ChemLetter

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Nancy Wade

Paul Hopkins, Chair

In this issue

Dear Friend of Chemistry,

It has been two years since I last wrote to you. Much has happened. Let me share with you a few high points.

Students, staff, and faculty members in Chemistry at UW continue to enjoy tremendous success in their various activities. Rarely, if ever, do these successes come by chance; rather, they are the product of devoted efforts by one or all. The list that follows almost defies credibility, but it's all true.

- Two of our faculty members, Professor Philip Reid and Associate Professor Sarah Keller, have won prestigious UW Distinguished Teaching Awards, and Mr. Gary Pedersen won a UW Distinguished Staff Award.
- Several of our faculty members have won important national awards, including Associate Professor Daniel Gamelin winning a Sloan Fellowship, Gamelin and Assistant Professor David Ginger each receiving the Presidential Early Career Award for Scientists and Engineers (PECASE) from the NSF, and Professor Younan Xia receiving an NIH Pioneer Award.
- In fiscal year 2004, our department was the third most successful public university chemistry department in the nation at winning federal research grants.
- Nationwide, we remain one of the top two producers of chemistry and biochemistry undergraduate degree recipients (tied with UCLA) and among the top 10 in producing chemistry PhDs.
- We have begun $10 million in renovations to Bagley Hall that will transform about 16,000 square feet of research space and the first of the four laboratories in which we teach freshman chemistry.
- The endowments that enrich ALL of our department's activities now exceed by almost $2 million the $10 million target we set several years ago. In the past three years, we have celebrated new endowment funds created by Basil and Gretchen Anex, Larry Dalton and Nicole Boand, the friends of Martin Gouterman, the family of the late Norman Gregory, Lewis Honnen, Spyros Pavlou, the family and friends of B. Seymour Rabinovitch, the family and friends of the late Brian Reid, Bert and Susan Rowland, Usha and Rao Varanasi, and the family and friends of the late Boris Weinstein. These funds elevate the quality of all we do.

Of course just a small fraction of our activities are honored with awards. Our major "product" continues to be educated men and women. Again last year, we awarded nearly 250 bachelor degrees and 30 PhDs.

I report, in closing, on one position in the department that has changed hands and one that has not. In the fall of last year, our department's lead administrator, Ms. Sharon Minton, elected to take a next step in her career, leaving us to fill this critical post. I am delighted to report that we recruited Mr. Gary Pedersen to this position. Gary is a graduate of our undergraduate program, and served for many years on our staff in positions of increasing responsibility, before leaving us in 2000. We are extremely fortunate to have him back with us, and in charge.

—continued on page 20 (last page)

Keller Honored in 2005 and 2006


Mary Levin

Associate Professor Sarah L. Keller

UW Distinguished Teaching Award

The UW Distinguished Teaching Award honors faculty members who show a mastery of their subject matter, intellectual rigor, lively curiosity, a commitment to research, and a passion for teaching. Associate Professor Sarah L. Keller won this award in 2006 for her teaching in a senior-level physical chemistry course for biochemistry majors.

By incorporating calculus, the course shows exactly how and why the chemistry works. Encouraging students to think independently, both in her class and in her research laboratory, Keller wants them to come out of this course thinking the material is useful and can even be fun.

Keller credits her success to the strengths of the students and postdocs in her lab

Margaret Oakley Dayhoff Award

In 2005, Keller was the recipient of the Margaret Oakley Dayhoff Award. Established in 1957 by former President of the Biophysical Society, Dr. Margaret Oakley, the award honors the accomplishments of women who show great promise in biophysical research early in their careers. Nominations are open to researchers around the world working in academia, government, and industry.

The last UW faculty member to win the Dayhoff was Professor Rachel Klevit in 1988. Since then, the award has gone to researchers at institutions such as Yale University, University of California (UC) Berkeley, Cornell University, and the University of Chicago.

Research Focus

Keller's research focuses on membranes composed of model mixtures of phospholipids and cholesterol. The lipids are incorporated into vesicles, which are thin, spherical shells of lipid bilayers freely floating in water. At high temperatures, all of the surfactant molecules in the membrane mix uniformly. When the temperature is lowered below the miscibility transition, the membrane suddenly demixes into two distinct liquid phases. By fluorescence microscopy, the vesicles contain both bright and dark domains, as in the photo at left.

Members of Keller's lab map phase diagrams of the lipid mixtures, and determine tie-lines to

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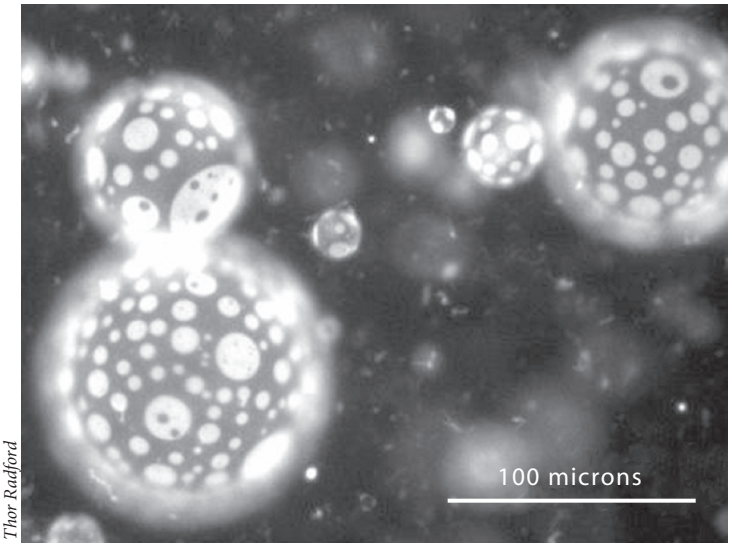


Thor Radford

"Giant" unilamellar vesicles made from mixtures of phospholipids and cholesterol. The thin shell of the lipid membrane contains circular domains of two liquid phases, which are visible by fluorescence microscopy.

find the compositions of the two different liquid phases. Keller's work helps us to understand cell membrane "rafts," which are domains rich in particular lipids and membrane proteins. Recent literature has implicated raft domains in vital cell functions including budding, endocytosis, adhesion, signaling, and protein function.

Keller credits her success to the talents of the students and postdocs in her lab, who often win their own awards. Sarah Veatch, Ben Stottrup, and Daniel Stevens were particularly pivotal contributors to the research cited in the award. All three are pursuing their own scientific research. Veatch is a post-doc at the University of British Columbia. Stottrup earned his PhD and immediately started as an assistant professor at Augsburg College—a rare accomplishment without postdoctoral experience. Stevens went on to graduate studies at UC Santa Barbara.

According to Keller, "Daniel's ability to get involved in world-class research as an undergraduate is a huge strength of the University of Washington, and I'm sure it contributed to his success in being admitted to graduate school."

Keller believes accomplishments are generated from collaborative efforts. Her interactions with the "Membrane Chix" (a group of young women scientists), and the interdisciplinary research accomplished by the chemists, physicists, and bioengineers in her lab, all stimulate achievement.

Keller also acknowledges that "department funds help us bring in students the summer prior to their first year so they can get an early start and become an integral part of research groups." She adds, "My success is aided by the department and contributors to the department. Both enhance the success of younger faculty, which enables them to win awards like the Dayhoff." ■

Professor Phil Reid

Nancy Wade

Reid Jazzes Up Intro Science Course

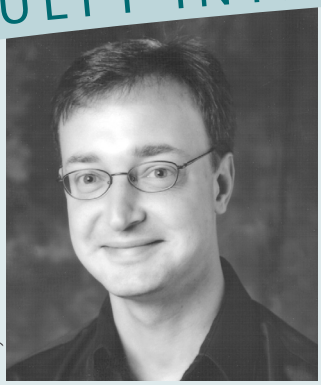
Professor Phil Reid is one of those unusual teachers who can make a difficult subject—chemistry in particular—memorable and fun. As one appreciative student puts it, Reid's talent is "creatively teaching material whose defining characteristic is a lack of room for creativity."

It's difficult to jazz up an introductory science course, Reid notes. But he finds chemistry and science "super interesting," and hopes his enthusiasm rubs off on students.

Apparently, it does. In 2005, he received a UW Distinguished Teaching Award—not the first time Reid has been recognized as an effective teacher. He received several graduate teaching awards while doing doctoral work at UC Berkeley. Since joining the faculty at the UW, Reid has won a Career Award from the National Science Foundation and a Cottrell Fellowship from the Research Corporation. The two national awards recognize beginning faculty members who excel at both research and teaching.

Reid has a knack for explaining difficult concepts, which he does for students ranging from 450 freshmen in the introductory chemistry class to a handful of graduate seminar students. "One of Reid's most impressive skills is his ability to clearly articulate even the most difficult concepts," writes a former honors student.

What Reid likes most is when his students challenge him. "Science continues to evolve and we learn new things. And the way you learn new things is by questioning the old," he says. "I really love it when they challenge something I put forth in class. Those are the moments you look for, the ones that allow you to teach at a deeper level." ■


Mary Levin

Assistant Professor
Glenn Bartholomew

Glenn Bartholomew—Synthetic Creativity

In fall 2004, Assistant Professor Glenn Bartholomew joined the faculty. His work forms bridges among several different interests—chemistry, materials science, and photonics, to name a few.

In 1988, Bartholomew received his BS Summa Cum Laude in Chemistry at the State University of New York at Geneseo, and in 2002, he earned his PhD in Chemistry at UC Santa Barbara. His research is focused on the rational design of materials with structures and electronic properties conducive for a number of photonic and electronic applications.

Bartholomew enjoys interacting with students, whom he calls "bright, hard-working, and a pleasure." Teaching undergraduate organic chemistry is exciting for him, and the levity he brings to the classroom is quite popular with his students.

In his graduate course, Bartholomew provides a hands-on approach to advanced organic chemistry. With a synthetic facility and equipment laboratory, the interdisciplinary nature of Bartholomew's interests bring unique challenges to his research, providing opportunities for synthetic creativity.

Being a research advisor is, in his mind, the "rare privilege of teaching people how to be scientists—working with graduate students is just as much teaching as one would do in a classroom, if not more." His own travels as a graduate student, and the idea of collaboration and visiting different institutions, directed him toward academics, or "peddling ideas rather than products," and it is the reward of "providing people with the same 'Aha!' moments" that he himself experienced that drives him to work with the great scientists of tomorrow. ■

Forrest Michael—Organic Chemistry

Assistant Professor Forrest Michael joined our faculty in autumn 2004. He specializes in the development of new methodologies for the synthesis of organic molecules using metalloids.

A broad base of support was one of the most important factors that attracted Michael to our department. With our ability to attract high quality students, our great facilities, and access to cutting-edge equipment, Michael felt our department would provide an opportunity to do important science. He earned his BS degree at Pennsylvania State University and his PhD at Harvard. He worked at UC Berkeley as a postdoctoral researcher.

Michael benefits from interactions with his colleagues, all of whom he finds to be "surprisingly approachable for such a large institution."

During his first quarter teaching undergraduates at the UW, Michael was happy to discover that the students were engaged and interested in the material. With his graduate students, he enjoys the opportunity to be a mentor, and to watch his students develop self-assurance and start to think independently.

Michael's interest in chemistry stems from a fundamental desire to understand how things work, and to answer the many questions that he sees daily in the world around him. He is excited to add a purely methodological bent to the organic synthetic chemistry done in our department. ■


Mary Levin

Assistant Professor
Forrest Michael

Assistant Professor
Ziaosong Li

Mary Levin

Ziaosong Li—New Methodologies

Assistant Professor Xiaosong Li joined our department in July 2005. He grew up in the Kunming, in the southwest part of China, not far from Tibet. He was one of only 10 students in his province to be accepted as an undergraduate to the prestigious University of Science and Technology in China.

Li's interest in computational and theoretical physical chemistry led him to Wayne State University in 1999 to study with Bernie Schlegel, an expert in the field. After earning a PhD there in 2003, Li chose to go to Yale to do postdoctoral research with advisor John Tully. At the same time, he also worked at Gaussian, the Connecticut company that created one of the most popular software packages used at universities (Gaussian 03 Academic). Li is one of the software co-authors.

Li had many career options, but choosing the UW and Seattle was an easy decision. Li said, "I could feel the good energy of the department during my interviews here." He feels very motivated and enthusiastic, rather than pressured, in this environment, and finds it exciting to have so many young colleagues. Li finds senior faculty to be quite helpful and truly interested. He appreciates their assistance with proposals and helpful constructive criticism.

Li loves Seattle, the people here, and the active lifestyle. He likes to hike, and for indoor sport, he's a champion badminton player!

Li's research group won a UW Royalty Research Fund grant and a joint $2.5 million grant (with Associate Professor Daniel Gamelin) from the National Science Foundation for collaborative research. His group is working on developing new methodology for larger scale systems and simulation of nanomaterials.

Li has published more than 40 publications in peer-reviewed journals. ■

Professor Gammon to Lead Exploration Seminar in Brazil

This summer, Professor Richard Gammon will lead 20 students to Salvador, Brazil on an Exploration Seminar, "Chemistry, Climate Change, and Culture." While there, students will study the science, public policy, and social justice issues surrounding global warming, and they will have the unique opportunity to learn field sampling techniques and apply them in real world contexts.

Gammon's course is timed for August 19–September 15, just after summer quarter ends and before fall quarter starts.

Professor Gammon, a national authority on climate change science, spent two years in São Paul, Brazil (1972–74) at the Centro de Radioastronomia e Astrofisica at the Universidade MacKenzie. While there, he taught graduate courses in Chemistry of Interstellar Space and Quantum Mechanics.

Brazil is a fitting location for the course as it was the host country for the first Earth Summit in 1992. The city of Salvador was founded more than 500 years ago as the original capital of Brazil. Positioned in a wide and beautiful bay on the tropical Atlantic Ocean coast, 13 degrees south of the equator, it has a rich and complex history. It served as the center of the Brazilian slave trade during colonial times and retains a strong African flavor in all aspects of its culture—music, dance, cuisine, and religion. This culture is influenced by and blends with both the colonizing Portuguese and the native American cultures.

Students will also have opportunity to learn some Portuguese, samba, and capoeira; to visit a Candomble religious ceremony (similar to Santeria or Voudou) and a favela (shantytown); and to participate in a reforestation project. Part of the time, they will stay in the homes of Brazilian students who attend a small agricultural college in the interior of Bahia.

We are certain that students will have an incredible and memorable experience!

For more information about this course or to help UW students attend this course, please contact Mary Harty: *harty@chem.washington.edu.* ■

Chemistry PhDs follow roads less traveled

Three UW Chemistry PhDs use their scientific expertise to affect society in far-reaching and unexpected ways

Sometimes, students who entered graduate school planning to pursue a career in academic or industrial research discover by the end of their program that neither of these choices is right for them. If you do not want to follow a traditional path, it may seem like there are fewer, rather than more, options after earning a PhD.

However, lab research and teaching are not the only career choices available to PhD chemists. In fact, advanced science training opens doors to a surprising variety of opportunities, as several UW chemists have found. Rhys Lawson, Roni Kopelman, Brian Smart, and Deborah Illman have each chosen to use their science training outside of the traditional setting, joining a diverse mix of people working in law, business, and communication.

Chemist as Patent Lawyer: Rhys Lawson

As a graduate research assistant, Rhys Lawson is familiar with the bittersweet nature of the "eureka!" moment. "Most of the time you have an idea, you read up and find out that somebody else has been working on it already," says Rhys. If you do manage to come up with something truly novel but fail to put your name on it early enough, you could be in for a frustrating legal battle.

A particularly famous case in point is Gordon Gould's claim that he discovered the laser. Though he created the first written prototype and coined the word "laser," Gould was not the first scientist to apply for a patent for the device. He mistakenly thought he needed to build a working prototype before he could submit an application. That one mistake led to a nearly 30-year battle to win the rights to his own discovery. What Gould needed was sound legal advice from someone who understood the importance of maintaining the rights to his intellectual property.

That is precisely why Rhys plans to pursue a career in patent law. He wants to help scientists secure legal rights to their ideas and avoid repeating Gould's experience.

"I enjoy research but knew that I didn't want a career in a lab setting," says Rhys, who took the law school admissions test (LSAT) before starting graduate school at UW Chemistry in autumn 2001. Rhys completed his law degree while interning at the firm of Christensen, O'Connor, Johnson, & Kindness.

His dual degrees in law and chemistry, along with his valuable intern experience, provide the background he needs to help other scientists manage the legal aspects of their "eureka" moments.

Chemists as Entrepreneurs: Roni Kopelman and Brian Smart

Monitoring water quality in an aquarium is a necessary but time-consuming job for fish enthusiasts. Some existing pH-testing systems require the user to mix chemicals in specific proportions with a water sample. Other systems are composed of pH-sensitive dyes adhered to a plastic strip that the user briefly dips into the water. Frequent water testing with such systems is costly, and the accuracy of the results depends strongly on the user's skill.

Roni Kopelman and Brian Smart, two chemistry graduate students, had an elegant solution to these problems: a card with a colored dot that changes with the water's pH. Besides solving an interesting science problem, Roni and Brian thought it might be a marketable product.

This inspired them to submit a proposal to the UW Business School's annual Business Plan Competition, which offers students an opportunity to develop business ideas (*http://bschool.washington.edu/cie/bpc/*). This competition was the starting point for Roni and Brian, who teamed with former physicist and business student Stuart Jamieson. The trio took first prize, earning both a cash award of $35,000 and the attention of local investors.

The win also convinced the three that they had discovered something commercially viable. Roni and Stuart were both about to graduate, so they

teamed up to form Aquastasis (later renamed LiveMeter Technologies, Inc.). With two years left in his PhD program, Brian elected to finish his degree rather than join in the venture.

Roni and Stuart recognized that in order for their idea to be successful, further product development was required. The final product had to address many technical issues: it needed to be sensitive to a wide range of pH, insensitive to changes in temperature, insoluble in water, and needed to have a reliable lifetime. Eventually they developed a viable card design, and the testing device "LivepH" was born.

Chemist as Public Communicator: Deborah Illman

Nearly 50 years ago, physicist C.P. Snow lamented the increasing cultural divide between the humanities and sciences. Deborah Illman uses her talents to shrink this divide through communication.

After earning a BS in Chemistry at UW, Deborah pursued graduate studies at the State University of Campinas in Brazil. Her postdoc assignment brought her back to Seattle, where she worked applying multivariate analysis to chemical problems in an area called chemometrics. In 1984, she helped found the Center for Process Analytical Chemistry (CPAC), an NSF-funded Industry/University Cooperative Research Center, and later served as Associate Director.

"I did it because I got to wear a lot of hats," says Deborah. And as if that weren't enough to keep anyone busy, she was also building a publication portfolio by writing science articles geared toward general audiences.

The combination of writing, management experience, and a solid scientific background eventually landed her a job with *Chemical & Engineering News* (C&EN). As Associate Editor, Deborah saw firsthand how the media reported science, and she saw opportunities for improvements. Journalists often have little or no scientific knowledge needed to understand the material they are writing about, and scientists may not have the skills necessary to communicate with the public. "I wanted to help enhance that process," says Deborah.

Once more, she returned to the UW, this time funded by an NSF professional development fellowship that allowed her to study accuracy in science news reporting and to develop a course of study for science writers. The program has operated under the aegis of the Department of Technical Communication (*http://www.uwtc.washington.edu*), and consists of a three-part curriculum designed to address the issues involved in writing science articles for general audiences. Student articles are eligible for publication in *Northwest Science & Technology* (*http://www.nwst.org/*), a quarterly online publication founded by Deborah and Professor Alvin Kwiram. ■

Thor Radford

Roni Kopelman and Brian Smart and their invention, the LivepH tag

CAN'T WE ALL JUST BREAK THESE BONDS?

Carbon-hydrogen (C–H) bonds are very hard to break, as are carbon-carbon (C-C) and carbon-oxygen (C-O) bonds. Current methods are awkward, inefficient, and dirty, and they require a huge amount of energy. Current methods are so harsh—involving strong acids or extremely high pressures and temperatures—that they usually break more than one bond in a compound. This makes selective synthesis very difficult and produces a lot of waste.

The ability to easily manipulate these strong bonds could incite a revolution in synthetic chemistry, leading to fundamental advances in fields as diverse as petroleum refining, pharmaceuticals, and biochemistry. Although several individual researchers have attempted to make these bonds more cooperative in the last few decades, progress has been slow. The problem is just too big for one scientist to solve alone.

Current methods are awkward, inefficient, and dirty, and they require a huge amount of energy

CATSB

UW Chemistry Professor Karen Goldberg knew that many scientists working together would have better luck, so in 2004 she and fellow UW Chemistry Professors D. Michael Heinekey, Jim Mayer, and Ernest Davidson founded the Center for Activation and Transformation of Strong Bonds (CATSB).

With Goldberg as Director, CATSB includes eight institutions—University of Washington, University of North Carolina, University of California at Santa Barbara, Rutgers University, Yale University, University of Rochester, University of North Texas, and Los Alamos National Lab—and dozens of researchers located across the country

The center was started with a three-year, $1.5-million Phase I grant from the National Science Foundation (NSF). The center is now in the final stages of competition for Phase II funding from NSF of $15 million.

"What we're trying to do is figure out better ways to convert one chemical to another. If we can do that, we can make much better use of our resources," says Goldberg. For example, one project being pursued by CATSB is the development of an environmentally friendly method to convert methane gas (CH4) to its alcohol equivalent, methanol (CH3OH). Currently, there are vast deposits of methane located in remote locations, but methane gas is difficult and dangerous to transport, rendering those deposits useless for all practical purposes. If a technique to convert methane to methanol is perfected, those remote methane deposits suddenly become usable.

Emphasis at CATSB is also placed on collaboration and community building. "We need everyone working together, coming up with new ideas. That is the purpose of the center, and that is what the NSF is looking for," says Goldberg.

The investigators and students from all eight institutions gather at UW for annual meetings. The first meeting was held in 2005. The students gave talks on the progress of their research projects and the entire group of faculty and students worked together to formulate new research ideas and directions. In 2006, representatives from the center's industrial affiliates also participated in the meeting.

"CATSB provides a unique opportunity to collaborate with experts from both academia and industry, and students from various universities," says Andy Pawlikowski, a fifth-year graduate student in Goldberg's lab. The meeting "was a good opportunity to meet everyone face-to-face and to get some input about their various projects."

The center offers postdoc, graduate, and undergraduate students the valuable opportunity to rub shoulders with colleagues from other institutions. As a graduate student it is easy to become cloistered in your research group unless you are collaborating directly with others, so CATSB's focus on building a community of researchers is an important way to help graduate students stay abreast of developments in their field. "CATSB is intended to bring together groups of people to tackle bigger problems," notes Heinekey.

CATSB uses new media to foster better communication between geographically isolated researchers. The center uses regular video-

teleconferencing and is improving the CATSB web presence to provide another forum for discussion (*http://depts.washington.edu/catsb)*.

CATSB Community Service

Another element of the center's mission is community service. CATSB reaches out to undergraduates and high school students and teachers.

High school and entry-level college science classes often fail to impart the excitement of scientific discovery because the curricula depend almost entirely on textbook knowledge. Textbooks tend to present science as little more than an annotated list of facts without emphasizing the skills necessary to systematically characterize an unknown phenomenon. The chance to perform real research in a real laboratory can go a long way towards illuminating the scientific process, and help students stay interested in science.

CATSB hosts a summer research program for undergraduates, which allows them to conduct research in a university setting with a faculty or graduate-student advisor. Heinekey stressed the continuing need to recruit talented young people with an interest in science for the center's undergraduate research program. "Studies have shown that undergraduate research is crucial to keep students in the sciences," he said.

CATSB is giving high school chemistry teachers a similar opportunity through the Murdock Trust Partners in Science Grant, which places them in a research lab for two consecutive summers. The first participant in the program was Amy Schwentor, a chemistry teacher from Roosevelt High School in Seattle.

Schwentor worked with members of Goldberg's lab on the development of environmentally friendly methods to catalyze the conversion of alkane gases to alcohols. She has a master's degree in mathematics education, but her experience is typical of most high school science teachers in that she had never performed any laboratory research. This program gave her a brief, yet significant exposure to graduate-level research. "It was like being a student again," says Schwentor. "It gave me another perspective on how my students feel on a daily basis."

Schwentor plans to bring her students to tour the UW Chemistry facilities. "For me, a big part of this [program] is connecting my kids with UW and its laboratories, and having them exposed to the process of research," she says.

The graduate students Schwentor worked with visited her classroom to present their research in an accessible fashion. Even though some high school students may have an interest in a scientific career, they don't really have a sense of what that means. "If you've never been exposed to what [scientists] do, I think it's really tough to make that decision."

"We were very fortunate to have Amy work with us," says Goldberg, "and we will continue to develop that contact." ■

Chemistry faculty and graduate students

Kathy Sauber; background image: ©2007 www.clipart.com

Catalysts, Agents of Change in Big and Small Ways

—Mary Anne E. Leung, PhD candidate, defending March 2007

Jang Jiang Cheng

This article, originally published in the American Association for Colleges & University's journal, *On Campus With Women,* September 2005, has been edited for space constraints

It was not easy for me to transition from a small, liberal arts women's college to a large, public, research-intensive doctoral program. Nor was I entirely prepared for the challenges of being a woman in science, let alone a racial minority and an older student. However, I believe we should seek the lessons that adversity has to teach and so, I found myself looking for ways to create a support network. I began thinking about ways graduate students in the Department of Chemistry could support each other and explore issues related to gender in science.

I began hosting meetings with graduate students of both genders. Eventually, we secured funding from our department. I chaired a series of planning meetings where participants began laying out goals and objectives. At this time, we came up with the name "The Catalysts Committee." Since we are a group of chemists, being Catalysts seemed very appropriate, as we sought to facilitate change by improving the conditions for women in science.

Monthly Lunches

We decided to hold quarterly seminars and monthly lunches. Initially, our lunches consisted of graduate students gathered around a table, sharing conversation, laughter, and stories. We usually discussed topics related to surviving graduate school: For example, we talked about how to pick an advisor and shared stories about the trials, tribulations, and challenges of graduate school. Our attendance increased quite a bit, but we still strived to keep our lunches informal, where we could hold lively, yet intimate conversations.

As momentum built, we started inviting guests. Some of our guests included:

- Dr. Irene Peden, the first woman to receive her PhD in electrical engineering from Stanford University and the first female professor in the UW Electrical Engineering Department
- Dr. Ruta Sevo, Senior Program Manager for the Research on Gender in Science program at the National Science Foundation
- Mr. Chris Loving, founder of the Leadership Institute for Tomorrow, who leads workshops to help graduate students and faculty improve their communication and leadership skills and promote diversity in Science, Technology, Engineering and Mathematics (STEM)

Quarterly Seminars

For our first quarterly seminar, we invited Professor Angela Ginorio, a renowned researcher in the field of gender in science from the UW Women Studies Department. We advertised throughout the science, engineering, education, and women studies departments and managed to fill a lecture hall with about 60 attendees. Not bad for our first major event!

The Catalysts continued to host seminars each quarter on various topics, which included a Career Exploration Panel, Learning Styles, Life in Industry, and Balancing Parenting and A Career in Science.

We hosted a seminar by Debra Rolison, "Time to Thrive Not Just Survive: Accumulating Advantage for Women in Academic Science." Dr. Rolison is Head of the Advanced Electrochemical Materials Section, Surface Chemistry Branch of the Naval Research Laboratory. In addition to her scientific research, she has given lectures on the enforcement of Title IX in science at the National Academy of Science and other institutions across the country.

For this program, we assembled a panel consisting of the Dean of Engineering, the Dean of Arts and Sciences, and representatives from the Athletics

Department and the Office of Equal Opportunity. We asked the late Dr. Marsha L. Landolt, former Dean of The Graduate School, to moderate.

This event was attended by approximately 200 people and generated a lively discussion about applying Title IX to academic science. Not only did we catalyze discussion amongst the faculty, staff, students, and postdoctoral researchers, we also involved scientists from industrial and academic institutions in the Seattle area.

One moment that was particularly rewarding for me was at the reception after this seminar. I was speaking with Dr. Hodge, Dean of Arts and Sciences. He mentioned that prior to attending our seminar, he had reservations about enforcing Title IX in academic science, but after hearing Dr. Rolison, he now saw the merit in the proposal. I felt great knowing that our small graduate student-run organization was able to have an impact at the institutional level.

Another example of how we have served as catalysts of change is the impact of Donna Nelson's visit to our campus. Dr. Nelson, a faculty member in the Department of Chemistry at the University of Oklahoma was the first tenure-track female professor and the first and only under-represented minority faculty hired there. She has testified at US congressional briefings about diversity in science and engineering.

Dr. Nelson gave two inspiring presentations: one about her recent study of diversity in the top 50 STEM departments across the country and another about her research and education work. A particularly striking moment occurred when I least expected it. During Dr. Nelson's seminar on organic chemistry, a few of the professors started asking questions about the diversity study that she had published. Then, a very gratifying thing happened: two professors of different races began discussing the impacts of race on the faculty in our department. The conversation only touched on some of the important issues; however, it was worth the effort I had put into the Catalysts to see such a conversation happening.

Keys to Success

One key to our success was the support of our department Chair, Dr. Paul Hopkins, and our Graduate Program Director, Dr. Michael Heinekey. Another key was our collaboration with other groups on campus: the ADVANCE Center for Institutional Change, the Center for Workforce Development (CWD), and the Women in Science and Engineering (WiSE) program. This created a synergy between groups that shared mutual goals.

The Catalysts have co-sponsored many events with these groups and have been able to bring in researchers from around the country to speak on the latest developments in gender and diversity in science issues.

Chemistry Mentoring Program

An issue with which many chemistry graduate students struggle is that while the majority of us go into industry after completing our PhDs, the training we receive is geared predominantly towards academic careers.

For this reason, the Catalysts, partnering with CWD, created the Chemistry Mentoring program, with emphasis on providing industrial mentors. Our department Chair generously allocated the necessary funds. With CWD, we recruited mentors from our alumni, local companies and colleges, a national laboratory, and the local American Chemical Society chapter. Graduate students completed a simple questionnaire to find an appropriate mentor. By the end of our first year, we had 13 graduate students matched with mentors and by the end of the second year we had 25 student participants.

While there are many success stories, one stands out. One graduate student had the misfortune of having her advisor denied tenure. Her advisor then had to leave the university, and she was on her own for three years. Luckily, she was matched with a local mentor through our program; they met regularly, and she cited the relationship with her mentor as instrumental in the timely completion of her degree. She is now in a prestigious postdoctoral position at Stanford University. It is very gratifying to know that in some small way, we helped at least one woman stay in science.

While many challenges for women in STEM remain, there are many stories of success and inspiration all around us. We must keep the momentum going by opening more doors and catalyzing change in every way possible. My organization strived in large ways to change our institution and in small ways to touch an individual's life with an encouraging word or helping hand. ■

DOCTORAL DEGREES AWARDED, SPRING 2003

Due to an unfortunate production error, the names of several doctoral degree recipients were omitted from the last edition of the *ChemLetter*. We deeply regret this oversight. To ensure that no one is overlooked, we include in this list PhD recipients from Spring 2003 through Spring 2006. (Faculty advisors in parentheses)

Henry Michael Ajo
*Energetics of hydrocarbon adsorption on model catalysts (*Charles Campbell) Summer 2003

Nikolina Babic
Regulation of energy metabolism of heart myoblasts (Norm Dovichi & Craig Beeson) Winter 2004

Arunima Bandyopadhyay
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Lani Stone, Lead Academic Advisor

—Mary Harty

Thor Radford

Chemistry Lead Academic Counselor Lani Stone receives pictures and cards from students studying around the world

Our department's Lead Academic Adviser, Lani Stone, has received the first-ever Pangaea Award for Global Citizenship, given jointly by the UW Office of Undergraduate Education and the UW Office of International Education. The Pangaea Award celebrates Lani's efforts to "reverse 200 million years of continental drift" by encouraging students to pursue an international experience during their time at the University of Washington.

Lani explains that, "international education is transformational for students, providing them with the opportunity to reflect on their role in the world both as individuals and as scientists. As science becomes increasingly international in scope, it is essential that science students become familiar with foreign cultures, languages, and economic systems."

Lani guided one of the organizations for pursuing international education—the Trans Atlantic Science Student Exchange program (TASSEP). Science students face unique challenges because of the large number of required courses in the standard curriculum and the vertical structure of the science curriculum. TASSEP permits students to study their chosen disciplines at a foreign university without losing ground at their home institutions. Opportunities include studies in France, England, Scotland, Ireland, Denmark, Sweden, Belgium, Greece, Finland, Germany, Austria, Switzerland, Italy, and Spain.

Lani, along with chemistry Academic Adviser Mary Harty, is also involved in the creation of an opportunity for students to study abroad through the "Exploration Seminars" offered through the College of Arts & Sciences. Potential offerings may include courses in Malawi, China, Tanzania, India, Brazil, and Prague.

Although Lani never studied abroad, she became a world traveler at age 20. She recalls sitting at an outdoor café in Istanbul completely mesmerized by the sight of taxis careening through the streets with their radios blaring belly dancing music or Tom Jones's "Delilah" juxtaposed with the sounds of the muezzin's hypnotic call to prayer. She recalls the cacophony of sights and sounds as if it were yesterday and remembers understanding, for the first time, what it means to be a citizen of the world. Lani was instantly hooked on travel, and she has since visited Bali, Java, Costa Rica, Peru, Sicily, and Eastern and Western Europe. As part of her Pangaea Award, Lani received two round-trip tickets to Scandinavia.

Our department commends Lani for her leadership and advocacy in making these international educational opportunities available to students. ■

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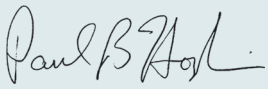
The position that remains occupied by the same individual is my own: In May of 2005, I signed on for a third five-year term as chair. The last person in this department to serve as chair for more than 10 years was the late Henry Benson, who served from 1919 until 1947, and for whom Benson Hall is named. What flaw of character or judgment led Benson to do this I cannot say. In my own case, I have stayed on because this office provides me both opportunity and challenge to participate in the education of our next generation and to facilitate the discovery of new knowledge in our laboratories. Your friendship and assistance make the job that much easier.

With very best wishes,



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