly as it relates to designing better medicines.

Mayrhofer, who took only three years to earn her bachelor's degree in chemical engineering, had the opportunity to work in two different laboratories: Michael Strano's and Chad Rienstra's. That research experience helped her hone in on what interested her.

Strano first met Mayrhofer in his sophomore ChemE class (which she took as a freshman).

"I could tell she was very bright because she answered quite a few questions," says Strano. "I mentioned something about her working in my lab, and she jumped on it and immediately contacted me. She is very motivated, organized, and enthusiastic. It often turns out that enthusiasm is the most important thing; it didn't matter to me that she was a freshman."

"I learned a lot," says Mayrhofer of her experience in Strano's lab, which studies nanotubes. "Dan Heller (one of Strano's graduate students) taught me everything. He made me independent."

Mayrhofer was a co-author on two papers, one published in the *Journal of the American Chemical Society* and the other in the *Journal of Physical Chemistry*. It is highly unusual for an undergraduate to have enough lab experience to be included in a single paper, notes Strano. Being on two is an indication of Mayrhofer's level of energy and drive.

During her second year, Mayrhofer took quantum chemistry with Rienstra and fell in love with it. She spent her

second summer in Rienstra's lab learning how to use solid state NMR to calculate the structure of proteins.

In Rienstra's lab, Mayrhofer collaborated with two graduate students by analyzing the experimental data and including it in calculations, says Rienstra. The resulting protein structure is one of the first 10 ever determined this way and it has the highest precision of any protein structure determined with SSNMR.

Mayrhofer graduated with highest honors, is a James scholar, speaks four languages, and wrote a thesis based on this work titled *Protein Structure Analysis of GB1 with 3D Solid State NMR Data*.

But Mayrhofer most definitely does not work all the time. She takes taekwondo four days a week, trains for marathons, and just hangs out with her boyfriend, Ben Meador, and numerous friends. Her friends are very important to her. For example, Mayrhofer missed her own graduation ceremony to attend her friend Nicholas Martin's ceremony in agricultural sciences. Martin, whom she met through taekwondo, was receiving his doctorate and didn't have any family to join him. "I thought it was more important to be there for him than to attend my own ceremony," says Mayrhofer.

Rienstra, assistant professor of chemistry, has been struck by how much Mayrhofer likes to help others.

"I saw Becca at a coffee shop the first week of class in January," says



Rienstra. "I quickly realized that she organized study sessions among her colleagues and often held these sessions at the coffee shop. She was the best student in the class and did brilliantly on all her problem sets and exams, but it was her commitment to helping other students also learn that really impressed me the most."

Mayrhofer, whose parents are German, grew up in Singapore and is considered a citizen of both countries.

Her father is a computer engineer and works for Singapore Airlines. Her mother is a psychologist. The second of six children, Mayrhofer attended the U. of I. on a scholarship from the Singaporean government. The scholarship is known as the A\*Star and is very difficult to qualify for. Successful applicants receive support, including room and board, for their entire education, up through their PhD. The year Mayrhofer succeeded, there were only 27 students who qualified and she was the only non-Asian student, she says.

In exchange for this financial support, Mayrhofer will return to Singapore where she will work for one year on biomedical imaging with Sir George Radda. During her year in Singapore she is hoping to collaborate with a Beckman researcher. "I love to collaborate," she says. "I'd rather help someone else than do my own work."

Even though she is leaving the country, Mayrhofer knows she'll be back soon. She has all her friends to visit, and a PhD to earn.

**The School of Chemical Sciences graduated a total of 139 undergraduates during the academic year of 2005-2006. Sixty of those received degrees in chemical and biomolecular engineering and 79 received theirs in chemistry. In addition, SCS awarded 43 master's degrees and 71 doctorates. Companies such as 3M, Anheuser-Busch, Clorox, Kraft Foods, Pfizer, and Shell hired our graduates.**

## Hergenrother Groundbreaking Research Receives Awards



Paul Hergenrother is a chemist who loves a challenge.

"One of the most exciting and really unique things about our lab is that Paul takes on the toughest

problems, ones that even pharmaceutical companies shy away from, and says, 'Let's solve these problems,'" says Jason Thomas, a graduate student in the Hergenrother lab and co-author of two papers.

For example, Hergenrother, associate professor of chemistry, has chosen to focus on melanoma, one of the most untreatable forms of cancer.

Hergenrother and his research group have discovered a class of small molecules called triphenylmethylamides that induce apoptosis (cell death) in melanoma cells. The TPMAs induce apop-

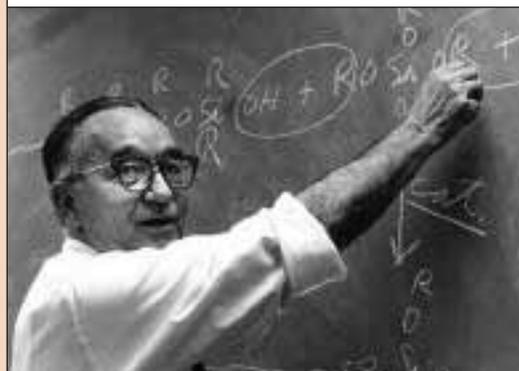
tosis in the G1 phase of the cell cycle, unlike most other drugs, which target cell division or DNA synthesis. In addition to helping to understand the biology of melanoma, these TPMAs could be the starting place for a new drug.

Hergenrother also has spearheaded an effort to counter antibiotic resistance by using a small, naturally occurring molecule to destroy the plasmid that enables bacteria resistance.

Hergenrother, who joined the faculty in 2001, has received numerous awards for his work. This year he received the American Chemical Society David Robertson Award for Excellence in Medicinal Chemistry, which recognizes seminal contributions by young scientists to medicinal chemistry, and a Gunsalus Scholar Award from the LAS Executive Committee.

## Dow Corning Names Building in Honor of Chemistry Alumnus

Dow Corning recently named its science and technology building the J. Franklin Hyde Research and Development Center. Hyde (PhD '28, Chem, R. Adams), who died in 1999 at the age of 93, is sometimes referred to as the "father of silicones." Over the course of four decades at Corning Glass and then Dow Corning, he received more than 100 patents in the broad field of silicone chemistry.



Gregg Zank (PhD '85, Chem, Rauchfuss), chief technology officer at Dow Corning was the driving force behind the naming of the building. Says Zank, "I began to realize that there are many people here who do not know or fully appreciate the significance of this rich history and the people that made it. I had the honor to spend time with Dr. Hyde when he would visit Dow Corning after his retirement. On these occasions, I learned so much about our science and him that it had a profound effect on me. I wanted others to feel some of what I felt firsthand and I wanted it to be something of significance for the entire company in perpetuity."

Hyde's work became the foundation upon which the company was built. His fused silica was used in everything from the giant mirror of the Hubble Space Telescope to the windows of the space shuttle. The glass also contributed significantly to the fiber optics industry: the "net" in the Internet.

## Professor Zhao Advances Protein Engineering Techniques



Professor Huimin Zhao has developed a new technique to engineer proteins with novel functions. Thanks to the rapid advances in recombinant DNA technology and genomics, numerous proteins have been engineered into useful therapeutics, diagnostics, and industrial catalysts. However, the engineering of proteins with novel functions remains a huge hurdle. To overcome this challenge, Zhao and his team mimicked Mother Nature's co-evolution process in the test tube for the first time. Co-evolution is the driving force behind the biological "arms-race" between, for example, flowering plants and pollinating insects. In their *in vitro* co-evolution approach, Zhao and his graduate student, Zhilei Chen, modified a human estrogen receptor, a protein that naturally binds to the hormone estrogen, to react with a different hormone, corticosterone. Chen recently graduated from the Zhao group and has accepted a faculty position in the ChemE department at Texas A&M. A patent application has been filed based on his thesis research.

Some researchers have used a "rational design" approach to design novel protein functions, in which they try to make site-directed changes in the proteins. But that approach has met with only limited success because of our incomplete understanding of protein structure and function, says Zhao.

Down the road, Zhao hopes to co-evolve enzymes to remove polluting side-products from petroleum refining and to leave DNA target for use in human gene therapy. These new projects are being carried out by two graduate students, Ee Lui Ang and Sheryl Rubin-Pitel.

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**Ben Thoburn Briggs**, PhD '37, Chem (Rodebush), died on March 22, 2006. He was 94 years old. He was a longtime employee of Rainier Pulp and Paper Company (ITT Rayonier), eventually becoming the director of the Shelton Research Division. In 1960, he resigned to become a chemical consultant. He was a 59-year member of the Technical Association of the Pulp and Paper Industry and a 69-year member of the American Chemical Society. He is survived by his son, Scott; daughter, Nancy Wehr; and two grandchildren.

**Charles J. Hoffman**, MS '48, PhD '51, Chem (Gutowsky), died March 8, 2005. He was 86 years old. Dr. Hoffman was the first student of Dr. Herbert Gutowsky at U. of I. and took great pride in having been part of his original research group to explore the then-new field of nuclear magnetic resonance, (commonly known as NMR). After Illinois, Hoffman became a cryogenist and staff member at Los Alamos National Laboratory and then at Lockheed Missile and Space Company. Dr. Hoffman is survived by his wife, Ruth; one daughter; two granddaughters; and two great-grandsons.

**Albert "Humph" Humphrey**, BS '46, ChemE, passed away on October 31, 2005. He was 80 years old. He earned an MS in chemical engineering from MIT in 1948, and an MBA from Harvard Business School in 1955. Humph joined the Stanford Research Institute in January 1965 and left in June 1969 as an independent consultant. He is survived by his wife, Myriam.

**William L. Masterton**, PhD '53, Chem, died on June 19, 2005. He was 78 years old. After teaching chemistry at Illinois, he headed the general chemistry program at the University of Connecticut until his retirement in 1979. Masterton co-authored six editions of the textbook *Chemical Principles* with Emil Slowinski. With Cecile Hurley, Masterton wrote five editions of *Chemical Principles and Reactions*. He is survived by his wife, Loris; two sons; and four grandchildren.

**Donald M. O'Brien, Sr.** died on April 9, 2006, at age 65. Don was a much-beloved scientific glassblower who supervised the U. of I. Chemistry Glass Shop until he retired in 1996. Tom Rauchfuss, professor and director of the School of Chemical Sciences, fondly remembers Don as "a large man with a good hand, keen eye, and a warm heart. He was always ready



to help out in an emergency and, in his wonderful New England brogue, had fun stories to entertain you [with] while he conducted the quick repair." A native of New Hampshire, Don started his glassblowing career in 1959 as an apprentice at Macalaster-Bicknell in Fitzwilliam. In 1964, he began working at U. of I. During his tenure, Don worked with hundreds of faculty and students who frequently benefited from his technical expertise. A competitive ballplayer in his youth, Don declined an opportunity to play in the Red Sox farm league to pursue a career in glassblowing. Don founded O'Brien Scientific Glassblowing, a family business, in Monticello, Ill. The company makes glassware for companies and universities across the country. Fittingly, Don, Jr. succeeded his father as head glassblower in chemical sciences. Don, Sr. was preceded in death by his wife of 45 years, Mary O'Brien.

**Richard D. Sacks**, BS '65, Chem (Malmstadt), died on February 11, 2006. A faculty member at the University of Michigan, his research included multi-dimensional GC (GCxGC), selectivity enhancement to improve the quality of separation and the development of miniaturized GC's, and collaborative research relating to instrumentation for inter-planetary environmental investigations. He is survived by his wife, Kristine, and daughter, Jenny.

**Jay R. Schenck**, BS '36, MS '37, Chem (Shriner), died on June 16, 2006. He worked as a research chemist at Abbott for 42 years. He was an avid snow skier, enjoyed sailboat racing, and was a member of the U.S. Power Squadron where he taught navigation. He is survived by his wife, Ann; his children, John and Kathryn; and his granddaughter, Juliann.

**Angelo John Speziale**, PhD '48, Chem (Fuson), passed away on April 3, 2006. He was 89. He had a distinguished career at Monsanto in the agricultural division. He was named senior scientist in 1960 and became director of research until his retirement in 1979. It was during his tenure as director of research that the popular weed-killer, Roundup, was

developed. He was predeceased by his wife of 54 years, Dorothy, in 1996. He is survived by his daughters and sons-in-law; five grandchildren; and three great-grandchildren.

**James William Westwater**, BS '41, ChemE, died on March 31, 2006. He was 86. Born in Danville, Ill., Westwater returned to the University as an assistant professor after



receiving his doctorate from the University of Delaware in 1948 (the first PhD ever conferred by that University). He rose to professor of chemical engineering and led the department as head from 1962-1980, during an era of profound and substantial growth in the field of chemical engineering. He retired in 1988. A professorship in his honor was established by the friends and admirers in 1986. An innovative researcher, Westwater pioneered the use of high-speed motion pictures to study boiling water. This work led to the first realistic theories of heat transfer that remain crucial to the design of boilers and condensers. These "Westwater Movies" have been shown throughout the world, have aided in the building and operation of nuclear reactors and steam generating plants, and enhanced the study of many chemical processes. Westwater was a dedicated instructor and a skillful leader. The many awards for his teaching and research included the AIChE Founder Award and election to the National Academy of Engineering. He is survived by his wife, Elizabeth; one son; three daughters; seven grandchildren; seven great-grandchildren; and one brother.

**John H. Widdowson**, BS '41, ChemE, died on June 21, 2006. He was 86. Widdowson was a licensed chemical engineer and patent attorney, and was good friends with his classmate Jim Westwater (see above). He is survived by his wife, Melba; two sons; and a granddaughter.

## ALUMNI NOTES

**James K. Koehler**, BS '55, Chem (Ray), had a one-man art show at Antioch University, Seattle, Wash., in November 2005.

**Darsh T. Wasan**, BS '60, ChemE (Hanratty), Motorola Chair Professor of Chemical Engineering and Vice President of Illinois Institute of Technology, received the American Institute of Chemical Engineers' Alpha Chi Sigma Award for Chemical Engineering Research in 2005. He received the award for his "ingenious applications of thin colloidal films, for identifying novel fluid particle interaction mechanisms in dispersions, and his translation of fundamental principles to industrial practice."

**George "Bud" Homsy**, MS '67, PhD '69, ChemE (Hudson), a professor of mechanical and environmental engineering at U.C.-Santa Barbara, has been elected to the National Academy of Engineering. His citation reads: "For innovative experimental and theoretical studies of multiphase and interfacial flow phenomena and for the development of educational materials in fluid mechanics."

**Ted Wegner**, PhD '72, ChemE (Hanratty), is with Forest Products Laboratory in Madison, Wisc. He has initiated a program in wood utilization focusing on nanotechnology, the forest biorefinery and bioenergy, advanced composites, and advanced wood structures. Ted has been at the laboratory for 29 years.

**Steve Greiner**, BS '74, Chem, was part of a product development team at Kraft Foods that developed DiGiorno Microwave Rising Crust Pizza. This product recently won first place in a "Spirit of Innovation" competition run by Prepared Foods. Three other members of the team were also Illinois graduates, including Samira Mirarefi, BS '01, MS '03, Food Science, the daughter of Dr. Asghar Mirarefi, assistant to the head of ChBE.

**Charles W. Boeder**, PhD '78, Chem (Pirkle), is a vice president at the 3M Company in St. Paul, Minn. Notable 3M products in his area of responsibility include filter masks and respirators, document security laminates, protective window films, and commercial cleaning products.

**John Hoots**, PhD '83, Chem (Rauchfuss), is a research associate at Nalco Company, a leading provider of integrated water treatment and process improvement services. John, who works on corrosion and scale

inhibitors, particulate dispersants, and fluorescent tracers, is co-inventor on 52 U.S. patents and 268 corresponding international patents. In recognition of his achievements, he recently received Nalco's platinum award (50+ patents). In addition to his many awards, he received Nalco's only Chairman's Lifetime Achievement Award. In his spare time, John travels the world to witness total solar eclipses. This interest has taken him to Hawaii, the Caribbean, the Black Sea, and the Mediterranean.

**Joseph Fuchs**, BS '85, Chem, recently opened Everest Intellectual Property Law Group in Chicago. Fuchs has practiced intellectual property (IP) law for the past 16 years and is a member of the Illinois State Bar. He concentrates his law practice in such areas as nanotechnology, material sciences, drug formation, polymer sciences, medical-error reduction, and Internet healthcare. Fuchs, a member of the Intellectual Property Law Association of Chicago and iBIO (Illinois Biotechnology Industry Organization), also belongs to the Association of University Technology Managers.

**Catherine J. Murphy**, BS '86, Chem (Rauchfuss), Guy F. Lipscomb Professor of Chemistry at the University of South Carolina, published the top-cited paper in the *Journal of Physical Chemistry*. The article is a study of wet chemical synthesis of high aspect ratio cylindrical gold nanorods, co-authored with N.R. Jana and L. Gearheart.

**Rodney Ruoff**, PhD '88, Chem (Gutowsky), John Evans Professor in Mechanical Engineering at Northwestern University in 2005, became affiliated with Sung Kyun Kwan University Advanced Institute of Nano Technology as Distinguished Chair Visiting Professor. Rod is co-editor of two journals devoted to nanotechnology research and development: *Journal of Nanoengineering* and *Nanosystems*. He directs the Northwestern component of the NASA URETI Biologically Inspired Materials Institute. Rod lives with his wife, Akiko, and their baby boy, Christopher Daiju Ruoff, in Skokie, Ill.

**Joan F. Brennecke**, PhD '89, ChemE (Eckert) Keating-Crawford Professor of Chemical Engineering at Notre Dame, will receive the American Institute of Chemical Engineers' 2006 Professional Progress Award. This award recognizes "outstanding progress in the field of chemical engineering by individuals less than 45 years of

age." Brennecke has emerged as one of the world's authorities on supercritical fluid technology and ionic liquids.

**Raymond Dieter, Jr.**, BS '94, Chem, is president of the Center for Surgery, Department of Surgery in Glen Ellyn, Ill. In November 2005, he spoke on animal bites and unexpected hospital admissions at the East African Surgical Association Meeting. In January 2006, he attended the World Health Organization meeting in Geneva, Switzerland. In April 2006, he attended the International College of Surgeons meeting in Singapore.

**Julia Brumaghim**, PhD '99, Chem (Girolami), an assistant professor at Clemson, won a CAREER Award from the National Science Foundation. The award recognizes and supports "early career-development activities of those teacher-scholars who most effectively integrate research and education."

**Peggy Jean (Prest) Flanigan**, PhD '99, Chem (Moore), is a product development specialist in 3M ESPE in St. Paul, Minn. 3M ESPE manufactures and markets more than 2,000 products and services for dental professionals worldwide. PJ, her husband, John, and daughter, Kendra, live in Woodbury, Minn., and enjoy outdoor activities.

**Geoffrey Fichtl**, BS '03, ChemE (Kenis) is just completing an assignment in Indonesia working for UOP (see photo). He's expecting his next project to take him to Russia.



## Drop us a line

Clip and mail to SCS News editor.

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Not all of our start-ups focus on technology! The Blind Pig, founded by former postdoc Dr. Chris Knight, was recently ranked as one of the top bars in the U.S. by pubcrawler.com.

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