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Chemistry

Wright State University Department of Chemistry Newsletter January 2007

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Chair's Chat

New Year greetings to you from all of us in the Chemistry Department. As I write, at the start of a new year, I'm well into the third year of my one-year appointment as interim chair! Yes, I'm still here, despite my words of fond farewell in last year's version of this holiday newsletter and, hence, I will not be foolish enough to write any such thing this year. In that regard, alas, in February, our chair candidate of choice elected to stay in flood-ravaged New Orleans rather than come to Dayton! We tried not to take it personally. In this year's iteration of our chair search, we've completed the interview process and we hope to be in a position to make an offer by the end of January. We have been interviewing also for an assistant professor of environmental chemistry and, presently, we are in the negotiation phase with an excellent candidate.

This will be one of two Chemistry Department newsletters that you should receive in the new year since the department has generated an insert for the College of Science and Mathematics (CoSM) Equation. To avoid too much redundancy, this missive will focus on aspects not covered comprehensively in the CoSM Equation and on the individuals who make up the department. However, in case you are on our mailing list but not the college's, I will attempt also to summarize the major departmental highlights in the past year.

First, the multi-year renovation of the CoSM is moving along, as is construction of our primary teaching laboratories, which will be in the basement of the Brehm Laboratory building. These labs are scheduled to come "on-line" in Fall 2007. The Brehm lab analytical operation, under the direction of Roger Gilpin, has been relocated to a new building off Colonel Glenn Highway and, for the past eight months, the department has made laboratory and office space available to "displaced" faculty members from the Geology department. More recently, we have been in "negotiations" regarding our research space. While this process is not complete, we will have the entire fourth floor of Oelman Hall and substantial portions of the basements of Oelman and the Math and Microbiology building should be available for department use.

The past calendar year has been an exciting one with several special lectures and events. In the spring, Marc D. Porter, professor of chemistry at Arizona State University and a 1977 and 1980 Wright State University graduate, was recognized as the 2006 Outstanding Alumni Award winner from the College of Science and Mathematics. More details can be found at: http://www.wright.edu/cgi-bin/cm/news.cgi?action=news_item&id=1135. The outstanding alumni award is an annual event, which presents an outstanding opportunity to showcase the successes of our alumni. Unfortunately, we are not always cognizant of the full extent of the latter and, accordingly, we would appreciate any information or suggestions that you might have regarding suitable candidates for nomination.

In mid-May, the rescheduled Procter and Gamble Lecture brought a world leader in materials' chemistry, viz., Professor Craig Hawker from UC Santa Barbara, to the department. Professor Hawker presented an exciting talk entitled "Commercial Exploitation of Nanostructures: Studies at the Interface of Organic and Materials Chemistry" and he was a delightful, inspiring visitor. In September, the department played host to two world-class scientists. A joint venture with the Mineralogical Society of America (MSA) and the WSU Department of Earth and Environmental Sciences featured Professor Tim Lowenstein from Binghamton University as the 2006 MSA Distinguished Lecturer. Professor Lowenstein presented two fascinating lectures, "Reviving Ancient Organisms in Crystals: Jurassic Park of Fantastic Lark?" and "Tracking Changes in the Chemistry of Ancient Seawater: Mammal Blood, Salt, and Sea Shells." For the second lecture event in September, a joint venture with the Dayton Section of the ACS, we were honored to welcome

Prof. G. K. Surya Prakash, Scientific Director of the Loker Hydrocarbon Research Institute, who spoke on the topic "Electrophilic Intermediates and Their Reactions in Superacids."

After 14 years, and an association with the university and department from their inception, Andrea Burns retired as Freshman Chemistry Lab Manager. While Andrea has done a yeoman's job over the years and will be much missed, fortunately, she has agreed to continue teaching for us on an adjunct basis. We are pleased to welcome Kirby Underwood as the new Freshman Chemistry Lab Manager. Kirby completed his M.S. in our department in 2006 under the tutelage of Bill Feld. He has settled into his new role very well and has already experienced his first "baptism by fire," viz., the annual winter break chemistry demonstration shows. When the smoke cleared, everyone had survived!

Our initiative of improving communication with and between our alumni needs your help. We are seeking your current contact information (mail and email addresses) as well as any updates that you would like to provide, both professional and personal. Just log onto our website, www.chm.wright.edu and click on Alumni Update. Alternatively, you may e-mail us at chemistry@wright.edu. We very much enjoy hearing from you! Also on our website, you can view the latest department goings-on, including our annual department picture, class offerings, recent M.S. theses, seminar schedule and pictures from the Procter and Gamble Lecture. We are very grateful to all of you who have been so generous in providing funds for scholarships and other department initiatives. In this regard, recently, we have learned that Tom Farquar (Chemistry Department alumnus) has endowed a departmental scholarship in the names of emeritus faculty members, John Fortman and George Hess. We very much appreciate this recognition of these outstanding former faculty members and the support that this will provide for future chemistry students.

Best wishes to you and your families in 2007 -- Ken Turnbull

Faculty Frolics

Dan Bombick received recognition of twenty years of service at WSU this year. He finds it hard to believe how fast the time has gone! In the same vein, his daughter is now ten years old. Dan continues his efforts in the science education courses for elementary education including the newly developed SM 144 foundation course.

Dave Dolson and MS student David Postell, using the 1-meter monochromator in 119 Oelman and signal processing gear from AFIT/WPAFB, are pursuing the laser excited spectroscopy of bromine vapor with plans to extend observations into the unexplored near infrared region. Results from this effort are aimed at extending the ground state potential to higher energies than are now known. MS student Alan Forlines has measured kinetic rate coefficients in the laser initiated $\text{Cl}_2/\text{cyclohexane}$ gas phase chain reaction and is exploring termination kinetics with addition of O_2 . Undergraduates Ben Kohn and Jennifer Monohan have joined with Dave to explore energy transfer kinetics. At home, Bonnie is nearing completion of her most recent project — a fireplace and Dave is choosing a nearby spot for his rocking chair.

Bill Feld is completing 35 years at Wright State. His research group had a good year with three MS graduates. Shingirai Chirisa graduated in March and has joined the BMS Ph.D. program at Wright State. Kirby Underwood and Joe Shumaker graduated in June. Kirby was the departmental outstanding graduate student and became the General Chemistry Lab Director at Wright State and Joe is working at Wright-Patterson AFB. Matt van den Eynden, an undergraduate, joined the Ph.D. program at Ohio State in September and is doing great. Bill plans to stay around for a few more years just to have an up close and personal look at the renovations. Bill and Nancy also enjoyed a unique Alaskan adventure (4 couples, 80' yacht, chef) in August.

Eric Fossum's group continued along its merry way during 2006. Laura Sennet, Jennifer Williams, and Hope Klukovich finished their M.S. degrees in July, August, and October, respectively. Laura is currently teaching chemistry and physics at Springboro High School, Jennifer moved on to the Ph.D. program in Polymer Science at the University of Akron, and Hope is starting her assignment to teach at the Air Force Academy. Longtime

group member Sridevi Kaiti took a job at Promerus, in Brecksville, OH, working in the polymer synthesis area. Undergraduate departures included Mohamed Abdellatif (WSU M.S. program), Sally Banks (gainfully employed in North Carolina), and Dawn Douglass (November graduate, job hunting). We hired our first postdoc this year with funding from WPAFB, via UTC, and Zhenning Yu has been a most welcome addition to our group. Kodak has also decided to continue funding our ink additive project. We were able to publish papers in *Macromolecules* and the *Journal of Polymer Science* as well as filing a patent application with Kodak. On a personal note, a new Fossum arrived on July 19, Rachel Elizabeth, and now the tally at home is three females, one male, and, thankfully, one male dog.

Roger Gilpin, in addition to his role as director of the Brehm Lab, taught two on-line variants of our first general chemistry course, CHM 121, including one for the CORE program. The latter is an initiative to revamp high school teachers of other sciences as chemistry teachers.

Dave Grossie continued to perform heroically as assistant chair and as the department representative to the CoSM renovation committee – now up to three years of meetings! Dave presented a paper at the American Crystallographic Association Meeting in Honolulu, Hawaii during the summer. A considerable level of productivity has continued, including virtual visits to Youngstown State University to collect diffraction data.

Steve Higgins joined the ranks of the tenured faculty this year and was promoted to associate professor. He was the organizer of the 2006 Mineralogical Society of America Distinguished Lecturer series featuring Professor Tim Lowenstein from Binghamton University. He has continued with his NSF and DOE supported research in scanning probe microscopy instrumentation and the surface chemistry of minerals. He was an invited speaker at the Fall ACS Meeting in the Environmental Interfaces symposium where he presented work from his two postdoctoral researchers, Dr. Pablo Cubillas and Dr. Xiaoming Hu. He and his wife, Jennifer, have taken up running and cycling, but not at the same time!

Vlado Katovic continued his successful, well-funded collaboration with WPAFB and the Faraday Company in the area of fuel cell development. Vlado received gifts of electrochemical equipment from Wright Patterson Air Force Base this year.

Dan Ketcha and Thomas Brown of the Department of Neuroscience, Cell Biology and Physiology (NCBP) received a WSU Research Challenge Technology Commercialization Award for their proposal entitled "Synthesis and Use of Novel Dual Function Cell Death Inhibitors". They have now established a partnership with Eugene Hern (retired from Research and Sponsored Programs) and David Kool (NCBP) to bring these drug candidates to market.

Suzanne Lunsford also was promoted to associate professor with tenure this year. She was again extremely active on the chemical education front, teaching in our Middle Childhood Education program, and was our representative to The Ohio State University led REEL (Research Experiences to Enhance Learning) project. In July she took 24 teachers to Duke University Marine Laboratory to learn aspects of water quality / chemical equilibrium in an inquiry-based mode integrated with geology. Her M.S. student, Nicole Speelman, presented a poster at the American Chemical Society Fall Meeting in San Francisco.

Audrey McGowin's MS students, Gail Dean and Pragathi Kadiri won a best poster award at the Annual Poster Session of the Dayton Section ACS and the Society for Applied Spectroscopy March 7, 2006. The title of the poster was "Temperature Programing in the High-Performance Liquid Chromatographic Separation of 20 Polycyclic Aromatic Hydrocarbons in Soil, Sediment, and Sewage Sludge". Pragathi graduated in June and is employed with Exxon-Mobile in Houston, TX. Gail also graduated in June and is employed at Chemical Abstracts Service in Columbus, Ohio. Audrey has been working with the Greene Environmental Coalition to improve air quality in the state. She was appointed to a multi-disciplinary board to review Brownfield cleanup laws in Ohio under the Voluntary Action Program of the Ohio EPA.

Paul Seybold continued his research in several areas of theoretical chemistry, including applications of quantum chemistry and agent-based models of complex systems. Last December, Paul's book *Modeling Chemical Systems Using Cellular Automata* (Springer), written with colleagues from Virginia Commonwealth University, was published. More recently, graduate student Frank Campanell completed his M.S. degree work on solubility modeling and headed to Washington, D.C. to consider obtaining a law degree.

Adjunct Antics, Emeritus Escapades and Staff Sprees

We are very grateful to the following adjunct professors, who continued to render great service to the Department: **Lawrence Cerny** (CHM 102, Spring '06) **John Kuo** (Isotec, CHM 101 and 102, Summer '06) and **Adam Smith** (Wright Patterson Air Force Base, CHM 101, Winter and Fall '06). **Jon Grieb**, our Organic Chemistry Lab. Coordinator taught several sections of CHM 215 on top of his other duties and continued to teach CHM 102. **Andrea Burns** was immensely helpful, teaching 4 sections of CHM 246 and 1 of SM 144 on top of her outstanding work as Freshman Chemistry Lab Coordinator. Andrea once again provided sterling support services for the ever-popular Chemistry Demonstration Shows. As mentioned earlier, Andrea retired at the end of June and we welcomed **Kirby Underwood** as the new Lab Director. Kirby's first quarter as a member of the Wright State University staff has come and gone without incident and he is fitting into his new position comfortably. Most recently, he participated in preparing chemical demonstration shows for our retired faculty members, John Fortman and Rubin Battino. His first attempt at this went off with numerous explosions, open flames and broken paraphernalia; all of which confirmed a successful chemistry outreach program!

As well as teaching CHM 752 (Thermodynamics) in the spring, **Rubin Battino** has continued the popular chemical demonstration shows with **John Fortman**. He gave an invited lecture "Taking the 'Sting' Out of Teaching Chemical Thermodynamics" at the IUPAC Thermodynamic Conference in Boulder. Also this summer, his book, *Expectation. The Very Brief Therapy Book* was published and, recently, he ran a workshop at the Brief Therapy Conference in Anaheim. He co-supervised two graduate students with **Paul Seybold** and one of them, Frank Campanell, completed his M.S. degree this year.

Retired professor and department chair, **Sue Cummings**, and her husband Glynn Marsh, were busy recently selling cut-your-own Christmas trees off their farm in Union. Otherwise, Sue keeps busy with auction sales, gardening, mowing grass and writing her quilt book, which she hopes to finish sometime in the next ten years.

John Fortman (with **Rubin Battino**) continued to do 18 chemical demonstration shows on campus, reaching over 8,000 students per year in the largest outreach program of its kind in the world. John also continued his speaking tours for the American Chemical Society, presenting for local sections in Michigan, Missouri, and Illinois. In 2007 he will perform for sections in Ohio, Kentucky, Texas, Louisiana, Alabama, Tennessee, New Mexico, and Arizona. With his wife, Margie, he cruised to Mexico and Alaska and took a two-week tour of Italy. Their travels may be reduced some with the birth of two new grandsons: Dalton Thomas, to Tom and Jackie on Oct. 23 and Nathan John, to Tim and Angie on Nov. 22. As mentioned earlier, thanks to the generosity of alumnus Tom Farquar, the department now has an endowed scholarship in the names of both John and **George Hess**. Congratulations to them both.

Marty Tucker remains the rock of stability in the department office. Her knowledge and humor are much appreciated. Marty now has 30 years of service at Wright State and promises to continue employment on a month to month basis hoping to add one or two years to her accumulated years of service. She continues to stay busy volunteering with both the Montgomery County Metro Parks as well as other Montgomery county community services. She and her family are doing well and are looking forward to a busy 2007. **Mary Sparks**, our other senior administrative assistant, received her B.S. degree in Business in June with a concentration in Management Information Systems and a minor in Economics. Additionally, in November, she received a promotion from Administrative Specialist to Administrative Support Coordinator. Her hope is that in the fall of 2007 she will continue to pursue her educational endeavors by going for a Master's degree in Business.