

UNM Chemistry Newsletter

UNM Department of Chemistry & Chemical Biology

Message from the Chair

Dear New Mexico Chemistry Community:

September marks my second month as the Interim Chair of Chemistry and Chemical Biology. However, for those of you whom I have not met, I would like to introduce myself. I was previously an active member of the department in the early 1980s during the period that Riley Schaeffer was the Chair, and I carried out a number of research and teaching collaborations with Carlos Bustamante, who was on the faculty in the department at the time - you may remember that Dr. Bustamante was the first recipient of the Riley Schaeffer Award this past year. I received a B.S. degree in chemistry from the University of Arizona in 1972 and a Ph.D. in chemistry from the University of California at Santa Cruz in 1978. I was an NIH Postdoctoral Fellow in the Department of Chemistry and the Institute for Molecular Biology at the University of Oregon from 1978-1982 before coming to UNM, where I have been in the Department of Cell Biology since October 1982. I also continue to have a secondary appointment in the Department of Biochemistry and Molecular Biology. I served as the Director of Graduate Studies for the School of Medicine from 1989 to 1994 and as Chair of newly formed Department of Cell Biology and Physiology from 1998 to 2004. I currently serve as the Dean for Admissions for the School of Medicine and I am also the co-chair the Genetics and Neoplasia block in the first year of the medical school curriculum. My term as Interim Chair of Chemistry and Chemical Biology will be for approximately two years in anticipation of a new search for a permanent chair next year who would take office in 2011. Dr. Martin Kirk will serve as the Associate Chair for the next two years. I would like to thank Dr. Kirk for doing a splendid job as Interim Chair over the past several months. He has been exceptionally cordial and helpful in easing my transition into the position.

The economic crisis facing the state has made our task of rebuilding the Department that much more challenging. However, many of our faculty members are very busy in major efforts to address these challenges. Professor Martin Kirk is leading an effort to obtain Federal Stimulus Program Funding through an NIH G20 grant proposal that would completely remodel the basement and first floors of the Riebsomer Wing to create an Instrumentation Core Facility. I am working with the Office of the Provost to include funds for renovation of the second and third floors of the Riebsomer Wing for synthetic chemistry and chemical biology in the General Obligation Bond package that would go before the voters next year. Professor Richard Kemp is leading efforts to revamp the graduate program requirements and increase recruitment efforts. Professor Debra Dunaway-Mariano is developing new undergraduate and graduate curricula to strengthen our Chemical Biology program. Associate Professor Deborah Evans is the Associate Director of the UNM NanoScience and MicroSystems (NSMS) interdisciplinary program that includes the Colleges of Arts and Sciences, Engineering and the Health Sciences Center. Professor Stephen Cabiness is the Associate Director of the Water Resources Program in University College.

We are also undertaking several new initiatives in chemical education. Adjunct Professor Joe Ho is currently developing a new program in chemical education. The program will facilitate the interface between the College of Education and the Department of Chemistry and Chemical Biology to better prepare high school chemistry teachers around the state. Dr. Ho is also developing an education program for our graduate teaching assistants to increase the quality of instruction and prepare them for careers in chemistry education. Dr. Ho is also actively engaged in the planning for the opening of the new Science and Mathematics Learning Center, which is scheduled to open in late 2010 or early 2011. At the present time, only the introductory laboratory instruction is to move to the SMLC. However, the planning of Phase II of the construction is underway all of the organic chemistry laboratory teaching laboratories will be moved to that facility once it is completed. Also in support of our undergraduate chemical education program, Research Associate Professor and Lecturer Donald Bellew will offer a distance-learning course in freshman chemistry (Chem 121) next semester. This will allow us to participate in the early undergraduate chemistry education of students from around the state, and hopefully better prepare them for successful completion of our other chemistry courses when they transfer to the UNM main campus.

In support of our research and education initiatives, we will be conducting searches for two new tenure-track faculty members at the Assistant or Associate Professor levels. Professor Hua Guo and Associate Professor David Keller will lead the search for a chemist conducting research in the nanosciences. Professor Debra Dunaway Mariano will lead a search for chemical biologist. We anticipate conducting interviews in the late winter and early spring and hope to have both faculty members on board in August 2010. We also anticipate hiring a Visiting Assistant Professor to teach undergraduate analytical chemistry courses for 2010-2011.

Another very positive note is that we have matriculated one of the larger chemistry graduate student classes in some time, and we are anticipating significant growth in the graduate program over the next several years. This is coupled with a projected 10% increase in matriculating freshman at the undergraduate level over the next five years. With the enhancement of our facilities, new education programs and our additional faculty, the UNM Department of Chemistry and Chemical Biology will be poised to rise to a new level of productivity in the next decade. I look forward to working with all of the members of the Department over the next two years.

Faculty News

Prof. David Bear has been appointed as the Interim Chair of the Department of Chemistry and Chemical Biology. Prof. Bear also holds the position of Professor of Cell Biology and Physiology. Prof. Marty Kirk has been appointed as the Associate Chair.

Wei Wang was promoted to Associate Prof with tenure. Congratulations!

Dr. Lisa Whalen has been named as a recipient of 2008 - 2009 Adjunct Teachers and Lecturers of the Year Award. Congratulations!

Prof. Martin Kirk and his group had a very productive summer this year. In July, their work was detailed in a presentation entitled "Spectroscopic and Electronic Structure Studies of Probing the Reaction Coordinate of the Molybdenum Hydroxylases" at the International Conference on Bioinorganic Chemistry ICBIC, Nagoya, Japan. Prof. Kirk was also invited to Chair the Molybdenum Enzymes session at this meeting. Prof. Kirk was invited to present a seminar entitled "MCD Spectroscopy as a Probe of Ground and Excited State Electronic Structure" at Osaka University while visiting Japan. Additionally, Prof. Kirk was co-Chair of the Molybdenum and Tungsten Enzymes Gordon Conference held this July in Barga, Italy.

A recently published paper from Prof. H. Guo's group on quantum propagators garnered much attention as one of the most downloaded paper on J. Chem. Phys.

Prof. H. Guo gave an invited talk at the Dynamics of Molecular Collisions conference at Snowbird, Utah. He was elected to serve as the vice chair of the Gordon Conference style meeting in 2011, and chair in 2013.

Prof. H. Guo gave an invited talk at the 10th workshop on Quantum Reactive Scattering in Dalian, China, and he was elected to organize the next workshop in 2011.

Dr. Robert Paine's group DoE-BES project "Preorganized and Immobilized Ligands for Metal Ion Separations" was renewed for 3 years (\$435,000), a U.S. Patent was issued (78,192,644 "Non-aqueous Borate Routes to Boron Nitride" and several publications have appeared.

The Grey group published its first paper in the Journal of the American Chemical Society that describes a new spectroscopic imaging approach for mapping structure-function relationships in disordered photovoltaic materials.

Tom Martin (University of Washington) and Alan Thomas (UNM) worked in the Grey group over the summer and developed a new inert gas flow cell for spectroscopy experiments, wrote a new data processing program and constructed a photovoltaic device testing station.

Professor Dunaway-Mariano was a recent co-recipient of a four year R01 grant from the NIHGMs to study structure and function of human hyaluronidases.

As an invited participant in the Repilgen Award Symposium at the Fall 2009 American Chemical Society meeting in Washington D.C. Professor Dunaway-Mariano presented a plenary talk entitled "Competition for Biochemical Dominance Among Enzyme Families

Rick Kemp was awarded a three-year, \$435,000 grant from NSF to examine the use of CO₂ and related heteroallenes in synthesis using main group metals. As well, he was invited as a speaker to the prestigious Whitney Symposium sponsored by General Electric to discuss his group's work on activation of CO₂. He has also guest edited two journal issues of Main Group Chemistry, issues honoring Kemp's Ph.D. mentor, Prof. Alan H. Cowley of The University of Texas. In the past several months, the Kemp group's work has been highlighted twice in Chemical and Engineering News. The most recent C&EN highlight featured work on multi-colored crystals done primarily by an undergraduate, Giang Nguyen, with the help of postdoctoral fellow Dr. Diane Dickie.

Former student Dr. Jian Wang joined Dept of Chem, National University of Singapore in July 2009 as Assistant Professor.

Prof. Wei Wang was invited to give a talk at the Singapore Catalysis Forum held in Singapore on August 2009.

One of our papers has recently been recognised in the "Top-50 most cited articles" as published in Tetrahedron Letters 2006-2009 with award certificate. "Highly enantioselective aldehyde-nitroolefin Michael addition reactions catalyzed by recyclable fluoros (S) diphenylpyrrolinol silyl ether" by L. Zu, H. Li, J. Wang, X. Yu, and W. Wang, Tetrahedron Letters, Volume 47, Issue 29 (2006), Pages 5131-5134.

Alumni News

A PhD grad, Dr. Linda J. (Caudle) Wood (Paine, '84) was recognized in C&EN Aug 3 issue page 6, as the head mentor for the U.S. Chemistry Olympiad team that did well in the competition this summer in London.

Kemp's group most recent Ph.D. student, Dr. Brian Boro, received his degree and moved to a postdoctoral position at Pacific Northwest National Laboratories in Washington state.

Department Picnic Fall 2009



Student and

A paper authored by Greg Smith and others has been chosen as the cover page of J. Phys. Chem. B, the flagship ACS journal in Biophysical Chemistry.



Ken Seal from the Guo group received a travel allowance to attend a NSF sponsored workshop on accelerated computing using a graphics processing unit (GPU) at the University of Tennessee.

Recent PhD graduate students Dr. Jian Cao and Dr. Zhimin Li (Dunaway-Mariano lab) have begun their postdoctoral studies at University of California, San Diego and Yale University, respectively.

Dr. Diane Dickie was chosen to attend the 2009 Green Chemistry Conference held in Golden, CO. As well, Dr. Dickie was selected to give an oral presentation at the inaugural Gordon Research Symposium on Inorganic Chemistry, highlighting work of students and postdocs. Lastly, a high school student in the Kemp group - Raymond Sanchez - was selected by Sandia National Laboratories as a STAR student.