

IU • CHEMISTRY

Message to the Association of Indiana Chemists

by William Carroll, President of the ACS

It's an honor and a pleasure, especially as president of the American Chemical Society, to be writing a message for chemists reading *IU•Chemistry*.

One of the main points of my agenda for 2005 has been secondary education. That may seem to be an odd topic for someone who spends most of his time in industry, but it really isn't that unusual. One of the very few things that all ACS members have in common is an education. That experience makes each of us think we're "local experts" on the topic, and I'm no exception.

Here are some thoughts on various stages of education. Virtually none of this is new, but I have the privilege of having access to experts in the field, and I have the "bully pulpit."

Second-career high school teachers

My concern for secondary education grows from a great experience in high school. To be blunt, the reason I am writing this letter for you today is because of my chemistry teacher at Crown Point High School, Bob Conard. As a recent graduate, his love for chemistry and teaching came through, and I was hooked. From the letters I get, it will come as no surprise to you that a high percentage of our colleagues have had similar good experiences.

NSF tells us that today 60 percent of high school students take chemistry, but only about half of the high school teachers have even a minor in chemistry. Many of those who are teaching "out of field" are wonderful, dedicated teachers, but research shows that, all other things being equal, a person teaching in his or her field of expertise makes a better teacher. Years ago, unlike today, chemistry teachers were most likely chemists who conveyed a passion born of their personal commitment to the field. Knowledge and, particularly, passion make a difference.

Over the past two years, I've seen an increasing number of early retirees and mid-career industrial scientists who are interested in making a transition to a second career in high school teaching. Many find it difficult, however, to figure out how to get started. And some are just unsure if it's the right thing for them.

But given the temperament, the desire, the technical expertise, and some basic pedagogical tools, members with chemistry degrees and life

experience can shape our future by becoming teachers. I also believe more of our students would choose teaching as a first career if they understood more clearly what was involved.

In order to help members with the transition, we held a symposium in San Diego to answer the "frequently asked questions" about a second career as a high school teacher. In that symposium were presentations on the need for teachers, the route to certification, and what to expect along the way. Most importantly, teachers who have made the transition from another career to teaching shared their experiences and advice. Their message, by the way, is, "It's tough, especially at first. But it's worth it."

A summary of the symposium was published in the *Journal of Chemical Education* in September, and a link is available from the ACS Web site at www.chemistry.org/education in the "High School" section. A summary of certification requirements and other tidbits can also be found at that site.

'Chemistry Teacher Connections'

Over the past three years, I've talked to lots of teachers about the value of ACS as a resource for them. They told me that they know we have great materials for teachers on our Web site, but they have a hard time finding them. They explain that they have limited time and limited resources, and teaching aids must be easily accessible, immediately usable, affordable, and tried and true. And full membership in the society, most teachers told me, does not fit their needs for the price.

There's good news. Acting on my request, the Division of Chemical Education (DivCHED), the *Journal of Chemical Education* and the ACS Education staff have created an exciting new product called Chemistry Teacher Connections. CTC combines an affiliate membership in DivCHED with a subscription to the *JCE* Online High School Chemical Learning Information Center, all for an affordable price.

(continued on page 2)



William Carroll

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"ACS members with chemistry degrees and life experience can shape our future by becoming teachers."
❖

— WILLIAM CARROLL

Message

(continued from page 1)

Affiliate membership in DivCHED affords the right to vote for chair-elect, treasurer, and member-at-large (and the right to run for these offices) as well as a subscription to the DivCHED newsletter. *JCE* Online HS CLIC includes all articles marked in the table of contents as being of interest to high school teachers — from 1996 to the present.

CTC has two purposes. First, it provides information high school teachers can use in the form in which they would like to receive it. Second, and just as important, it helps bring ACS and high school teachers closer together. We all have something to gain from this closeness.

To that end, we have also recently changed the constitution and bylaws to make it easier for teachers to become members. We are also taking a hard look at the value proposition the society offers teachers. There clearly is value for the society: we gain advocates for chemistry and a window on the next generation. We hope the teachers find value in the community of ACS.

Teachers can subscribe to CTC by going to the *JCE* Web site at <http://store.jce.divched.org>. Please consider passing the word on to the high school teachers in your local area.

Primary education

When I speak to ACS audiences about these topics, usually someone points out that the deficit in science education really starts in elementary

school. Of course, they're right; on the other hand, as wonderful an organization as ACS is, we can't fix the entire education system. But we're not without weapons. Education is inherently local, and so are our members.

Committed chemists can become science volunteers at elementary schools. Science is not the first subject for most elementary teachers, and these volunteers can assist teachers in whatever ways make the most sense in individual cases. Whether it is helping teachers understand the subject matter they are teaching, setting up demonstrations to illustrate the principles, teaching the teachers to use the demonstrations or actually doing them, dedicated scientists — even if formally retired — can help enrich the experience of elementary school students.

The most important observation I have about education, however, is how much I value my experience in the IU Department of Chemistry both as a graduate student and as an adjunct professor. Dennis Peters was and is a marvelous teacher and a great research adviser. He gave me the latitude I needed to learn how to teach myself, and without that skill, my career would have been very different.

Being ACS president has been a hoot — a lot of work, but a lot of fun. I'm happy to receive comments or questions at bill_carroll@oxy.com.

The author received his PhD in 1978 working under the direction of Dennis Peters.

Trivia about chemistry ? ? ?

Chemistry at IU did not have an auspicious beginning: The first catalog for Indiana College, one of two early names for our university, was not published until 1831. It indicated the enrollment was 53 students with four faculty members. One of those was John H. Harney, who was listed as professor of mathematics and natural and mechanical philosophy and chemistry. His equipment, according to the catalog, consisted of a "chemical and philosophical apparatus." There exists no indication that he had ever received any training in chemistry or that he provided a stimulus for any students to acquire even rudimentary chemical knowledge. Harney was dismissed by the trustees in late 1832. Nevertheless, an area in the current Joseph H. Wright Quadrangle is named for him. (Taken from *Development of Chemistry at Indiana University in Bloomington* by Harry G. Day.)

Question: Suppose you are an analytical chemist who has been approached by a representative of Sotheby's, the international auctioneers. They are in possession of 10 stacks of coins, each stack containing 10 coins. All of the coins appear to be gold, but Sotheby's knows the coins in one stack are actually gold-plated, although their appearance is indistinguishable from the others. The representative tells you the mass of each gold coin is 10 grams, while the mass of each gold-plated coin is 11 grams. Your job is find which stack contains counterfeit coins. Because you want to impress the representative, you say that you will do it unambiguously without relying upon chance using one and only one measurement, and you will not harm any of the coins. How will you do it? (Adapted from a question in *Ask Marilyn* by Marilyn vos Savant, *Parade*, Oct. 31, 2004.) See answer on page 27.

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Salmon for dinner?

by Ronald A. Hites

About 20 years ago there was an innovation in the fish industry. Prior to that time, fresh (as opposed to canned) salmon was expensive and could be purchased only at limited times of the year. In the mid-1980s, fresh salmon started to appear in supermarkets all around the world at reasonable prices. This was the result of the successful farming of these fish.

Salmon farms are large net enclosures in near-shore ocean waters. The salmon are raised from eggs on shore, and when they are big enough, they are transferred to these enclosures, where they are fed liberally to fatten them for market. A typical salmon farm will have 10 to 20 enclosures holding several hundred thousand fish. One reason for the popularity of farmed salmon is the perception that eating fatty fish, such as salmon, is good for your heart. However, salmon are carnivorous fish that feed high in the food web, and as such, they bioaccumulate contaminants from their food. Unfortunately, the potential risks of eating contaminated farmed salmon had not been well evaluated.

To address this issue, we were approached by the Pew Charitable Trusts to put together a scientific team and to design a study that would determine the levels of various polyhalogenated organic contaminants in farmed salmon as a function of the location where the fish were raised. We eventually measured these contaminants in approximately 700 farmed and wild salmon (totaling about 2 metric tons) collected from around the world, and we published the results in early 2004 in *Science* (R.A. Hites, J.A. Foran, D.O. Carpenter, M.C. Hamilton, B.A. Knuth, and S.J. Schwager, "Global Assessment of Organic Contaminants in Farmed Salmon," *Science*, 2004, 303, 226–229).

In our study, farmed Atlantic salmon from eight major producing regions in the northern and southern hemispheres were purchased from wholesalers. These salmon were from 51 farms located in Scotland, the Faroe Islands, Norway, Eastern Canada, British Columbia, Maine, Chile, and Washington. In addition, farmed Atlantic salmon fillets were purchased at supermarkets in Boston, Chicago, Denver, Edinburgh, Frankfurt, London, Los Angeles, New Orleans, New York, Oslo, Paris, San Francisco, Seattle, Toronto, Vancouver, and Washington, D.C. For comparison, samples of five wild species of Pacific salmon (chum, coho, chinook, pink, and sockeye) were obtained from Oregon, Washington, and British Columbia. All samples were ground up and analyzed by gas chromatographic high-resolution mass spectrometry.

We measured the concentrations of 15 polyhalo-

genated contaminants or contaminant groups. In general, most of these contaminants were significantly more concentrated in the farmed salmon than in the wild salmon. The concentrations of all contaminants in farmed salmon from Europe were significantly higher than the concentrations in farmed salmon from both North and South America.

We focused additional analysis on polychlorinated biphenyls (PCBs), dioxins, toxaphene, and dieldrin because the patterns of their occurrence in farmed and wild salmon were similar to the patterns of all contaminants evaluated in this study and because an abundance of human health risk information is available for these particular compounds. These data are too numerous to show here, but as an example, the PCB concentrations in the farmed and wild salmon are shown in fig. 1 as a function of location. PCBs were significantly more concentrated in the farmed salmon than in the wild salmon. The salmon fillets obtained from commercial outlets in the various cities had contaminant concentrations similar to those in the farmed samples and much higher than those in the wild samples.

Contaminant concentrations were typically highest in farmed salmon from Scotland and the Faroe Islands and lowest in farmed salmon from Chile and Washington (see fig. 1 as an example). Even the least contaminated farmed salmon, from Chile and Washington, had significantly higher contaminant loads of PCBs, dioxins, and dieldrin than wild salmon. Farmed salmon fillets purchased from supermarkets in Frankfurt, Edinburgh, Paris, London, and Oslo were generally the most

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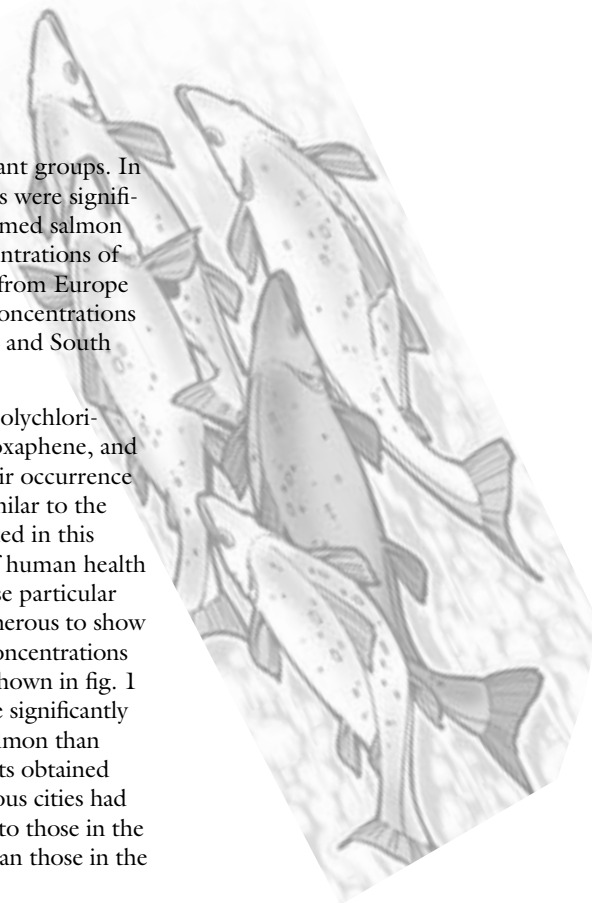
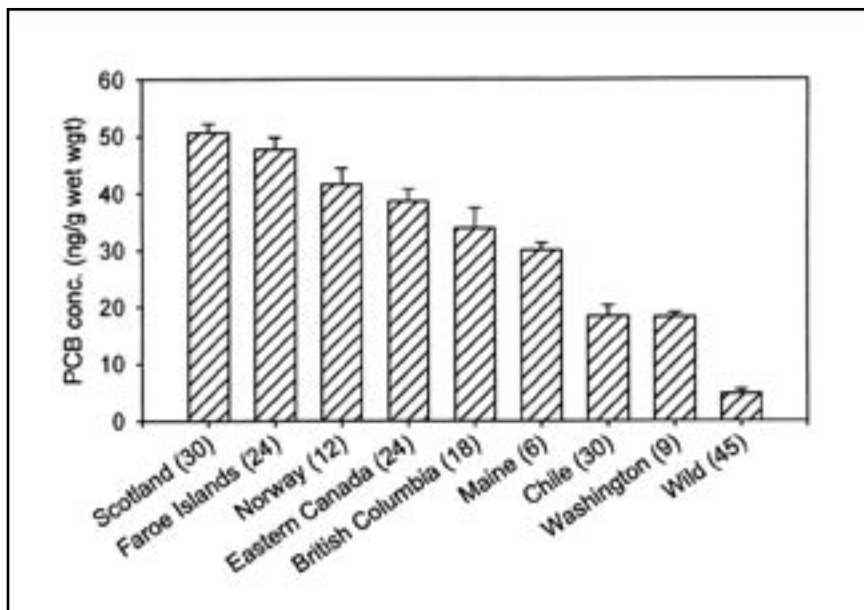


Fig. 1. Average concentrations of PCBs in farmed-raised salmon (eight leftmost bars) and in wild salmon (rightmost bar). The error limits are standard errors, and the numbers following the locations are the number of replicates in each average.



Salmon

(continued from page 3)

contaminated. Those purchased in New Orleans and Denver were the least contaminated of the store-bought samples. The concentrations of PCBs, dioxins, toxaphene, and dieldrin in salmon fillets purchased at retail outlets in Europe were significantly higher than those purchased in North America. This makes sense. Most of the salmon sold in European stores comes from European farms, which produce the more contaminated salmon, while much of the salmon sold in U.S. stores comes from Chile and Canada.

The large differences between the farmed and wild salmon contaminant concentrations are most likely a function of the salmon's diet. Farmed salmon are fed a concentrated feed high in fish oils and

FDA action/tolerance levels are not strictly health based, do not address health risks of concurrent exposure to more than one contaminant, and do not provide guidance for toxaphene and dioxins in fish tissue.

Using the EPA approach, we found that the combined concentrations of PCBs, toxaphene, and dieldrin were high enough to suggest that people eat (on average) fewer than one-half meal per month of farmed salmon and fewer than four meals per month of wild salmon. The most restrictive advice, which reflects the highest health risks, was for farmed salmon fillets purchased from stores in Frankfurt, Germany, and for farmed salmon from Scotland and the Faroe Islands.

If it is not contaminated, salmon is a healthy food, high in nutrients, such as omega-3 polyunsaturated fatty acids, that are known to have a variety of beneficial human health effects. However, this study suggests that consumption of farmed salmon may result in exposure to a variety of persistent bioaccumulative contaminants with the potential for an elevation in attendant health risks. Although the risk-benefit computation is complicated, consumption of farmed Atlantic salmon may pose risks that detract from the beneficial effects of fish consumption. This study also demonstrates the importance of labeling salmon as farmed and of identifying the country of origin. Further studies of contaminant sources, particularly in salmon feed, are needed.

We believed that these results were significant, and once they were published, this study received a lot of publicity; for example, it was picked up by *Time*, *Newsweek*, *The New York Times*, and *The Washington Post*. We also heard both directly and indirectly from interested parties on both sides of the issue. I append here some of their comments:

- “highly credible scientists from respected institutions”
- “a beautiful study”
- “pawns of the environmentalists”
- “unwitting dupes of isolationist U.S. trade policy”
- “more food nannyism”
- “a bunch of rogue scientists”
- “wealthy American, anti-Scottish campaigners”
- “we are going to sue”
- “we will look into it”

I also did a number of interviews with print and radio reporters (the television interviews went to a more photogenic co-author). Most of these interviews were fair and came out well. One very common question in all of these interviews was, “Well, Professor Hites, do you still eat salmon?” My answer was, “Yes, I do, but you must remember that I am an old guy. If I were a young woman in her childbearing years, my answer would be different. In addition, I know that the salmon sold in Bloomington comes from farms in Chile, which produce a relatively clean product.” All in all, I rather enjoyed the attention.



Ron Hites

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Ron Hites is a professor appointed to both the School of Public and Environmental Affairs and the Department of Chemistry.
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fish meal, which is obtained primarily from small so-called “trash” fish that are netted from the open ocean. We analyzed 13 samples of this commercial salmon feed, and although the concentrations in these feed samples varied considerably, the concentrations were generally similar to or greater than those in the farmed salmon. The concentrations in feed purchased from Europe were significantly higher than those in feed purchased from North and South America. This may reflect higher contaminant concentrations in “trash” fish from the industrialized waters of Europe’s North Atlantic compared to these fish from the waters off North and South America.

The human health effects of exposure to these contaminants in salmon tissues are a function of contaminant toxicity, concentration in fish tissues, and fish consumption rates. We used the approach of the U.S. Environmental Protection Agency to assess comparative health risks of consuming farmed and wild salmon. Although individual contaminant concentrations in farmed and wild salmon do not exceed U.S. Food and Drug Administration action or tolerance levels for PCBs and dieldrin, this does not mean much.

General chemistry — then and now

by Dennis Peters and Kate Reck

The new millennium has ushered in dramatic changes in the general chemistry curriculum in Bloomington. Roughly five years ago, it became painfully apparent that the number of our chemistry and biochemistry majors was plummeting — from a high of nearly 600 and a consistent first-place national ranking in the annual total of baccalaureate degrees awarded in the late 1980s and early 1990s to a frighteningly low total of 248 in the 2000–2001 academic year. Sometime in 2001, David Clemmer appointed a committee of concerned faculty to discuss the matter and to arrive at a course of action to reverse the just-mentioned trend. Although cause-and-effect correlations are always problematic, the recent trend is clear. We believe our recent changes (those described herein) to the chemistry curriculum are the reason for our numbers rebounding to 431 by spring 2005. Thus, we are most optimistic about the new general chemistry curriculum.

Where did we start?

Early discussions led to the obvious conclusion that one way to increase the number of chemistry and biochemistry majors was to modify the general chemistry program to appeal to freshmen who had not yet declared a major. Recognizing that most freshmen taking general chemistry on the Bloomington campus are primarily interested in biosciences (often these students are focused on careers in biochemistry, biology, medicine, dentistry, or optometry), the committee decided that our general chemistry courses must include considerable material dealing with biochemical topics. Thus, the first change to the general chemistry sequence was to retit it Chemistry C117 and C118, Principles of Chemistry and Biochemistry I and II, respectively. Let us provide a historical perspective about the old chemistry program before we say more about what the new curriculum entails.

Readers who gained their formal chemistry training in the 1970s or 1980s will recall, perhaps not fondly, their experiences in first-year general chemistry, where heavy emphasis in lectures was placed on stoichiometry, gas laws, atomic and molecular structure, thermodynamics, kinetics, electrochemistry, and chemical equilibria of all kinds (and their accompanying and annoying calculations). In the laboratory, the students did far too many titrations, along with the familiar calorimetry, spectrophotometry, kinetics, qualitative analysis, and perhaps a synthesis; the experiments were classical and based very much on inorganic systems — moreover, the experiments were all too reminiscent of work that had been done previously in high school. We have found that “vintage” general chemistry mirrors less and less the passions of our present student clientele for the biosciences.

Starting in the fall semester of 2003, incoming freshmen found themselves in C117 Principles of Chemistry and Biochemistry I, a five-credit integrated lecture–laboratory course. Upon entering C117, the students were immediately immersed in discussions about atoms and molecules (atomic structure, the nucleus and subatomic particles, atomic numbers, and isotopes), followed by lectures on electron configurations and periodic properties based on the periodic table. Ionic and covalent bonding led to discussions about Lewis dot structures, with a strong emphasis on organic molecules, functional groups, with an eye kept on the pertinence of biological systems. A large body of lectures was devoted to molecular structures (VSEPR theory, hybridization, molecular polarity, non-covalent interactions between molecules, hydrogen bonds, biomolecules, and chiral compounds). After phases and phase transitions, the next set of topics included energy, enthalpy, entropy, calorimetry, and thermochemistry. The semester concluded with an introduction to equilibrium and non-covalent interactions in biomolecules to tie together all the concepts from the first semester by providing “real-life” applications of general chemistry concepts. In the laboratory, the students embarked on updated activities such as “The Determination of Alcohol in Wine,” “Harvesting Chemical Information on the Internet,” “Building Molecules Using Spartan,” “Determination of Water Hardness,” and “Heat Storage for Solar Heating.”

For the spring semester of 2004, Chemistry C118 Principles of Chemistry and Biochemistry II, the five-credit, lecture–laboratory sequel, was launched. Starting with conventional material on chemical kinetics (rate laws, reaction orders, mechanisms, and reaction-energy diagrams), the early lectures led quickly into enzymatic cataly-



Dennis Peters

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*“For the times they
are a-changin’ ...”*

— BOB DYLAN

*“Time ripens all
things.”*

— MIGUEL DE CERVANTES

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Then and now

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sis. Solubility was introduced in the guises of Alzheimer's disease, Huntington's disease, sickle cell anemia, and "mad cow" disease. Solutions were examined in the framework of non-covalent interactions and energy changes involving solute and solvent molecules. Surfactants and cell membranes were discussed, along with osmosis and dialysis. After acid-base chemistry was described, some fundamentals of electrochemistry were introduced, including mention of the action of neuron cells. The course culminated with four "special topics" on environmental chemistry (the ozone hole and chlorofluorocarbons, greenhouse gases and global warming, and the hydrogen economy), nuclear chemistry (including the origin and stability of elements), materials, polymers, and biopolymers (proteins and DNA), and selected descriptive chemistry of some main group and transition elements. The updated laboratory

experiments included "Enzyme Kinetics," "Titration of Antacids," "What's in the Water?" "Which Gases Are Greenhouse Gases?" and "Radioactive Decay."

During the 2004–05 academic year, the Undergraduate Curriculum Committee was hard at work in assessing the success of the new curriculum and in making more far-reaching changes throughout all of the undergraduate degree programs in chemistry and biochemistry. The proposed changes were subjects for intense discussion, and then approval, at two chemistry faculty weekend retreats.

The final iteration of the new curricular changes calls for our changing to only a single semester of introductory general chemistry (Chemistry C117) starting in the fall of 2005;

this one-semester lecture–laboratory course features most of the subjects already described for Chemistry C117 with the addition of kinetics and thermodynamics. Lest there be puzzlement or disbelief about the omission of other subjects in a typical general chemistry sequence, it should be mentioned that some topics have moved to other courses within the first two years of chemistry. Moreover, to make room for more interesting, biochemically oriented material, students are expected to retain basic chemistry concepts (stoichiometry, solutions, and significant figures) from high school chemistry; this expectation allows us to free up approximately five weeks of the semester to cover the new, more interesting material.

Students must now demonstrate their preparation to enter C117 by passing a Chemistry Placement Examination; those who do not meet minimal requirements must take a preparatory class, Chemistry C103. We have observed that students entering C117 are now better prepared to handle the concepts and pace in the course. Additionally, we find that students have a heightened interest

in chemistry because they are not encountering "old" material from high school. Overall, it can be easily confirmed that the pace and content of C117 are much enhanced in comparison with our old curriculum, and students are responding well to our raising the bar.

Finally, starting in the 2005–06 academic year, we will inaugurate what is called a 1:2:1 curriculum — one semester of general chemistry (C117) followed by two semesters of organic chemistry (C341 and C342) followed by a new one-semester capstone course, Chemistry N330 Intermediate Inorganic Chemistry. This capstone course will cover descriptive and theoretical aspects of inorganic, bioinorganic, and organometallic chemistry as well as acid-base chemistry, nuclear chemistry, and electrochemistry. Much of the effort put into making C118 a great, new course will be used in the new Intermediate Inorganic Chemistry, although taught at a higher level. On balance, the new lecture-course sequence (Chemistry C117, C341, C342, and N330) will cover most of the topics treated in our former first two years of college chemistry — the big differences are the order of topics, the reliance on biochemical systems for illustrative purposes, and the closely integrated progression of these courses.

Refining the curriculum for general chemistry has been challenged by the fact that there are no textbooks completely suitable for our biochemistry-infused lecture and laboratory work. Moreover, there are no textbooks on the market that address the topics from an "atom's first" approach that matches our new sequence of topics. Consequently, most teachers of C117 and C118 have spent considerable time composing lecture material that includes illustrative examples drawn from the world of biochemistry. To alleviate this issue, one of the authors of this paper (Kate Reck) and Jill Robinson have taken on the challenge of writing a textbook that will address the needs of our department and the growing needs of the chemical education community.

This new book will provide a one-semester integrated lecture–laboratory sequence, with an "atom's first" approach, that has a very application-oriented and biologically minded flavor that will prepare students well for organic chemistry. This textbook will be the first of its kind in the present commercial market; ideally, this textbook will meet the requirements of a number of colleges and universities that have made or are planning to make changes in their curricula that parallel our new direction. In June 2005, Reck and Robinson chose to sign with Thomson Higher Education as the book publisher, and their book is expected to be on the market in the fall of 2008. Through our new curriculum and this forthcoming commercial textbook, we have high hopes of making prominent changes in the chemical education community while concomitantly encouraging more of our own students to pursue chemistry as a satisfying career.





The 'omics revolution hits IU chemistry — again

In this issue, the editors write about a \$53 million dollar grant from the Lilly Endowment that is called the METACyt initiative. The name METACyt aims to capture the idea that this initiative will help IUB build strength across the areas of metabolomics and cytomics. I am struck that many chemists may not know exactly what these words mean, but I will leave detailed definitions up to the editors. Briefly, to put this initiative into perspective, you might recall that our December 2002 issue focused on another 'omics' — proteomics. This field involves studies of complex mixtures of proteins. The field (and name) emerged after genome initiatives coined the word genomics to describe studies of regulation patterns of genes. With these ideas in place, it follows that metabolomics will engage at the level of small molecules (metabolites), that cytomics involves broader processes of living systems, and that at least one driver for this type of high-throughput multidisciplinary science is economics.

Our department stands to benefit substantially from METACyt. It will provide several new facilities, seed funding for initiating new research, as well as future center grants that will strengthen our research cores. The initiative is led by our colleague Professor **Ted Widlanski**. Over the

next few years, two research centers (bioanalysis and molecular imaging) and one research node (involving new analytical measurement techniques) will be created and housed in the Department of Chemistry.

The timing of this grant is nearly ideal. It comes as construction of the new multidisciplinary science building, Simon Hall, is in full swing (see photo below). My understanding is that we are on pace for occupation in late 2006 or early 2007. Much of the building is fitted with chemistry labs, making it possible for an expansion of the chemistry faculty. Among other things, METACyt funds will allow us to immediately fill out a new NMR facility in Simon Hall with a new 800-MHz instrument. This initiative also complements others that have recently strengthened the sciences at IUB, including the Commitment to Excellence, which has provided resources for faculty expansion in the areas of materials chemistry and proteomics.

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David E. Clemmer



A hole in the ground begins to take shape. It will be Simon Hall.

Chair's letter

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New faculty hires

During the past year, we added two new tenure-track faculty members and one lecturer. Please welcome **Amar Flood**, who joins us at the rank of assistant professor. Flood completed his PhD in 2000 with Keith Gordon at the University of Otago, in Dunedin, New Zealand, and did post-doctoral work with Stoddart's group at UCLA. His research interests cut across areas of materials chemistry and nanotechnology. You may remember hearing about the university's Commitment to Excellence initiative that included a new materials-science program. This program now has a core of faculty (including Professor Flood).

We successfully recruited **Faming Zhang**, who joins the biochemistry division as an associate professor. Zhang received his PhD in 1990 from the Institute of Biophysics, Beijing, China. He did postdoctoral work at the University of Texas Southwestern Medical School with Elizabeth Goldsmith. Prior to joining Indiana University, he was manager of Global Statistics and Information Science at Eli Lilly. His research focuses on chemical biology, chemical genomics, protein crystallography, and structure-based design targeting obesity cell signaling, tumor angiogenesis pathways, and therapeutic peptide/protein optimization.

Finally, **Andrea Pellerito** joined our faculty as a lecturer. She obtained her PhD earlier this year in organic chemistry from Michigan State University, where she worked with Robert Maleczka. In addition to teaching duties, she will restructure the C344 organic lab.

Dan Mindiola received the Presidential Early Career Award for Scientists and Engineers.



Awards

Members of our faculty continue to win prestigious awards and bring acclaim to our department. **Daniel J. Mindiola** was selected as the recipient of a 2004 Presidential Early Career Award. This award brings recognition and the nation's highest honor for professionals at the outset of their independent research careers. Mindiola was among 58 researchers who were honored in a ceremony at the White House presided over by John H. Marburger III, science adviser to the president and director of the White House Office of Science and Technology Policy.

The Presidential Early Career Award for Scientists and Engineers, established in 1996, honors the most promising researchers in the nation within their fields. Eight federal departments and agencies annually nominate scientists and engineers at the start of their independent careers whose work shows exceptional promise for leadership at the frontiers of scientific knowledge during the 21st century. Participating agencies award these talented scientists and engineers up to five years of funding to further their research in support of critical government missions. In addition, Mindiola was the recipient of a 2005 Alfred P. Sloan Research Award. This is an extraordinarily competitive award, involving nominations of most of the very best scientists throughout the United States and Canada. The selection from this remarkable group of nominees will aid in personal satisfaction as well as convey a clear indication of the high esteem in which Mindiola's past work and future potential are being held by fellow scientists. The Sloan fellowship carries with it a grant of \$45,000 for a two-year period. Also, Mindiola was the recipient of a 2005 Camille Dreyfus Teacher-Scholar Award. Based on institutional nominations, the program was designed to provide discretionary funding to faculty at early stages in their careers. The competition for the Teacher-Scholar award was strong. Criteria for selection included a commitment to education that signaled the promise of continuing outstanding contributions to both research and teaching. Finally, Mindiola was presented the 2004–05 IU Outstanding Junior Faculty Award. This award is to recognize the achievements of junior faculty who have committed themselves to the teaching and service missions of the university, while also developing nationally recognized programs in research and creative activity and to advance their distinction as scholars or artists. The competition was intense; thus, the faculty review panel chose only those nominees whose proposals and previous academic records clearly suggest promise for a career of excellence and significance.

Dennis G. Peters received the Distinguished Service Award for 2004–05 for his extraordinary model of truly distinguished service. The Bloomington Faculty Council initiated the service awards in order to recognize leadership and dedication within the university, within a discipline, or in the community. I had the pleasure of speaking on behalf of those who have appreciated Professor Peters through many years. I was struck by the extraordinary impact that he has made on their careers. Former students have modeled their careers after Peters and describe him as the essence of IU. Several commented about another side of Professor Peters, associated with his behavior at basketball and football games.

Richard D. DiMarchi received the 2005 Research Achievement Award in Biotechnology. This award is among the highest conferred by the American Association of Pharmaceutical Scientists and is highly competitive. DiMarchi discussed his

research at a dedicated roundtable session at the AAPS Annual Meeting and Exposition in Nashville, Tenn., in November 2005.

Last spring two of our faculty (**Dennis Peters** and **Jim Reilly**) were recognized by being the recipients of Trustees Teaching Awards, established by the IU board of trustees in recognition of classroom excellence. Courses taught, course enrollments, and student evaluations provided the principal bases for selection.

Last, **David Williams** was awarded the 2005 Edward Leete Award, by the American Chemical Society Division of Organic Chemistry for outstanding contributions to teaching and research in organic chemistry. This award was presented to Williams at the 230th American Chemical Society National Meeting, held in Washington, D.C., in August 2005.

Congratulations go to all of our award winners for their recognized excellence!

Changes in the undergraduate chemistry program

On July 1, Professor **Dennis Peters** took over as the associate chair of undergraduate chemistry. Peters, who is beginning his 44th year on faculty at IU, replaces Professor **Martha Oakley** in this

position, who will be away this year doing a sabbatical at Stanford with Professor Julie Theriot (a recent MacArthur “genius” award winner). It is difficult to overstate the impact that Professor Oakley has had on our undergraduate program. She restructured the undergraduate office, spearheaded a major curricular change (the first major change in more than 30 years), assembled and implemented a team-teaching approach (within and across courses) that aims to integrate content, and then watched as the number of majors in our department increased by more than 50 percent (all in three years). A number of us affectionately refer to the core faculty in this program (professors **Cathrine Reck**, **Jill Robinson**, **Michael Edwards**, and **Andrea Pellerito**), along with their support team of advisers and administrative staff (**Alice Dobie-Galuska**, **Steve Wietstock**, **Becky Baugh**, and **Heather Brummett**) as the undergraduate dream team. As chair, it has been a pleasure to receive the many e-mails and letters from students and parents applauding this group for their dedication to the educational mission.

In closing, we hope that all of our alumni have been productive and successful this year. We would welcome a visit or note updating us about you.

— *David E. Clemmer*

Entropy in government and in Charlie Parmenter's office after a flood



Around IU • Chemistry

Southern Indiana Section ACS activities

The Southern Indiana Section of the American Chemical Society hosted several TGIF social events in 2005 for the local section. Among these, we hosted two incredibly successful ice cream socials. At each, we saw almost 600 people eat through 40 gallons of ice cream and toppings!

Starting this year, SISACS awarded travel grants to seven students (two undergraduates and five graduate students) to attend the August ACS meeting in Washington, D.C.

At the end of every academic year, SISACS gives an award to an "Outstanding Undergraduate in Chemistry" during the chemistry department's honors banquet ceremony. The recipient for 2005 was Anthony Mitchell, who graduated from IU in May 2005 with a BS in biochemistry. Mitchell

performed undergraduate research in the lab of Professor Vic Viola, and he will be attending medical school at IU in the fall of 2005.

Our new local Student Affiliates chapter of the ACS has done an excellent job planning and executing both social and outreach activities. After our first year of activity, we have acquired more than 120 student affiliate members. Our monthly activities have included several movie nights, student-faculty bowling nights, and volunteering at WonderLab. On April 2, the chapter hosted a trip to the Exotic Feline Rescue Center located in Centerpoint, Ind. This rescue center is home to more than 180 exotic felines, giving them a home for life once they have been removed from dangerous and abusive private situations.

(continued on page 17)

SCENE ON CAMPUS

\$53 million grant benefits university, department

Metabolomics and cytomics are two words that are not usually read or uttered over most breakfast tables in Bloomington. Yet, on a cold morning in mid-December 2004, Bloomington's morning newspaper, *The Herald-Times*, had a story on page one featuring these words.

The story indicated that IU President Adam Herbert had announced a \$53 million grant from the Lilly Endowment to fund the Indiana Metabolomics and Cytomics initiative — a name he shortened to METACyt. The grant, he said, is significant not only because it is the largest single grant ever given to IU Bloomington, but because it will provide strong support to the university's quest for global preeminence in the life sciences.

Interestingly, the author of the article failed to define for his breakfast readers the two words that were central to the story. We shall do so here.

Metabolomics is the systematic study of the unique chemical fingerprints that specific cellular processes leave behind — specifically, the study of their small-molecule metabolite profiles. Thus, metabolic profiling can give an instantaneous "snapshot" of the physiology of a specific cell.

Cytomics is the science of cellular analysis that integrates the study of cell metabolism, genetic encoding, and protein function within complex cellular systems. The aim of cytomics is to define thoroughly the molecular characteristics of single cells resulting from the interaction of its genetic material with exposure to internal and external factors. The development of cytomics is so compelling because it uses the novel and powerful

technologies based upon single-cell analysis never utilized previously.

The newspaper went on to quote Michael McRobbie, IU vice president for information and technology: "Bloomington becomes a full participant in the state's relentless campaign to become (an international) leader in life-sciences research." Sara Cobb, Lilly Endowment's vice president for education, speaking to the same newspaper, echoed and embellished those words, saying the METACyt initiative will augment others in Indiana to make the state a life-sciences "BioCrossroads" with new industries providing high-paying jobs.

The Herald-Times also quoted Dean of Arts and Sciences Kumble R. Subbaswamy, who said that, among other benefits, METACyt will help researchers at IU Bloomington make the next leap in terms of understanding the complete chemical basis for the functioning of cells and their environments.

Ted Widlanski, professor of chemistry, will serve as CEO of METACyt. He said, "The Lilly Endowment's METACyt initiative ranks among the most exciting scientific enterprises ever undertaken at IU Bloomington. The size and the scope of the funding will affect a wide area of the life sciences. Intended to provide support for faculty retention, research, facilities, and new initiatives, METACyt funding directly affects four broad areas of campus science: research initiatives, service/research facilities, infrastructure, and economic development."



Ted Widlanski

LECTURE SERIES, SPECIAL LECTURES, & SYMPOSIA



Lectures

The Ernest Campaigne Lecture was presented on Sept. 15, 2004, by **Peter G. Schultz**, professor of chemistry from the Scripps Research Institute in La Jolla, Calif., and director of the Genomics Institute of the Novartis Research Foundation, San Diego. In his talk titled "New Opportunities at the Interface of Chemistry and Biology," he discussed his research, which spans the interface of biology, chemistry, and materials science. He was a founding scientist of Affymax Research Institute, Symyx Technologies, Syrrx, Kalypsys, Phenomix, Symyx Therapeutics, Ilypsa, and Ambrx. His awards include the Waterman Award of the National Science Foundation, membership in the National Academy of Sciences and National Institute of Medicine, the 1994 Wolf Prize in Chemistry, and the 2003 Paul Ehrlich Prize.

On Oct. 13, 2004, the Harrison Shull Computational Lecture was presented by **Ken A. Dill**, professor of pharmaceutical chemistry and biophysics from the University of California, San Francisco. He delivered a talk titled "Protein Folding: A New Twist on the Transition State Idea." He has recently developed a new physical chemistry textbook called *Molecular Driving Forces: Statistical Thermodynamics in Chemistry and Biochemistry*.

This year's Eli Lilly Lecture, "Systems Biology: A New Analytical Based Strategy in Life Sciences," was delivered on Nov. 3, 2004, by **Jan van der Greef**, from the Center for Medical Systems Biology, Leiden University, Leiden, the Netherlands. Van der Greef is scientific director of systems biology research, life sciences, at Netherlands Organization for Applied Scientific Research in the Netherlands. He is also professor of analytical biosciences and co-founder of the Center for Medical Systems Biology at Leiden University at the Leiden/Amsterdam Center for Drug Research. He is considered a pioneer in the field of liquid chromatography coupled to mass spectrometry, bodyfluid profiling, and pattern recognition, and was among the first to develop single-cell profiling by mass spectrometry.

On Feb. 16, 2005, the Harry G. Day Lecture was presented by Howard Hughes Investigator and Professor of Biochemistry and Molecular Biology and of Physics **Carlos J. Bustamante** from the Department of Chemistry, University of California, Berkeley. His talk was titled "Grabbing the Cat by the Tail: Manipulating Molecules One by One."

Professor **F. Fleming Crim** from the University of Wisconsin delivered the Frank T. Gucker Lecture, titled "Controlling Chemical Reactions and Watching Energy Flow in Gases and Liquids," on April 13, 2005. He has been nationally recognized for his contributions by being inducted into

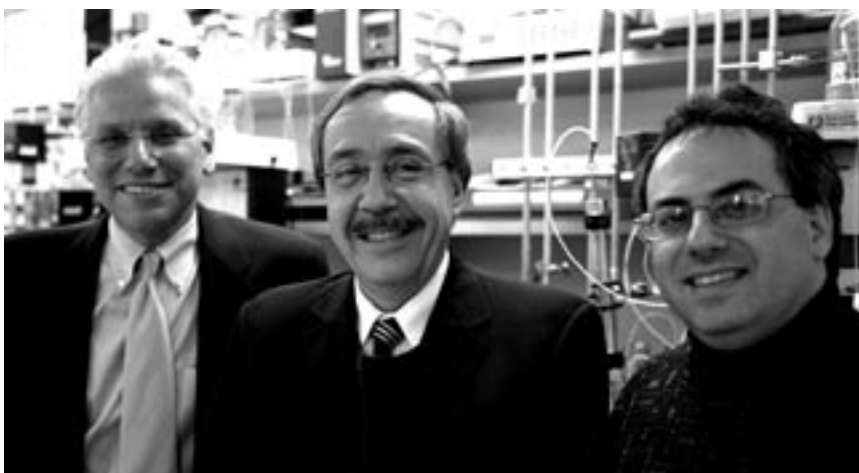
the National Academy of Sciences in 2001, the American Academy of Arts and Sciences in 1998, and the Japan Society for the Promotion of Science in 1995, and by becoming a fellow of the American Association for the Advancement of Science in 1995. His awards include the Max Planck Research Award (with Jürgen Troe) in 1993 and the Earl K. Plyler Prize for Molecular Spectroscopy from the American Physical Society in 1998.

Symposia

The 14th annual Inorganic Alumni Symposium occurred on Oct. 8, 2004. The speakers were **Kathy Schwiebert**, PhD'93 (with Jeffrey Stryker), from DuPont Fuel Cells Program, Wilmington, Del.; **James Wakefield**, PhD'92 (with Jeff Stryker), from Franklin and Marshall College; **Jack Coalter**, PhD'00 (with Kenneth Caulton), from the Dow Chemical Co.; **John Vincent**, PhD'88 (with Kenneth Caulton), from the University of Alabama; and **Ken Miller**, PhD'78 (with Rupert Wentworth), from GE Global Research. The symposium culminated with a dinner at Le Petit Café and a picnic on Saturday at Hardin Ridge.

Ferst Award

Our own **Gary Hieftje** was awarded the Sigma Xi Monie A. Ferst Award. This award is given annually to a scientist who has made "notable contributions to the motivation and encouragement of research through education." The award was presented during a day-long symposium focusing on the achievements of his former doctoral students. The day's events culminated in Hieftje's presenting the keynote lecture, titled "New Platforms and Procedures for Chemical and Biological Measurement."



Carlos Bustamante, center, who gave the Harry Day Lecture on Feb. 16, 2005, with IU chemistry professors Richard DiMarchi, left, and Andrew Feig



IU chemistry professor Krishnan Raghavachari, left, with Ken Dill, who presented the Harrison Shull Computational Chemistry Lecture on Oct. 13, 2004

FACULTY PROFILE:

Jeffrey Zaleski

An amiable, self-reliant competitor

❖
*Tackling a
problem and
figuring it out
on his own is a
virtue Jeff Zaleski
learned as an
undergraduate.*

❖

Jeff Zaleski



“His drive for research excellence, breadth of chemistry, and clever molecular approaches have allowed him to develop a unique combination of synthesis and spectroscopy in the fields of inorganic and bioinorganic chemistry. More impressively, he has defined an area of research and generated a class of molecules that the field recognizes as unique, important, and his own.” These powerful words from a colleague accurately, if all too briefly, describe Jeff Zaleski as a chemist, but do not portray his amiable and appealing personality or his teaching accomplishments, which include three awards from IU.

Nor do these words suggest that this excellent chemist was once a boy living in Buffalo, a boy who hated to read, preferring sports, such as skiing, ice hockey, and baseball, as well as fishing for anything from suckers and carp to largemouth bass and salmon in Lake Erie and the Niagara River. However, he loved science, showing this love at an early age when playing the card game Old Maid. He would pound on the card displaying “Clyde the chemist,” saying, “I want to be that.” He also became interested in astronomy and spent hours on his family’s garage roof identifying constellations, nebulae, star clusters, and double stars.

After playing baseball in high school, where he pitched or patrolled the hot corner, he chose to attend college at the State University of New York at Geneseo, primarily because of its strong academic profile, but also because it had no intercollegiate baseball team, removing any temptation for him to continue playing this all-too-tempting sport. He

found a worthy substitute, however, during the second semester of his freshman year. He was able to begin some research using laser spectroscopy, and he continued with this endeavor throughout the remainder of his undergraduate years, learning to find a balance between going to class and doing research. And when doing research, he obtained more than the knowledge the research afforded; he developed a mindset that has lasted to the current day: He learned not to be afraid to take on a problem and figure it out on his own.

Graduate school at Michigan State University in East Lansing, where he worked jointly with professors Daniel G. Nocera, an inorganic chemist, and George E. Leroi, a physical chemist, was the next step in his education. His research explored electron transfer in diporphyrin metal complexes using nanosecond and picosecond spectroscopy to examine luminescence lifetimes and transient absorption signatures of short-lived charge-separated states. To his surprise, his research efforts in this field began with one of his major professors telling him that he would have to build a suitable laser spectrometer before his real research work could begin. He was daunted but willing. He tackled the problem and built the spectrometer using the motivation he learned as an undergraduate. His PhD was granted in 1993.

For his postdoctoral experience, he obtained a Jane Coffin Childs fellowship and chose to work at Stanford University with Professor Edward I. Solomon, a bioinorganic chemist. His research dealt with chemically generating and trapping oxygen-dependent intermediates involved in the reactivity of bleomycin, an iron-containing antitumor agent, and non-heme iron dioxygenase enzymes. Although his graduate work had concerned excited state properties, he now wanted to build up a background in wet bioinorganic chemistry and on ground-state spectroscopies. He tackled the problem and figured out the ins and outs of electron spin resonance, circular dichroism, magnetic circular dichroism, and raman spectroscopy — he even built the raman spectrometer. He loved working and biking in California, and it was here that his interest in bioinorganic chemistry really got going.

He arrived at Indiana University as an assistant professor in 1996 and immediately began developing a broad research program, encompassing synthesis and photochemistry, as well as low-temperature and time-resolved spectroscopies on wide ranging inorganic, organic, and biological systems.

His use of metal ions to control thermal and photochemical Bergman cyclization — that is, the rearrangement of a 1,5-diyne-3-moiety to a

(continued on page 13)



Ken Caulton lectured at both national ACS meetings, as well as at Bucknell, Cornell, and Michigan State universities, and the universities of Michigan, Illinois, and Washington. He also lectured at the 50th anniversary celebration of the Nesmeyanov Institute of Organo-element Chemistry in Moscow. Caulton will host a symposium at Pacificchem, the chemistry conference of Pacific Basin countries, to be held in Honolulu in December 2005.

In addition to his third year as chair of the chemistry department, **David Clemmer** gave a plenary lecture at the 40th annual British Mass Spectrometry Society conference at York University on the research of his group on "Developing IMS-IMS Analogues of MS-MS." He also was the co-organizer of the session titled "Applications of the New Mass Spectrometry Techniques of Electrospray and Matrix Assisted Laser Desorption to Biochemistry," at the Pacificchem meeting, held in Honolulu. Clemmer was an invited speaker at the FASEB Summer Research Conference in Saxtons River, Vt., and at a special proteomics workshop in Philadelphia about the protein biomarker discovery by MS. He also traveled to Cambridge, England, for a board meeting for the *Analyst*.

Richard DiMarchi, PhD'79 (Gurd), has established a research program at IUB after a distinguished career at Lilly Research Labs. The goal of his current research is development of proteins with enhanced therapeutic properties through biochemical optimization with non-natural amino acids, an approach he has termed chemical-biotechnology. He delivered plenary lectures pertaining to his research at the Peptides to Drugs Conference in Zermatt, the ACS Short Course on Drug Discovery in Miami, and the annual meetings of the American Association of Pharmaceutical Scientists in San Francisco and the American Peptide Society in San Diego. He

recently received the 2005 Career Achievement Award in Biotechnology from the AAPS, and he was elected to the board of directors of Isis Pharmaceuticals. He is a co-organizer of the 2005 Biotechnology CSO conference to be held this September at Kiawah Island.

Ronald Hites recently presented invited lectures at the California Institute of Technology, Washington State University, the International Association for Great Lakes Research meeting, the International Workshop on Brominated Flame Retardants, the University of Illinois, the International Symposium on Halogenated Environmental Organic Pollutants, the Mount Sinai School of Medicine, and the World Congress of the Society of Environmental Toxicology and Chemistry. Hites continues to be an associate editor of *Environmental Science and Technology*, which is the pre-eminent journal in environmental chemistry. He also serves on several scientific, steering, and advisory committees for the U.S. Environmental Protection Agency, the University of Michigan, the Massachusetts Institute of Technology, and others. Although eligible for retirement in mid-2006, Hites plans to continue with his work; apparently, his wife will not let him stay home.

Gary Hieftje was selected as the Distinguished Faculty Research Lecturer at Indiana University Bloomington for 2004–05. Hieftje also received the 2004 New York Section of the Society for Applied Spectroscopy Gold Medal Award and the 2004 Monie A. Ferst Award from Sigma Xi, which was presented at IU. Hieftje spoke at the Eastern Analytical Symposium, Somerset, N.J. He was selected as a fellow of the Society for Applied Spectroscopy; this was the first time fellows of the SAS had been named. He was subsequently appointed to chair an SAS committee to consider other candidates for fellowship. Hieftje gave 22 invited lectures or plenary talks, and the Hieftje research group presented a total of 24 contributed papers at various national and international conferences. Hieftje assumed the chair of the editorial board

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Faculty profile

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potent 1,4-phenyl diradical — is now a prominent area of interest in his research group, an interest sparked by certain natural products with enediyne units displaying anti-cancer properties. These antibiotics owe their therapeutic activity to their ability to undergo Bergman cyclization, producing powerful diradicals that will cleave DNA and induce cell death. He and his group have shown with metal ions bound to enediyne ligands that the geometry around the metal center, ligand flexibility, and steric bulk adjacent to the alkyne termini can have profound effects upon the cyclization temperatures. These temperatures are

usually considerably less than those required by the metal-free ligands.

Jeff and his students have other projects within the scope of mediated radical and enediyne chemistry, including photochemical Bergman cyclization achieved via metal-ligand charge transfer excited states. He is also collaborating with Carl Bauer from the Department of Biology, examining photochemical and metal-dependent, redox-induced gene expression and using spectroscopic methods to evaluate adhesion in nanocomposite materials.

When I talked to Jeff, I was impressed with his obvious enthusiasm for his research. I was not surprised, therefore, when he told me, "I really love science and always want to do better and to do more."

— Rupert Wentworth

Faculty news

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of the *Journal of Analytical Atomic Spectrometry*, a publication of the Royal Society of Chemistry, in addition to assuming the chair of the external review Committee of the Chemistry Division at Los Alamos National Laboratory. Hieftje continues to serve on the editorial boards of 13 journals.

Srini Iyengar's group is a theory group that specializes in developing state-of-the-art computational methodologies. They recently developed a new computational methodology that allows the simultaneous dynamics of electrons and nuclei in potentially large systems. Such methods are important for obtaining time-dependent properties. The group is in the process of applying this method to problems in atmospheric chemistry, biological chemistry, and the study of novel materials with potential fuel cell applications.

Jeffrey Johnston was reappointed to the Beckman Scholars Advisory Panel. He presented 12 invited lectures, including one invited talk at the Gordon Research Conference on Heterocycles. Johnston graduated three PhD students last year.

Milos Novotny gave 11 invited lectures on subjects ranging from unraveling the complexities of mammalian proteomes to chemical communication in mammals. The sites of these lectures were as close as Indianapolis and as far as Osaka, Japan. Along with several other scientists, he was also awarded a commemorative medal from the University of Messina (Italy) at the opening ceremony for the Mediterranean Separation Science Center. The mission of this new center will be regional service and educational activities in the field of analytical separation science.

Martha Oakley organized a symposium called "Frontiers in Bioorganic and Chemical Biology" at the March 2005 ACS meeting in San Diego. She left for sabbatical in August 2005 to work with Julie Theriot at Stanford University in the area of biochemistry during the next academic year. Oakley graduated one PhD student this year.

In April 2005, **Dennis Peters** received two awards: a Distinguished Service Award for the Bloomington campus and a Trustees Teaching Award. The first award was presented at a special reception (attended by students, colleagues, and friends of Peters) at the Woodburn House on April 18. In May 2005 Peters completed a two-year term as chair of the Organic and Biological Electrochemistry Division of the Electrochemical Society; subsequently, he has been named to serve as a member of two society committees, namely the Nanotechnology Committee and the Henry B. Linford Teaching Award Selection Committee. He graduated one PhD student this year.

Krishnan Raghavachari became chair in 2005 for the theoretical chemistry subdivision of the physical chemistry division of the ACS. Raghavachari continues to be on the advisory editorial board for both the *Journal of Physical Chemistry* and the *Journal of Computational Chemistry*. Raghavachari gave several key invited lectures: at the International Symposium on "Theory and Applications of

Computational Chemistry," Gyeongju, Korea; at the "Canadian Symposium on Theoretical Chemistry," Quebec; and at Sandia National Laboratories, among several other locations.

Kate Reck continues to teach in the general chemistry and organic curriculum while working on curriculum development and outreach activities. Jill Robinson and she recently signed a contract with Thomson Higher Education to write a textbook for a one-semester general chemistry class to fit our new 1:2:1 curriculum. This fall, she is developing and teaching a new one-semester organic class intended for dietetics and nutrition-sciences majors. As faculty adviser of the Timmy Foundation on campus, she chaperoned 28 IU students (eight of whom were chemistry majors) to the Dominican Republic for a medical mission trip over spring break 2005. These students worked alongside health professionals, pharmacists, and dentists to tend to more than 1,500 patients in a five-day period. Finally, Reck is pleased to announce that our chemistry department will host the 20th biennial Conference on Chemical Education in July 2008, for which she is to be program chair. This conference is dedicated solely to discussing chemical-education issues at the college and high school levels. She hopes this conference will bring our department and the new chemistry curriculum to the attention of the chemical education community.

Jill Robinson has been involved with teaching general chemistry, curriculum development, and outreach in the past year. Last spring, she was nominated for a Student Choice Award for teaching in general chemistry. Robinson gave a presentation at the International Center for First-Year Undergraduate Chemical Education Conference about IU's newly adopted 1:2:1 curriculum. She has also been purchasing new instrumentation for the analytical teaching facility and developing a bio-analytical laboratory class. Robinson has been involved with several outreach projects, including a service-learning section of general chemistry (where the college students go into a sixth-grade class to perform hands-on activities), the Science Olympiad, Ellettsville Elementary Science Night, and workshops that train high school teachers to use the IU Department of Chemistry's online homework system (CALM). She also serves as the membership chair for the local ACS section.

Vic Viola has recovered well from his knee surgery and is back on the streets running again. He presented one of the Frontiers in Chemistry lectures at Texas A&M University and was an invited speaker at the San Diego American Chemical Society meeting in March 2005.

David R. Williams became a fellow of the American Association for the Advancement of Science. He presented more than 14 invited talks, published eight papers and contributed three chapters in *Name Reactions in Heterocyclic Chemistry*. Two students graduated from Williams's group, one with a master's degree and the other with a PhD.

STAFF NEWS



The department's annual staff reception was held on May 5 at the IMU Tudor Room. A notable feature was the expansion of the Outstanding Staff Award to include six new recipients! Honored for their exemplary service were **Delbert Allgood**, research machinist III; **Jack Baker**, facilities engineer; **Jackie Drake**, purchasing assistant; **Susie DuMond**, purchasing assistant; **Stacy Felton**, research secretary to professors Johnston and Williams; and **Lee Ann Mobley**, research secretary to Professor Hieftje. Once again, we also recognized a number of the staff for their long-term service to the university, with a remarkable part of that time having been accrued in our department. The honorees were: **Ray Sporleder**, 35 years as the manager of Research Computer Services; **Mary Swarthout**, administrative assistant and **Kathy Fisher**, administrative secretary, both in the chair's office and each with 30 years; **Jack Baker**, facilities engineer, **Jeff Tate**, research machinist III, and **Gayla Bradfield**, accounting associate, all with 25 years of service; **Gary Fleener**, the director of the Edward J. Bair Mechanical Instrument Service, and **Toni Lady**, the manager of the Graduate Office, both with 20 years; and, finally, **Becky Baugh**, scheduling officer, and **Susie DuMond**, purchasing assistant, with 10 years at IU. It continues to amaze me how many years of service our staff dedicate to this department. Such loyalty and work ethic are a major contribution to the success of the department. With the seven staff retirees of a year ago, we lost a cumulative total of 231 combined years of experience! We were again fortunate to see so many of our retired staff members return for this special annual event.

Jeannette Silvers joined the department as the new inorganic research secretary last September. She replaced **Jackie Chandler**, who left last August to start a graduate program here. Jeannette transferred from the School of HPER, where she was the departmental secretary in kinesiology for four years. During that time, she had received the HPER Support Staff of the Year Award. Prior to that, Jeannette was the coordinator for hourly staff at Thomson Consumer/RCA for 33 years. Jeannette works with professors Baik, Caulton, Lee, Mindiola, and Zaleski. This is the position that **Sondra (Flynn) Gerner** had held for 16 years, although at the time it was supporting professors Caulton, Christou, and Todd. Sondra left to join Professor Christou at the University of Florida in Gainesville several years ago and has since married Charlie Hayes. Charlie and Sondra planned to attend the inorganic picnic on Oct. 1 to renew old acquaintances, acquaintances that will, we hope, include a number of our readers.

April Dressel left her position as research secretary to professors Clemmer, Jacobson, and Peters

in May to head to Italy for a summer language program and to start a graduate program in the fall. **Kaycia Myers** returned from Purdue to settle back in Bloomington, so our timing was good to catch her again to return to her former position.

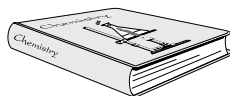
Sara Lowe left her position as research secretary to Professor DiMarchi in May so that she could accompany her husband to a new position. He was offered a wonderful opportunity at a Japanese university, so the two of them are spending this year in Japan. We were fortunate to find **Natasha Brenchley** as her replacement. Natasha transferred from undergraduate career services at the Kelley School of Business, where she had been an office services assistant for the last two years. She received her BS with a concentration in psychology from Utah State University shortly before she joined the department. Her excellent skills and previous university experience have made her a great asset to the department.

Thomas Stromberg left the department in June to relocate to the Atlanta area, where both he and his significant other had new opportunities. Thomas has been an instrumental part of ITG as the coordinator of UNIX systems for nearly two years in a crucial and ever-expanding area of the department. We are still recruiting for his replacement.

Brian Finan joined the department in July in a new position in the DiMarchi lab as a research lab technician, working under the direction of Vasily

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LIBRARY



NEWS

Brian Winterman, assistant librarian, was hired in September 2004 to help with reference, instruction, and other library duties. In one of his former positions, Brian was the head of circulation and systems in the Alexandrian Public Library in Mount Vernon, Ind. Among his hobbies he includes songwriting and leading a band called the Delusion Train. He also has duties in the Life Sciences Library, as I do, and is now the owner of CHMINF-L, a listserv for chemical information started by **Gary Wiggins**. **Andrew Klein** is our SLIS graduate assistant for 2004–05. He will be replaced by **Yan He** for 2005–06. Yan has a background in organic chemistry and has experience developing workshops on MDL CrossFire and SciFinder Scholar, two of our most important chemistry databases. Andrew was involved in several training sessions for these databases, and Yan will continue this work.

An important addition to the collection was the electronic backfiles of *Angewandte Chemie International Edition in English* 1962–1997 (volumes 1–36). This title is one of our most-used electronic journals.

In 2004 and 2005, approximately 6,000 bound journal volumes or books were sent to the IUB Libraries Auxiliary Library Facility to free up room in the Chemistry Library for the growth of the collections. ALF is a storage facility with same- or next-day retrieval service and contains a state-of-the-art preservation facility. Items selected to be housed in ALF are usually older, little-used books or journals that are available electronically.

— Roger Beckman

STAFF PROFILE:

Alice Dobie-Galuska



Alice Dobie-Galuska

❖
*"I have been
fortunate to be
given challenges
and to be given
the support and
patience from
people who believe
in me."*
❖

Diminutive but dynamic

A belly dancer and an indoor climber, a wife and a mother, Alice is also our department's coordinator of undergraduate services. She's a Midwesterner, born in Berea, Ohio, and raised in Crete, Ill. Her mother taught mathematics in junior and senior high school and was the organist in the Methodist church across the street from her house. Her father was an accountant for U.S. Steel. She has one sister and two brothers. The family went to Chicago and the Indiana Dunes often.

Alice enjoyed her seventh-grade biology class very much. It was the first science class she had that was not general science, and she did very well in it. Her two experiences in high school chemistry were not as rosy, however. The class was so bad that only one experiment was assigned each year — and it was the same experiment.

When she began attending Beloit College in Beloit, Wis., she wanted to take classes in chemistry because she knew

she had missed something in high school. But she still liked biology, so she majored in biochemistry. She also took a lot of dance classes from a dance teacher who coincidentally — or perhaps not so coincidentally because Beloit College is small school — was married to the biochemistry professor.

Shyness had always been a problem for Alice. She remembers being so shy in high school that she could barely speak in front of a class. In college, however, she began to come out of her shell through dancing. After one year of dance classes, Alice became a member of Beloit College's dance company, Chelonia. (Chelonia is a Latin word for turtle, and a turtle is a mascot of sorts for Beloit College because it is built near an Indian burial ground with burial mounds shaped like large turtles.)

Upon graduation from Beloit in 1990, Alice began graduate studies in nutrition education at the University of Wisconsin–Madison. She soon became more interested in the theory and philosophy of education, and she received teacher certification in 1992.

She married John Galuska in 1993 before coming to IU, with John entering graduate school in the folklore and ethnomusicology program and Alice becoming assistant coordinator of general chemistry.

One of her initial assignments was to become thoroughly familiar with all of the lecture demonstrations that were in use for the 100-level courses. All of the professors teaching at that level

worked with her, helping her learn the demonstrations that each of them did and familiarizing her with the type of demonstrations they hoped she would develop. Alice will always be grateful to Mike Jackson and Tom Hacker, who showed her some of the most popular demonstrations, including balloons filled with oxygen and either hydrogen and methane, the oscillating clock reaction, and luminol. With all of their help, she gathered the demonstrations into one manual that provides instructions for preparing each demonstration, as well as safety precautions. Eventually, the manual found a home on the Web where faculty — and teachers everywhere — can learn about the demonstrations they can incorporate in their classes. For any teachers who may be interested, the address of the Web site is <http://chemlearn.chem.indiana.edu/demos/>.

Dennis Peters used Alice's help and her preparation of demonstrations for his annual "magic shows." Alice recalls that the children were fascinated with even very simple demonstrations, such as pouring liquid nitrogen on the floor. She also recalls Dennis asking his audience for ideas of things to freeze with liquid nitrogen. One child raised his hand enthusiastically and yelled, "Freeze me! Freeze me!"

Although setting up lecture demonstrations and trying out new laboratory experiments (another one of her duties) was enjoyable, Alice was happy when another opportunity came her way after 10 years: coordinator of undergraduate services. The duties of the new position include being an academic adviser and managing the undergraduate office (née freshman office).

She is very proud of the chemistry majors she advises. Her goal and that of the office she manages is to give them the support they need to meet the challenges they face. Alice also wants to serve the faculty, especially the new faculty, more efficiently.

Her life at home is very full, with two children — David, a young artist and performer, and Toudora, a budding biologist — her husband, friends, and two recent hobbies. Alice is studying American tribal belly dancing, and she performs with a local belly dance group. She is proud of her accomplishments in this dance form and the fact that she can now lead dance sequences while playing finger cymbals. Whatever happened to the shy girl? Indoor climbing at a local climbing gym is her other new hobby. She supplements both of these activities with regular doses of yoga. Her newest goal is to do a back bend. I suspected her real goal is the *Chakrasana*, a back-bending posture in yoga also known as "The Wheel," but Alice said I was wrong. Time will tell.

— Rupert Wentworth

Staff news

(continued from page 15)

Gelfanov. This past spring, Brian received his BS in biology with a minor in chemistry from IU, garnering several honors along the way. He also worked for a period as a strength-and-conditioning consultant and as an informal sports supervisor at IU's Recreational Sports, where he twice received the Employee of the Month award.

The graduate office has undergone a staff change with the departure of **Jennifer Julian**, the graduate admissions secretary, who left with her husband, Ryan, for California, where he has assumed a faculty position at the University of California, Riverside. **Melissa Jayne** moved next door in August to take up this key position. Melissa has been in the business office as the office services assistant for the past four years, where she has worked with nearly everyone in the department. Since she is already familiar with most of our graduate students, this is a wonderful opportunity for her. We are recruiting now for her replacement in the business office.

Kevin Bruce left his position as research technician IV in August. Kevin worked in the Novotny lab for more than three years and started a graduate program here in environmental sciences in SPEA in the fall.

Doug Garvin completed his apprenticeship in our Edward J. Bair Mechanical Instrument Services and was promoted to the position of research machinist I. Doug transferred into this area two years ago, after handling shipping and receiving needs and assisting in many other capacities within the department for more than 18 years. This has been a very nice move for Doug and helps with the growing demands of that service.

CHEMICAL INFORMATICS

The first student to select a chemical informatics track in the School of Informatics' new PhD program is **Xiao Dong**, whose undergraduate degree in chemical physics was followed by an MS in computer science from Marquette University. Xiao was awarded the Elsevier MDL Excellence in Informatics Fellowship. Entering the second year of her MS in chemical informatics program is **Huijun Wang**, a member of **Mu-Hyun "Mookie" Baik**'s group. Also continuing with the Baik group as a postdoc is **Marco Fioroni**. He will be teaching the undergraduate molecular modeling class in fall 2005. Former Pfizer employee **David J. Wild** has accepted a full-time visiting faculty position at IUB for 2005–06. He will teach the introductory chemical informatics courses on both the graduate and undergraduate levels and a course in programming for chemical informatics. The laboratory informatics track of the MS in chemical informatics program at IUPUI continues to grow, with 14 students currently in the program. The first meeting of the Science Informatics Advisory Board was held on April 22, 2005. Following that meeting, board member and LabWare president and CEO **Vance Kershner** announced a gift to fund the LabWare Fellowship in the laboratory informatics program. On the library science side, **Allison Tipton** completed her MLS degree, and **Andrew Klein** will enter the second year of his MIS program.

— Gary Wiggins

The best, as usual, is saved for last! **John Poehlman** was married in April to Amy Eklund. John has been in the department for 17 years and is the manager of our electronic instrument service. Amy is a research associate in the Department of Biology. **Heather Brummett**, student services assistant in our undergraduate office, and husband David had their second baby in June. Madison Nicole joins her brother, Logan, who is now 2 years old.

— Judy Crandall

ACS section news

(continued from page 10)

On April 9–10, 2005, the Student Affiliates team participated in the American Cancer Society Relay for Life. The annual American Cancer Society Relay for Life of Indiana University raised \$68,708 for cancer research and patient services. Our team of seven students raised more than \$700; they were among 850 participants who spent an exhausting 20 hours of walking, covering several miles at the Gladstone Fieldhouse. Several students participated in WonderLab's Bubblefest, which saw nearly 4000 community citizens visit the sticky, hands-on demonstrations.

The SISACS sponsored National Chemistry Week to enhance the public's awareness of the wonderful contributions of

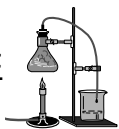
chemistry. NCW was celebrated during Oct. 16–22 in the Chemistry Building at Indiana University. This year's theme was the "Joys of Toys." We also offered a series of activities, including a hula-hoop competition, chemical demonstrations, hands-on activities for kids and families, contests and games, Boy Scout merit badges, and poster competitions for students from elementary school to high school. The final Magic Show, hosted by Dennis Peters and Matt Nance, made a splash in the local newspaper. Our Student Affiliates hosted a successful "Haunted Laboratory," where kids could walk through the laboratory and see and feel creepy things, see cool demonstrations, and watch Frankenstein come to life.

Last, we instituted a new officer position called high school tutoring coordinator. This position was held jointly by graduate

student J. Cullen Klein and new faculty Andrea Pellerito. Klein, working with Bloomington North High School, and Pellerito, working with Bloomington South High School, coordinated volunteer activities between our ACS student affiliates, the IU chemistry department, and the high schools. We anticipate that this will help us in our venture to increase outreach activities for the local section.

For the calendar year 2005, Dan Mindiola is the chair, Kate Reck is the chair-elect, Levi Simpson is the secretary, Jill Robinson is membership chair, and Steve Wietstock remains the treasurer. The National Chemistry Week coordinator is Alice Dobie-Galuska. Jeff Zaleski is our local section councilor, with Kenneth Caulton as our alternate councilor.

— Kate Reck

*George Chan**Chao Chen**Gerardo Gamez**J. Cullen Klein**Stormy Koeniger*

During the 2004–05 school year, Professor **Jeffrey M. Zaleski** was director of graduate studies. Serving with him on the Standards Committee were professors **Kenneth G. Caulton**, **Gary M. Hieftje**, **Lawrence K. Montgomery**, **Martha G. Oakley**, and **Charles S. Parmenter**.

The Graduate Admissions Committee was chaired by **Martin F. Jarrold**. Evaluating the hundreds of dossiers submitted to the department were professors **Bogdan Dragnea**, **Srinivasan S. Iyengar**, **Richard D. DiMarchi**, **Thomas J. Tolbert**, **Stephen Jacobson**, **Jeffrey N. Johnston**, **Daniel J. Mindiola**, and **Dongwhan Lee**.

Award winners

George Chan was awarded the ACS Fellowship award sponsored by GlaxoSmithKline. Chan attended the University of Hong Kong from 1994 to 1997 before receiving his BSc degree in chemistry. After receiving his BSc degree, he joined the Wing-Tat Chan research group at the University of Hong Kong for graduate study and received his MPhil degree, majoring in analytical chemistry, in 2000. He started his graduate research at Indiana University in 2002 with Gary Hieftje. His current research interest lies in understanding matrix effects mechanisms and analyte excitation mechanisms in ICP-AES. The work aims to clarify the origin of matrix interferences, to better understand the excitation and ionization mechanisms for analytes and their relationships to matrix effects.

Chao Chen was awarded the E.M. Kratz Fellowship. Chen attended Peking University in China, where he earned a BS degree in 2002. He came to Indiana University in August 2002 and began research in Bogdan Dragnea's lab. He is currently a fourth-year student, and his research focuses on inserting gold nano-particles into viral capsids. This tiny gold-capsid complex reveals the mechanism by which a viral capsid works during the virus life-cycle, and it has provided a new idea for drug-design — an encapsidated drug delivered to specific locations in cells.

David Dye was awarded the Merck Fellowship. Dye completed his undergraduate studies at Samford University, where he earned a BS degree in chemistry with a minor in physics. Dye started his graduate studies in our department in 2001 in the laboratory of Jeffrey Zaleski. His synthetic research has focused on the development of photo-reactive metalloenediynes that can undergo Bergman cyclization upon long wavelength photolysis. In addition to these synthetic pursuits, he is also involved in a variety of spectroscopic projects ranging from the study of the coordination environment of lead peptides to the shifts in molecular vibrations associated with phase transitions of liquid crystals. This work has included the development of several pieces of custom spectroscopic equipment for use in these studies.

James Jianmiao Fan was awarded the Richard Slagle Fellowship award. Fan graduated from

USTC in China in the spring of 2002 with a BS degree in chemistry and a BE degree in computer science. He joined our department in August 2002. His current research is to develop multi-dimensional multi-scale cell simulators. Fan is a PhD candidate under the supervision of Peter Ortoleva.

Gerardo Gamez was awarded the Dick Payling Award. Originally from Mexico, Gamez obtained a BS in 1999 from the University of Texas at El Paso with a major in chemistry and a minor in biology. At UTEP, he did undergraduate research in the laboratory of Gardea-Torresdey, developing a cost-effective method of using dead plant tissues (e.g. leaves, roots and stems) to remove heavy metal contaminants (e.g., Cr, Pb, Cu, Cd, and others) from aqueous systems. In addition, he obtained an MS from UTEP with a major in chemistry and an emphasis on environmental science. During that time, his research was focused on an environmentally friendly method of recovering gold ions and producing gold nanoparticles with dead plant tissues. Currently he is a PhD candidate in the analytical chemistry program in our department. His present research in Gary Hieftje's laboratory involves the fundamental study of plasmas that are routinely used in analytical spectrochemistry, such as the inductively coupled plasma and glow discharge, through laser scattering, laser induced fluorescence, and emission-based techniques. Specifically, these techniques allow the observation of the behavior of key plasma species such as electron number density, electron temperature, electron energy distribution, plasma gas temperature, and analyte number densities, among others. The purpose is to understand the fundamental mechanisms better to improve the plasma analytical performance.

J. Cullen Klein was awarded the Abbott Fellowship. Klein graduated cum laude with his BS in chemistry and mathematics from Ohio State University in 2002. In the same year, he moved to Indiana University to pursue his PhD in synthetic organic chemistry under the supervision of David Williams. Klein is currently investigating the use of highly diastereoselective Ireland-Claisen rearrangements and intramolecular Diels-Alder reactions leading toward the total synthesis of australifungin and australifunginol, two potent antifungal polyketide natural products.

Stormy Koeniger was awarded the Proctor and Gamble Fellowship. Koeniger received her BS degree in chemistry from Purdue University and began working toward her PhD degree in analytical chemistry at Indiana University in 2001 in David Clemmer's lab. Her interests in research began early in her undergraduate career, where she developed methods to analyze trace carboxylic acids in snow samples collected at Summit, Greenland, during the polar sunrise. Her doctoral research involves the design and construction of ion mobility spectroscopy/time-of-flight mass spectrometry instrumentation. She has recently developed a two-dimensional ion mobility separa-

tion that provides a new method to study protein folding pathways, gas phase structure of peptide and protein fragment ions, and complex systems such as oligosaccharides.

Michelle Kovarik was awarded the National Science Foundation graduate research fellowship. Kovarik graduated with a BS in chemistry from Saint Louis University in 2004. She started her graduate studies here in August 2004 in the laboratory of Professor Jacobson. She has been working to fabricate nanometer-scale channels and pores using electron beam lithography and standard photolithography for use in chemical analysis.

Beili Quan received the Linda and Jack Gill Fellowship. Quan graduated from Fudan University, Shanghai, China, with a BS in chemistry. She entered Indiana University Bloomington in the fall of 2003 and is majoring in biological science. She currently works for Richard DiMarchi in the research of insulin analogue activity. She participated in the American Peptide Society meeting in June 2005 and was chosen to give an oral presentation in the Young Investigators' Mini Symposium. She also won the travel award for the meeting.

Renā Sowell has been awarded the Kraft Fellowship. Sowell attended the University of Louisville, Ky., where she received her BS degree in chemistry with a concentration in business in the winter of 2000. She came here in the summer of 2001 and began research in David Clemmer's lab. She is currently a fourth-year student. Her research focuses on monitoring changes in the *Drosophila melanogaster* proteome as the adult organism ages. In particular, she's interested in how the fruit fly's proteome and lifespan are affected by the organism's caloric intake and single-gene changes in the immune system.

The Department of Chemistry has been selected by the U.S. Department of Education to participate in the Graduate Assistance in Areas of National Need Fellowship Program. Fellowships were awarded to: **Brad Bailey**, **Emily Barter**, **Leigh Boerner**, **William Broshears**, **Jodi Evans**, **Max Fontus**, **Alison Fout**, **Julienne Green**, **Sarah Mabbett**, **Julie Pigza**, **Manolo Plasencia**, **Kelly Rask**, **Sarah Richer**, **Justin Riddle**, **Brigitte Robinson**, **Bianna Smith**, **Renā Sowell**, and **Bruce Yoder**.

Other fellowship recipients were **Parichatr Vanalabhpatana**, Anandhamahidol Foundation Scholarship; **Gerardo Gamez**, Dean's Fellowship; **Vanvimon Saksmerprom**, Royal Thai Government Fellowship; and **Max Fontus**, McNair Fellowship; and **Michelle Kovarik** and **Maggie Lerch**, WIS Fellowship.

Research and University Graduate School Fellowships were awarded to: **Debashis Adhikari**, **William J. Andrews**, **Brad C. Bailey**, **Leigh Boerner**, **William Broshears**, **Nicholas Chow**, **Elizabeth Clizbe**, **Ashley Copes**, **Xiao Cui**, **Alen Cusak**, **Anja Dancevic**, **Arnab De**, **Chris-**

topher DuFort, **Gholam Ebrahimian**, **Ryan Fenno**, **Glen Ferguson**, **Alison Fout**, **Michael Fultz**, **Holly Herbert**, **Thaddeus Jones**, **Uriah Kilgore**, **J. Cullen Klein**, **Tillmann Koepke**, **Michael Lawler**, **Sarah Mabbett**, **Samuel Merenbloom**, **Nathan Miller**, **Colleen Neal**, **Elizabeth Opsitnick**, **Julie Pigza**, **William Pitcock**, **Kelly Rask**, **Jamie Regan**, **Justin Riddle**, **Brigitte Robinson**, **Laura Sharon**, **Levi Simpson**, **Anand Singh**, **Isaiah Sumner**, **Timothy Troyer**, **Scott Wallace**, **Martin Walsh**, **Christopher Weitzel**, and **Lloyd Zilch**.

Annual honors and awards

At the Chemistry Honors Banquet in April 2005, the following students were honored:

E. Campaigne C500 Award: **Sean Xiaofan Yang**

Wendell P. Metzner Memorial Award: **J. Cullen Klein**

William H. Nebergall Memorial Award: **Brad Bailey**

Felix Haurowitz Award: **George Chee-Yuen Chan**

William Klinkenberg Award: **James Jianmiao Fan**

Henry R. Mahler Award: **Ginny Goehlert**

McKenzie Award: **Levi Simpson**

Jack Crandall Award: **Julie Pigza**

David A. Rothrock Award: **Michael Lawler**

Instructor Awards: **Anja Dancevic**, **Partha Nag**, **Greg Schilling**, **Wei Wang**, and **Lloyd Zilch**



Michelle Kovarik



Beili Quan



Renā Sowell

Congratulations to recent graduates!

PhD degrees awarded

Cortright, Sarah (organic, Johnston, August 2004), postdoctoral research, Ohio State University, Columbus, Ohio

Gurnon, Daniel (biological, Oakley, June 2005)

Johnson II, David (organic, Widlanski, August 2004), postdoctoral research, IU Department of Chemistry

Karty, Jonathan (analytical, Reilly, November 2004), mass spectrometry laboratory, IU Department of Chemistry

Mullins, Richard (organic, Williams, August 2004), assistant professor, Xavier University, Cincinnati

Vanalabhpatana, Parichatr (analytical, Peters, June 2005), lecturer, Department of Chemistry, Bangkok, Thailand

Viswanathan, Rajesh (organic, Johnston, May 2005), postdoctoral research, University of Utah, Salt Lake City, Utah

MS degrees awarded

Hayes, Jack (analytical, Peters, December 2004), faculty, State Fair Community College, Sedalia, Mo.

Stites, Ryan (organic, Williams, May 2005), Research, Eli Lilly, Indianapolis

The 2004–05 academic year was another year of change and growth in the undergraduate program in chemistry at IU. This was the second year during which we offered our new Principles of Chemistry and Biochemistry (C117 and C118). Thanks to the hard work of all the faculty and staff associated with the general chemistry program, it is working well. Our students are performing at a higher level, and their enthusiasm has grown.

Dennis Peters and **Kate Reck** have described the new program elsewhere in this issue (see page 5).

Last fall, we were also pleased to welcome a new teaching faculty member for organic chemistry, **Andrea Pellerito**. Andrea came to us directly from her graduate work in synthetic organic chemistry under the direction of Rob Maleczka at Michigan State. This year, she taught three organic chemistry courses while she was finishing up her thesis work at Michigan State. In the upcoming academic year, she will continue to teach the second-semester organic lecture course and will play a key role in modernizing our organic chemistry lab courses.

The undergraduate lab program also underwent a major reorganization last year after the retirement of longtime support staff members Don Chatten, Tom Hacker, and Mike Jackson. **Steve Wietstock**, who moved to the new position of director of undergraduate labs, took over primary responsibility for the entire lab program and oversaw the preparation for the organic labs. We were fortunate to hire IU chemistry MAT alumnus **Kimberly Aumann** into the new position of coordinator of undergraduate labs, and Kimberly oversaw the preparation of the general chemistry labs. She was ably assisted by IU alumnus **Matt Nance**, who added laboratory preparation duties to his primary responsibility for preparing lecture demonstrations for the department.

It was an exciting and challenging year, and we look forward to making major changes in the analytical and physical chemistry labs in the upcoming year.

New events

Heather Brummett, student services assistant in the undergraduate office, gave birth to her daughter Madison Nicole, a beautiful and healthy 7 lbs. 3 oz. and 20 inches, on June 17, 2005. Father David and brother Logan are very proud. Heather was sorely missed during her maternity leave, but she returned to work just in time for fall classes to begin.

Alyse Crouch (daughter of **Brian Crouch**, the manager of the chemistry department's Information Technology Group) joined the undergraduate office this summer to help during Heather Brummett's maternity leave. Alyse's superb organizational skills helped keep the office running smoothly.

Becky Baugh, scheduling officer and enrollment manager in the undergraduate office, graduated

in May 2005 with her BA degree in social and behavioral studies and a minor in sociology. In her last year, she was the recipient of a general studies scholarship as well as the J.D. Fine Scholarship. We are grateful to have such an accomplished staff member as part of the undergraduate office team.

Annual departmental graduation ceremony

On the sunny morning of Saturday, May 7, 2005, we honored our undergraduates who graduated in December 2004, May 2005, and August 2005 at our second annual chemistry graduation ceremony. Approximately 150 students, their friends and families, and chemistry faculty and staff gathered for a light breakfast under a tent on the north side of the Chemistry Building. The ceremony followed in the Harry G. Day Lecture Hall. David Clemmer gave an opening speech, and Dennis Peters called each student up to spend a minute or two to speak about the student's accomplishments and future plans and to acknowledge family and friends. There was just the right mix of lists of serious accomplishments and amusing stories. We are very proud of our graduates and look forward to hearing from them as they begin the next phase of their lives and throughout their careers.

— *Alice Dobie-Galuska and Martha Oakley*

Scholarships and awards

C117 Award: **Mary Clegg** and **Igor Ristevski**

S117 Award: **David Lance Hocker**, **Shreyas Subhash Joshi**, and **Elizabeth Ann Lemmon**

C118 Award: **Theodore Bauer Jennermann**

Chemistry Honor Roll: **Khadem Mohd Al-Rumaihi**, **Carla Marie Beatty**, **Jun Chung**, **John J. Dever**, **Katherine Elaine Hersberger**, **Stephen Paul Lathrop**, **Joseph Mathew Lee**, **Grace Lin**, **Anthony Keith Mitchell**, **James Travis Patterson**, **Christopher Lloyd Pomeroy**, **Aaron Mathew Royer**, **Laura Marie Sliker**, **Esther Marie Tristani**, **Erin Renee Badenhop**, **Michael Yoon-Phil Bang**, **Noah Meyer Benjamin**, **Mark J. Bieszka**, **Gregory William Bishop**, **Todd Leo Budreau**, **Matthew Tyler Burk**, **Elizabeth Theresa Cera**, **Jean K. Chung**, **Anshuman Das**, **Kathryn Elyse Dickerson**, **Irina Michaela Dunayevich**, **Rebecca Marie Forest**, **Emily Kathleen Free**, **Michael Fuchs**, **Amy Marie Ho**, **Amy L. Hoffman**, **Michael Andrew Ischay**, **Denver J. McDaniel**, **Elizabeth Anne O'Bryan**, **Trent James Oman**, **Anita Panchanathan**, **Trevor Franklin Price**, **Raymond Ramirez**, **Adam John Sedia**, **Rahul Sharma**, **Daniel Edward Shelby**, **Vlad Valentine Simianu**, **Mark T. Smith**, **Pamela Alisa Sontz**, **Sienna Marie Teschendorf**, **Tedi Sasho Vlahu**, **Richelle Caluag**, **Jessica Ellen Brown**, **Alex S. Burn**, **Adam Daniel Comer**, **Erica Marie Daniel**, **Albert Carl Fahrenbach**, **Justin Thomas Farlow**, **Shea Brooke Ferree**,

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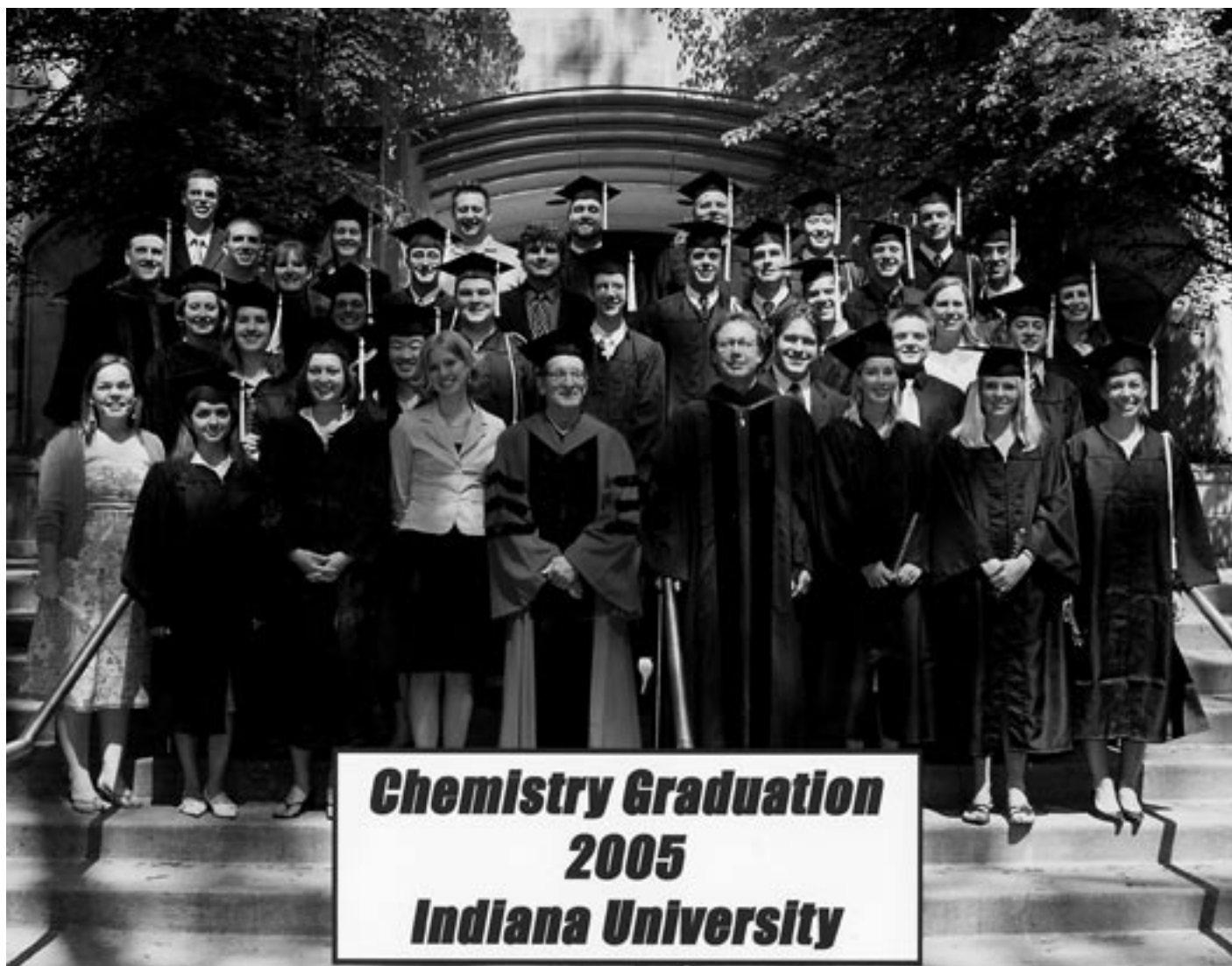
Undergraduate notes

(continued from page 20)

Philip Charles Gach, Abram Samuel Hess, Cristina Marie Hoffer, Erin Callie Hudson, Erin Kay Jefferson, Theodore Bauer Jennermann, John Fielding Kellie, David Jonathon Kiefer, Christopher Joel Kumfer, Kyle Patrik Lammlein, Joseph Tien Yo Lee, Brian N. Leech, Adriana Marta Mach, Paul Anthony Mannia, Kimberly Mae Madsen, Jeff Allen Mayfield, Aubrey Fae Merrill, Robert Wesley Mertz, Tyler Marcus Nolting, Emmanuel Kwabi Obeng-Gyasi, Tara Lynn Oman, Zachary Todd Quinkert, Tiffany Ann Ray, Bryan Harris Schmidt, Daniel Paul Stanko, Sarah Jean Teter, Susan Therese Wallace, Stephen Albert Zent, Alana Louise Barbato, Michael William Drazer, Chris Michael Heaton, John Vidyadhar Hedge, Katherine Anne Israel, Sibol Lin, Deanna Lynn Miller, Maria Francesca Monn, Thomas George Pottanat, Mathew Walter Robinson, Anand Subhash Shah, Vasu Maruthi Tumati, Ryan Andrew Volz, Erica Ann Weyer, and Jun Yin

(continued on page 22)

Graduation 2005: 1) Katie Calhoun, 2) Shabnam Moshref, 3) Kristina Stephenson, 4) Cordelia Boersma, 5) Professor Dennis Peters, 6) Chair David Clemmer, 7) Mary Patten, 8) Emily Baker, 9) Nicole Vincent, 10) Marla Nova, 11) Irene Kim, 12) Chris Dwulet, 13) Matt Hostetler, 14) Aaron Royer, 15) Laura Sliker, 16) Esther Tristani, 17) Stephen Helms, 18) Brendan Sweeny, 19) Steve Spencer, 20) Carla Beatty, 21) Katie Hersberger, 22) Professor Todd Stone, 23) Chris Moore, 24) Professor Kate Reck, 25) Michael Goodman, 26) Justin Damron, 27) Jonathon Wertz, 28) Jonathon Steinhof, 29) Aalo Gupta, 30) Rob Kellogg, 31) Tasia Pyburn, 32) Erik Schatz, 33) Mark Weber, 34) Joseph Lee, 35) Josh Maze, 36) Jason An, and 37) Stephen Lathrop



Undergraduate notes

(continued from page 21)

Chemistry Honors Program: **Carla Marie Beatty, Aalo Kumar Gupta, Katherine Elaine Hersberger, Robert Givens Kellogg, Ryan Paul Kilgore, Stephen Paul Lathrop, Anthony Keith Mitchell, Christopher Paul Moore, James Travis Patterson, Aaron Mathew Royer, Brendan Keith Sweeny, Esther Marie Tristani, Amanda J. Walker, Michael Yoon-Phil Bang, Noah Meyer Benjamin, Matthew Tyler Burk, Jean K Chung, Anshuman Das, Kathryn Elyse Dickerson, Irina Michaela Dunayevich, Emily Kathleen Free, Noah Robert Herron, Amy L. Hoffman, Michael Andrew Ischay, Nshir Kumar, Denver J. McDaniel, Elizabeth Anne O'Bryan, Trent James Oman, Nicole Elaine O'Neil, Rahul Sharma, Pamela Alisa Sontz, Corinne Danielle Sulok, Tedi Sasho Vlahu, Jessicca Ellen Brown, Adam Daniel Comer, Lindsay Elaine Darling, Philip Charles Gach, Abram Samuel Hess, David Jonathon Kiefer, Joseph Tien Yo Lee, Zachary Todd Quinkert**

Phi Beta Kappa: **Nicholas Richard Abel, Jason Kyun An, Rebecca Ruth Baxter, Gregory William Bishop, Kathryn Mc Govern Calhoun, Justin B. Damron, Kathryn Elyse Dickerson, Mark Andrew Gromski, Joseph Mathew Lee, Grace Lin, Christopher Paul Moore, Neal Balvant Patel, Evan Sherfick, Jonathan David Steinhof, Kunal Dhiren Thakrar, Nicole M. Vincent, Amanda J. Walker, and Jonathon Allen Wertz**

Howard Hughes Medical Foundation Capstone Scholarships: **Kathryn Elyse Dickerson, Amy L Hoffman, and James Travis Patterson**

John H. Billman Summer Scholarship for 2005: **Bryan Harris Schmidt**

Herman T. Briscoe Summer Scholarships: **John Ryland Retrum, Samprati K. Lalwani, and John Fielding Kellie**

Harry G. Day Scholarships for 2005: **Pamela Alisa Sontz**

Ira E. Lee Summer Scholarships for 2005: **Noah**

Meyer Benjamin and Daniel Edward Shelby

Frank Mathers Undergraduate Summer Research Scholarships for 2005: **Abram Samuel Hess, John Vidyadhar Hedge, and Corinne Sulok**

Earl G. Sturdevant Summer Research Scholarship for 2005: **Michael William Drazer**

Votaw Undergraduate Research Scholarship for 2005: **Sibo Lin**

Eli Lilly Scholarship: **Brian Phillip Ward**

Eli Lilly Organic Chemistry Summer Scholarship for 2005: **Elizabeth O'Brien**

Pfizer Summer Undergraduate Research Fellowship for 2005: **Matthew Tyler Burk**

Honors Division Summer Scholarships for 2005: **Gregory William Bishop, Jessica Ellen Brown, Jean K. Chung, Philip Charler Gach, Amy L. Hoffman, Michael Andrew Ischay, Joseph Tien Yo Lee, Peter Morone, Zachary Todd Quinkert, Erika Robertson, and Tedi SashoVlahu**

Keith Ault Scholarship for 2005–06: **Matthew Walter Robinson**

R.J. Grim Scholarships for 2005: **Pamela Alisa Sontz, Tedi Sasho Vlahu, Theodore Bauer Jennerman, David Jonathon Kiefer, Sibbo Lin, Zachary Todd Quinkert, and Daniel Paul Stanko**

Andrew Loh Scholarship for Analytical Chemistry for 2005–06: **Gregory William Bishop**

Dennis G. Peters Scholarships for 2005–06: **Michael William Drazer and John Vidyadhar Hegde**

William G. Roessler Scholarships for 2005–06: **Emmanuel Kwabi Obeng-Gyasi**

Enola Rentschler Van Valer Trafford Scholarship Awards for 2005–06: **Kathryn Elyse Dickerson and Kimberly Mae Masden**

Francis and Mildred (Eckerty) Whitacre Scholarships for 2005–06: **Jessica Ellen Brown and Michael Andrew Ischay**

Russel and Trula Sidwell Hardy Scholarship: **Sarah Jean Teter**

Merck Index Awards: **Michael Yoon-Phil Bang, Jean K Chung, and Trent James Oman**

ACS Analytical Chemistry Award: **Michael Andrew Ischay**

William H. Bell Awards: **Anshuman Das, Elizabeth Anne O'Bryan, and Daniel Edward Shelby**

Hypercube Scholar Award: **Aaron Mathew Royer**

American Chemical Society Award: **Anthony Keith Mitchell**

Joseph B. Schwartzkopf Award: **Katherine Elaine Hersberger**

Mary Frechtling White Award: **Carla Marie Beatty**

James C. White Award: **Robert Givens Kellogg**

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Alumni profiles: It's a family affair!

Ray and Lisa Childers

It all began in Bloomington in the fall of 1969 — Lisa and I bumped into each other in the elevator of the Chemistry Building. She was a senior chem major and I was beginning my third year in Rupert Wentworth's group. Lisa was doing her undergraduate research with Bill Streib, and I had synthesized some metal complexes with a highly hindered ligand systems. John Huffman, one of Bill's students, who solved our X-ray structures, was just one of many incredible coworkers and professors with whom we would be privileged to work.

The chemistry department picnics and parties were legendary. Those in the building featured snacks and punch served from many theoretical plates. At a department picnic at Lake Yellowwood, volleyball was the highlight. There, Lisa and I spent "quality time" across the net from each other. The fact that she and my motorcycle made it through the first winter was perhaps an indication that some "interesting chemistry was brewing." Many thanks to all of the friends we abused that winter by borrowing their cars for dates!

Lisa graduated with honors in 1970 and began the combined degree program in chemistry and medicine at the Bloomington campus. We had a good time the next year. From a cubic foot of frozen sperm whale, we isolated enough myoglobin for Lisa to grow crystals and determine the structure. The volunteered assistance from people like Bill Streib, John Huffman, and Terry Jenkins was very gratifying.

We were married in 1971 in Indianapolis. On the way through Bloomington, at about 1 a.m., the car broke down. Undaunted, I called and woke one of my fellow grad students (Mike Matson) and asked if he was doing anything! Shortly thereafter, he was driving us to our honeymoon. What great friends chemists make!

The next spring ('72), I began a postdoc with Adam Allerhand on the structure of proteins via C^{13} NMR. Adam was a tough taskmaster in those days, but so were his predecessors in my life, Cliff Garner (UCLA, undergraduate research, '66-'67) and Rupert — thus I was well prepared. Concurrently, I was privileged to teach a course to honors chemistry majors. I used two texts, *Chemical Evolution* and *Biochemical Predestination*, to examine some of the contemporary experiments exploring the early moments after the "big bang." Meanwhile, Lisa's interests were shifting from medical research to clinical

medicine. She completed the combined degree program with an MS in chemistry and began her last two years of medical school in Indianapolis.

In April of '74, I accepted a position at Eli Lilly and Co. as a senior analytical chemist. I was at home in the development labs at Lilly, automating many existing manual assays while developing additional, automated ones for new drugs. Lisa began her own internal medicine practice in '78. In those years, we had a great time traveling around the country and to Europe, attending medical and chemical meetings. In '79 our daughter, Alice, was born and I was promoted to research scientist at Lilly. Our son, Jeffrey, was born in '82, and we expanded our house in Carmel.

In the mid '80s, I moved to the solid-oral-dosage-forms development area. Experimental design, product design, and process engineering were challenging new areas of study. Fortunately, I inherited a group of very good people — chemists, industrial pharmacists, an engineer, and several experienced technicians — to help solve a new (to me) set of problems.

Around the same time, I was pondering "the meaning of life" — existence, purpose, and destiny. I became frustrated with life and my inability to totally understand it. Then, in '87, I found Christ. I began to question which of the predominant models for origins, evolution or

(continued on page 24)



It seems to me that a long time ago one of my daughters watched a TV show whose name is the one I chose for these profiles. Family affairs also occur in our department, as these stories show.

— RUPERT WENTWORTH



Ray and Lisa Childers



Alumni profiles

(continued from page 23)

creation, was (more) credible. While teaching the chemical evolution class, I was convinced that the laboratory simulations of the “big bang” would produce life. I’ve since found many scientists, philosophers, and theologians agree that the only way to create something out of nothing is by divine intervention. Fascinating stuff — to read more about it, see my Web site, intelligentorigins.com, which should be launched later this year.

In '93, I formed a Materials Science–Physical Characterization group at Lilly and stocked it with the latest instrumentation, including ESEM, digital imaging, and a variety of particle characterization systems. These enabled us to better understand drug product and packaging matrices that had caused “headaches” in the past. Thereafter, we saw nearly every part of every (potential) product.

At the end of 2000, I retired from Lilly, to spend more time in ministry. The next year, Ali graduated from Wheaton and went on staff with Youth for Christ in Chicago. Jeff went on to Savannah College of Art and Design as a graphic design major. Today, Lisa is still enjoying the practice (do they ever get it right?) of internal medicine. Ali is a general editor at Moody Publishers in Chicago, and Jeff graduates in June to take a graphic design position in Indianapolis.

— Ray Childers

Ken and Evan Miller

I imagine that every student of the Bloomington campus can recall days in early spring when the temperature climbed unexpectedly and you felt surrounded by the sheer beauty of the Bloomington campus and were energized by the optimism of spring and the promise of good things to

come. Purely by chance, just such a day defined my first contact with Indiana University and the IU chemistry department. Whether it was the gorgeousness of that day in 1973 or the impressive salesmanship from professors Joe Gajewski and Jack Crandall, I am not sure, but IU quickly eliminated Ohio State and all the other graduate schools that I had previously interviewed.

That fall, I began the march toward my doctorate under the direction of Professor Rupert Wentworth. Several students warned me that “he will be very demanding”; however, Professor Wentworth’s enthusiasm for the emerging field of bioinorganic chemistry and his crystal-clear teaching style convinced me that I would like being part of his group. Graduate school, in hindsight, passed quickly, aided in large part by great friends like Bob Weber, Eric Maatta, Bill Carroll, and Chip Ungermann, just to name a few. My bioinorganic research at IU led to a postdoctoral position with Edward Steifel who, at that time, was a principal scientist at the Charles Kettering Research Lab.

I joined GE Advanced Materials as a polymer chemist in 1980 in Mt. Vernon, Ind. I had never expected for even one second that I would return to work in Indiana, but the thought that Mt. Vernon might be like Bloomington was at least a small factor in my choice to join GE. I quickly realized, and I have confirmed many times over the years since then, that there is really no other place like Bloomington in Indiana (I say this with some degree of sympathy for my friends from Purdue).

During my 25 years at GE, I have appreciated many times the valuable but “demanding” expectations from Professor Wentworth, my overall education at IU, and how they influenced my career. At GE Advanced Materials, I have successfully developed or led the development of a several new polymer systems and processes. Any reader of this article will experience many of these materials on a daily basis. For 14 of those years, I have been a technology general manager for various GE product lines. My career satisfaction at GE has been surpassed only by the personal blessings I have received during that same time. I married my college and graduate school girlfriend, Debi, and we have three terrific children, Mindy, Evan, and Mike, the last two of which are the “official Hoosiers” in our family, both having been born in Mt. Vernon.

Being within three hours of Bloomington and IU since graduation has been both a personal and professional pleasure. I have stayed in touch with the chemistry department through recruiting and an occasional seminar or visit to the Inorganic Symposium. More than a dozen advanced-degree chemists from IU have joined me as colleagues at GE over the years, and they have represented IU very well. As a result, IU is viewed as a key location for chemistry talent within GE.

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Evan and Ken Miller





Alex F. Argotte, BA'88, MD'92, practices surgery in Paducah, Ky., where he is director of bariatric surgery at Lourdes Hospital. He and his wife, Melissa (Puckett) Argotte, DDS'93, have three children.

Stephen C. Beale, PhD'89, has been appointed senior vice president of marketing and sales and chief scientific officer at Analytical Bio-Chemistry Laboratories Inc., Columbia, Mo.

Jean C. Beckman, PhD'77, has been serving as dean of arts and sciences at the University of Evansville (Ind.) and is now acting vice president for academic affairs.

David Bracken, PhD'96, a staff scientist at Los Alamos National Laboratory, received the 2004 number-one ranking in his weight class for the Master's Division of the U.S. Power Lifting Association.

Donald W. Buck, BS'02, married Jennifer A. Lazarus, BA'02, on May 29 in St. Louis.

Tiffany L. Buller-Schussler, BS'94, DDS'98, practices dentistry in Metairie, La.

Robert J. Cates, MS'69, MD'71, is an emergency department physician and chair of the department of emergency medicine at Inova Fairfax Hospital in Falls Church, Va. He is co-author of *Leadership for Great Customer Service: Satisfied*

Patients, Satisfied Employees (Health Administration Press 2004).

John W. Clader, PhD'80, was one of a team of five scientists from Schering-Plough who received the 32nd annual National Inventor of the Year award from the Intellectual Property Owners Education Foundation for their work in developing a new cholesterol-lowering drug, Zetia.

Shoshanna Rose Coon, BS'87, is associate professor of chemistry at Northern Iowa University.

Sarah Cortright, PhD'04, is a postdoctoral associate with Robert Coleman at Ohio State University.

Richard B. Dietz, BS'94, BA'94, MS'02, is director of information and technology services for the city of Bloomington, Ind. He founded Oacea Inc., which specializes in Web development, Web site hosting, and technology consulting, and co-founded the Humanetrix Foundation Inc., a not-for-profit organization that supports technology in the public interest.

Timothy T. Chan, BA'74, of Pittsford, N.Y., has retired from Xerox after 22 years of international assignments.

Katrina M. Dipple, BS'87, MD'95, PhD'95, is an assistant professor in the departments of human genetics and pediatrics at the David Geffen School of Medicine at UCLA. In February, she received the 2005 Ross Young Investigator Research Award at the Western Society of Pediatric Research's annual meeting, in honor of her research on how

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50 YEARS AGO

Following an academic year at UCLA where he was on sabbatical leave, **Ernest Campaigne** spent the summer at Oak Ridge.

Alice Frutchey, AB'55, began working for Ciba Pharmaceutical Co. When she was at IU, Frutche was well known for her pulchritude as well as her scholarship.

Robert Davis, AB'55, won the gold medal of the American Institute of Chemists for his outstanding record as an undergraduate.

Alumni profiles

(continued from page 24)

My appreciation of Indiana University and the Bloomington experience has taken on a new dimension through my two sons, who have both chosen IU for their undergraduate education. Evan and Mike have schooled me on fraternity life, dorm life, Dance Marathon, Little 500, and the Hilly Hundred, all of which were not part of my graduate school experience, but certainly are features about IU and Bloomington that make them both very special. I am especially proud that Evan is the second generation of IU chemistry graduates in our family. Evan, pictured with me here, graduated with his BS degree in biochemistry in 2004 and is now a second-year medical student at IU. Evan also created an independent Little 500 racing team when he was a freshman at IU. His team continues to compete today and provides me with another opportunity to be involved with an IU activity each spring. I'd like to think that watching *Breaking Away* probably more than 50 times with his father in order to see my 3-second accidental appearance in the movie

had something to do with Evan becoming an accomplished rider.

Mike and Evan have also given Debi and me the opportunity to spend a lot of quality family time in Bloomington, and I have used some of that time to become more closely involved with the chemistry department. Earlier this year, with the assistance of Professor Ken Caulton, I organized a series of four seminars on industrial careers in chemistry to provide students with some added perspective on preparing for the challenges and opportunities of an industrial career. I hope this activity benefited some students as much as it was a fun experience for me. In the fall of 2005, I will begin a two-year adjunct faculty appointment in the chemistry department. I am very excited about this opportunity, and I am looking forward to finding additional ways to pay back the department for the impact that it has had on my family and me. I'm also hoping that maybe I'll have the good fortune of another unexpectedly gorgeous spring day on campus that will launch me fortuitously into some new direction.

— Ken Miller

STORY FROM AN
ALUMNUS:

Delbert E.
Philpott



*Last year, I said I
would publish any
tale of a lighter
moment from World
War II by an
alumnus/alumna.
Soon afterward,
I received a story
from Delbert
Philpott, BA'48,
MA'49. This is his
yarn in part.*

— RUPERT WENTWORTH



*PFC Delbert Philpott in
central Germany in 1945
with a captured flag and
other memorabilia.*

A catastrophic cooking lesson

Our advancing column had halted in a small rural town in Germany. Our mission was to race across Germany and link up with the Russians in order to cut Germany in half and reduce the German ability to resist.

The unpaved streets and recent rains made walking in mud rather tedious. My squad was assigned to a small farmhouse. The backyard was filled with piles of firewood, a small stack of hay, a manure pile, some rusty machinery, and chickens running all over the place. I preferred staying inside.

The owners had just left with their bedding and food. I was snooping around the kitchen wondering what they used for cooking. Maybe it would be possible to make some pancakes. Another box of mix had arrived in the last mail call. Finding a large bowl and some lard, I wondered if I could innovate something better than our C-rations. I was about to gag on them.

Just then, a chicken came running through the kitchen, chased by one of our guys who was having fun chasing it. The chicken was frantically running, jumping, and flying over and into everything. Although we were trained to kill, catching chickens wasn't one of the subjects taught in basic training. Amid the clatter and crashing of pots, pans, and chairs, the two of us raced, turned sharp circles, and dove into corners, certain we were up to the task. The beating of wings and several temporary captures sent feathers everywhere. Frightened squawks added to the pandemonium, while curses were hurled at the creature as it flapped its wings in an effort to escape its invitation to dinner: "She's coming your way!" and "You let her get away!" as well as "If she slows up, grab your gun!"

When the chicken flew into a scattered pile of pots and pans, we both pounced on it. This time, with four hands grasping for anything white and feathered, we held a screaming, squawking, flopping chicken. Our arms and legs were battered and bruised. The room was full of slowly descending feathers. I

transferred my grip on one leg to my buddy, who looked up and mumbled, "Hey, it's snowing!"

"Hang on," I said. "We won't live through another fight like that one."

The kitchen was a mess. A cannon shell couldn't have done what we and a stupid chicken had accomplished. At last, I thought, we'll have something besides those cold, never changing C-rations. And I had plenty of experience dressing and cutting up chickens in Wisconsin.

The noisy ruckus had attracted the rest of the squad, so I put them to work building a fire. I cut up the chicken, put the lard in an iron pan, and waited for it to get hot. This, I reasoned, would give us succulent, wonderful food. My mouth was watering. Real food at last, just like home. Unfortunately, my culinary skills ended with chicken dismemberment. Placing the chicken in the hot grease, I realized there wasn't enough to cover all the parts. The onlookers, all licking their chops, turned to me, "OK, big cook, what are we going to do now?"

No one admits defeat at this stage. Thinking I knew a lot of chemistry — I'd had two years in college; just enough to be dangerous — I calmly announced, "All I have to do is add water. That'll bring up the level." My mother used to boil chicken parts, and I reasoned this should work fine.

The hungry and curious squad crowded in to watch my masterful stroke. I, however, must have missed the chemistry lecture on mixing hot oil and water. I dumped in the water and watched it slide under the chicken and bubbling grease. With the fire underneath and the fat at a higher temperature than the boiling point of water, the water turned to steam almost instantly. The kettle exploded. Chicken parts flew all over the room. Grease and water hit the ceiling and came spattering down. How everyone escaped serious injury was a miracle. God surely protects fools.

The container was now completely empty. I couldn't have wiped it cleaner. When I recovered enough to stop staring into it, I forced an air of nonchalance. Still bruised and battered from the wild pursuit, my clothes and face spattered with grease and debris, I asked calmly, "Anyone for pancakes?" Silence. No one was present. All had escaped my catastrophic cooking lesson. "Aw, C-rations aren't so bad after all," I mumbled to myself.

Later, I slipped into the room where our sleeping bags were and laid down by mine. Written in big letters, a sign read, "HERE LIES PHILPOTT, DEFEATED BY A CHICKEN."

Later, everyone agreed the temporary escape from our real infantry job was well worth it.

Alumni news

(continued from page 25)

changes within genetic material can cause disease and why some people are more severely affected than others given the genetic change.

Philip A. Downing, BA'93, is director of analytical services at Bioanalytical Systems Inc. in Evansville, Ind.

Maya Tawil Feliciano, BA'97, wrote that she and her husband, George W. Feliciano, BS'96, MD'00, and their 2-year-old son, Dominic, planned to move to San Diego last summer.

Ed Flexman Jr., PhD'67, of Wilmington, Del., won a 2004 DuPont Lavoisier Medal in recognition of his innovations in engineering polymer science.

Trivia about chemistry

Did you read the trivia question on page 2? Check your answer with the answer below.

? ? ?

Answer to last year's question: The obsolete symbols from last year's inside rear cover were: (1) A: the original symbol for argon whose symbol is now Ar. (2) Il: the symbol for Ithium, atomic number 61, whose discovery in nature was claimed erroneously in 1926. However, the true element, promethium (Pm), atomic number 61, was prepared by nuclear bombardment of neodymium in 1947. (3) Cb: the symbol for columbium, the element whose name is now niobium, atomic number 41. (4) Ma: the symbol for masurium, atomic number 43, an element whose discovery in nature was reported erroneously in 1925. The real element, now called technetium, was discovered in 1937 after nuclear bombardment of molybdenum.

Answer: You take one coin from the first stack, two coins from the second stack, and so on, until you take 10 coins from the 10th stack. You will have taken 55 coins. If all the coins were gold and not counterfeit, the mass of the pile would be 550 grams. But it is not because of the counterfeit coins. If the first stack were counterfeit, the mass of the pile would be 551 grams because you took one coin from that stack. If, instead, the second stack were counterfeit, the mass of the pile would be 552 grams because you took two coins from that stack. You don't need to be an analytical chemist to figure out the rest.

David Ginger, BS'97, is an assistant professor of chemistry at the University of Washington in Seattle. He earned a PhD from the University of Cambridge in 2000 and recently received a Presidential Young Investigator Award for his research.

Dan Gurnon, PhD'05, began a faculty position at DePauw University in fall 2005.

Tony E. Hugli, PhD'68, spent 28 years in the immunology department at the Scripps Research Institute before leaving in 2000 to co-found the company Cell Activation, which has since been bought out by Aethlon. Hugli is currently a professor of biochemistry at the Torrey Pines Institute for Molecular Studies in San Diego. He recently co-founded a new company, HealthAide Inc., which will develop products for treating disease based on the biological functions of aspartame. He writes, "I am so happy to see the multidisciplinary science center being built on the IU campus as a vision to the future."

Demetrios N. Kaiafas, BA'89, MD'93, of Belleair Beach, Fla., practices pain management at Clearwater Pain Management.

Peg (Smith) Kartinos, MA'46, of Park Ridge, Ill., writes, "I regret to inform you that my husband, Nick, died Oct. 30, 2003. We were married at the Episcopal Church (just off campus) in 1947. He was doing government research in the lab with Mel Hedrick and Gordon Schrotendoer, working on antimaterials (as I recall). On V.J. Day we took all sodium scraps and threw them in the Jordan River — our fireworks!"

Charles P. Kuntz, BS'03, worked in a laboratory in the IU Medical Sciences Program for the first year after graduating, then returned home to Chesterton, Ind., to work as a substitute teacher while choosing a graduate school. He writes, "I miss all my friends! You all know who you are, and you have been scattered across the surface of the Earth! Always feel free to e-mail me at cpkuntz@alumni.indiana.edu."

William H. Mohr, BA'79, MD'83, is the immediate past president of the Indiana State Medical Association.

Maher Mualla, MS'84, a professor of chemistry at Adrian College, received the college's Teacher Excellence Award in 2004.

Chris Powell, BS'92, is an assistant scientist in the Center for Transportation at Argonne National Laboratory.

Erin Renshaw, PhD'94, is a software design engineer in the Signal Processing Division of Microsoft Corp. in Redmond, Wash.

Stanley Schwartz, BA'43, DDS'45, of White Plains, N.Y., has just retired from his orthodontic practice after 60 years as a dentist. He writes, "I have very pleasant memories of my time at IU. I

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25 YEARS AGO

Six new faculty members joined the department. (Only **David Williams** and **Victor Viola** are still here in 2005.)

Those who attended the 25th Anniversary Reunion of the Association of Indiana Chemists included **Wendell Roelofs**, PhD'64; **Sidney Fleisher**, PhD'58; **Katherine Knight**, PhD'66; **Paul Rylander**, PhD'48; and **Bernard Wolnak**, PhD'43.

Alumni news

(continued from page 27)

enjoyed visiting many times.”

Travis Smith, BS’04, is entering law school at IU in the fall of 2005.

Connie V. Thornsberry, BS’00, BA’04, is currently pursuing a master’s degree in microbiology at IUB.

Parichatr Vanalabhpattana, PhD’05, returned to Thailand after graduation to assume a position as assistant professor of chemistry at Chulalongkorn University in Bangkok.

Samuel S. Wakim, BA’86, is a dentist in Yreka, Calif., and is the incoming chair of the Siskiyou County GOP. He and his wife, Hannah, have been married for 10 years and have three children.

Amie Williams, PhD’04, is a postdoctoral associate with William Roush at Scripps Research Institute.

Christopher L. Winters, BA’91, has been in podiatry practice for five years in Indianapolis.

Mary J. (Mahon) Munchak, BA’81, BS’82, is a laboratory manager at Inova Fair Oaks Hospital, Fairfax, Va.

Dmitry V. Yandulov, PhD’00, an assistant

15 YEARS AGO

Gary Hieftje won the Analytical Chemistry Award in Spectrochemical Analysis; **Charles Parmenter** received the Dean of Faculties Tracy M. Sonneborn Award; and **Dennis Peters** won the 1990 ACS Award for Excellence in the Teaching of Analytical Chemistry.

John C. Warner, PhD’23, died. He was one of the first to receive a PhD in chemistry from IU and was a former president of the Carnegie Institute of Technology and the ACS.

professor of chemistry at Stanford University, was selected as one of 13 Frederick E. Terman Fellows for 2004–05.

Sherry Yennello, PhD’90, a professor of chemistry at Texas A&M University, is also serving as associate dean for diversity in the College of Science.

Necrology

We received notices of the following deaths of alumni since the 2004 issue of *IU•Chemistry*:

Robert H. Addleman, BA’42, MD’50, Oct. 6, 2004

William M. Alexander, BA’42, July 8, 2005

Harvey J. Alpine, BA’55, May 2, 2005

Noble K. Arch, BA’31, Sept. 24, 2003

Bernard Asdell, BA’32, MA’33, March 3, 1997

Morris Bader, PhD’61, April 21, 2005

Gus C. Browne, BA’40, Feb. 29, 2004

Alfred B. Ciesar, BA’36, July 16, 2000

William R. Clark, MA’50

Richard L. Clevenger, BS’59, Aug. 22, 2001

Joseph E. Cooper, BA’38, Feb. 21, 1999

Isidore S. Edelman, BA’41, MD’44, Nov. 21, 2004

Morion G. Edwards, BA’49, Oct. 14, 2003

Morris R. Ferguson, BA’41, MD’43, Jan. 30, 2003

John T. Goodman, BA’48, July 31, 2002

M. Richard Harding, BA’41, MD’43, May 12, 2005

Mason Hayek, MA’43, PhD’47, Aug. 14, 2004

Arvin T. Henderson, BA’41, MD’43, Jan. 21, 2004

Richard M. Herd, BA’41, Oct. 29, 2004

Albert L. Higdon, BA’39, May 19, 2005

Howard W. Hillis, BA’38

Marvin P. Hunt, BA’59, April 28, 2004

Joseph L. Hutton, BA’42, DDS’44, Dec. 7, 2004

Sidney L. Jaffe, BA’43, Dec. 28, 2000

George D. Jimerson, PhD’70, May 27, 2004

Paul H. Johnson, MA’37, March 9, 2000

Everett J. Kelley, BS’41, Oct. 29, 2004

William F. Key, BS’48, Feb. 12, 2005

Gerald L. Kirkman, MAT’61, April 30, 2005

Anthony F. Klee, BA’78, MD’82, March 23, 2005

Mary E. Walton Lawson, BA’31, Oct. 26, 2003

Rodney M. Leas, BA’31, MA’32, Oct. 16, 1998

Robert W. Lewis, MA’42, PhD’43

Robert P. MacKenzie, BA’48, Jan. 24, 2002

Jeffrey Mark, BA’47, April 13, 2005

Richard V. McGaughey, BA’47

Gilbert W. Miller, BS’49, MA’51, Aug. 13, 2004

John F. Phillips, BA’42, MD’44, Feb. 4, 2005

John W. Reuter, BA’55, MD’59, July 21, 2005

Robert T. Roy, BA’48, Dec. 5, 2002

Paul N. Rylander, MA’48, PhD’48, April 27, 2000

Carol K. Karr Sell, BA’42, Jan. 9, 2005

Donald H. Simonsen, PhD’52

Paul R. Smith, BA’37, Oct. 20, 1999

Paul B. Sollman, BS’47, Dec. 30, 2004

G.W. Stackhouse, BA’28, MA’30, Sept. 19, 2001

Marvin C. Tobin, MA’49, Aug. 4, 2004

Phelps Trix, MA’44, Feb. 2, 2003

Donald L. Tursman, MA’34, Feb. 13, 2002

Malcolm S. Wade, BA’49, May 31, 2004

Paul L. Webster, BA’47, MD’51, Aug. 23, 2004

Elizabeth Dow Weersing, BA’39, June 25, 1999

Henry W. Wehr, BS’40, July 25, 2004

Emil Wildman, PhD’68

Sydney J. Williams, BA’49, March 3, 2005

Hugh L. Williams, BA’41, MD’43, May 13, 2005

Mark Wisen, BA’56, MD’59, May 7, 2005

Russell B. Wyatt, BS’36, Feb. 9, 2003

Otto F. Zeck, BS’42, MA’43, Feb. 6, 1996

Louis A. Zuckerman, BA’41, MD’44, Aug. 4, 2004

CHEMISTRY HONOR ROLL 2004

Abascal, Mel Eric
 Abraham, Aleyamma
 Ake, Robert
 Anderson, Mark & Ann
 Anex, Deon & Lisa
 Appleton, Burton
 Arvan, Peter
 Atkinson, George & Charlene
 Ayers, Timothy & Irene
 Bacon, William Jr. & Mary
 Bair, Edward & Dorothy
 Ball, Donald
 Ballard, Larry
 Balliet, Craig & Margaret
 Balsley, James
 Bannister, Thomas
 Barber, Richard & Janice
 Bart, John
 Basinger, Bradley
 Baxman, Horace
 Beauchamp, John & Teresa
 Becker, Larry & Karen
 Beckman, Jean
 Beeson, James
 Belanger, Robert
 Benner, Charles
 Bensko, Nicholas
 Bente, Paul Jr. & Edna
 Berk, Genia
 Berry, John
 Bettinger, Ella
 Black, Lawrence
 Boehne, John III
 Borders, Alvin & Mary
 Bornmann, John Jr.
 Boxman, Charles
 Bradley, David
 Brand, Ludwig & Sheila
 Brandes, Ellen
 Briner, Robert
 Bromer, William
 Brooks, Dawn
 Brugman, Helmut & Aija
 Bryant, Mark
 Buck, Robert & Gertrude
 Buck, Donald II
 Buddenbaum, Warren & Judith
 Buhrow, Susan
 Burck, Kenneth & Marian
 Burger, Amanda
 Campaigne, Ernest & Jean
 Campos, Teresa
 Canada, Emily & John
 Carroll, William Jr. & Mary
 Cartwright, Alan
 Cassel, William
 Chang, Colin
 Chhatriwala, Mariya
 Chiu, Grace Py
 Chung, John
 Clemmer, David & Wendy
 Saffell-Clemmer
 Cliff, Johnnie Marie
 Cline, Richard & Janet
 Combs, Jan Arvin & James
 Cook, Donald & Marion

Coon, Jesse
 Coope-Epstein, Janet
 Cooper, Tina
 Cooper, William III
 Corning, James & Kelly
 Coulehan, William
 Coveleskie, Joan Marie
 Cox, Standiford
 Craig, John & Mary
 Crandall, Jack
 Crelier, Arnold
 Crofts, Bradley
 Czuba, Leonard
 Dalman, David
 Davis, Ralph
 Davis, Dwight
 Day, Deana & James
 DeHoff, Anthony & Jill
 Delano, Juanita
 DeMattia, Gregory
 Dennis, Meta
 DiMarchi, Richard & Sue
 Dinner, Alan
 DiPierro, Michael & Barbara
 Doherty, Michael & Mary Lorenz
 Dolson, David
 Dorman, Linneaus & Phae
 Douglas, Bryce
 Druelinger, Melvin & Judy
 Duerr, Ann
 Dugan, LeRoy Jr. & Dorothy
 Dygert, Stephen & Mary
 Dykstra, Ronald
 Earl, Donald & Dorythe
 Eaton, Merrill Jr. & Louise

Ebeling, Richard
 Edmonson, Keith
 Elcock, Douglas
 Ellenbogen, Leon & Roslyn
 England, Dustin
 Everton, Yvonne
 Fernandez, Reet
 Ferris, James
 Fesenmyer, Lynn
 Fields, James
 Fisher, Doris
 Flack, William
 Foley, Sally
 Folkerth, Virginia & Richard
 Folkerth, Rebecca
 Forgey, William
 Foshay, Miriam & Wellesley
 Foye, William & Lila
 Frank, Bruce & Linda
 Franz, John & Martha
 French, Robert
 Frohman, Charles & Evelyn
 Frump, John & Norma
 Fullington, Garrin
 Galley, Paul
 Gasser, Wilbert Jr. & Mary Kratz
 Gay, Frank
 Gilinski, Perla & Isaac
 Gnewuch, Charles & Julie
 Godici, Patrick
 Godomsky, Stephen
 Goldhammer, Alan
 Goltart, Carl & Patricia
 Grant, Raymond
 Gratz, Rachel & Conrad

Greathouse, Shawn
 Green, Mark
 Greenberg, Benjamin
 Griffith, Charles & Gloria
 Guthrie, Frank & Marcella
 Gwaltney, Charles & Catherine
 Hall, Arthur & Dorothy
 Hammersley, Vernon
 Hamori, Paul
 Hanes, Maurice
 Harrison, Nancy
 Hauber, David & Mary
 Heil, Janet & Jerome
 Hein, Scott & Claudia
 Helt, Leonard & Linda
 Henry, K. Sue
 Hensley, Albert Jr. & Wilma
 Herman, Rayna & Christopher
 Hespen, Robert & Maria Attanasio
 Hieftje, Gary & Susan
 Hillhouse, Gregory
 Hodes, Zachary & Judy
 Hoham, Christopher
 Hold, Andrea
 Hopkinson, Alice Frutchey
 Howell, Jonathon & Margaret
 Huffaker, Donald & Clara
 Huffman, John & Carolyn
 Hugli, Tony & Judith
 Humphrey, James Jr. & Janet
 Immel, Calvin
 Irick, Neil & Susan Anderson
 Iung, Orestes
 Jacobson, Stephen
 Janetos, Nicholas

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Membership matters

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Your membership also supports programs and services for alumni.

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- IU alumni chapter network
- Membership in your school and/or campus alumni association
- Lifelong connection to IU

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- **E-mail iuaamemb@indiana.edu**
- **Go online @ www.alumni.indiana.edu**
 (click "membership")



ALUMNI ASSOCIATION
 CONNECTING ALUMNI. SERVING IU.

Honor roll

(continued from page 29)

Janizek, David & Patricia
 Jarosinski, John
 Jeffcoat, Alex & Elaine
 Jenkins, Celia
 Jewett, John
 Johnston, Hugh & Mary Boppell
 Johnston, Maynard & Barbara
 Jurayj, Jurjus
 Kaplan, Maxine
 Kaufman, Michael
 Keilsohn, Jerry
 Kelley, Everett & Elizabeth
 Kellum, Charles & Rose
 Kelly, Robert III & Judith
 Kennison, Jill
 Kindig, John & Wendy
 Kindsvater, John
 King, Gerald
 King, Ada
 King, Peter & Ellen
 Kinnaman, Rob & Cheryl
 Kleindienst, Tadeusz & Juedi
 Klinkenberg, Iris
 Kochell, Jay & Jean
 Kovach, Paul & Susan
 Chintis-Kovach
 Kratli, Frank
 Krauhs, Stanley Jr. & Jane
 Kreighbaum, William
 Krieger, Paul & Barbara
 Krieger, Nancy
 Kriz, George Jr. & Carolyn
 Krueger, Kathryn
 Kuehl, Guenter & Christel
 Kump, Robin & JoAnn
 Kunka, Michael & Mary
 Kurtz, Wendy
 La Belle, Ellen & Frank Jr.
 La Perriere, Daniel & Leona
 Lace, Martha & Richard
 Lagenaur, Carl
 Lauer, Joseph
 Lawrence, Donald & Joyce
 Leahy, Jeanette
 Leal, Joseph
 Leitner, George & Shirley
 Letsinger, Robert & Dorothy
 Levetown, Herbert & Bernice
 Levy, Melvyn
 Lewis, Larry & Ricki
 Lidster, Reuben
 Light, James & Nina
 Lin, Luan-Ho & Cheyeh
 Lindahl, Mary & Peter
 Linder, James & Laura
 Logan, Ted & Ruthanne
 Loge, Gary
 Lohnes, Vida Trafford & Jonathan
 Long, Steven & Della
 Luther, Lars & Janet
 Luthy, James
 Madri, Joseph
 Mahoney, Wayne
 Mahony, Mary
 Mann, Robert
 Marks, Bruce & Donna
 Marquis, Edward & Thelma
 Marsella, John & Gail

Marsischky, Gerald
 Mayo, Dana & Jeanne D'Arc
 McAnally, Robert & Dara Spivack
 McCarthy, John & Kara Morgan
 McChesney, James
 McGill, John & Patricia
 McGillivray, Bette Tillman
 McKay, David
 Metz, Fred & Judith
 Meyer, Wendell & Barbara
 Mickelson, Kenneth
 Middendorf, Max
 Miller, Steven
 Miller, Kenneth
 Mitchell, Patrick & Frances
 Moore, William Jr.
 Morice, William & Elizabeth
 Morrison, Irena & Ralph
 Moss, David & Kathleen
 Cornely-Moss
 Muser, Frani Blough
 Nagarajan, Ramakrishnan & Alice
 Nagle, Joel
 Naples, John
 Nash, Brian & Amanda
 Ng, Elaine & Raymond
 Nicholas, James & Gloria
 Northuis, Jill & Michael
 Norton, Martin Sr. & Arlene
 Nugent, William & Susan
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