

# ALUMNI NEWS

## School of Chemical Sciences

Departments of Chemical Engineering and Chemistry

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

#42 FALL-WINTER 2000

### Girolami Takes the Helm

As the new Head of the Department of Chemistry, **Professor Gregory S. Girolami** looks forward to the challenges and opportunities of leading one of the premiere departments in the country. Girolami succeeds Professor Steven Zimmerman who has returned to research and teaching after having served as interim head for the last year.



Girolami, a highly respected inorganic chemist, has set ambitious goals for the future. "Illinois is rightly recognized for having one of the best chemistry departments in the world, but we will not rest until we're number one, and even then we won't rest!" he laughs. "Over the last ten years or so, we have hired a distinguished group of junior faculty members that, I believe, ranks as the best in the country. In addition, we have established the first new research areas in the department in over 80 years: materials chemistry and chemical biology." Girolami points out that these new areas have already led to new fundamental discoveries by researchers at Illinois. He adds, "But we also face great challenges, such as finding substantial funding for laboratory renovation, endowments for faculty chairs, and graduate student stipends."

Girolami looks forward to meeting many of the Department's alumni. "I have an interest in the history of chemistry, and enjoy talking to alumni who took part in the life of the department over the years."

Professor Girolami received his Ph.D. in Chemistry from UC Berkeley. He joined the department as an assistant professor in 1983 following an 18-month NATO postdoctoral fellowship with Nobel prizewinner Geoffrey Wilkinson at Imperial College of Science and Technology, London.

### "Engineering and Life"

"I've been doing radio spots since August 31, 1999," says **William Hammack**, Associate Professor of Chemical Engineering. "My wife and I dashed off a tagline for the show, thinking it was only temporary. It has, of course, stuck."

That tagline, "Engineering and Life," which to Hammack are one and the same, exemplifies the wide scope of his interests and the broad impact of engineering on our standard of living.

*... exemplifies the wide scope of his interests.*

Topics have included cell phones, plastic bottles, pop tops, the typewriter, Muzak, the Sears Tower, skis, Project Gutenberg, windshield wipers, and Spam. More than 70 programs have aired over the past year on National Public Radio stations. In Champaign-Urbana, the program can be heard Tuesdays on WILL AM-580 Morning Edition at 7:25 a.m. and 9:25 a.m.

Hammack, who completed his Ph.D., ChE (Drickamer), in 1988 brings a similar wide range of applicability to the classroom. In ChemE 101, "The Hidden World of Chemical Engineering," he brings engineering to life for photography, dance, history, and other non-engineering students.



## ALUMNI NOTES

1930

John Pianfetti, B.S., Chemistry, retired, FMC, founder of the Pianfetti reaction, is still participating in long distance races at age 93.

1932

William F. Henry, Ph.D., Chemistry (Rodebush), retired, 1973, Pillsbury, R&D turned 92 on August 23, 2000.

1943

Fred Basolo, Ph.D., Chemistry (Bailar), won the Priestley Medal in 2000. As announced in the *C&E News*, it is the highest award given by the ACS.

1952

David W. Carley, Ph.D., Chemistry (Clark), is enjoying his work with a small furniture repair and refinishing business in San Diego, following his retirement from teaching at Ripon College.

Gideon Fraenkel, B.S., Chemistry, has been appointed M. S. Newman Professor of Chemistry at Ohio State University.

1961

Philip M. Gresho, B.S. ChE, M.S. NucE and Ph.D., ChE '69 (Sani), after a successful 2-year

*continued*

## “One Other” – St. Elmo Brady

Referring to his educational experiences at Illinois, St. Elmo Brady lauded “all the advantages of a great university, contact with great minds, and the use of all modern equipment.” But Dr. Brady — the first African American to receive a Ph.D. in chemistry in the United States — continued beyond graduation to forge an outstanding career, leaving as a legacy of top quality chemistry departments at four American universities.



St. Elmo Brady was born on December 22, 1884 in Louisville, Kentucky. Greatly influenced by Thomas W. Talley, a pioneer in the teaching of science, he received his Bachelor's Degree from Fisk University in 1908 at the age of 24, and immediately began teaching at Tuskegee Institute in Alabama. His outstanding abilities were acknowledged in 1912 when he was offered a scholarship to Illinois to engage in graduate studies.

Many years later, he told his students that when he went to graduate school, “they began with 20 whites and one other and ended, in 1916 with six whites and one other.”

He received his Master of Science in Chemistry in 1914. Under Professor Clarence G. Derick, he completed his Ph.D. two years later, with a dissertation entitled “The Divalent Oxygen Atom.”

During his time at U of I, Brady became the first African American admitted to Phi Lambda Upsilon, the chemistry honor society (1914) and was one of the first to be inducted into Sigma Xi, the science honorary (1915). In November 1916, *The Crisis*, a monthly magazine of the NAACP, selected Brady as “Man of the Month.”

Brady published three scholarly abstracts in *Science* in 1914-15 on his work with Derick. He also collaborated with Professor George Beal on a paper published in *Journal of Industrial and Engineering Chemistry* titled, “The Hydrochloride Method for the Determination of Alkaloids.” Professor Brady also authored three monographs on “Household Chemistry for Girls.”

Brady's legacy was his establishment of strong undergraduate curricula and graduate programs, as well as his fund raising at four historically black colleges and universities. In conjunction with faculty from the University of Illinois, he established a summer program in infrared spectroscopy, which was open to faculty from all colleges and universities. He served Tuskegee (1916-1920), Howard University in Washington DC (1920-27), Fisk University (1927-52), and following his retirement from Fisk, Tougaloo College (1952-66). Samuel P. Massie commented as follows the challenge at Tougaloo, “It would have stopped a lesser spirit but not Brady. *continued*

*The first African American to receive a Ph.D. in Chemistry in the U.S.*

### To reach the editor...

You can reach our office by e-mail 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!

*St. Elmo Brady continued...*

With a puff of his pipe and a twinkle in his eye, he rolled up his sleeves and began to build again. As at Tuskegee, Howard, and Fisk, there soon arose another building, another good undergraduate program, and another good chemistry faculty."



Chemist, teacher, administrator, and humanitarian, Dr. St. Elmo Brady retired from active teaching and administration in 1961. He continued in adult education in his church until his death on Christmas Day, 1966 at the age of 92. He is buried in Lincoln Memorial Cemetery, Washington, DC. (Photos courtesy of Fisk University)

### Zukoski Stays on as Chemical Engineering Head

**C. F. Zukoski** has agreed to continue as head of Chemical Engineering for a second 5-year term. He has presided over an expansion of the number of faculty from eight in 1993 to 14 in 2001, and he has plans for further growth to keep up with the growing demands of the undergraduate and graduate students for the quality education they receive at UIUC. In 2000, the department presented degrees to 76 bachelor, 18 masters, and eight doctoral students. In the past five years, ChemE has established a major presence in engineering biology (three faculty) and systems and process control (two faculty), while maintaining its traditional strengths in materials science, reactor design, and complex fluids. During his headship, Zukoski has maintained a very active research program focused on the physics and processing of small particles and gels. In recognition of his research accomplishments, Zukoski received a William H. and Janet Lycan Professorship and has continued as a classroom instructor. He has also emerged as a campus-wide leader in biotechnology. Chip and his wife, Barbara Morgan, have two children, Andrew and Nick.



### ALUMNI NOTES

**1961** *continued*  
run of his book, *Incompressible Flow and the Finite Element Method*, the publisher (John Wiley & Sons) has recently released a 2-part paper-back version, aimed more toward the advanced undergraduate/graduate student market.

**1967**  
Stanley R. Crouch, Professor Emeritus, Ph.D., Chemistry (Malmstadt), has retired from active teaching from Michigan State University. He continues to write textbooks with D. A. Skoog (Ph.D., '42) and J. D. Ingle, Jr. (B.S. '68).

**1968**  
John C. Munday, Jr., Ph.D., Chemistry (Govindjee), after many years in academia has begun several business ventures in nutritional health and telecommunications. He is a member of the Chesapeake (Virginia) Wetlands Board and the Virginia Pesticide Control Board. He still enjoys running and ragtime music.

Andrew T. Zander, B.S., Chemistry (Jonas), is Vice President of Engineering for Molecular Devices, Sunnyvale, CA. Molecular Devices is the market leader in absorbance-fluorescence microplate readers. His daughter, Megan, is a junior at UIUC in Psychology.

### Alumni Make a Difference

Excellence is expensive! Two important funds are the **Roger Adams Fund** and the **Chemical Engineering Instructional Leadership** fund. Matching gifts from your company multiply your dollars. If your company has a matching gift plan, be certain to include a form from your company along with your contribution. Unless designated, your donation will go to the School of **Chemical Sciences Facilities Fund**, which supports the library, instrumentation facilities, and the visualization laboratory.

This gift is for \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

## ALUMNI NOTES

1978

John Petrovski, B.S., ChE, is Group President for Heller Real Estate Finance. He holds a JD from the University of Michigan and resides in Arlington Heights, IL.

1982

Paul Schubert, Ph.D., Chemistry (Suslick), is now Vice President of Research and Development at Syntroleum Corp., Tulsa, OK.

1987

Robert W. Johnston, B.S., ChE, is Process Technology Manager for Exxon Mobil Chemical in Baytown, TX.

1990

Steve Doktycz, Ph.D., Chemistry (Suslick), is currently CFO, Angus Chemical Co., Buffalo Grove, IL, a division of Dow Chemical Co. His current responsibilities include strategic planning, business analysis, M&A, finance, accounting, information systems, and administration. He is completing the Kellogg Executive MBA program at Northwestern University. Steve resides in Vernon Hills with his wife and four children.

1991

Gordon Kwan, B.S., Chemistry, is Senior Environmental Specialist with McRoberts & Associates, P. C. in Kansas City, MO.

## SCS Student Services and Placement Office: A Time for Change

After 22 years at the helm, **Rebecca Simon** did some self-advicing. She determined that it might be good to accept the presidency of the Champaign-Urbana Spinners and Weavers Guild for the next couple of years, at least. "As many know, I have a house full of yarn and spinning fibers that keep my creative side challenged," she says. "Most important, I'll enjoy having time with my husband, Jim, who retired two years ago."



Simon became Director of Placement and Student Services in May 1978. Her background in curriculum development and undergraduate advising gave her the tools necessary to make the SCS Placement Office one of the nation's best. Her efforts set the standards for similar offices around the country. The media consulted with

Becky regularly for insights regarding trends in employment.

Through the SCS Student Services and Placement Office, thousands of Illinois chemists and chemical engineers have been helped in discovering and setting career goals.

### Into the Breach!

The SCS is fortunate to have found a worthy successor to **Becky Simon, Debe Williams**. Debe comes to the SCS with an illustrious record of innovation and effective advising on campus and still enjoys the many issues that face the undergraduate students. New for her is the placement side of the office's responsibilities. Debe's vertical learning curve this fall is making for an interesting semester as she becomes familiar with companies areas of business, who has merged with whom, and gets to know company recruiters. Carolyn Cornwell, the office's Scheduling Coordinator, is an invaluable asset as Debe transitions into the Placement and Student Services Office. And just in time! This year her office will offer extended services to Chemical Engineering undergraduates. These students and those from Chemistry will receive advice on nontechnical curriculum choices toward their degree.



Debe's career has taken several diverse roads. After completing her degree in Education, she taught in the Dental Hygiene program at Parkland College. Her career choice to join UIUC was one of the best. Debe enjoys the student contact and the interaction with businesses during the recruitment periods on campus.

## The Aura of Aromas

The sweet smell of success greeted two U of I researchers this summer when the



August 17 issue of *Nature* reported on their development of an artificial nose. "It's like a litmus test for odors," says **Kenneth S. Suslick**, William H. and Janet Lycan Professor of Chemistry, using one of the various colorful metaphors for this color-dependent procedure. Suslick, along with graduate student Neal A. Rakow, conceived and realized the "smell-seeing" device by arranging vapor-sensitive dyes on a glass plate.

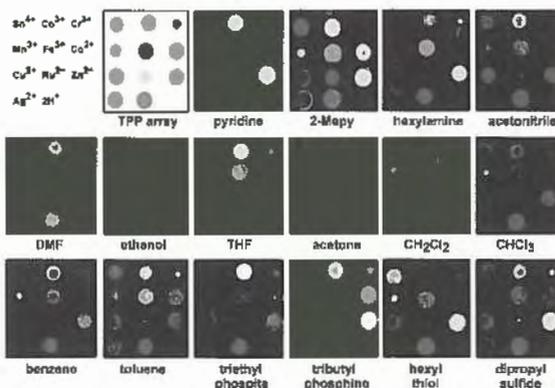
To make the sensor, Suslick and Rakow put down spots of metalloporphyrins, intensely colored compounds that contain metal ions at their center. When introduced to various alcohols, amines, arenes, ethers, halocarbons, ketones, phosphines, thioethers, and thiols, the central metal atom of the compounds coordinates with the airborne odorants and produces a distinctive color change (shown in black and white). Because different gases cause specific color changes in each metalloporphyrin, odors can be identified by the color changes of the spots.

More good news: it is a simple, fast, and inexpensive procedure. The test takes 30 seconds. An ordinary flatbed scanner or digital camera can be used to scan the dye array before and after exposure to the vapor. The color changes give a unique diagnostic pattern, or "color fingerprint," which is characteristic of the chemical being tested. Another advantage is that this technique, unlike other approaches to artificial olfaction, is insensitive to water vapor.

"It doesn't matter if you are in the Gobi Desert or downstate Illinois. The color change will be identical," says Suslick, fittingly touting the triumph of his device over the legendary Midwestern humidity.

Suslick claims the digital nose is so sensitive that it can detect chemical concentrations as low as 32 parts per billion. That's 10 to 100 times as sensitive as the human nose in most cases. Identifying a mystery chemical (or at least its chemical functional groups) is as easy as comparing its test pattern with a library of color fingerprints.

There are many potential uses for the device, including detecting and monitoring toxic vapors in the workplace; detection of flavorings, additives, and spoilage in the food and beverage industries; identifying counterfeit products in the perfume industry; and uncovering contraband at customs checkpoints.



## ALUMNI NOTES

1995

**Edward E. Fenlon, Ph.D.**, Chemistry (Zimmerman), won the McDonald award for outstanding teaching at Xavier University.

1996

**Steve R. Duke, Ph.D.**, ChE (Hanratty), was awarded the Birdsong Superior Teaching Award at Auburn University. This is the highest teaching award given by the Auburn College of Engineering. He lives with his wife, Robin, and his children in Auburn, AL.

## IN MEMORIAM

**Lester E. Coleman, Jr.**, Ph.D., 1955, Chemistry (Marvel), October 23, 2000. He was the retired Chairman and C.E.O. of the Lubrizol Corporation. He contributed generously to the Chemistry Library, establishing a unique fund for the purchase of monographs.

**Morton B. Epstein, Ph.D.**, 1942, Chemistry (Phipps), March 2, 2000, after a long illness. He was one of the organizers and the first president of the National Academy of Clinical Biochemistry. He was active in the American Association of Clinical Chemists, served as Chicago section chair in 1973-74. He was one of the organizers of the Conference on Amniotic Fluid.

**Robert Ellery Jones, Ph.D.**, 1945, Chemistry (Snyder), August 1, 2000. He was a member of the team at Merck that synthesized the hormone hydrocortisone.

## Faculty Lauded

Professor of Chemistry, **Peter Beak**, received the Gassman Award from the American Chemical Society at the annual meeting in August 2000. The award is given in recognition of outstanding service to the organic chemistry community in promotion of excellence in organic chemistry. Beak's research has provided basic studies of structure-stability relationships and mechanistic delineation of novel and useful reactions. He has been instrumental in initiation and development of programs that doubled the size of the Organic Division of ACS and has served on several editorial, study, and advisory boards. Beak holds the Roger Adams Chair in Organic Chemistry.

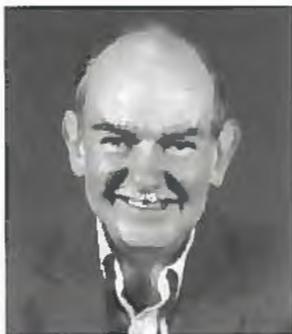
**Richard Braatz**, Associate Professor of Chemical Engineering, was named the recipient of the 2000 Donald P. Eckman Award presented annually by the American Automatic Control Council to an individual under the age of 35 who shows the most promise and who has made the most contributions to the automatic control community. Dr. Braatz's research in computational control theory and applications has been applied to many processes such as pharmaceutical crystallization and polymer film extrusion. He joined the Chemical Engineering faculty in 1994.

Recipient of the Burroughs-Wellcome New Investigator Award this year is **Neil Kelleher**, Assistant Professor of Chemistry. The award was for his project, "Genome-proteome correlations in respiratory pathogens: an experimental approach for identification of new pharmacological targets." The Burroughs-Wellcome Fund's mission is fostering the development of exceptional scientists early in their careers. Professor Kelleher also received the Camille and Henry Dreyfus New Faculty Award in 1999.

The Gill Prize, which is associated with the Linda and Jack Gill Center for Instrumentation and Measurement Science at Indiana University, is awarded biennially to a scientist who has contributed in a significant way to the fields of instrumentation and measurement science. This year's inaugural recipient is **Jonathan Sweedler**, Professor of Chemistry. He was recognized for his internationally known work on the analysis of ultra-small samples using the techniques of capillary electrophoresis, NMR, fluorescence spectroscopy, and mass spectroscopy. Sweedler has previously received the Dreyfus Teacher-Scholar Award and the Benedetti-Pichler Award in Microanalysis. His research interests focus on the development of new methods for assaying nanoliter volume samples and the application of these methods to the study of the distribution and dynamic release of neuropeptides from individual neurons.

## Retiring Faculty Contributed 85 Years to Chemistry at UIUC

**Kenneth L. Rinehart** joined the Chemistry faculty in 1954. Research in his group led to the development of mutasynthesis as a procedure for preparing new antibiotics and the discovery of new classes of peptides and alkaloids in sea squirts that are undergoing clinical trials as anti-tumor agents. He continues conducting research in analytical, organic, and medicinal chemistry. He received the Guenther Award in Natural Products Chemistry from the ACS.



**Donald Secrest** joined the Department of Chemistry in 1961. A distinguished theorist, he was awarded an Alexander von Humboldt Award and is a Fellow of the American Physical Society. He continues in his research and mentoring of students.



Alumni and friends of the Chemical Engineering and Chemistry Departments: Mark your calendars for **September 14, 2002**, for the celebration of the Centennial of Noyes Laboratory! This weekend gala will be an opportunity to meet old friends and check out the changes at your Alma Mater.

## New Faculty Join SCS Departments

Following a two-year postdoctoral appointment in laboratory of Professor Jeff Moore, **Mary S. Gin** has joined the Chemistry faculty as an assistant professor. She did her undergraduate education at Bowling Green State University receiving her B. S. in 1992 in both Chemistry and Physics. She was awarded a Ph.D. in Organic Chemistry from California Institute of Technology in 1998. Her research interests center on the use of synthetic organic chemistry to engineer macromolecular assemblies with implications for biological systems.

**Paul J. A. Kenis** received his undergraduate and graduate education in his home country of The Netherlands. He came to the USA on a postdoctoral fellowship in the Department of Chemistry at Harvard University. This fall he became an assistant professor in Chemical Engineering. His research interests are in microfluidics, microreactors, and microfabrication.

Joining the Chemistry faculty as an assistant professor is **Scott K. Silverman**. He comes to Illinois after completing a postdoctoral fellowship with Thomas Cech at the University of Colorado at Boulder. He received his B. S. degree in Chemistry from UCLA in 1991 and his Ph.D. in Chemistry from the California Institute of Technology in 1997. He was the recipient of the Helen Hay Whitney Foundation Postdoctoral Fellowship, the American Cancer Society Postdoctoral Fellowship, the Caltech Herbert Newby McKoy Award, the ACS Division of Organic Chemistry Graduate Fellowship, and the NSF Postdoctoral Fellowship.

After receiving his undergraduate degree (1992) from the University of Science and Technology in China, **Huimin Zhao** came to the USA to pursue his Ph.D. in Chemical Engineering (1998) at the California Institute of Technology. He joined Dow Chemical Company following graduation, becoming a project leader at their Biotechnology Laboratory. Research in his laboratory will focus on the development and applications of directed evolution technologies to engineering new genes, proteins, pathways, and genomes. His research goal is to develop gene-based bioproducts/ bioprocesses and to understand their biochemical and biophysical mechanisms at the molecular level. He joins the Chemical Engineering faculty as assistant professor.

### Keep in Touch

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Your news (Please include newspaper clippings, photos, extra sheets, etc.)

## Snyder Program Welcomes Student Researchers

Once again this year, summertime at the UI campus offered a warm welcome to fortunate undergraduate students in the Snyder Fellowship Program. The fellowship stipend provides living expenses during the summer term. Soon-to-be-senior students Casey Filson, Brad Jellerichs, Jonathan Lockner, and Wendy Marriner were given the opportunity to spend their Midwest summer months here, undertaking or continuing laboratory research. Rachel Hector was able to return to the laboratory and become acquainted with the UIUC campus community before beginning her graduate career.



This summer, all of the students expressed the feeling of having gained maturity and independence in the laboratory. Although working in different laboratories, they were unanimous in declaring that their experiences were "awesome!"

The Snyder Fellowship Program was established to introduce junior or senior students to independent research in various areas of chemistry. This year, students worked in areas of synthetic organic and biochemistry. Their specific projects included the enantioselective opening of epoxides using  $\text{SiCl}_4$  and a phosphoramidate catalyst, the study of aziridines, synthesis and study of ligand-gated ion channels, estrogen receptors, and MRI contrast agents for improving fluorescence.

The **Department of Chemistry** will host a reception for all Alumni attending the American Chemical Society national meeting in San Diego, California, **April 1-5, 2001**. Details about time and location will appear in C&E News and will be posted on the Department's website <http://www.scs.uiuc.edu/chem/>. Come renew old acquaintances and make new friends at this reception.



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