

College Takes Top Campus Teaching Awards

Digital Chem 1A, Bertozzi Honored

The College of Chemistry was recently recognized by the campus for its outstanding teaching achievements. Digital Chemistry 1A concluded its stellar first academic year by receiving the Educational Initiatives Award, a \$10,000 cash award presented annually by the Academic Senate. This award recognizes departments, units, or a group of faculty who have created an outstanding program or initiative with a sustained impact upon undergraduate education that can serve as a workable model for others on campus.

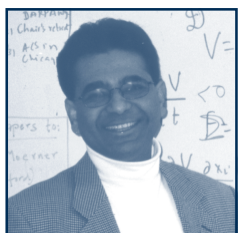
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Photo by Jane Scheiber

The jubilant Digital Chem 1A team consists of Lonnie Martin, Mark Kubinec and Alex Pines, a former recipient of the Campus Distinguished Teaching Award.

Chakraborty to Chair Chemical Engineering



Arup Chakraborty will be the new chair of the Department of Chemical Engineering effective July 1, according to Dean Clayton Heathcock. "I would like to thank Harvey Blanch for his excellent stewardship of the department for the last four years and welcome Arup to his new administrative role in the College," Heathcock said. Chakraborty has previously served the department as Vice Chairman and has chaired various faculty committees.

Chakraborty's research focuses on the modeling and theory of complex systems. His group uses sophisticated statistical and quantum mechanical approaches to unravel the mechanisms underlying the behavior of systems, which include the immunological synapse in T-cell biology, self-assembling polymeric materials, and catalytic processes in zeolites.

"I have three main objectives for my tenure as department chair," said Chakraborty, who also has an appointment in the Chemistry Department. One important priority is to coordinate the hiring opportunities for new faculty over the next few years. "I look forward to playing a role in recruiting the best faculty in emerging areas and those of strategic need for the department and the university," he said. Additionally, he wants to improve upon the department's outstanding undergraduate program. "We do a great job of teaching our students, but we can improve upon the service we provide outside of the classroom, such as career counseling," he continued. "This would help our students make a smooth transition from school to work. It is also an opportune time to carefully consider the undergraduate curriculum." Finally, along with the faculty, Chakraborty would like to consider adding new dimensions to the graduate student experience. "Perhaps, in addition to the traditional teaching and research program, we could provide interested graduate students the opportunity to gain first-hand experience in start-ups and industrial laboratories during their time at Berkeley."

Health Science Initiative and QB3:

New Approach to Molecular Medicine

The campus's \$500-million Health Sciences Initiative (HSI), launched in 1999, is bringing together scientists across disciplines, including chemistry and chemical engineering, in a whole new approach to human health. "HSI is assembling scientists to do science logically, from the benchtop to the bedside," said Adam Arkin, Assistant Professor of Chemistry. "It's an exciting environment."

Research into basic human health has changed in recent years, noted Edward Penhoet, dean of the School of Public Health. "Scientists in a broad range of disciplines are bringing their expertise to the health care table to help solve the basic blueprint of life," he said. "Breakthroughs in everything from bioinformatics—the science of mining databases like the Human Genome Project—to gene profiling will benefit once they are brought under one programmatic roof."

An essential element of the HSI is the construction of two new buildings: a molecular engineering complex, which will be constructed on the site of the current Stanley Hall, and a center for biomedical and health sciences to replace Warren Hall. Together these new complexes will facilitate a wide array of research in biological sciences, engineering, physics, chemistry, computer sciences, environmental science and public health to tackle some of the most challenging problems in medicine today.

The HSI got a large boost with the recent establishment of the Bioengineering, Biotechnology and Quantitative Biomedical Research Institute (QB3), one of three announced for state funding by Gov. Gray Davis as part of the California Institutes for Science and Innovation (CISI) program. "These institutes for sciences and innovation...will propel the next generation of technologies and



Stanley replacement building

train the next generation of high-tech leaders," said Davis. Organized around three research and educational themes—bioengineering and biotechnology, structural and chemical biology, and bioinformatics and the analysis of complex biological systems—QB3 scientists will develop techniques

Recent Recruiting Coup for the College

Berkeley and the College of Chemistry are very proud to have recruited some of the country's top scientists to its faculty for the coming year. **Michael Marletta**, a chemical biologist from Michigan, will be joining the chemistry department. **John Kuriyan** and **Jamie Cate**, both structural biologists, will divide their time between Chemistry and Molecular and Cell Biology. A fourth structural biologist, **Jennifer Doudna**, will move from Yale this summer to take up a position in MCB.

Notes Dean Clayton Heathcock, "These recruitments have positioned Berkeley as the clear world leader in structural biology, largely because of the LBNL Advanced Light Source, the forthcoming Stanley replacement building (SRB) and QB3, the recently funded initiative that will be located in the SRB."

Additionally, synthetic organic chemist **Matt Francis**, most recently a post-doctoral fellow in Jean Fréchet's group, will join the chemistry department in July. Francis will also work at the interface of chemistry and biology, applying the techniques of organic synthesis but using biomolecular building blocks for the creation of new materials.

These scientists will each be profiled in an upcoming issue of the Newsletter.

for storing and analyzing vast quantities of biological information.

One of the most anticipated projects resulting from the HSI is the Stanley replacement building. The building will house state-of-the-art research and lab equipment and provide the opportunity for close collaboration among diverse research groups. The building will provide 270,000 gross square feet, roughly three times the current size of Stanley Hall, at approximately \$150 million. Groundbreaking is expected by summer 2002.

QB3 will provide a significant sum of money for construction of the Stanley Hall replacement building and will lead to a joint Institute with UCSF and UC Santa Cruz.

Graham Fleming, who played a major role in securing funds from the Governor's initiative, will direct the Berkeley side of the new institute. "QB3 will lead the next revolution in biomedical research," said Fleming. The interdisciplinary approach of QB3 is in tune with powerful trends in science. "Chemistry is increasingly turning to biology for its challenges," Fleming continued. In turn, biology is becoming a predictive and quantitative science, turning to chemistry and other physical sciences for new methodologies.

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HSI, continued from page 2

Adam Arkin is enthusiastic about the forthcoming Stanley replacement building. "The new Stanley building will help bring people together and enhance interdisciplinary collaborations. For example, my group works with 7–8 different organisms, and we want to compare them all, but this takes a great deal of knowledge about each individual organism. Luckily, we have this great knowledge all here at Berkeley and the spatial localization at Stanley will further these collaborations."

David Schaffer, Assistant Professor of Chemical Engineering, agrees. He is part of the Helen Wills Neuroscience Institute, a unit created by the HSI. "I have found that the HSI is a good way to meet people and set up collaborations. We go on retreats together as well as attend lectures and a seminar series within neurosciences. These activities let us get to know each other and the research being pursued in each department," Schaffer commented.

Richard Mathies, Professor of Chemistry, is best known for developing two technologies essential for the recent success of the Human Genome Project: capillary array electrophoresis and special fluorescent dye labels for DNA. He is currently working on miniaturization of nucleic acid electrophoresis for sequencing and diagnostic work.

Mathies envisions the day when projects supported by the HSI yield products for widespread use in the medical community, such as a personal genetic analyzer, for clinical and forensic use, that can monitor healthcare status in real time. "We have the genome in hand and the promise of molecular medicine is very real. However, to deliver on that promise, we need to develop very inexpensive and rapid genetic analysis devices that are available to everyone," Mathies explained.

"We also need to understand genetic variation in the population and what that variation means," Mathies continued. "We need to correlate a person's genes with their health record, because basically each of us is a genetic experiment. For example, we all respond differently to pollen or medication drugs because of our unique genetic makeup. The idea is that in the future we will have medicine that is fine-tuned to our uniqueness."

New aspects of the HSI and QB3 will continue to be covered in future publications. For additional information, please visit <http://www.berkeley.edu/news/extras/1999/healthscience/>.

TEACHING AWARDS, continued from page 1

Digital Chemistry 1A is run by Professor Alex Pines and Dr. Mark Kubinec, with assistance for demonstrations from Lonnie Martin, and aims to increase the effectiveness of teaching and the number of students who can enroll in the course.

Currently Chemistry 1A is the largest course on campus, with nearly 2000 students each year. Digital Chem 1A makes extensive and innovative use of available online tools, using streaming video to broadcast the course in real time. This allows the students to participate in the course from remote locations. Additionally, the lectures and demonstrations are archived so that students can readily review them online.

"We have had tremendous support from the College," said Kubinec. "As we developed the course, we realized that using computer hardware and software to let the students participate without being present would allow the class to be more cost-effective, since we would use fewer teaching assistants, less room usage, etc. And the course design just kept growing and evolving."

"I would love for Digital Chem 1A to serve as a model for other digital courses in the future. I think we have designed an effective course using generic tools and now other instructors can use the tools we have developed with their own content," Kubinec added.

For her individual teaching achievements, Professor Carolyn Bertozzi received the Campus Distinguished Teaching Award. This award both encourages and rewards excellence in teaching on the Berkeley campus.

"My philosophy in Chem 3A is to provide a view of organic chemistry through my eyes, to recapture in each lecture the thrill

I felt when it was revealed to me that molecules are as diverse as human beings," said Bertozzi.

Each year, UC Berkeley's distinguished teachers are honored in a public ceremony to recognize their achievements. The ceremony was held on April 25 in Zellerbach Playhouse. Bertozzi and her fellow Distinguished Teaching Award recipients received a cash award from the campus and a gift from the Alumni Association.



Photo by Jane Scheiber

Carolyn Bertozzi beams after receiving the Campus Distinguished Teaching Award.

Leo Brewer, Professor Emeritus of Chemistry, has been honored for fifty years of membership in the Royal Society of Chemistry.

Kristie Boering, Assistant Professor of Chemistry, received a prestigious Packard Fellowship. One of 24 researchers awarded grants by the David and Lucile Packard Foundation, Boering will receive \$125,000 a year for five years. One of the foundation's goals this year is to support research in conserving the environment.

Chris Cappa, a graduate student in Chemistry Professor **Ron Cohen's** group, has been awarded an American Meteorological Society Graduate Fellowship for 2000-2001 and a National Defense Science and Engineering Graduate Fellowship for 2001-2004.

Darleane Hoffman, Professor of Chemistry, received the 2000 Harry and Carol Mosher Award of the Santa Clara Valley Section of the American Chemical Society at their January 25, 2001 dinner meeting and gave the Award lecture on "The Long-Sought Super Heavy Elements (SHEs): Atom-at-a-time Nuclear Chemistry."

Jack Kirsch, Professor of Chemistry and Molecular and Cell Biology, will receive an honorary doctorate from Uppsala University, Sweden, in June.



Valerie Koch



Jane Scheiber

Valerie Koch, Nikki Ogunnupe, Jane Scheiber and **Norman Tom** were recognized for their

Noteworthy News

outstanding leadership skills with the Excellence in Staff Management Award, presented by the Berkeley Staff Assembly.

John Kuriyan, an incoming Professor of Chemistry, has been elected to the National Academy of Sciences. Election to membership in the Academy is considered one of the highest honors that can be accorded a U.S. scientist or engineer.



Harold Johnston

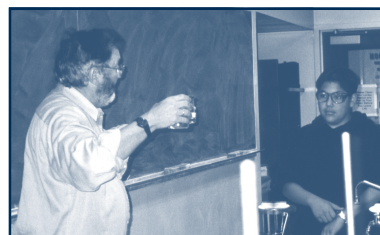
Professor Emeritus of Chemistry **Harold Johnston** delivered the inaugural Harold S. Johnston Lecture entitled "Something Old and Something New about Stratospheric Ozone," on April 17. The lectureship was established by Johnston's students, colleagues and friends.

Two students associated with the College of Chemistry have been named Haas Scholars. **Nicholas Parra-Vazquez**, a Chemical Engineering and Material Sciences major, will work in **Alexander Katz's** lab on a project entitled "A Fundamental Study of Selective Catalysis in Hetero."

John Weedin, an MCB and history major, will study "Exploring the Role of Polysialic Acid in Tumor Metastasis" in **Carolyn Bertozzi's** lab. The Robert and Colleen Haas Scholars Program funds twenty undergraduates to engage in a sustained research, field-study or creative project in the summer before and during their senior year at Berkeley.

Congratulations to Professor Emeritus of Chemical Engineering **Morton Denn**, and Chemistry Professors **Michael Marletta**, **Kenneth Raymond** and **Ignacio Tinoco, Jr.** for their election to the American Academy of Arts and Sciences. The Academy is an international society composed of the world's leading scientists, scholars, artists, business people, and public leaders

Chemistry Professor **Kenneth Raymond** demonstrated chemical principles to junior high students from San Jose on April 5 as part of the college's Scholars Outreach program. The students wore safety glasses donated by Ford for the event.



Kenneth Raymond

Henk Visser, a graduate student with Chemistry Professor **Kenneth Sauer**, has won the Daniel Cubicciotti award, presented by the San Francisco section of the Electrochemical Society and sponsored by Structural Integrity Associates. The award consists of a plaque and \$1000.

Photo by Jane Scheiber

Photo by Jane Scheiber

Photo by Monica Jackson-Tribble

Chemical Dynamics Symposium Honors William Miller

William Miller, the Kenneth S. Pitzer Distinguished Professor of Chemistry, was honored with a chemical dynamics symposium on March 28-31 to celebrate his 60th birthday. The symposium, which had more than 140 participants and featured presentations and posters by many



George Schatz and William Miller at the Symposium. Schatz is senior editor of the *Journal of Physical Chemistry* and a former student of Professor Miller's.

of Miller's former students and post-doctoral fellows, was funded by the Office of Naval Research. Professor Miller was also presented with a special issue of the *Journal of Physical Chemistry* commemorating his work.

Professor Miller's research group explores the theory of chemical reactions and reaction rates, as well as other

chemical dynamics phenomena such as photodissociation and femtosecond pump-probe spectroscopy. Their goal is to describe the dynamic properties of molecules with the same level of detail as the static and structural properties of molecules.

The symposium was organized by Professor Nancy Makri of the University of Illinois, a former graduate student

University Capital Campaign Raises \$1.44 Billion

"The Promise of Berkeley: The Campaign for the New Century" concluded this winter by raising \$1.44 billion in private support for students, faculty, and facilities. Launched in 1993 with an ambitious goal of \$1.1 billion, the campaign attracted gifts for endowment/capital and ongoing expenses in nearly equal proportions.

"This is the largest amount ever raised by a public university and the most raised by any university without a medical school," said Chancellor Robert M. Berdahl.

"We are enormously grateful to everyone who contributed to the campaign," said Dean Heathcock.

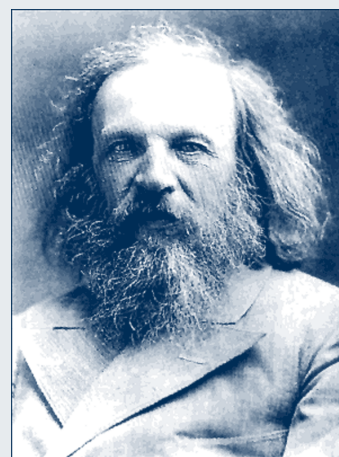
Further coverage will be provided in the College's fall publications.

of Dr. Miller. "Over more than three decades, Miller's profound work in chemical dynamics has literally shaped modern theoretical chemistry. He has a great insight into quantum mechanics and dynamics that often allows him to guess the result correctly before the math has been worked out. He has a large bag of scientific tools and is highly skilled at using them," praised Dr. Makri.

University Acquires Rare Mendeleev Text for Bancroft Library

President Atkinson recently confirmed a gift to the University of great interest to chemists and scholars alike: the original publication of D. I. Mendeleev's *Osnovy Khimii [Principles of Chemistry]*, St. Petersburg, 1868-1871. This extremely rare and valuable book is the original Russian edition generally acknowledged as the first appearance in print of the Periodic Table. The two-volume set is being donated by alumni Kenneth and Dorothy Hill to celebrate the 30,000,000th book acquired by the University and the 500,000th book acquired by Bancroft, according to Peter Hanff, deputy director of the Bancroft Library.

The Bancroft Library at the University of California, Berkeley, is one of the largest libraries of manuscripts, rare books, and special collections in the country, one of which is the History of Science and Technology. Many of Berkeley's Nobel laureates have donated their papers to the library.



UC Provost C. Judson King to Speak at Commencement

Chemical Engineering Professor C. Judson King will speak at the College of Chemistry commencement ceremony on May 20, 2001 at 7:00 p.m. in Zellerbach Auditorium. In addition to being a faculty member in Chemical Engineering, Dr. King serves as Provost and Senior Vice President for Academic Affairs of the University of California system, where he oversees both academic planning and planning of research and academic policies for the UC system. He has previously served as Dean of the College of Chemistry and Chair of the Department of Chemical Engineering at UC Berkeley.

The graduating class this year (students finishing their degree requirements from Summer 2000 through Spring 2001) includes:

B.S. Chemistry—71
A.B. Chemistry—6
B.S. Chemical Engineering—95
M.S. Chemistry—10
M.S. Chemical Engineering—6
Ph.D. Chemistry—59
Ph.D. Chemical Engineering—21



Photo courtesy of UC Office of the President

The *NEWSLETTER OF THE COLLEGE OF CHEMISTRY* at Berkeley is published several times each year to support the College's mission of providing excellent teaching, research and public service in the fields of Chemistry and Chemical Engineering.

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