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Paul Hopkins, Chair

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Dear Friend of Chemistry,

Greetings from the Office of the Chair on a beautiful Seattle summer day. In this time between academic years, we reflect on where we've been and where we're going.

In my last message, I noted that we will add three new faculty members in the fall. Sadly, I report that two long-standing members of the tenure line faculty made this past academic year their last with us. Professor William Reinhardt retired in December, moving eastward to pursue new projects and to be closer to family. Bill had been with us since the early 1990s as a highly valued member. Professor James Mayer also departed at the end of the academic year, relocating to Yale University. Jimmy leaves behind an extraordinary group of inorganic faculty members, all of whom he recruited during his three decades on our faculty. We will miss both Bill and Jimmy.

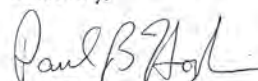
It is my great pleasure to report that former Chemistry Chair and Professor Emeritus Alvin Kwiram was elected to the Washington State Academy of Sciences. We congratulate Alvin on this recognition of all he has done for the UW and the state of Washington.

Let me share a statistic concerning our graduate program that was recently published in *J. Chem. Ed.* and came as something of a surprise to me. A paper on trends in doctoral degree production at the top 50 U.S. chemistry departments reported that our department was tied for second nationally in the fraction of Ph.D. degrees awarded to women. That 47% of Ph.D. degrees in Chemistry at the UW during the period 2005–2009 went to women came as no surprise, since our graduate program has been nearly gender balanced for quite a while. The surprise for me was the range across the 50 departments nationally, which fell from a high of 49%, through a median of 34%, to a low of 20%. Also interesting is that many of the departments that have historically produced strong contenders for tenure track faculty jobs in our field were on the bottom half of this list. This contributes to the problem that all chemistry departments continue to experience, difficulty populating our tenure track professoriate with women.

We are bombarded of late with media reports of the negative impact on undergraduate students of the rising costs of higher education. At the UW, the cost of a four-year degree for an in-state student has grown to an impressive figure: about one hundred thousand dollars, almost equally divided between educational costs and the cost of living away from home. In past messages to you, I have emphasized that for public institutions, nearly all of the recent growth in costs can be attributed to lost state support being shifted to student tuition bills. Rising higher education costs have led student loan debt in our nation to grow considerably. How does the UW stack up in this regard? Only about half of UW undergraduate students graduate with any educational loan debt (the only kind we have data on). And for the half who do take on educational loan debt, the average and median levels of debt are about \$20,000 per graduate. Many students benefit from need-based financial assistance. We'd all prefer no debt to \$20,000, but I contrast this to the stories of graduates saddled with hundreds of thousands of dollars in student loans. The latter is clearly not the norm at the UW. A public undergraduate degree, I would argue, remains relatively affordable, particularly when the impact on lifetime earnings is taken into account.

Let me close, as I nearly always do, with thanks to the many, many of you who regularly send contributions to us. Whether your gift is \$1,000 or \$10, your gifts in the aggregate impact everything we do. We operate with many fewer dollars per student than nearly all of our quality-matched peers in chemistry across the nation. Thank you for giving back to today's students!

Sincerely,



Paul B. Hopkins

Professor and Chair

Retired? Are You Kidding?

WILLIAM REINHARDT

Retired from UW Chemistry, Dec. 31, 2013

In February, Katrina and I moved from Seattle, our home for 23 years, to downtown Washington, DC: only a few blocks from the National Mall with its museums, concert halls, and scores of wonderful restaurants, and with the Metro right next door. We have family in the area and I have many scientific colleagues at the National Institute for Standards and Technology (NIST) where I've been a visiting scientist for many summers, also close at hand. But nothing had prepared me for what has actually come to pass.

What is retirement? I didn't know, except that I don't play golf and sitting under a beach umbrella in Florida has never seemed of any great interest. Well, there go the two poster images of American Retirement! So what does one *do* when retired?

What I had never really thought about in any serious way was that following a 40-to-50-year career, you are an expert in that area, and your expertise will be of value during your retirement should you allow that to happen. So on arriving in this "other" Washington, I certainly was not thinking about any of this. I told Katrina that I'd likely spend the first six months really getting to know the National Gallery of Art, and then see if I could parlay my UW retired faculty Husky Card into a library card at the Library of Congress, as I've always wondered what's really there. Who could predict what I'd find? I'll likely never know.

Reality hit within a week: the NSF approached me about a half-time job reading and reporting on incoming proposals in computational chemistry and materials science. I had lunch, a few blocks from our new home, at Jaleo (said to be the best Spanish tapas restaurant in the country...well, there are a few pleasures to be associated with retirement!) with a wonderful and lively NSF program director. We had a wonderful talk and a wonderful lunch, but... if I wanted to still be writing and reading NSF proposals why had I retired?

A friend then e-mailed me an ad from the American Physical Society (APS) seeking a 50% time senior staff member with 40 to 50 years of experience in academic physics (I've been closely connected to physics at the UW and other institutions) and/or national lab physics departments (e.g., my NIST summer experience), and with a minimum qualification of being a Fellow of the APS (which I've been since 1980), in the area of theoretical atomic and molecular physics. Sounds sort of like



James Reinhardt

On the bridge which connects the two halves of our DC condo building.

that general expertise I'd always been hearing might come in handy. Within a week, I had an excellent offer from the APS to fill the position of director of the APS Honors Programs; I started in March, only one month after arriving in Washington, DC, with our furniture barely unpacked, and our books, records, and CDs still in their shipping boxes. So much for spending time at the National Gallery and Library of Congress!

So what do I do? The APS has 35 units that each typically elects Fellows of the Society and has its own endowed prizes and awards. I am responsible, not for choosing who gets what award or fellowship, but in making sure that the committees that make those choices are properly constituted, carry out their work in a well-documented and timely fashion and in a manner which respects both the breadth of science done by their members as well as the diversity of their membership. A lot of jawboning needed there, so what the 40 to 50 years of experience actually means is: not afraid to call anyone on the phone and make clear the rules and expectations of the Society. It is also my job to help prepare well-thought-out materials for the creation and management of new prizes and awards, and to present these to both the Committee on Prizes and Awards, and then to the APS Executive Board.

Is there any fun and intellect here? Let me give one example: In September, nine of us will interview five of the top graduating physics undergraduates in the United States (chosen from fifteen nominees) for Apker Awards for one student from a research university and one from a liberal arts college. These interviews take place over a two-day period of seminar presentations and intense questioning, and end with a celebratory dinner, after which the students depart without yet knowing who has won and who has lost. But all, in a sense, have won by even taking part in this marvelous event, and all are recognized by the APS at its next national meeting. So there it is: my 50-year career has prepared me for, and earned the privilege of organizing and participating in a challenging and rewarding event to recognize undergraduate achievement in physics at the highest level. ■

KHALIL AND ZHANG Promoted

Congratulations to Assistant Professors Munira Khalil and Bo Zhang on their promotions to the rank of associate professor with tenure, effective September 2014.

Professor Khalil's research seeks to understand charge transfer processes in solution at a microscopic level. One goal of this research is to correlate electronic and atomic motion on ground and excited electronic surfaces. Her group uses and develops various nonlinear spectroscopies employing ultrafast light pulses across the electromagnetic spectrum from infrared (8 microns) to X-ray (0.4 nm) wavelengths.

Khalil's work is currently funded by the Department of Energy (BES), the National Science Foundation, the David and Lucille Packard Foundation, the Alfred P. Sloan Foundation, and the Camille and Henry Dreyfus Foundation.

Professor Zhang's research focuses on the heterogeneous electron transfer reactions at the electrode/solution interface. One project aims to understand the electrochemistry and electrocatalysis of single nanoparticles. This research will address fundamental questions in nanoparticle-based heterogeneous catalysis which are otherwise difficult to study with nanoparticle ensembles. Nanoelectrodes in the size range of 1–3 nm are developed and utilized to study single nanoparticles. In a second project, his group develops very large arrays of microelectrodes to image neuron-neuron communication in the brain.

Zhang's work is currently supported by the Defense Threat Reduction Agency, the National Science Foundation, the Alfred P. Sloan Foundation, the Air Force Office of Scientific Research, and the National Institutes of Health (NIGMS). ■

below: Munira Khalil
right: Bo Zhang



Courtesy of the Dept. of Chemistry



Courtesy of Bo Zhang

BENJAMIN VAN KUIKEN Awarded the Graduate Medal in the Natural Sciences

The College of Arts & Sciences annually names four graduate student medalists representing the four divisions of the College: Arts, Humanities, Social Sciences, and Natural Sciences. Benjamin Van Kuiken (Ph.D., Chemistry) was named the 2014 Graduate Medalist in the Natural Sciences. The following is reprinted from *Perspectives*, the College of Arts & Sciences newsletter:

If you're looking for tools for conducting transient X-ray experiments—high level stuff, nothing like the X-rays used to diagnose broken bones—Ben Van Kuiken is your guy. For his dissertation research, Van Kuiken experimented with a method known as “synchrotron-based ultrafast X-ray absorption spectroscopy” to study chemical dynamics in solution. “He is in a unique position to impact a nascent and rapidly developing field,” says dissertation adviser Munira Khalil, assistant professor of chemistry.

Van Kuiken has collaborated with researchers at various national laboratories, including the Lawrence Berkeley National Laboratory and the Pacific Northwest National Laboratory. At the UW, he is a valued member of Khalil's research team. “Ben has a fine sense of chemical intuition and very strong computational and theoretical skills,” says Khalil. “He is widely sought after by all my group members to discuss scientific problems.”

With three publications as first author, three more as co-author, and two more first-author publications in the works, Van Kuiken is establishing his reputation as an important contributor in the field of ultrafast X-ray science. He will build on that this coming year as a postdoctoral research fellow in Germany at the Max Planck Institute for Chemical Energy Conversion. ■



Courtesy of Benjamin Van Kuiken

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Graduation 2014

The Departments of Chemistry and Biochemistry celebrated the graduating class of the 2013–14 academic year on Wednesday, June 11, 2014, at the Husky Union Building, in a late evening ceremony from 8:30 to 10:00 p.m. This year's graduates were congratulated and encouraged by remarks from two of their classmates, Kristin Kontogianis and David Mahoney.

Kristin shared her story how persistence and determination got her through her undergraduate career and encouraged her classmates to “bask in the successes.” David reflected on the bigger lessons he learned, “This degree program challenged me to think critically and become a better learner in general; that’s valuable no matter what you do.” Although he can’t remember every single chemical structure he studied, he said, “We can face complex science unintimidated and inspired to know more.”

Kristin completed a dual degree in biochemistry and business administration (human resources management) and plans to attend veterinary school in the fall. David double majored in biochemistry and biology and plans to attend medical school.

A total of 386 bachelor's degrees and 27 Ph.D.'s were conferred this year. ■



Ruth Rabinovitch

Charles Campbell, Professor and B. Seymour Rabinovitch Endowed Chair in Chemistry, visits with Professor Emeritus B. Seymour Rabinovitch, on the occasion of Rab's 95th birthday, in March 2014.

Scott Rayermann Receives Teaching Excellence Award

—Jack Mo

Alpha Epsilon Delta (AED), an undergraduate premedical honor society at the UW, awarded Scott Rayermann the AED Teaching Excellence Award. Each year, AED seeks to recognize one professor and one teaching assistant who have made exceptional efforts in teaching. Rayermann was nominated and selected by student members of AED for his dedication and commitment to teaching their students.