

CHEMISTRY & BIOCHEMISTRY

California State University, Long Beach • Fall 2010

Alumni Reunion Banquet Celebrates Department's 50th Anniversary



Above: Dr. Doug McAbee gives a presentation on the department's history.

From left: Bill Hulbrock (B.S., chemistry, 1970; M.S., biochemistry, 1974), Christine Angeletakis, Dr. Roger Bauer, Steve Jones (B.S., chemistry, 1979) and Chris Angeletakis (B.S., chemistry, 1976; M.S., chemistry, 1978).



Foreground: Dr. Bob Loeschen, Dr. Tom Maricich, Dr. Dot Goldish, Ernie Valfre (B.S., chemistry, 1978), Jason Barca (student), Steve Laven (B.S., biochemistry, 1993), Gary Hathaway (B.S., chemistry, 1964), George Mast (B.S., chemistry, 1970). Standing: Dr. Paul Buonora, Dr. Margie Merryfield, Director of Development Maryanne Horton and Annette Guerrero (B.A., chemistry 1986).

The Department of Chemistry and Biochemistry's 50th anniversary was celebrated on April 17 with an alumni reunion banquet. Twenty alumni along with many of their spouses, as well as present and former faculty, attended the event.

The evening began with a reception on the Molecular and Life Sciences Center (MLSC) patio. Guests took a guided tour of MLSC and a guided hard-hat tour of the new Hall of Science under construction. Following a banquet held in the Chart Room, Dr. Doug McAbee made a presentation on the history of the department, and Dr. Jeff Cohlberg gave a nostalgic overview. We were fortunate that Dr. Ken Marsi maintained a photo archive from his 21 years as department chair, and we enjoyed lots of vintage photos, including snapshots from the 1976 and 1977 pizza banquets. Several attendees recognized themselves in the photographs.

Included among the attendees were alumni and faculty spanning the department's history. The graduating classes of 1964–07 were well represented, and faculty in attendance included all the living past department chairmen: Drs. Darwin Mayfield, Roger Bauer, Nail Senozan and Doug McAbee.

Chemistry was offered for the first time at Long Beach State College in 1953, and the first three B.S. degrees in chemistry were awarded in 1958. Formal department status came with the 1960–61 academic year. The faculty at that time comprised Drs. A.G. Tharp, Gene Kalbus, Roger Bauer, Ed Becker, Darwin Mayfield, Julie Kierbow, Bertha Odenheimer, Ed Harris, Dot Goldish, Clyde Osborne, Don Simonsen and John Stern. Dr. Mayfield and Dr. Goldish both attended the 50th anniversary banquet. A 25th anniversary banquet was held in 1983.

We hope to continue to hold alumni reunion banquets every few years, and we hope that more of you will be able to attend future events.

Continued on pg. 2



Dr. Laura Kingsford

Message by the Dean

I've always felt that I work on one of the best campuses, and this year is no exception. The faculty and staff have been truly amazing. As many of you know, we just went through a year of furloughs (two days per month) with a pay cut of about 10 percent. This has affected everyone on campus, including our students, who had fewer class days in many cases because of faculty furloughs. Services were not always available for students, as the campus was totally shut down for six days plus additional days when staff members were off, and many offices were closed. It was difficult for everyone to get their jobs done. However, despite this and major cuts to our operating budgets, the faculty and staff worked really hard to make sure students still got the best education possible and the support services they needed. I commend them for the outstanding job they did in a difficult situation and their commitment and dedication to our students and their success.

Our campus received a number of recognitions this past year, including a major national report from the Southern Regional Education Board that singled out CSULB as one of the top institutions recognized for its efforts in outperforming most similar U.S. institutions (public master's) in helping students stay on track and graduate. CSULB increased its six-year graduation rate from 2002 to 2006 by 20 percent to a rate of 48 percent. This was done on a campus that, in 2006, had nearly 38,000 students, a freshmen class with a median SAT score of 1,015 and 33.9 percent Pell Grant recipients. In 2007, the rate jumped an additional seven points to 54 percent, with the same high percentage of Pell Grant recipients and a majority of students entering who were deficient in CSU standards for math and English. This year, CSULB graduated 9,070 students. The increase in graduation rates and numbers has been due to many student success efforts implemented on our campus, including three mandatory advisement sessions for all incoming freshmen, specific programs set up for students at risk for

dropping out, pre-baccalaureate support through the Beach Learning Community, curriculum innovations in math pre-baccalaureate and graduation writing instruction, and college-based programs that support students such as our college's Freshmen Experience Success Program.

During the 2009-10 academic year, our campus started on a new journey with the Highly Valued Degree Initiative (please see link to the initiative on the CSULB homepage). President F. King Alexander asked the campus to launch this initiative with the goal of boosting graduation rates even higher while sustaining and raising the value of our degrees. Task forces were created that will work on streamlining curriculum for students, providing even better support services and advising, and increasing the use of supplemental instruction classes for low completion rates (LCR) courses (high percent of D and F grades). The College of Natural Sciences and Mathematics has several LCR courses, so it is a priority of ours to implement more support for students to help them be successful the first time they enroll in these courses.

As you can see, we really care about the success of our students and their timely graduation. This, however, is not just a campus priority but should be one we share with our friends and alumni in the community. Thus, we invite you to become engaged with the Department of Chemistry and Biochemistry—especially you who are alumni. We value your input, partnerships and contributions to programs in the department as well as others in the college. If you are interested in gift giving to set up student scholarships, to build and sustain programs or to name rooms in our new science building, please contact Maryanne Horton, our director of development in the college. Her e-mail address is mhorton@csulb.edu, or you may call her at 562-985-1687.

As always, we thank you—faculty, staff, students, alumni and friends—who have contributed in some way. Your support helps make it possible to provide the high-quality programs for our students so they leave CSULB with highly valued degrees.

Alumni Reunion Banquet



Top photo: Jace Jones, Steve Jones (B.S., chemistry, 1979), Dr. Roger Bauer, Mark Zakhour (Facilities), George Mast (B.S., chemistry, 1970), Michael Manneh (B.S., chemistry, 1993), Al Basiulis, Danute Basiulis (M.S., chemistry, 1976), Roger Meyer (B.S., chemistry, 1968) and Shirley Meyer. Above: Jeannette Santage and Dr. Darwin Mayfield.

Left to right, below: Arti Patel, Chris Appleton (B.S., chemistry, 1972), Richard Kurjan, Katherine (Christopherson) Kurjan (B.S., chemistry, 1986), Arlene Oto (B.S., chemistry, 1982; M.S., chemistry, 1990).



Photos by David J. Nelson

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Faculty Win Recognition for Excellence

Dr. Michael Schramm was named this year's winner of the Mayfield Award for outstanding teaching at our Commencement ceremony in May. The College of Natural Sciences and Mathematics Student Council established the award in the 1990s in honor of former chemistry professor Darwin Mayfield. Each spring the students hold a noontime picnic, at which they may vote for their favorite professor, and this year Dr. Schramm was their choice.

Dr. Lijuan Li was one of four recipients of a university Distinguished Faculty Scholarly and Creative Achievement Award, presented annually at an awards ceremony at the Walter Pyramid. Dr. Li was recognized for her highly productive research program in inorganic chemistry. Many of her publications focus on the properties of metal nitrosyl compounds, complexes in which metals are coordinated with the biologically active compound nitric oxide, which plays a major role in regulating blood pressure. Her work may have therapeutic applications.

The same ceremony also honored the two recipients of a new award, the Provost's Award for Impact Accomplishment of the Year in Research, Scholarly & Creative Activity. One of these awards went to **Dr. Steve Mezyk**, who was honored for his studies of chemical kinetics by pulse radiolysis, including work on the potential use of radiological techniques for wastewater decontamination.

A paper from **Dr. Eric Sorin's** lab, "Equilibrium conformational dynamics in an RNA tetraloop from massively parallel molecular dynamics," was a cover article for *Nucleic Acids Research*. Dr. Sorin and four undergraduate students, biochemistry majors Allison DePaul and Sarav Patel, chemical engineering major Erik Thompson and mathematics/economics double major Kristin Hardeman authored the paper.

Finally, **Dr. Xianhui Bu** has done it again—his recent *Angewandte Chemie International Edition* paper, "A Tale of Three Carboxylates: Cooperative Asymmetric Crystallization of Three-Dimensional Microporous Framework from Achiral Precursors," was designated a Hot Paper by the editors of the journal "for its importance in a rapidly evolving field of high current interest."

Dr. Jeffrey A. Cohlberg

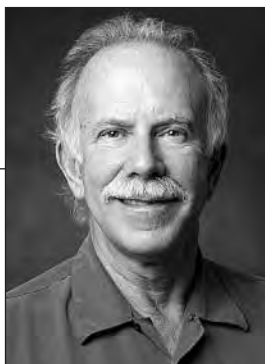


Photo by Victoria Sanchez

Remarks by the Chair

Greetings to all the alumni and friends of the Department of Chemistry and Biochemistry. It has been a challenging year for the department, but we are working hard to maintain a quality program in the face of reduced state support. This year, we were able to offer a full schedule of classes, and next year, we should be able to restrict cuts to our General Education (CHEM 100) and Preparative Chemistry (CHEM 101) classes. We were able to survive a year of faculty and staff furloughs, including three days each semester when the university was closed and all classes were cancelled.

There have been plenty of bright spots as well. Our faculty had continued success in publishing the results of their research, obtaining external funding and receiving honors in recognition of their work. We added an isothermal titration calorimeter and a powder X-ray diffractometer to our facilities. Fifty of our students graduated with bachelor's degrees, and nine of our students completed their M.S. degree programs. Our students continued to be involved in large numbers in research, co-authoring publications and making presentations at national meetings. We had an outstanding Distinguished Lecturer program, featuring a visit from Dr. Irwin Rebek, Jr. of the Scripps Institute. We held our first alumni reunion in many years. We have seen a substantial increase in contributions to the department by our alumni and friends. Finally, we have had the pleasure of watching the new Hall of Science rise in between PH2 and the Molecular and Life Sciences Center, and we look forward to moving into the building next spring and summer. Our students continue to gain acceptance to leading graduate and professional schools.

At the alumni reunion banquet, I presented a comparison between the department in 1975-76, the year I joined the faculty, and today.

- In 1975, the prime activity of a chemist was using a fine wire to unclog the pen on a chart recorder, while in 2010 it is sitting in front of a computer.

- In a more serious vein, the number of our majors has increased from 164 to 476, while the number of tenure-track faculty has remained the same at 23, and the number of graduate students is also about the same (45 in 1976 and 46 this year).

- The typical size of an upper-division class was under 40 in 1975, while now it is 60-80.

- In 1975, when research was just beginning to be required for tenure and promotion, our faculty published eight research journal articles, compared to 34 in 2008-09.

- In 1975, a student paid \$194 a year (\$767 in today's dollars) to attend CSULB; now fees are \$5,008 for undergraduates and \$6,040 for grad students (more than double the fees in 2000).

- State funds for operating expenses have gone from \$85,000 in 1975 (\$336,000 in today's dollars) to \$38,300 today (the 1975 figure does not include separate allocations for new and replacement equipment).

Our department will continue to grow and evolve. We have survived budget crises in the past, and we will survive this one as well. The changes in our department at least partly reflect the changes going on in higher education everywhere. We may embrace some of the changes that are occurring more enthusiastically than we embrace others, but we can take pride in continuing to provide high-quality training in chemistry and biochemistry for this generation of students and, hopefully, the coming generations as well.

Department Gets Isothermal Titration Calorimeter

By Dr. Brian L. McClain

In fall 2009, the Department of Chemistry and Biochemistry received a \$334,625 Major Research Instrumentation Grant from the National Science Foundation for the purchase of a MicroCal Auto-iTC200 isothermal titration calorimeter (ITC). The proposal was written as a collaboration among Drs. Brian McClain, Douglas McAbee, Eric Martinez, Michael Schramm, Vasanthi Narayanaswami, Paul Weers and Kasha Slowinska.

ITC is a sensitive, rapid and direct method for measuring the enthalpy of interaction between two chemical species through the detection of heat exchanged when the two species interact. The instrument is a complement to the MicroCal differential scanning calorimeter already in the department. The combined use of the two instruments allows full characterization of the thermodynamics of many chemical systems.

The Microcal Auto-iTC200 provides throughput of up to 384 samples with unattended operation; all filling, data collection and cell cleaning functions are fully automated. The instrument can directly measure sub-millimolar to nanomolar dissociation constants and can measure dissociation constants in the nanomolar to picomolar range using competitive binding techniques. Most important, as little as 10 μg of protein can be used. ITC requires no labeling or immobilization and presents no buffer restrictions.

Several faculty labs are using the ITC in their research. Dr. McClain's lab is studying the binding of drugs and fatty acids to human serum albumin. Dr. Schramm and his students will be looking at the interaction of α -helical peptidomimetics on protein-protein interactions and at the uptake of cavitands by lipid vesicles. Dr. Martinez's group is using ITC to characterize the binding of anions to synthetic ligands based on enterobactin. Dr. McAbee will be examining the binding of lactoferrin to the asialoglycoprotein receptor and to serum proteins. Dr. Narayanaswami's lab will use ITC to characterize the interaction of apolipoprotein E with the low-density lipoprotein receptor and with the amyloid-beta peptide. Dr. Weers and his students will investigate the binding of apolipoproteins to lipid vesicles and to lipopolysaccharides. Dr. Slowinska's group will look at the interaction of drugs and other small molecules with a collagen drug delivery matrix.

The instrument will be housed in the Institute for Integrated Research in Materials, Environments and Society (IIRMES), and this will facilitate its use in collaborative and cross-disciplinary research involving faculty from other departments and other CSU campuses.

The ITC will also be integrated into a number of our courses, including the physical chemistry laboratory course. This will provide our undergraduate and graduate students with hands-on experience using one of the most ubiquitous bioanalytical instruments currently available in industry.

The department is fortunate to have this truly state-of-the-art instrument as part of its suite of modern instrumentation.

State Budget Crisis Affects the Department

California's ongoing budget crisis continues to affect the Department of Chemistry and Biochemistry. For 2009-10, with the state facing a \$42 billion deficit, the CSU budget was reduced by \$649 million, a six percent cut. To help address this problem, faculty and staff voted to accept a furlough program that reduced their number of working days (and their pay) by 9.3 percent. In addition, student fees were raised by 30 percent, while enrollment was cut. Many classes were cancelled, and students scrambled to get the courses they needed to progress toward graduation. Fortunately, at CSULB, the university was able to tap (and essentially deplete) their reserve funds to mitigate the effect on course offerings, and a late decision to support additional sections of critical lower division courses from Student Success funds enabled our department to offer a full schedule of classes.

But the cuts were felt in other ways. With class meetings cancelled because of furloughs, it was challenging for faculty to teach courses so that all essential material in the curriculum could still be covered, and challenging for students to master the material with less class time. Tenure-track hiring was cancelled because of a lack of funds for research startup expenses. We were not permitted to hire a replacement for our long-term instrument technician, Bob Soukup (see article on Bob's retirement). There was no money to buy new instructional equipment or to replace existing equipment—lottery funds normally used for this purpose were diverted to paying for service contracts—and we still had to cancel contracts on two instruments. There were insufficient resources to provide matching funds for some faculty grant proposals and less support for faculty and student travel. Class handouts were banned in order to save photocopying costs, and faculty were directed to post material for students online only.

For 2010-11, the situation is uncertain as of this writing. California still faces a roughly \$19 billion shortfall. The governor's budget proposal contains a restoration of roughly half the funds that were cut last year. But the proposed budget faces an uncertain fate in the California legislature, where Democrats may be unwilling to accept other cuts proposed by the governor, including the elimination of the state's welfare program, and Republicans continue to oppose any tax increases. The university is currently planning significant cuts in class offerings. In our department, this means substantial reductions in lab sections of our general education and preparative chemistry classes. Support for faculty research has been cut substantially, and many tenure track faculty are carrying heavier teaching loads. We were unable to rehire a number of our part-time lecturers. Other cuts instituted last year will continue.

As of this writing (mid-August), we are waiting to see what type of budget emerges. It is now clear that we will not have a budget in place by the beginning of the fall semester. If a budget is passed during the coming months that restores to the CSU some of the funds cut last year, it may be possible to offer additional classes in the spring. Our highest priority is to make sure that our majors and other majors in areas related to science get the classes they need to make unimpeded progress toward graduation.

To view time-lapse movies of Peterson Hall 3's demolition and the new building's construction, visit <http://chemistry.csulb.edu/cameras/>.



New Hall of Science Nears Completion

The construction of the new Hall of Science is proceeding on schedule, and the building should be ready for us to move in during the spring 2011 semester and hold classes in fall 2011.

The building will contain 180,000 gross square feet and 98,000 assignable square feet, of which 14,200 square feet will go to the Department of Chemistry and Biochemistry. The total cost of the project is \$110 million. The basement will contain the science shops, storage, and both teaching and research labs for the Biology Department. The first floor will house two 180-seat and two 80-seat lecture halls, in addition to the dean's offices, advising offices, and additional teaching and research labs for Biology. The second floor will house teaching and research labs for the Physics and Science Education Departments.

The third floor will be shared by the Departments of Chemistry and Geology. The west wing of the building will include four teaching labs for general chemistry and a lab and instrument room for instrumental analysis and a physical chemistry laboratory. Five faculty members in the areas of physical and analytical chemistry will have research labs, and one room will house a laser facility. The department office and 14 offices for chemistry faculty will line the south face of the building. The chair's office will move from its present location in MLSC, with a vista of the snow-capped San Gabriel Mountains, to the south side of the new building, with a vista of the side of PH2 that previously faced the loading dock. The labs will be served by the issue room in MLSC, and a bridge will connect the third floor of the new building with MLSC.

You can view the project's progress on the department website (<http://chemistry.csulb.edu/cameras/>). The work began with the demolition of PH3 during summer 2008. By the end of the fall semester, we had a rectangular pit lined with retaining walls. At that point, work was interrupted for three months because of a halt to all state-funded construction in California. During the spring and early summer, underground utilities were installed and a concrete foundation was poured. Steel girders started rising in July 2009, and the last beam was put into place in a topping-off ceremony that September. During the fall 2009 semester, the building acquired most of its shell with the installation of precast walls, windows and a roof. By the beginning of summer 2010, the outside of the building was nearly complete, and work on the inside was well underway.

Photo by David J. Nelson

New Powder X-ray Diffraction Instrument

By Dr. Shahab Derakhshan

The new powder X-ray diffractometer (XRD) in my research laboratory is a valuable addition to the single crystal X-ray machine in Dr. Xianhui Bu's lab and completes our instrumental needs for crystallography tasks. When single crystals with suitable sizes are not available, powder diffraction techniques are unique tools for crystal structure determination. In addition, the XRD instrument enables us to confirm the formation of desired phases, phase homogeneity and, if present, the type of side products in polycrystalline samples.

The Panalytical X'pert Pro Alpha1 system is equipped with a state-of-the-art X'Celerator ultrafast detector. The monochromatic incident beam results in high-resolution diffraction patterns.

The XRD instrument is housed in MLSC 302 and will be available for all interested faculty labs in our department. This will particularly be beneficial for materials research labs. In addition, researchers from other departments such as Physics and Astronomy, Geological Sciences, Chemical Engineering, and Mechanical and Aerospace Engineering will be able to use this instrument in collaborative research projects.

The XRD system will also be employed in CHEM 332: Inorganic Chemistry Laboratory and CHEM 531: Advances in Inorganic Chemistry. The students will get hands-on experience in obtaining diffraction patterns and in analyzing the diffraction data. This will provide a great opportunity for our students to understand both the principles of diffraction techniques and their applications in crystallographic structure determination.

Dr. Julius Rebek, Jr.

2009 Allergan Distinguished Lecturer

The Department of Chemistry and Biochemistry was privileged to host Dr. Julius Rebek, Jr., a chemistry professor at The Scripps Research Institute and director of The Skaggs Institute for Chemical Biology, as the 2009 Allergan Distinguished Lecturer. Dr. Rebek visited our department on Nov. 18. He presented two riveting talks: one, a lecture for a general audience; and the other, a technical seminar on the topic of molecular recognition and molecular self-assembly.

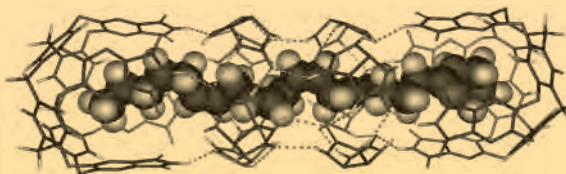


Dr. Rebek received his Ph.D. degree in 1970 from the Massachusetts Institute of Technology, studying peptide chemistry with Dr. D.S. Kemp. He was appointed director of The Skaggs Institute for Chemical Biology in 1996 after academic appointments at UCLA, University of Pittsburgh and MIT, where he was the Camille Dreyfus Professor of Chemistry from 1991-96.

Dr. Rebek's early work included development of the three-phase test for reactive intermediates and invention of molecular cleft structures for molecular recognition. He was a pioneer in developing the first synthetic, self-replicating molecules (*J. Am. Chem. Soc.*, 1990, 112, 1249-1250). He has received numerous prestigious awards, given scores of presentations under named lectureships, is an editorial advisory board member for many high-impact publications and commercial companies, and has authored over 425 publications.

Dr. Rebek continues to be a leader in the field of molecular recognition and self-assembly. In his first lecture, "Molecular Assembly and Encapsulation," he described some of his group's first efforts to develop molecules that assemble and encapsulate other molecules. In these complexes, new chemical phenomena emerge. Using NMR spectroscopy as a tool, Dr. Rebek convincingly demonstrated the driving force that dictates self-assembly: appropriate filling of space. Moreover, these new assemblies allow for the study of chemical phenomena within the capsules with time scales from milliseconds to hours that could not otherwise be observed in solution, where the lifetimes of the relevant species are too short. The NMR data was quite cleverly used to develop a series of breathtaking animations that Rebek played for the audience, giving his best description of the actual physical behavior based on chemical observation.

A second—standing room only—technical lecture elaborated on "The Inner Space of Molecules," where themes from earlier in the day were revisited in depth and applied to assemblies of greater complexity and assemblies in which more than one guest is encapsulated in larger capsules. In these studies, several new forms of stereoisomerism emerge. Molecules held in new arrangements give new and thought-provoking challenges to conventional definitions of isomers. Dr. Rebek then elaborated on some unusual contortions that molecules undergo as they are "driven" to fill space inside cavitands and capsules. A new expanded capsule emerges when a seam of spacers is introduced. This arrangement allows a long alkyl chain to go from a compressed and coiled conformation to a more familiar expanded zigzag conformation. This behavior mimics our everyday notion of the compression of a spring, except now it is reduced to the molecular level. An encapsulation complex of anandamine is shown below with two "seams" of spacer molecules that allow this lengthy molecule to fill the space



defined by the two capsule halves at the end. Coiling and kinks of the guest emerge with unfavorable energetic consequences; in the end, the energetic benefit of encapsulation wins!

Throughout the lectures, despite the complex experiments required to prove the existence of such complexes, Dr. Rebek had a masterful way of keeping the audience on the edge of their seats, awaiting the next detail, discovery or animation. It was truly a privilege for the department to host Dr. Rebek as our 2009 Allergan Distinguished Lecturer. We are very grateful to The Allergan Foundation for their ongoing support of this program.

Stephen Mezyk's Radical Chemistry Benefits Society

By Anne Ambrose

Remediation of chemical contaminants in waters, elucidating aerosol chemistry in the atmosphere and even understanding the chemistry behind carcinogenesis have long been interests of Stephen Mezyk, professor of physical and environmental chemistry, whose expertise in radical chemistry has earned international recognition. "I try to do chemistry that helps overcome some of the bigger problems in the world," he said. Now, his RadKEM laboratory is turning its sights in a new direction, working to improve reprocessing methods for spent nuclear fuel in support of the many nations currently generating electricity through clean nuclear energy programs.

The U.S. Department of Energy (DOE) recently named CSULB's Dr. Stephen Mezyk as the only principal investigator from a non-Ph.D.-granting institution among 23 universities to receive Nuclear Energy University Program 2010 funding for nuclear education and technologies. This four-year grant for \$1.4 million was one of 13 Fuel Cycle Research and Development grants exploring methods for recycling and disposing of used fuel produced by nuclear power plants, and one of the largest of 42 university grants for nuclear research awarded by DOE this year. Dr. Mezyk will be working with the colleagues at the Idaho National Laboratory and University of California, Irvine, on this project to explore the effects of radiolysis on the extraction ligands used to selectively recover radioactive nuclides from dissolved spent fuel. The project will examine the chemistry behind the alpha and gamma radiation-induced degradation of these ligands under anticipated reprocessing conditions. Dr. Mezyk's research is ultimately aimed at understanding the fundamental mechanisms of radiation damage that occurs, thus allowing for improved isotope recycling efficiency and reduction of high-level radioactive waste.

Dr. Mezyk, who joined CSULB in 2001, earned his B.Sc. and Ph.D. from the University of Melbourne, Australia. He is an associate editor of the *Journal of Advanced Oxidation Technologies* and has received multiple research grants and contracts, particularly for his water chemistry studies. This spring, he received the CSULB Provost's 2010 Award for Impact Accomplishment of the Year in Research, Scholarly and Creative Activity, following his CSULB Distinguished Faculty Scholarly and Creative Achievement Award in 2008.

In addition to his research accomplishments, Dr. Mezyk is also a respected teacher and mentor. He received the CSULB University Distinguished Faculty Teaching Award in 2007 and, over the past nine years, has mentored his RadKEM research students to pursue careers in medicine, veterinary and doctoral research programs. His students have had extensive experience at working at state-of-the-art Department of Energy national laboratories, writing scientific papers published in such prestigious journals as *Environmental Science and Technology*, *Radiation Research*, *Journal of Physical Chemistry*, *Water Research* and *Environmental Chemistry*. Many of his students have presented their research in talks at national and international conferences, and obtained their own research funding from outstanding organizations including the Arnold Beckmann Foundation, CSULB's Women and Philanthropy, Phi Beta Kappa and the Orange County Water District. He also recently appeared as an expert in water and nuclear chemistry in the award-winning video series, *Understanding Chemistry in Your World*, by Coast Learning Systems.

By Dr. Eric J. Sorin,
Web Page Committee Chair

I am happy to announce that the new Department of Chemistry and Biochemistry website will, by the time of this publication, be fully functional and fully accessible to the general public. The Web Page Committee has spent considerable time redesigning the website to dramatically improve the overall visual appeal, organizational flow and ease of navigation. Most notably, users will now see a much stronger focus on the research taking place within the department and the sense of community that exists within our college.

Among the many changes that have been made, the new homepage now includes a modern flash banner with a continuously rotating panel that highlights areas of active research within the department. The homepage also dons a new "Department News" column and an interactive calendar that will minimize the amount of navigation needed to keep up with department, college and university events. The links menu has been replaced with a much more concise horizontal drop-down menu, thereby consuming less screen space and simplifying the navigation process. Within the "People" and "Research" menus, you will find several new options to access departmental information, including new categories to describe the research each faculty member is pursuing.

Our goals were simple: modernize the aesthetics of the website, make navigation simple and expose the Internet community to information on our academic programs, research activities and community atmosphere as accurately as possible. With many contributions and suggestions from members of the department, we feel we have accomplished these goals and look forward to the continued maturation of our new website, which serves as the international portal into the heart of our department. Please visit us at <http://chemistry.csulb.edu> and get to know the new department website!

Web Page Committee members are Drs. Paul Buonora, Vas Narayanaswami, Young Shon, Paul Weers, and graduate students Emel Adaligil and Tommy Neubauer.

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DEPARTMENT OF
**CHEMISTRY AND
BIOCHEMISTRY**

CALIFORNIA STATE UNIVERSITY
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1949

DR. LI
INORGANIC CHEMISTRY

The Li research group synthesizes and studies transition metal complexes containing nitric oxide, which have the potential to be used as medicines in smooth muscle relaxation, regulation of cardiac function, and cancer therapies.

Department | People | Academics | Research | Facilities | Events | Support | CNSM | CSULB

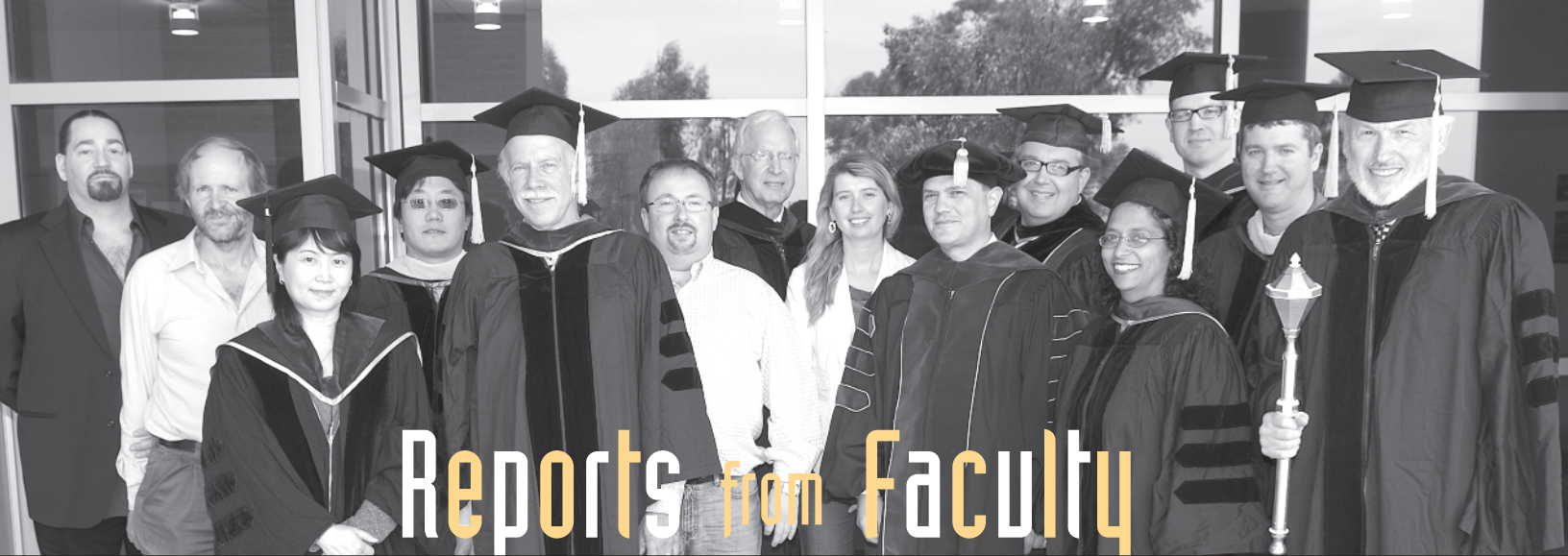


Photo by David J. Nelson

Dr. Roger Acey

There are several new faces in the group this year. Nolan Dunisch, Brent Wilkinson and Reyna Raya are the newest undergraduate students, and Aparna Shinde joined the group as a graduate student. Nolan and Brent are working alongside Paul Madera on the metallothionein project. Paul has been able to clone several variants of the protein, and Nolan and Brent are determining the optimal culture conditions for expression of the protein. Reyna and Aparna's projects involve butyrylcholinesterase. We are collaborating with Dr. Ken Nakayama's group to develop a class of cholinesterase inhibitors that potentially could



Photo by Victoria Sanchez

Standing from left: Joselyn Del Cid, Felisha Cage, Nolan Dunisch, Paul Madera, Dr. Roger Acey, Gwen Jordan and James Yand. Seated: Brent Wilkinson and Aparna Shinde.

be used in the treatment of Alzheimer's disease. Reyna is evaluating the inhibitory activity of these compounds, and Aparna is determining whether they are capable of inhibiting amyloid plaque formation. Joselyn Del Cid and Felisha Cage have been looking at butyrylcholinesterase in neuroblastoma cells and will begin looking at the enzyme in differentiating stem cells this summer.

I am very happy to report that Gwen Jordan, Simon Moon and Jim Yano are finishing up the last series of experiments for their M.S. degrees and are actively writing their theses. They are model department citizens, and I will

From left: Dr. Eric Sorin, Dr. Christopher Brazier, Dr. Lijuan Li, Dr. Young Shon, Dr. Jeffrey Cohlberg, Dr. Krzysztof Slowinski, Dr. Robert Loeschen, Dr. Kasha Slowinska, Dr. Paul Buonora, Dr. Marco Lopez, Dr. Vasanthi Narayanaswami, Dr. Brian McClain, Dr. Paul Weers and Dr. Tom Maricich.

be sorry to see them leave. They have been the cornerstone of the lab. Gwen's project has involved isolating the promoter sequence for the MT gene. Simon has been looking at changes in posttranslational modification of histone H1 during development. Jim has been involved in purifying a down-regulated transcription factor from macrophages.

Dr. Paul Buonora

In this year following my sabbatical, I have been focused on finishing up old projects and beginning new ones. With the renewal of the college's NIH-RISE grant, written with Dr. Marco Lopez of this department and Dr. Balwant Khatra of the Biological Sciences Department, I kicked off the fall semester recruiting freshman and sophomore students into the program. The RISE program supports the skills development of students who will pursue Ph.D.s in the biomedical sciences. As RISE Starters coordinator, I work with freshman and sophomore students to prepare them to enter into research in their junior and senior years. To add support to the college's development activities for those students who are not interested in biomedical careers, I worked with Drs. Chuhee Kwon from the Physics Department, Lora Stevens from Geology and Jen-Mei Chang from Math to write a proposal to the NSF under the S-STEM program to provide scholarship support to physical science majors with financial needs. Activities of the RISE Starters will be shared with the students from the S-STEM grant, which was funded by NSF in May.

On the research side, I have been reconstituting my research group since my return from sabbatical. Bryan Fiamengo, Crystal Jenkins and Jim Brady should all defend their respective M.S. theses by the time this newsletter is distributed. They have all worked on our studies related to the diversity-oriented synthesis from bicyclic- and tricyclic-lactams. I presented seminars at San Diego State University in December 2009 and at the Spring National ACS Meeting in March on our work related to correcting the mechanism of the cyclocondensation to form bicyclic- and tricyclic-lactams. Undergraduate students Ross Obenauer and Michael Kingham have participated in the project during the past year. This project is almost mined out and will be ending over the next year or two.

As the longstanding bicyclic-lactam project is phased out, we have begun a new project designed to provide a low-cost reagent for the synthesis of carbohydrates and pseudo-carbohydrates. Jose Guerro, a pre-veterinary medicine biology major, has moved this project forward along with Dao Ngo and Straun Phillips, a chemistry M.S. major. With the two Bridges to the Baccalaureate students, who will join the group in summer 2010, we hope to move to our first publications and grant applications in the fall.

While tight budgets are common and hinder our work every year, this year was extremely difficult with its lack of funding and furloughs. This added to my delight at receiving a \$1,000 donation from Dr. Ken Ishida to support my group's research work. A 1983 CSULB microbiology graduate who earned a minor in chemistry, Dr. Ishida works in the research labs at the Orange County Water District. His support has allowed us to purchase the materials needed to begin our new project.

Reports from Faculty

On a personal level, my wife, Sarah, and I took a little time to visit Seattle in June 2009 for the first time. While there, we took a four-hour glass-working lesson at an art glass foundry. It was my first time working glass at this level since my undergraduate scientific glassblowing class. It was fun and challenging, and we were able to make a few items shipped to us after annealing.

Dr. Shahab Derakhshan

In my research group, we intend to establish a broad, solid-state synthesis program, with the goal of discovering and characterizing novel compounds with desired physical properties for some specific applications. Accordingly, my research is focused on two different, but related, areas, namely energy related materials and magnetic materials.

The past year has been an exciting year for me as I designed the laboratory setup and eventually purchased and installed some of the major pieces of equipment and built others with great support from the CNSM science shop. I am glad to say that these pieces have now come together, and our lab is operational. Our materials preparation lab is located in MLSC 332, and our state-of-the-art powder X-ray diffractometer was installed in MLSC 302. I am very fortunate to have the opportunity to work with five very talented and enthusiastic undergraduate students in my lab. Alan Tran and Kenny Tran are trying to discover new materials with some interesting magnetic properties. Ryan Clark, Malinda Tan and Sophia Nguyen are searching for new functional materials with superior thermoelectric efficiency.

Another piece of exciting news for us was that my research proposal entitled "Design, Synthesis and Physical Properties of Some Novel Brownmillerite Compounds" was recognized for a Single Investigator Cottrell College Science Award by the Research Corporation for Science Advancement.

We have also started a collaborative research project with Dr. Sergio Mendez's group from the Department of Chemical Engineering.

Since my appointment at CSULB in August 2009, I have published two articles in peer-reviewed journals. Some of the work described in one of these articles, published in the *Journal of Alloys and Compounds*, was done at CSULB.

Dr. Tom Maricich

At commencement this spring, I was honored to be selected as grand marshal for



the College of Natural Sciences and Mathematics. I kept the graduates in line with my mace. My research group is continuing our studies of "Click Alkylations" by sulfonimides on various nucleophiles (Igor Izotov on phosphonic and phosphoric acids, Michael Fimbres on thiols, Holly Phung and Marilyn Ton on alcohols, and Francisco Rodriguez on new chiral sulfonimides). Francisco graduated this year top in his class and received both the Robert B. Henderson and Robert D. Rhodes Awards. He will begin his Ph.D. studies in organic chemistry at Vanderbilt University this fall. More details about our research can be found on my updated department website.

Another student (from the Food Science Department) is doing research on a project generated from my consulting activities as an expert witness. I have been retained on several cases involving severe scalp burns, which resulted from the exotherm of water in hydrogen peroxide with sodium metasilicate in hair bleaching powder. This happens when these chemicals are mixed into a paste and applied to the hair over the scalp. Sokrieth Sea is testing various mixtures at different temperatures to correlate the results and determine which commercial highlighting bleaches are hazardous and which appear to be safe.

On another level, I have been planting seeds of future chemists by making presentations at my grandson's second and granddaughter's third grade classes. The children performed hands-on experiments with sources of carbon dioxide and learned that the bubbles in cupcakes are filled with CO₂. By wearing placards of H, O and C, they held hands and demonstrated chemical reactions. Afterwards, some students said that they wanted to become chemists.

Finally, although this fall will be my last semester of formal teaching, I will continue to mentor students, develop my research projects, warn the public about hazardous

consumer chemicals and catch a few good fish in Sitka, Alaska (see photos on my webpage).

Dr. Steve Mezyk

In the past 12 months, the CSULB Mezyk RadKEMTM group has continued to focus on research, completing many old projects as well as starting endeavors in our new area of nuclear chemistry. Our efforts for this year resulted in 11 peer-reviewed papers and reports published, an additional nine papers accepted for journal and symposium publication, 24 conference presentations, and receiving nearly \$1.8 million in new grants from the Department of Energy and the National Science Foundation. This success was highlighted by my publication of five review articles, an invited expert talk at the ACSEPT nuclear reprocessing conference in Portugal and recent recognition by the university in my receiving the CSULB Provost's Award for Impact Accomplishment of the Year in Research, Scholarly or Creative Activities. It has truly been another amazing year.

As always, my hardworking group changed this year, with graduations and new students joining. Timothy Feliciano completed his final year with me this summer, finishing up his Beckman project on the radical-based removal of antibiotic metabolites from waters and graduating with his B.S. degree in biochemistry. He is currently applying for M.D./Ph.D. schools across the country. Thomas Neubauer completed his M.S. degree on the redox chemistry of sulfonamide antibiotics and has now started his Ph.D. degree at U.C. Riverside in solid-state NMR. Jonathan Kleinman also completed his M.S. degree on the roles of dissolved organic matter in advanced oxidation process treatment of chemically contaminated waters and is now back to full-time employment.

We will also be losing Tom Cullen and Andrea Hewitt at the end of 2010, when they complete their remaining courses. New undergraduate research students in the group are Jeremy Scheeler, who will be working on nitrosamine carcinogenesis kinetics, and Mathew Stephens, who will be studying the temperature-dependent kinetics of using radicals to remediate dry-cleaning fluid contaminated soils and waters. Two new graduate students have joined us: Charlotte Hirsch is investigating the radical chemistry involved in musk ketone (perfume components) removal from waters intended for reuse, and Hanqing Pan is looking at troposphere aerosol chemistry of nitrate and hydroxyl radical reactions with isoprene at low temperatures.

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Amidst all of these successes, there were several especially noteworthy achievements. One of the biggest was our collective success in obtaining scholarship funds so that my students were able to attend conferences with me, allowing them to give 13 oral and poster presentations at two American Chemical Society meetings in Washington, D.C., and San Francisco, as well as other national meetings in San Diego and Florida. Kimberly Rickman was awarded a Beckman Scholars national scholarship. She and Kimberly Johnston also got CSULB Women and Philanthropy scholarships, and four other students (Thomas Cullen, Andrea Hewitt, Delora Gaskins and Thomas Neubauer) received internal CSULB funding and scholarships for their research travel and efforts. Three other students received special recognition from the Chemistry and Biochemistry Department, with Garrett McKay being given the ACS Polymer Organic Chemistry (CHEM 320A & B) award, Edsel Abud receiving a Marsi undergraduate scholarship and Timothy Feliciano being acknowledged for his prowess in Analytical Chemistry (CHEM 451). Three of my students also received summer REU scholarships at Johns Hopkins University (Edsel Abud), Brandeis (Delora Gaskins) and University of Colorado (Garrett McKay). Lastly, I was privileged to have three of my students (Edsel Abud, Kimberly Johnston and Kimberly Rickman) accepted into the Phi Beta Kappa Honor Society.

My personal efforts during this period concentrated on obtaining research funding. Two grants this year (totaling the majority of my new funding) were from the Department of Energy for the investigation of the chemistry involved in the degradation of designer chemicals used for nuclear waste reprocessing. These grants were focused in the investigation of alpha radiation effects and are a collaborative effort between CSULB and U.C. Irvine, where we will be using their nuclear reactor, and Idaho National Laboratory. We will also be using facilities and the efforts of co-workers in France (Marcoule), Sweden (Chalmers) and Germany (Jeulich). Another grant obtained this year from the National Science Foundation was for the investigation of the impacts of natural organic matter on the large-scale treatment removal of pharmaceuticals from waters intended for reuse. This two-year effort is being performed in collaboration with the University of Colorado. All three of these grants will provide my students and me travel funds and access to national and international

laboratories to utilize their state-of-the-art equipment. Lastly, I was privileged to receive another personal donation of \$1,500 from Ken Ishida, directed to travel funding, which was used by several undergraduate research students to attend and present at a national ACS meeting.

With this focus on research, my teaching schedule was necessarily altered to only have classes in the fall semester. In 2009 I taught General Chemistry (CHEM 111B), trying to inspire the science majors of the future; Air and Water Pollution (GEOL 191), which I designed and taught to cover the major elements of general chemistry to environmental science and policy majors using real-world examples as well as excerpts from my research; and a Colloquium in Physical Chemistry (CHEM 595C), where six M.S. students summarized several research papers in the field of radical-based chemistry and gave a class presentation; in addition to my usual research-based courses of CHEM 695, CHEM 697 and CHEM 698. My CSULB service efforts were mainly concentrated on the Department Retention, Promotions and Tenure Committee. However, I also completed my expert consultant efforts as an environmental/physical/radiation chemist for an online telecourse Liberal Arts Chemistry textbook written by Nancy Gardner. We have recently learned that one of these online videos, entitled *Compounds: Opposites Do Attract*, won an international Gold AVA award, recognizing excellence in audio/video production as judged by the Association of Marketing and Communication Professionals.

In summary it was another amazingly successful year, and I am looking forward to many more to come.

Dr. Ken Nakayama

Our collaborative work with Dr. Roger Acey's group on the cholinesterase inhibitors has been very fruitful over the past six or so years. Drs. Eric Sorin and Katherine Kantardjiev (Cal Poly Pomona) have contributed greatly to the project through their expertise in computational methods. Every student in the group has also contributed to the progress made in this project. Carmen Castillo and Juan Guerrero, undergraduates I recruited from CHEM 323A, have worked very hard during 2009-10 on some organophosphorus inhibitor synthesis. Meanwhile, Omar Gallegos and Elise Van Fossen joined our research group in spring 2010 and are quickly familiarizing themselves with the lab work. Graduate student Astor Suriano is



Photo by Victoria Sanchez

From left to right: Omar Gallegos, Carmen Castillo, Elise Van Fosse, Astro Suriano, Dr. Ken Nakayama and Juan Guerrero.

making nice progress with the synthesis of chiral organophosphites. Ex-graduate student Ricardo Gallardo-Macias reports that he has completed his first year in the Ph.D. program in chemistry at Yale University and is doing well.

I have been involved in teaching the Advanced Organic Laboratory course (CHEM 420) since fall 2007. Every semester, I try to incorporate reactions from the literature into the course curriculum to give students an opportunity to experience "real-world" examples in the lecture and lab.

Dr. Vas Narayanaswami

By the time each of us in my group could say "Apolipoprotein E" the year was gone! It was eventful and fun, with one deadline after another. I do not remember any details except the fabulous time we had with the group at the beach on the eve of Halloween... We carved pumpkins and laughed and shrieked with glee at my pathetic attempt at carving a phospholipid bilayer. It truly was a ghastly piece of work that could send a shiver down Singer's and Nicholson's spines.

I was delighted to have two new students join my group last fall: Gursharan Bains, a grad student with a very positive attitude—her eternal optimism will serve her well in all her endeavors, and Darin Khumsupan, an undergraduate in biochemistry with a quirky sense of humor matched only by that of her brother's! We wrapped up the year with Panupon Khumsupan (PK), also a biochemistry undergraduate, presenting his biophysical work on the role of high-density lipoproteins containing apolipoprotein E (apoE) as potential "nanovehicles" to transport and deliver bioflavonoids of pharmaceutical and nutritional relevance in an oral format at the 2009 Southern California Conference for Undergraduate Research at CSU Dominguez Hills. Carlos Gallo and Max Amaya also presented their work at this meeting on the purification of recombinant rat apoE for stud-

ies related to the effect of secondhand smoke exposure on oxidative modification of apoE.

We kicked off the New Year on an excellent note with four manuscripts accepted for publication: one in biochemistry, where Arti Patel, a graduate student in biochemistry, was the first and PK was the second author, on fluorescence spectroscopic investigations of the lipid-binding domain of apoE. A second paper entitled "A new HDL mimetic peptide that stimulates cellular cholesterol efflux with high efficiency greatly reduces atherosclerosis in mice" was published in the *Journal of Lipid Research*. Arti and I were co-authors, contributing a biophysical analysis of the peptide to this multi-laboratory collaborative project. The third paper, an invited review article on helix bundle proteins, appeared in *Comparative Biochemistry and Physiology*, and the fourth publication, with one of my former collabora-



Front row from left: Panupon Khumsupan, Arti Patel, Dr. Vasanthi Narayanaswami, Gunsharan Bains. Back row: Ricardo Ramirez, Muhamman Rafay and Darin Khumsupan.

tors, which appeared in *Brain Research*, was on the protection offered by apoE against specific types of neurotoxicity.

Then started all the travel to regional and national/international conferences. Our lab was well represented at the CSUPERB Symposium in Santa Clara in January, where Arti was one of the finalists for the Don Eden graduate student research award for excellence in biophysical research. Arti and PK received travel awards from CSUPERB to present their findings at the Biophysical Society meeting in San Francisco in February. Arti was also one of two students from California to receive a travel award from the Biophysical Society. PK and Ricardo Ramirez, an undergraduate student in biology/physiology, gave a talk on flavonoid-bearing nanovehicles at the ACS Undergraduate Conference at Chapman University and at the ASBMB meeting in Anaheim. For my part, I attended the Biophysical Society, ASBMB and the American

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Bob Soukup Retires

Bob Soukup retired last December after 34½ years as the instrument and computer technician for the Chemistry and Biochemistry Department.

Soukup was born in Long Beach and graduated from Poly High School. He dabbled with electronics in high school and worked in a TV store. Soukup served in the U.S. Navy from 1966-70 and received training at the Navy school in Vallejo in computer hardware (which used vacuum tubes in those days) and in encryption and de-encryption, as well as received training in electronics at the Navy school on Treasure Island in the San Francisco Bay. He served off the coast of Vietnam and in the Mekong Delta on ships that fired shells in support of the infantry.

After leaving the Navy, Soukup continued to work at the TV store while enrolling in the program leading to a B.S. degree in industrial technology (now industrial engineering) at CSULB. He graduated cum laude in 1974 and continued to work in TV electronics. He also took courses related to biomedical engineering at the City of Hope and at Cerritos College, which gave him a familiarity with scientific instruments. In 1976, the CSULB Department of Chemistry and Biochemistry hired Soukup to maintain the Perkin-Elmer R12 60 MHz NMR.

According to Soukup, there was not enough work with the NMR to keep him occupied full time, so he "found other things to do." As several generations of faculty and students know well, this meant that Soukup was the person to go to when any piece of equipment stopped working. Whether it involved mechanical devices, vacuum pumps, balances, refrigeration units or scientific instruments with sophisticated electronics, Soukup was almost always able to either fix the problem or do the required troubleshooting so that the right replacement part could be ordered. Armed with a voltmeter and a soldering gun, Soukup was often able to identify and replace a faulty component of a circuit board that would have cost thousands of dollars to replace.

As the department entered the computer age in the mid-1980s, Soukup became the department's computer technician as well. He designed and maintained the department's Web page and server, kept all the department computers smoothly connected to the network and served as the all-purpose computer doctor.

Soukup met his wife Elizabeth when she was a microbiology major at CSULB in the 1980s. His daughter, Jennifer, is now 21. The Soukup family spends time at their home in Long Beach and at a second house in Idyllwild.

In retirement, Soukup plans to do deferred maintenance on both houses and to spend time researching his family genealogy and visiting "long-gone relatives" in other parts of the country. He also plans on doing some woodworking, learning the art of inlay and marquetry at which his father was an expert. In a recent e-mail, Soukup said, "Retirement is great! I'm actually busy from dawn to dusk, more so than when I was working, and finding more things to do all the time."



Photo by David J. Nelson

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Heart Association meetings; in the latter two, our work on the effect of secondhand smoke exposure that is funded by the Tobacco-Related Disease Research Program (TRDRP) was presented as posters.

The outstanding work done by the students has earned them awards and scholarships. Arti received a two-year TRDRP Cornelius Hopper Diversity Supplement Award for graduate students. Ricardo Ramirez was selected for a Children's Hospital Oakland Research Institute (CHORI) NIH-funded Student Summer Research Program scholarship to carry out his research training in my lab at CSULB. Gursharan is funded by a recently obtained two-year sub-contract on the TRDRP grant. Last, Arti was awarded the Allergan Graduate Summer Research Fellowship to continue her research project over this summer in my lab, and Darin received the NHK Laboratories, Inc. Biochemistry and Organic Chemistry Award.

It was with a heavy heart this spring that I bade farewell to all the undergraduate students from my class and my research group, who were moving on in pursuit of their dreams. In particular, we will miss PK and his wry sense of humor, as he will be returning to his home country, Thailand, with a plan to study phytochemicals of biomedical relevance.

Dr. Michael Schramm

Molecular recognition is the study of how and why molecules interact. At its essence lies the attraction of molecules at energy levels "weaker than covalent." Hydrogen bonding, metal coordination and the hydrophobic effect cover some of these possible forces. In nature, we find countless crucial interactions predicated on noncovalent interactions such as enzyme-substrate recognition, DNA-protein binding and ion-receptor transport. From a synthetic point of view these principles have strongly influenced areas of research from drug design to materials science to molecular self-assembly. Our research uses molecular recognition as a design principle to develop new synthetic molecules that are compatible with and capable of regulating biological function.

Current efforts in the Schramm research group utilize the principles of molecular recognition to solve chemical problems. We are actively preparing a 1,000 member small molecule library of alpha-helical peptidomimetics. This collection of compounds is designed to target a spectrum of protein-protein interactions based on the alpha-helix.

In generating these molecules, we hope to have a collection of compounds suitable for modulating several biological pathways. Our first screens will target the p53-HDM2 and BAX-Bcl protein-protein recognition events that are a cornerstone of study for the development of new chemotherapeutics. Jenny Pham and Michelle Park have been working on this project for over a year, and we have enlisted the efforts of Lisa Garcia, Monica Royer, Payal Patel and this summer's two volunteers, Auvid Mirhosseini (UCSD) and Ashely Kim (Cypress High School).

Jenny and Michelle presented their work at the 2009 CNSM poster session, and Michelle also presented her work at an ACS Undergraduate Research Conference in April 2010 at Chatman University. I presented our work in my first faculty seminar at CSU Northridge in December 2009. In December 2010, I will give an oral presentation at Pacificchem on this work in a symposium session on protein, peptide and peptidomimetic design.

A second project utilizes molecular recognition as a tool to develop synthetic small molecule receptors that we hope will one day shuttle molecules of our choosing across biological membranes. We have prepared a collection of fluorescently labeled small molecules that are complementary for a synthetic receptor known as a cavitand. Cavitands sequester these guests when embedded in phosphocholine micelles. We are now turning our attention to vesicle systems that are composed of a lipid bilayer. Utilizing fluorescent microscopy, we are tracking the migration of host and guest. Through synthesis, we aim to tune these molecules to control their localization and function. Chidi Umeh and Katie Feher are working on this project diligently.

Finally, efforts to support the membrane transport project involving measuring the effects of cavitands on micelles and vesicles are being explored by Massiel Trujillo and Mareya Youssef, respectively.

Massiel had a very productive year as both a McNair Scholar and RISE fellow. Massiel presented her work at the McNair Scholars Research Symposium in July 2009, she was one of three CSULB students to be selected to present at the National McNair Symposium at U.C. Berkeley in August 2009 and she competed in the CNSM student undergraduate research competition in November 2009. Massiel published her findings in the *CSULB McNair Scholars Journal* in spring 2010. Finally, Massiel will be beginning her Pharm.D. degree at UCSF this fall!

Brittany Maynard continues to explore expanding the internal dimensions of resorcinate cavitands using a unique approach. Her work this summer was supported by a Monahan Award.

I completed my first year of teaching CHEM 320A/B and began my second round this spring. Organic chemistry remains a delight to teach, given so many bright, talented and dedicated students in our department. Quite to my surprise I was honored by them as the recipient of the Mayfield Award for Outstanding Faculty Member in the College of Natural Sciences and Mathematics 2010. This award was completed unexpected to me and quite humbling—to think that students thought so highly of me has only motivated me to continue to develop as an instructor and has pushed me to try new things to motivate future students. Organic chemistry remains a very challenging class for many students—a time honored tradition, it seems. Its place as a cornerstone of subsequent courses gives it this unique distinction, so keeping organic chemistry up to date, inspiring and enlightening remains its major challenge to me.

This past year, I was able to travel to Japan to visit a former colleague, professor Tetsuo Iwasawa of Ryukoku University, a surprisingly similar college to our own! On this trip, I also had the pleasure of visiting Ki no Kenkyukai to continue my studies of Shin Shin Toitsu Aikido and Shin Shin Toitsu Do. I look forward to returning in future years for the intellectual challenges both my colleague and instructors present.

Dr. Young Shon

Our research continued on the design, synthesis and characterization of nanoparticle-hybrid materials. During the past year, we also started to obtain some positive results for the application part of our research. Overall, I think it was the most productive year in terms of research results since I came to CSULB. A total of four research papers were published in this past year. An article entitled "Direct Assembly of Photosensitive C60-Gold Nanoparticle Hybrid Films" was published in *ACS Applied Materials & Interfaces*, a new ACS journal focusing on important developments in technological applications of novel materials. An undergraduate student, Tuong Dinh, is the only co-author of this article. Another research paper, entitled "Stability of Tetraoctylammonium

Bromide-Capped Gold Nanoparticles: Effects of Anion Treatments," was published in *Colloids and Surface*; A. Shaeleen Chuc and Parfait Voundi, both undergraduate students, are the only other co-authors. Two other papers were the results of collaboration with Dr. Kwon's group in the Department of Physics or Dr. Slowinski's group in our department. Two undergraduate students, Nicole Choi and Michael Aquino, contributed to the research and are listed as co-authors. In addition, we recently submitted a paper on the catalytic property of Pd nanoparticles. A graduate student, Elham Sadeghmoghaddam, discovered that Pd nanoparticles are a good and selective catalyst for the isomerization of allyl alcohol to propanal.

Linh Tran, another graduate student, is getting closer to the synthesis of his target final product, water-soluble nanoparticle-cored dendrimers. Erick Ovalle and Wendy Chaing also studied the synthesis of monodisperse nanoparticle-cored dendrimers in the past year. Wendy received the American Institute of Chemists Undergraduate Award this year. Besides Elham, Hanmo Gu and Zachariah Mel investigated catalytic isomerization and hydrogenation reactions using Pd nanoparticles with different structure and composition. Michael Aquino, Leeann Korprapun, Josephine Yee and Paul Vaccarello participated in the preparation of Au, Ag and AuAg nanoisland films for optical sensing of biomolecules. Parfait Voundi and Phuong Nguyen studied the conductivity of different nanoparticle films upon exposure to volatile organic compounds. Parfait received a CSU LSAMP Scholarship for the 2009-10 academic year. Besides Wendy, Erick, Hanmo, Michael, Parfait and Phuong are leaving my research group after completing their degree programs in this past year. Several other students are also getting close to the completion of their course work. Therefore, it is anticipated that we will have a lot of changes over the next year, and I am certainly looking forward to the challenge.

Dr. Kris Slowinski

With support from the Research Corporation and ACS-PRF, my laboratory continues to perform research on electrical properties of nanostructures. We have published a paper (in collaboration with Shon's group) on the relative efficiencies of electron tunneling across self-assembled monolayers (SAMs) of n-alkanethiols and n-alkaneselenols, (E. Adaligil, Y.S. Shon, and K. Slowinski, *Langmuir*, 2010, 26 (3), pp 1570-1573) and

another paper (E. Adaligil, and K. Slowinski, *J. Electroanal. Chem.*, 2010, in press) describing unusual effects of aliphatic alcohols on long-range electrochemical electron transfer across alkanethiol monolayers. We continued our research on electrical properties of DNA and published a paper (in collaboration with Mike Hill at Occidental College) on spatially resolved electrochemical detection of DNA lesions using gold electrodes modified with DNA monolayers (W.J. Hammond, J. Arndt, T. Nguyen, K.U. Slowinska, C. Jackson, H.A. Burgoyne, M.G. Hill, and K. Slowinski, *ECS Transactions*, 2009, 16 (38), 55).

Two graduate students left the group this academic year. Bill Hammond graduated in January and is currently attending medical school at Boston University. Emel Adaligil graduated in June and is currently enrolled in a Ph.D. program at Tufts University. In May 2010, I was awarded an NIH-SC3 grant for the project titled "Biosensing in electrochemically controlled nano-junctions." The grant will provide \$75,000 per year for four years and will allow my group to continue our research on the conductivity of DNA. My group now consists of eight undergraduate students: Sara Agahi, Jason Barca, Jason Chang, William Do, Andrew Nguyen, David Ro euth, Jonathan Thang and Tri Tran, who are eagerly looking forward to a very productive summer.

I have served as department vice-chair for the last two years and collaborated with department Chair Jeff Cohlberg on several projects aimed at improving the quality of instruction in our department. We have developed a formal departmental policy concerning lecturer evaluations and established a new departmental award given annually to an outstanding teaching associate. I have proposed to develop standard course outlines for the general chemistry sequence (Chem 101, 111A, 111B) to ensure uniform standards in multiple section courses (the outlines were developed and approved by the Freshman Chemistry Committee). I also organized mid-semester teaching evaluations for all teaching associates. These evaluations give our teaching associates an important insight into what and how students are learning. Moreover, the mid-semester evaluations provide students with an opportunity to anonymously communicate with TAs about the course.

Following the evaluations, the graduate students meet with me individually, if necessary, to discuss their evaluations and to sug-

gest possible ways to improve their teaching effectiveness. I have also organized a new workshop for teaching associates who are scheduled to teach courses in the department. The workshop is held every semester and is devoted to hands-on experience in classroom activities in general chemistry. Students are asked to lead a 15-minute mock discussion session, which is videotaped. The taped presentations are analyzed and discussed.

Finally, I spent a significant amount of time working alongside Drs. Brazier, Buonora, Li and Weers on a new departmental RTP policy, and I am very glad that our proposal was approved almost unanimously.

Dr. Eric Sorin

Having just completed my third year at CSULB, the past 12 months have provided me with some new and exciting experiences. First and foremost, we submitted our first NIH grant proposal (co-authored by students Sarav Patel and Mona Bakhom) and our lab's first two manuscripts. While our grant was not funded, our manuscripts were both published in early 2010. The first, a study of the accuracy of molecular models applied to helical peptides and proteins, was published in *PLoS ONE*. The second, which focuses on the folding and equilibrium dynamics of a small RNA structural motif, was accepted as a featured article in *Nucleic Acids Research*.

These articles were co-authored by my first group of graduating students, including biochemistry major Allison DePaul, chemical engineering major Erik Thompson, mathematics and statistics major Kristin Haldeman and biochemistry major Sarav Patel. Allison, who gave her first oral presentation at the regional ACS undergraduate research conference this spring, is headed off to the Pharm.D. program at UC San Francisco, and Kristin is thrilled to be entering the biostatistics Ph.D. program at UC Davis. Sarav, who presented a poster at the regional AAAS conference in Oregon in June, has been accepted to the M.D. program at U.C. Irvine. Erik is continuing his participation in the Sorin lab as he enters the local job market. It is truly difficult to watch these students, and now close friends, leave our lab and our community, but it is also exhilarating to see them realizing their dreams. I couldn't be more proud of my first crop of CSULB undergraduates!

Indeed, Sorin lab students have had a very successful year: Erik won this year's Hypercube Award in Computational Chemistry; Yi An

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Publications for Department Faculty

Dr. Roger Acey

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Dr. Xianhui Bu

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Awards & Scholarships

Chemistry and Biochemistry Students 2010

Endowed Awards

Robert B. Henderson Award

Dr. Robert B. Henderson, a distinguished scientist and teacher of organic and general chemistry, was a founding member of the Department of Chemistry and Biochemistry and taught from 1955-82. He served as chair of Physical Sciences and associate dean of the college. This award is given to a student best exemplifying Henderson's scholarship and commitment to the profession of chemistry. This year, two awards of \$2,000 were presented to **Francisco Rodriguez** and **Andrea Hewitt**.



Andrea Hewitt



Darin Khumsupan

distinguished teacher of physical and general chemistry. **Jessica Servin** was named the recipient of the \$1,000 Stern Award for 2010.

NHK Laboratories, Inc. Biochemistry & Organic Chemistry Award

NHK Laboratories is a family-owned, private label contract manufacturer of vitamins, minerals, herbs, nutritional supplements and over-the-counter pharmaceuticals. NHK operates two facilities in Santa Fe Springs, Calif., with certified "A" ratings under the NNFA Good Manufacturing Practices program and the NSF GMP Registration, as well as a subsidiary company, NHK Chemical Corporation. Along with the \$1,000 NHK scholarship, the recipient also has the opportunity to complete a course-credit internship at NHK's Santa Fe Springs laboratory. This year's recipient is **Darin Khumsupan**.

Louis M. Perlgut Scholarship

Dr. Louis M. Perlgut, professor of biochemistry in the department from 1965-82, taught the biochemistry courses for both science majors and nursing students, and supervised both graduate and undergraduate research. Dr. Perlgut served as the first graduate adviser for the M.S. program in biochemistry and was largely responsible for launching the program. Upon his death in 2003, his family established this scholarship to defray the tuition expenses of a graduate student in biochemistry. Donations to the Perlgut Scholarship fund can be made through the Community Foundation of Tompkins County (N.Y.). This year, a \$1,000 scholarship was presented to **Ryan Kemp**.

James F. Myrtle Graduate Fellowship

This award has been established by the department master's alumnus, Dr. James Myrtle ('67), in honor of his CSULB biochemistry professor, the late Dr. Donald Simonsen, whom Dr. Myrtle described as "dynamic, relentless, untiring, perspiring and particularly inspiring," and whose teaching "lit the path I subsequently took." That path led to a Ph.D. in biochemistry and organic chemistry from U.C. Riverside; a 27-year career in pharmaceutical and medical device product development, including development of the PSA test for prostate cancer; and subsequently teaching chemistry. The recipient of the \$1,200 award is **Yi An**, a graduate student in Dr. Eric Sorin's lab.

Fred H. Dorer Research Scholarship

The Dorer Undergraduate Research Scholarship has been established by CSULB alumnus Dr. Fred H. Dorer, who received his B.S. degree in chemistry in 1961 and his doctorate in chemistry from the University of Washington in 1965. Dr. Dorer worked as a research chemist for Shell Development Company before joining the CSU, where he has served six different campuses in 42 years as both professor and provost, in addition to a stint as associate program director for chemical dynamics at the National Science Foundation. In 1991, he was named a Distinguished Alumnus of the College of Natural Sciences and Mathematics. The winner of the \$1,250 scholarship is **Duc Le**.

Kenneth L. Marsi Scholarship

The Kenneth L. Marsi Scholarship was established by faculty, staff, family, friends and former students of Dr. Kenneth L. Marsi on the occasion of his retirement in 1996. Dr. Marsi was a distinguished scientist, teacher of organic chemistry, and served superbly as department chair for 21 years. He passed away in 2005. The \$2,000 scholarships are used to defray registration fees of outstanding junior and senior chemistry or biochemistry majors. This year's scholars are **Edsel Abud**, **Jason Barca** and **Tuyen Tran**.



Edsel Abud



Ryan Kemp

McAbee-Overstreet Fellowship

The McAbee-Overstreet Fellowship recognizes a graduate student for excellence in scholarship and commitment to research. It was established by a donation from Cathie Overstreet, who received her M.S. degree in biochemistry at CSULB in 2004 under the supervision of Dr. Doug McAbee and went on to a Ph.D. in molecular biology at UC Irvine. This year, an award of \$1,780 was given to **Paul Madera**, a biochemistry graduate student working with Dr. Roger Acey.



Jason Barca



Yi An

Michael Monahan Fellowship

The Monahan Award was established through a generous bequest from Dr. Michael Monahan, an alumnus of our department who received his B.S. in chemistry in 1963 and his Ph.D. in physical organic chemistry in 1968 at U.C. San Diego. He was a distinguished scientist and member of the faculty at the Salk Institute and subsequently a senior research scientist at Beckman Instruments. Dr. Monahan was also the founder and president of California Medicinal Chemistry Corporation. In 1985-87, following his retirement, he served as an adjunct faculty member in the Department of Chemistry and Biochemistry. According to his will, the income from his bequest is to be used to support student research in the department. This year's award of \$1,500 was presented to **Brittany Maynard**, a B.S. biochemistry student working with Dr. Michael Schramm.



Paul Madera



Duc Le

Photos by Victoria Sanchez

David L. Scoggins Award

This award memorializes David L. Scoggins, a 1968 B.S. chemistry graduate of CSULB and a graduate student and teaching assistant in the Department of Chemistry at the time of his death in 1969. The award recognizes outstanding scholarship and promise by a graduating chemistry or biochemistry student who intends to pursue a career in one of the health-related professions. The Scoggins scholar this year is **Timothy Feliciano**.

John H. Stern Award in Physical Chemistry

The Stern Award, consisting of a cash prize, is given in memory of Dr. John H. Stern, internationally known for his work in solution thermodynamics and author of many publications in that field. The award was established by colleagues, former students and friends of Dr. Stern, who was a member of the faculty from 1957-87 and a

Subject Area Awards

Freshman Chemistry Award

Aaron Joffe

Spyros Pathos IV Award

Jeremy Scheeler

Inorganic Chemistry Award

Trina Tran

Organic Chemistry Award

David Rudd

Merck Award in Organic Chemistry

David Rudd

Biochemistry Award

Joe Salcedo

John H. Stern Award in Physical Chemistry

Jessica Servin

Analytical Chemistry Award

Timothy Feliciano



Aaron Joffe



Jeremy Scheeler



Trina Tran



David Rudd



Joe Salcedo



Jessica Servin



Timothy Feliciano

Special Departmental Awards

Robert B. Henderson Memorial Scholarship

Andrea Hewitt, Francisco Rodriguez

American Institute of Chemists Baccalaureate Award

Chemistry–Wendy Chaing

Biochemistry–Panupon Khumsupan

American Institute of Chemists Graduate Award

Chemistry–Thomas Neubauer

Biochemistry–Judith Valle

David L. Scoggins Memorial Award

Timothy Feliciano

Toni Horalek Award

Alexandria Brooks

Hypercube Award

Erik Thompson

M. Monahan Memorial Summer Research Fellowship

Brittany Maynard

Kenneth L. Marsi Award

Edsel Abud, Jason Barca, Tuyen Tran

McAbee–Overstreet Award

Paul Madera

Louis Perlgut Scholarship

Ryan Kemp

Outstanding Teaching Associate Award

Heather McKinney

Allergan Undergraduate Summer Research Fellowship

Arti Patel

James F. Myrtle Graduate Fellowship

Yi An

Fred Dorer Undergraduate Research Scholarship

Duc Le



Wendy Chaing



Panupon Khumsupan



Judith Valle



Alexandria Brooks



Erik Thompson



Brittany Maynard



Tuyen Tran



Heather McKinney



Nabilah Ali



Allison DePaul



David Truong



Emel Adiligil

Departmental Honors

Undergraduates

Nabilah Ali, Allison DePaul, David Truong

Graduates

Emel Adiligil, Van Buzzo

College Awards

Graduate Dean's List of University Scholars & Artists

Thomas Neubauer

Robert B. Rhodes Award

Francisco Rodriguez



Thomas Neubauer



Francisco Rodriguez



Van Buzzo

Photos by Victoria Sanchez

Alumni News

If you enjoy reading news about other alumni, please send us updates about yourself so that we can include them in the next newsletter.

1962

Robert Hutchins (M.S., chemistry) writes, "I retired from Drexel University last year after 40 years. I thoroughly enjoyed my years at CSULB (and I met my wife there!)."

1964

Gary Hathaway (B.S., chemistry) writes, "I graduated in February 1964 and got my first publication with Dr. Roger Bauer. With Dr. Bauer's encouragement I applied for and was accepted to two graduate schools. I chose U.C. Davis and completed my Ph.D. in comparative biochemistry (in under three years, a record which I believe still stands) thanks in no small part to my excellent training at CSULB.

"I eventually went on to Caltech as director of the Protein and Peptide Micro-Analytical Laboratory. There, with no formal grant support, I published eight journal articles and received a patent on the protein chemical modification process, which I named Chemically Targeted Identification (CTID). I directly attribute this and other research to Drs. Donald Simonson and Roger Bauer's biochemistry classes. I retired with 40 refereed publications, and for my last seminar, I presented this and other data at CSULB in tribute to those specific lessons learned from these two teachers.

"Ken Marsi's organic mechanisms course certainly didn't hurt my career in biochemistry, either, and I suspect my choice of a biophysics minor was greatly influenced by Gene Kalbus' laboratory in analytical chemistry, particularly the power of differential measurements. I will always be grateful to all my professor/teachers at CSULB."

1968

Roger Meyer (B.S., chemistry) writes, "I graduated in summer 1968 and began working for Stuart Pharmaceuticals in Pasadena. I began working with the Technicon Autoanalyzer and presented two papers based on my work in New York City. In 1971, I transferred to Allergan Pharmaceuticals. Allergan was a small company with only \$1 million in sales the year before. Allergan was a great choice, and I grew as the company grew, finally becoming a senior scientist in the Analytical Lab Group. I published scientific papers of my work in *J. Pharm. Sci.*, and many of my methods were adapted by the USP. I retired in 1997 to pursue my second passion of growing exotic fruiting plants."

1972

Chris Appleton (M.S., chemistry) writes, "My wife and I are still learning how to behave as retired people. Against our friends' advice, we are moving to Mesa, Ariz., from Santa Barbara, Calif., to be closer to children and explore the natural wonders of the Southwest. The new passion for me is geology and having a chemistry education is helping me to appreciate and understand this new interest. Our plan is to return to California in about three years."

1976

Chris Angeletakis (B.S., chemistry, 1976; M.S., chemistry, 1978) now works through a consulting company, Proteas Technologies, which deals with the design of new biomaterials mostly for dental applications. Of particular interest are biocompatible adhesives and silicones.

1979

Pat McKay (M.S., biochemistry) writes, "I just (literally) celebrated my 30th anniversary at Genentech. It's hard to believe that much time has passed since I graduated from CSULB! I'm still working in our Process Development Group and have had the opportunity to be a member of various teams throughout the years that have produced the biopharmaceuticals Herceptin, Pulmozyme, Avastin and Lucentis. I have taught an evening chemistry class (Health Science Chemistry) at Skyline College since 1998."

1985

Joy Bonde (B.S., chemistry) attended pharmacy school at USC and is currently clinical operations manager of the inpatient pharmacy at Saddleback Memorial Medical Center.

1990

Miki Aurang-Csintalan (B.S., biochemistry) writes, "I worked in Dr. Cohlberg's lab from 1990-91 doing neurofilament research before heading off to medical school. I graduated in 1995 with a medical degree, completed a residency in internal medicine and practiced for Kaiser Permanente for about 11 years, then decided to work at UCI Student Health Center, where I have been since fall 2009. I enjoy receiving the annual Chemistry Department newsletter."

1992

Daniel Bernier (B.A., chemistry) writes, "I graduated in 1992, doing some undergraduate research with Dean Jensen. After an M.S. at UCI, I received my Ph.D. from UCR in organic synthesis (thanks to Dr. Nakayama for a challenging and interesting year of undergrad

O-Chem). I have been teaching organic chemistry full time at Riverside City College for the last six years. This year, one of my top students is a former fine arts major from CSULB who saw the light. My parents still live across the street from CSULB, and my wife and our daughters visit every month."

1993

Michael Manneh (B.S., chemistry) writes, "I graduated from CSULB in summer 1993. Back then, I was a foreign student (F-1 visa) from Lebanon and did not have legal paperwork to remain and to work in the U.S. So I went back to Lebanon to work for my father in the food business at a sauce and beverage manufacturing plant called Tripak Food Industries, S.A.L. I started as a quality assurance supervisor and product development/R&D manager from 1993-02. During that time, I enrolled at the American University of Beirut (AUB) to pursue graduate studies in food technology. I was a part-time student working and studying. In March 2002, I got my M.Sc. in food technology from the Department of Agriculture and Food Sciences at AUB. I was promoted to production manager at Tripak in summer 2002. In 2004, I applied for my U.S. residency and got my Green Card in October 2004. I left Tripak in summer of 2005 and permanently moved to Irvine, Calif.

"In July 2007, I got a job as a senior food technologist at CKE Restaurants, Inc. in Ontario, Calif., and have been in this position since then. My task has been to make CKE food specifications, to monitor the quality of incoming shipments based on statistical sampling plan and lab testing, to supervise lab test procedures, to make new lab test methods using AOAC, to audit food manufacturing plants' HACCP/SOP plans and to closely work with the CKE Purchasing Department and new prospective vendors for CKE Restaurants during annual bids. I love this job because it gives me the opportunity to understand the physicochemical and the microbial changes of a wide range of food items...and I get to eat a lot of food for FREE!

"Thank you for your kind hospitality and reception you bestowed upon me during the 50th Anniversary Alumni Reunion Banquet on April 17. It was a great pleasure and honor meeting with you and with all the new and old faculty and graduates of the CSULB Department of Chemistry and Biochemistry."

Continued

Alumni News

1995

Thang Dinh (B.S., biochemistry) is now a research scientist with Allergan Pharmaceuticals in Irvine and received awards for the "Best Patent of the Year" in 2007 and 2010.

2001

Liz De Selm (B.S., biochemistry, 2001; M.S., biochemistry, 2004) is currently working at EMD Serano in their Billerica, Mass., facility doing GPCR work in the cancer research area. She completed work on two patents in late 2009 and early 2010.

2004

Jennifer Guzzo Latiff (B.S., biochemistry/chemistry) writes, "I attained my M.M. in percussion performance and my teaching credentials at CSULB. I met my husband Hamid on my Fulbright grant in Trinidad and have now been married two years. I am currently teaching high school chemistry and biology in Cerritos and direct a high school steel pan program in Lakewood."

Trina (Howard) King (B.S., biochemistry) is teaching eighth grade physical science at Carmenita Middle School in Cerritos. She is working on her final credential and stops into the department from time to time.

2006

In May 2010, **Melissa Flores** (B.S., chemistry) completed her Ph.D. at the University of Pennsylvania in Philadelphia. Her work with Dr. Jeffrey Bode, which involved in part the chemoselective protection of alpha-ketoacids, was published in *Organic Letters* in the spring.

2008

Casandra Cox (B.S., chemistry) is in the Ph.D. program in chemistry at MIT. She writes, "Massachusetts is nice. In my spare time I go hiking in the White Mountains in New Hampshire or go to beach towns in Maine for lobster and lighthouse sightings. After getting my Ph.D., I would like to get into consulting for environmental policy."

Christine Bradford (B.S., biochemistry) writes, "I am currently three days away from sitting my second-year preliminary exam at the University of Wisconsin-Madison in the Ph.D. program in biochemistry. I am in the laboratory of Dr. Ronald Raines and am looking at the development of small molecules that can be used as internalization aids. I am trying to understand some of the spatial and electronic considerations that can affect the internalization of molecules that specifically take advantage of non-specific cell surface interactions to get inside the cell. For the last year and a half, I have been exclusively doing organic synthesis, particularly metal catalyzed cross coupling. I have also even dabbled in computation with the help of one of my lab mates. I will eventually be working with polymers, doing cell culture as well as

protein expression and purification. My project uniquely integrates technical aspects from several disciplines, making it both exciting and challenging.

"Besides working in the lab, I am enjoying Madison and its beautiful seasons. Spring came early this year, and everything is beginning to explode in a colorful symphony that will soon complement warmer temperatures that should arrive in a month or two. I take advantage of our local farmer's market, which is one of the largest in the country, and do lots of cooking. When it's warm enough, kayaking on the lake is always enjoyable."

Joseph Badillo (B.S., chemistry) has advanced to candidacy in the Ph.D. program at U.C. Davis. He earned an NSF Graduate Research Fellowship in May 2010. This will provide him with support for independent research through the next three years of graduate study.

Margaret Brown (B.S., chemistry) is currently working in the Ph.D. program at the University of Maryland.

Iqziar (Angela) Bustamante (B.S., chemistry) landed an inside sales position in the Medtronic diabetes division. She transferred to the San Antonio office in late 2009.

2009

Furkan Senal (M.S., biochemistry) is employed as a protein biochemist at Amgen.

M.S. Theses

Emel Adaligil

"Electron Transfer through Self-Assembled Monolayers of Alkaneselenols and Alkanethiols on Mercury Electrode"
Research Advisor: Dr. Kris Slowinski

Aynur Bakirci

"Proteomic Analysis of Hepatocyte Proteins in Response to In Vivo Iron Overload"
Research Advisor: Dr. Douglas McAbee

William Hammond

"Scanning Electrochemical Microscopy of DNA Monolayers"
Research Advisor: Dr. Kris Slowinski

Wei Liao

"The Epitope Specificity of the Human Anti-Candida Albicans Antibody M1g1"
Research Advisor: Dr. Mason Zhang

Thomas Neubauer

"Absolute Free-Radical-Induced Oxidative and Reductive Kinetics and Degradation Efficiencies of Sulfa Drugs in Water"
Research Advisor: Dr. Stephen Mezyk

Stephani Ngo

"Analysis of the Structure and Function of CAAP, a Chloroplast-localized Serine Peptidase Using Site Directed Mutagenesis of the Predicted Dimerization Domain"
Research Advisor: Dr. Judith Brusslan

Merve Oztug

"Characterization of Apolipoprotein III/Lipopolysaccharide Complexes"
Research Advisor: Dr. Paul Weers

Judith Valle

"Quantification of Cross-Linking in Collagen Modified with Gold Nanoclusters"
Research Advisor: Dr. Kasha Slowinska

Tien Viep

"O-GlcNAcylation of Glycogenin and Its Effects on Glycogen Synthesis"
Research Advisor: Dr. Balwant Khatra

Staff News

Buddy Saxon, administrative support coordinator (ASC), left his position in late May. Buddy moved to Modesto, Calif., where he and Delia Padilla were married. The couple followed their wedding with a European tour for their honeymoon. Buddy served as a Department of Chemistry and Biochemistry administrative support assistant (ASA) from 2002-05. He took a year's leave of absence, returning in 2006, to serve briefly in the ASA position and then as ASC from 2006 to this year.

Irma Sanchez, who had served as ASA in the department since 2005, was selected as the new ASC. Irma is a native of Long Beach who worked for the CSULB Foundation for three years before coming to the Chemistry and Biochemistry Department.

Tung Trinh became the department's new computer technician in December 2009. Tung grew up in a rural area of Vietnam and emigrated to the U.S. in 1979. He received both B.S. and M.S. degrees in electrical engineering at CSULB. Tung worked for the Mechanical Engineering and Electrical Engineering Departments and then transferred to the computer office of the College of Natural Sciences and Mathematics in 2003, where he worked until assuming the position in the Department of Chemistry and Biochemistry.

Photo by David J. Nelson



From left: Dr. Michael Schramm (adviser), Carissa Campos, Dr. Brian McClain (adviser), Michelle Stadick, Marina Zeledon and Jason Barca.

Student Members of the American Chemical Society

By Dr. Brian L. McClain

SMACS is wrapping up another successful year that included touring the THUMS oil project in the Long Beach Harbor, sending students to an undergraduate conference, taking part in the Alumni Reunion Banquet and hosting the student/faculty coffee and donut social hour.

During the fall semester, treasurer Marco Martinez organized a trip to tour the THUMS oil islands in Long Beach Harbor. This was a unique opportunity for the club to see how modern oil extraction is performed at one of the premier sites in the world in an environmentally friendly and aesthetically pleasing way. SMACS students learned about the state-of-the-art closed-cycle irrigation system as well as the use of palm, oleander, sandalwood, fig and acacia trees for sound-proofing and camouflage of the oil drilling derricks. Students were also educated on the collaboration between the City of Long Beach and the THUMS corporations using reclaimed city water injected into the wells to maintain reservoir pressure.

Our spring semester garb sale, where SMACS sells basic lab supplies such as goggles and lab coats to students taking chemistry lab courses, was our most successful sale yet, raising over \$2,000 for the club. These funds allow SMACS to send undergraduate students to present their research at conferences. This April, three SMACS members attended the ACS Undergraduate Research Conference at Chapman University: Michelle Hansol Park, who gave a poster titled "Preparation of 3-Substituted Pyrroles: Progress Towards an α -Helical Peptidomimetic Library"; Panupon Khumsupan, who gave a talk titled "Reconstitution of Nanosized HDL Bearing Anti-amyloid Flavonoids for Targeted Drug Delivery"; and Allison DePaul, who gave a talk titled "Equilibrium Conformational Dynamics in an RNA Tetraloop from Massively Parallel Molecular Dynamics."

Two SMACS members, Alexandria Brooks and Jason Barca, along with graduate student Arti Patel, assisted as student ambassadors at the Alumni Reunion Banquet. Many alums recounted to the students their excellent undergraduate experiences as members of SAACS (at that time) while at CSULB.

SMACS recently elected new officers: Michelle Stadick, president; Marina Zeldon, vice president; Akira Ueno, secretary; and Carissa Campos, treasurer. These four individuals have already given countless hours of their time to help grow the club and will be attending a student leadership conference over the summer to hone their leadership skills.

Wendy Beck and Brittany Maynard have taken over the reins of the Coffee and Donut Hour, where faculty and students mingle and munch on a weekly basis.

Drs. Schramm and McClain would like to thank the graduating members and outgoing officers for their time and efforts to make SMACS successful. We would also like to congratulate the outgoing president, Alexandria Brooks, on receiving the Horalek Award for noteworthy service to the department.

Finally, SMACS was recognized by the ACS with a certificate of achievement for their "exceptional service throughout the 2008-09 academic year."

Alumni support and participation in the club is always welcome. If you or your company would be willing to provide a tour of your chemistry-related business or are interested in hiring CSULB chemistry graduates, please contact Dr. Brian McClain or Dr. Michael Schramm.

Continued from pg. 13

received a Myrtle Graduate Summer Research Fellowship; incoming chemistry M.S. candidate Jessica Servin received this year's Stern Award in Physical Chemistry; and biochemistry major Tuyen Tran became a McNair Scholar and won a Women and Philanthropy Summer Research Scholarship. Our lab also recently accepted two new students: biochemistry major Samantha Cao and computer science major Lynn Cherngchaosil, both of whom have become valued and fun-loving members of the Sorin lab. We now head full-steam into summer 2010 research activities with the addition of three Bridges to the Baccalaureate students. This is the first time I have had the opportunity to participate in this program, and I'm excited to have these eager, young scientists-in-training joining us for the summer.

Following Bob Soukup's retirement, I took over as webmaster this year, and, alongside maintaining our current website, a major project for



Front row, from left: biochemistry majors Tuyen Tran and Samantha Cao, entering master's degree candidate Jessica Servin, computer science major Lynn Cherngchaosil and biological sciences major Felisha Eugenio. Back row: mathematics and statistics graduate Kristin Haldeman, Dr. Eric J. Sorin, biochemistry graduate Allison DePaul, chemical engineering graduate Erik Thompson, master's degree candidate Yi An and biochemistry major Mona Bakhom.

me has been serving as chair of the Department Website Committee. This was a significant endeavor in which several CSULB students helped my colleagues and me to create what we feel is a modern, professional, informative and easy-to-navigate new website, which you will read more about in a separate column in this newsletter. I was also elected to the Academic Senate and the Faculty Advisory Committee on Technology, and I look forward to gaining an understanding of how our governing body works and participating in that process.

Dr. Paul Weers

The Weers lab studies the role of apolipoproteins in innate immunity and lipid transport processes. In 2010, the group was awarded a four-year grant from NIH to investigate the protective role apolipoproteins play against bacterial infection. Two manuscripts were published: a review focusing on apolipoprotein structure and a collaborative research project with Dr. Elmer Prenner from the University of Calgary (Alberta, Canada) describing the lipid-protein interaction using differential scanning calorimetry. In the 2010 spring semester, I visited the Prenner lab in Calgary during my sabbatical leave to focus on isothermal calorimetric analysis of apolipoprotein-liposome interactions. Earlier in the year, I received tenure and promotion to associate professor.

The Weers lab welcomed new lab members Wendy Beck, Duc Le, Anthony Tabet and Pankaj Dwivedi during the fall and winter of 2009-10. Wendy was awarded the Woman and Philanthropy Undergraduate Research and Creative Activity Scholarship. Duc received the Fred H. Dorer Research Fellowship, while Anthony was admitted to the RISE program. Our research was presented at the CSU Program for Education and Research in Biotechnology meeting in Santa Clara (Daisy Martinon and Sean Lee), Biophysical Society meeting in San Francisco (Daisy Martinon) and the American Society for Biochemistry and Molecular Biology meeting in Anaheim (Yin Phung and Johana Rodriguez). While pregnant, Daisy was also prepared to present her work in Anaheim, but her baby did not agree and Maryanna was born. MARC student Johana Rodriguez graduated and moved on to UCLA to become a medical doctor. In addition, lab members Yin Phung, Catherine Valdez and Kathy Bui graduated from CSULB.

Memorial Benches Honor Former Faculty

Two of the founding members of the Department of Chemistry and Biochemistry, professors Don Simonsen and Ed Becker, were recently honored with the installation of memorial benches donated by their families.

Donald H. Simonsen, professor of biochemistry, died on Sept. 27, 2004 at age 83. Simonsen grew up in Oregon and received a B.A. degree from Reed College, an M.S. degree in biochemistry from Oregon State University in 1945 and a Ph.D. in biochemistry from Indiana University in 1951. He served on the Chemistry Department faculty from 1956-80. In addition to teaching, Dr. Simonsen was active in campus administration, serving as dean of faculty, vice president, and acting president from 1969-70 during a turbulent year of antiwar protests. Benches dedicated to Dr. Simonsen and to physics professor George Appleton now sit side-by-side at the east end of the grassy area between PH1 and PH2. The benches were dedicated on Aug. 21, 2008 at a ceremony attended by Dr. Simonsen's wife Norma and other family members.

Edwin N. Becker, longtime professor of physical chemistry, died on Feb. 23, 2009 at age 87. A native of Iowa, Dr. Becker earned a B.S. degree in chemical engineering from Iowa State University and a Ph.D. in physical chemistry from the University of Wisconsin. He served in the U.S. Army Air Corps from 1943-45. Dr. Becker was a founding member of the Chemistry Department and served on the faculty from 1955-83. He was a well-liked and respected teacher. He was also chair of the Academic Senate for many years and was very involved in campus governance, where he acquired a reputation as a consensus builder and team leader. The Ed Becker Bench was installed on Friendship Walk, across from the MLSC building, and was dedicated on Oct. 2, 2009 at a ceremony attended by Dr. Becker's wife Catherine and his five children and their families.

Those who wish to honor other department faculty with memorial benches should contact Maryanne Horton, director of development of the College of Natural Sciences and Mathematics. A bench may be established by a donation of \$5,000.

Advisory Council New Members

Since its inception more than 30 years ago, the Department of Chemistry and Biochemistry's advisory council has supported the department's mission to provide students with excellence and opportunities in chemical and biochemical education. The current group of 21 council members represents a variety of chemical, pharmaceutical and biotechnology companies in Southern California. This past year, the department welcomed three new members to the council.

Sharmin Karim is executive director at NHK Laboratories, Inc. (Santa Fe Springs), a custom formulator, contract manufacturer and contract packager of private label dietary supplements, functional foods and pharmaceuticals. NHK Labs provides annual funds to support a six-week internship in their research and development lab for one undergraduate student, and the department is grateful to Karim for making this opportunity possible.

Dr. Robert Rzasa graduated from CSULB with a B.S. degree in chemistry in 1993 and has been a faithful and generous contributor for nearly a decade. Dr. Rzasa works in an organic synthesis lab designing new drugs for Amgen, Inc. (Thousand Oaks), a company that currently employs a number of former Chemistry and Biochemistry Department students.

Ernie Valfre graduated from CSULB with a B.S. degree in chemistry in 1978 and embarked on a career at Baxter BioSciences (Los Angeles) that has evolved from coagulant research to scientific systems management, to his current position in quality control as senior manager of Computer Systems Validation. Baxter also employs a number of CSULB graduates, some of whom work for Valfre.

Karim, Rzasa and Valfre are great additions to the advisory council, and the department looks forward to their input and support of its students and faculty.

Alumni Giving Makes a Difference!

Your donations to the Department of Chemistry and Biochemistry make a BIG difference. Simply put, *your support determines how rich an educational experience we can provide to our students:* time to do research instead of working off campus, use of state-of-the-art equipment in their classes and research labs, travel to professional meetings to present their results, and access to seminars and lectures by leading scientists discussing their own research.

About 97 percent of our budget is fixed in the form of salaries for faculty, teaching assistants, graduate assistants and staff. Only a small portion of our budget, around three percent (approximately \$100,000), is allocated for department operating expenses and what the state terms "non-instructional" expenses. These include faculty and student travel, equipment purchase and maintenance (both for classroom labs and research labs), our seminar and Distinguished Lecturer series, our advisory council activities, and student awards, scholarships and research fellowships.

Where does that three percent come from? Only about one-third comes from the state; the remainder comes from private sources, including distributions from the department's small endowment, a return from the overhead on research grants, gifts from corporate donors and, most importantly, donations from alumni and friends.

What is the outlook for the near future? Our expenses continue to rise with inflation and increased sales taxes while our state funding continues to decline with each budget cut. Lottery funds, previously used for purchasing new equipment, are being used to help pay for instrument service contracts during the budget crisis. Distributions from our endowment continue to be an uncertain source of funds in the current investment climate. All of this means your donations to our department are more important than ever. Each gift makes a difference.

What is the one bright spot? You! We are very pleased to report that the amount we received in donations from alumni and friends in 2009-10 was 50 percent higher than what we received in 2008-09. Thank you for responding to our situation and for stepping up to help us through this funding drought. Your generosity is having a big effect on helping us to sustain the excellence of our programs. We hope that, even in these difficult times, you will continue to give and give as generously as you can.

To make a gift, use the enclosed envelope or give online at <https://cf.papubs.csulb.edu/giving/>. Scroll down to the College of Natural Sciences and Mathematics and choose "Chemistry and Biochemistry Department." For endowments or naming opportunities in the chemistry wing of the new Hall of Science, contact Maryanne Horton at 562-985-1687 or e-mail mhorton@csulb.edu.

Where Are They Now?

C. Patrick "Pat" Dunne, a professor of biochemistry in the Department of Chemistry and Biochemistry from 1976-79, has been with the U.S. Army Research Center at Natick, Mass., since he left CSULB. Dr. Dunne is the senior advisor in Advanced Processing and Nutritional Biochemistry for the Department of Defense Combat Feeding Directorate at Natick. Since 1991, he has led the Advanced Preservation Project, which focuses on advanced food processing technologies, including food irradiation. He was a founding member and first chair (in 1999) of the Nonthermal Food Processing Division of the Institute of Food Technologists (IFT). He received a Federal Laboratory Consortium Award for Excellence in Technology Transfer in 2005 and was the 2005 winner of the IFT Myron Solberg Award, which recognizes leadership in developing industry/government/academia cooperative organization.

In 2009, Dr. Dunne was named as an IFT Fellow. The IFT noted that, "Through his work with the U.S. Army, Dr. Dunne has created combat ration options that have high levels of functional efficacy, have proven nutrient effectiveness and meet food safety standards." This year, Dr. Dunne and other members of the Washington State University Microwave Sterilization Consortium were honored with the IFT Research and Development Award.

Dr. Dunne and his wife Maureen have three daughters and two grandchildren. His oldest daughter, Eileen, just finished a Ph.D. in microbiology at Boston University Medical School, writing a thesis on an antimicrobial peptide that disrupts ribosome structure.

Gifts by Individuals

During the 2009-10 fiscal year, the department received gifts totaling **\$225,450**, including \$32,195 from individual donors. The faculty, staff and students of our department are very grateful for your generosity.

Cash gifts are used for scholarships, awards, the seminar program, and purchase of supplies and equipment for which there is not adequate state funding. Also, the costs of publishing the Department of Chemistry and Biochemistry newsletter are met with private giving. You may give an income tax-deductible gift directly to the department by sending a check to:

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The Office of University Relations and Development is informed of all gifts, and you will receive a personal letter of acknowledgment from the department. You might investigate the possibility of your company matching employee gifts, which multiplies the value of your gift to the department.

If you are contacted through the university giving program and a gift is requested, please specify the Department of Chemistry and Biochemistry as the recipient of your gift, if that is your intention.

Thank you!

Corporate Gifts to the Department

Total value of cash and in-kind gifts to the department during the fiscal year ending June 30, 2010 was **\$193,255**.

Companies and foundations contributing cash and in-kind gifts were:

Abbott Laboratories Fund
(in honor of senior researcher Stan Huth ('73),
winner of the Abbott Outstanding Research Team Award)
Allergan Foundation* (Summer Research Fellowships)
Allergan Pharmaceuticals, Inc.* (Equipment)
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* Companies represented on the Chemistry and Biochemistry Advisory Council.

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Photo by David [unreadable]

Members of the 2009-10 graduating class with members of the Chemistry and Biochemistry Department faculty.

In addition to meeting fully its obligations of nondiscrimination under federal and state law, CSULB is committed to creating a community in which a diverse population can live and work in an atmosphere of tolerance, civility, and respect for the rights and sensibilities of each individual, without regard to economic status, ethnic background, veteran status, political views, sexual orientation, or other personal characteristics or beliefs.

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