



Volume 25, Number 2

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COMMENCEMENT 2005



All that hard work is finally paying off. No more all-nighters. No more exams. Everything has led up to this moment, when you stand to go up front, to receive your reward.

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New Faculty



Paula Diaconescu studied under Professor Christopher Cummins at MIT where she studied bonding and reactivity of arene-bridged diuranium complexes supported by amide and ketimide ligands.

More about Paula on Page 4.



Alex Levine received his Ph.D. in Physics from UCLA in 1996. He then worked as a postdoctoral researcher at Exxon Research and Engineering Corporation with Drs. S.T. Milner and T.C. Halsey.

More about Alex on Page 4.

UCLA GK-12

Enlivening Science Instruction

The NSF-funded GK-12 Program improves mathematics and science instruction in our most poorly-performing urban schools by pairing graduate students in NSF-supported science, technology, engineering, and mathematics disciplines with first-year secondary science teachers.

.....Continued on Page 14



Mike Page introduces middle-school students to the concept of organic synthesis



CHAIR'S MESSAGE

We are on the brink of great new things in this department! The economy is improving, and the University has entered a new phase of fiscal stability that has allowed it to begin moving forward again. And this Department will be helping to lead the way! Already this year we have made two exciting new faculty hires—Paula Diaconescu has taken up residence in the Molecular Sciences Building among the Inorganic Chemists, and Alex Levine has joined the Physical Chemists on the 3rd floor of Young Hall. Both Alex and Paula arrived early in July within a few days of each other. And that is only the beginning! The Department is now embarking on a full-fledged hiring campaign, a concerted effort to bring in a wide range of new faculty at both junior and senior levels, to augment our research and teaching across all divisions in the department!

But that is not the only reason for our excitement. This year two of our own, Joan Valentine and Wayne Hubbell, were elected to the National Academy of Sciences! Of course, this is a great personal honor for Wayne and Joan, but I can't resist pointing out that they both chose to pursue their careers in this department. We must continue to do our utmost to attract the very best students and faculty to our midst, and it is in that spirit that we approach our new hiring campaign.

It is no accident that the administration is devoting a significant fraction of its gradually increasing resources on a hiring campaign for this department. We were described as the "Crown Jewel" of the College in the last Academic Senate review of the department. Did you know that three of UCLA's five Nobel Prizes are from this department? Or that fully one quarter of all active National Academy of Sciences members at UCLA are currently in this Department? And that includes the Medical School! Not only that, but we are distinguished

in teaching as well as in research. Our long and illustrious history in teaching includes two *alumni*—educated in this department—who are Nobel Laureates. Only two other alumni from UCLA have received this distinction. And we do it *en masse*. We graduate the largest number of undergraduate majors of any Chemistry (or Chemistry & Biochemistry) department in the country. We are also among the top Ph.D. granting Chemistry departments in the country. And, at home, we have the largest number of Ph.D. students of any department or interdepartmental program in the College, accounting for more than 10% of the total.

All of which reminds me of our big and very successful commencement on June 18th—still fresh in my memory. Over 2000 graduates and their guests watched and often cheered as each degree candidate came up to the podium to receive his or her degree. This year we awarded 36 PhD and 246 Bachelor of Science degrees. Of the bachelor degrees, 198 were in Biochemistry, 39 were in Chemistry, 6 were in General Chemistry, and 3 were in Chemistry/Materials. Four of these degrees were



Professor Martinson looks on as Ken Houk presents the hypercube Award to Christine Fang

with a specialization in computing. 17% of our bachelor degree recipients were destined for graduate school. A quarter were planning to go to medical school and a similar number were planning to go to pharmacy school. Others had their sites set on related professional schools or on immediate employment. As befits a major research university like UCLA, half of our bachelor degree recipients conducted original research during their undergraduate years, and many of these published their results in

refereed scientific journals.

We were pleased to have with us many distinguished guests, alumni, friends and benefactors of the Department during the graduation ceremony. Sylvia Winstein awarded the Saul and Sylvia Winstein Dissertation Award. The Alumni Undergraduate Summer Research Fellowship was presented by Bob Boschan, BS '45, PhD '50, the Yoshie Kadota Summer Research Fellowship was presented by Ruth Kadota and Akiko Woods, and Hillel Fierer presented the Dolores Cannon Southam Award for Excellence in Research. In addition, numerous other awards were presented to outstanding students by members of the faculty.

Our excitement about our hiring campaign and the future of the department was tempered this year by the loss of Professor Chris Foote. Chris passed away on June 13, 2005, at his home in Santa Monica, California, from complications of brain cancer. Chris came to UCLA over 40 years ago, where he became the acknowledged world leader in the chemistry and biology of singlet oxygen. He also produced a popular and widely used organic chemistry

textbook. As chair of our department from 1978-1981 he initiated a long and arduous effort that culminated in the construction of the Molecular Sciences Building. The Department will be holding a Memorial Concert on October 14, and Memorial Symposium and Dinner on October 16 in memory of Chris. Details can be found at: <http://www.chem.ucla.edu/research/org/FOOTE-MEMORIAL/FooteSymposium.html>.

In closing, I would like to remind everyone about the Seaborg Symposium and Dinner. This year's medalist is Professor Ron Evans at the Salk Institute. Dr. Evans obtained his Ph.D. at UCLA in 1974 and is known for his work on the mechanisms through

which steroids, vitamins A and D, and thyroid hormones regulate gene expression to control fundamental aspects of physiology. His discoveries have led to new drugs for diseases such as cancer, obesity, hypertension, diabetes, and atherosclerosis. The topic of the Symposium will be "Nuclear Receptors and the Complex Journey to Obesity". We hope to see you on November 5th!

Harold Martinson

Awards



Professor Charles West is pictured receiving the American Society of Plant Biologists' Charles Reid Barnes Life Membership Award from ASPB President Roger Hangarter at the ASPB's annual meeting in Seattle on July 16, 2005. This is the oldest award given by the ASPB, and was established in 1925 at the first annual meeting of the Society, through the generosity of Dr. Charles A. Shull. The award honors Dr. Charles Reid Barnes, the first professor of plant physiology at the University of Chicago. This annual award of life membership in the Society recognizes meritorious work in plant biology by an individual who is at least 60 years old.

Yung-Ya Lin was one of only 16 faculty throughout the country to be named winner of a 2005 Camille Dreyfus Teacher-Scholar Award. Yung-Ya was recognized for his outstanding contributions to the enhancement of contrast and sensitivity in NMR via chaos control (the "Butterfly effect"). This has significant ramifications for medical imaging such as in the early detection of cancer by MRI. Unrestricted funds are being made available by the Dreyfus Foundation to further his research efforts over the course of the next several years.

Two Chemistry and Biochemistry faculty, **Joan Valentine** and **Wayne L. Hubbell**, were among the 72 new members elected to the National Academy of Sciences on May 3, 2005. They were chosen in recognition of their continuing achievements in original research.

Happenings

The 2005 Postdoctoral Awards Ceremony

The 2005 Postdoctoral Recognition Awards Ceremony and Reception sponsored by the Department of Chemistry and Biochemistry, and the Molecular Biology Institute, was held Wednesday May 11 in Boyer Hall. Dr. Dmitry Kudryashov (of the Emil Reisler Research Group) won the Boyer-Peter Award, Deepa Shankar (Kathleen Sakamoto Group at the David Geffen School of Medicine's Mattel Children's Hospital) won the Boyer-Parvin award, Dr. Debora Bontempo (formerly of the Heather Maynard Group, now working in Germany) won the Amgen Award.

Research excellence awards were presented to the following postdoctoral Fellows by their mentors:

Dr. Sonali Barwe (mentor: Prof. Ayyappan Rajasekaran); Dr. Debora Bontempo (Prof. Heather Maynard);
Dr. Peter Bowers (Profs. David Eisenberg and Todd Yeates); Dr. Anthony Henras (Prof. Guillaume Chanfreau);
Dr. Dmitry Kudryashov (Prof. Emil Reisler); Dr. Deepa Shankar (Prof. Kathleen Sakamoto);
Dr. Aaron Wheeler (Prof. Robin Garrell); Dr. Yi-Lei Zhao (Prof. Kendall Houk)



**Prize-Winning
Postdocs join with
Donors**

Back Row: Mrs. Phyllis Parvin (Donor), Professors Ayyappan Rajasekaran, David Eisenberg, Todd Yeates, Robin Garrell, Kathleen Sakamoto, Heather Maynard, Emil Reisler, Guillaume Chanfreau, Ken Houk, Dr. James Peter (Donor) and Dr. Michael Gresser (Amgen, Inc., Donor); Front Row, seated: Drs. Sonali Barwe, Peter Bowers, Aaron Wheeler, Deepa Shankar, Debora Bontempo, Dmitry Kudryashov, Antony Henras and Yi-Lei Zhao.

Welcome to Our New Faculty Members

Paula Diaconescu

Continued from Page 1

She completed her post-doctoral work in the group of Professor Robert Grubbs at Caltech where her research centered on applied problems such as the metal-mediated conversion of methanol to hydrocarbons and olefin metathesis. Her research interests lie in the general area of lanthanide and actinide chemistry and encompass broad objectives such as applications to organic synthesis and pharmaceuticals as well as the fundamental understanding of f-element chemistry. At UCLA, she will be a member of the Inorganic Division faculty. Welcome, Paula!

Alex Levine

Continued from Page 1

He then moved to the University of Pennsylvania to work with Professors R. Kamien and T.C. Lubensky. After a post-doctoral position at UC Santa Barbara working with Professors P. Pincus and G. Fredrickson, Alex accepted an assistant professorship in Physics at University of Massachusetts. He joined the UCLA Chemistry and Biochemistry Department as an assistant professor in theoretical physical chemistry in July 2005. The Levine Group explores the

structure and dynamics of soft materials, paying particular attention to the role of such materials and structures in a biological context. They currently study force propagation in simplified models of the cytoskeleton, hydrodynamics in membranes, the theory of microrheology and the statistical mechanics of alpha-helical polypeptides of alpha-helical polypeptides.

Knobler Fest - May 2, 2005

by Ajaykumar Gopal, PhD



Ka Yee C Lee presents her talk.

On May 2, 2005, the Physical Chemistry Division held a symposium in honor of Chuck Knobler's retirement and 70th birthday, followed by dinner at the Faculty Center. The celebrations were a great historic and scientific experience. The day began with a symposium where his friends, collaborators and former students and postdocs spoke of their current research.

The evening saw a wonderful banquet arranged at the UCLA Faculty Center (Sequoia Room) where over 80 people -- all connected by one person, Charles Knobler, got to meet, reminisce and partake in the festivities. The highlight of the evening was when people started walking up to the mic and recounting wonderful stories of their experiences with Chuck and Carolyn.

Bill Gelbart and Howard Reiss organized the event.



Chuck Knobler admires the crystal glass cube containing a model of the CCMV virus presented to him at Knoblerfest 2005.

ALUMNI NEWS

Frances Charlotte Schellman, BS'46, PhD'50 (Stanford) lives in Eugene, Oregon where she has been an adjunct associate professor at the University of Oregon.

Donald Eliot Hurd, BS'53,DC (chiropractic)'75, initially was in microelectronics development engineering and management, but for the past 15 years has been self-employed in the Don Hurd Health Services in Vancouver, WA. He describes himself as now semi-retired and in nutritional counseling.

Grant Delbert Venerable II, BS'65, PhD'70 (Chicago) is Vice President, Academic Affairs, at Lincoln University in Pennsylvania.

Gordon W. Gribble, Postdoc'68 (Anet), professor of chemistry at Dartmouth College since 1968, has been chosen to be the recipient of a newly endowed chair as "The Dartmouth Professor of Chemistry"

Richard J. Brooks, BS'68, PhD '74 (UC Santa Barbara), MBA'83 (Golden Gate U) is a business analyst/strategist at France Telecom R&D in South San Francisco.

John Philip Dirlam, PhD'69 (Winstein), retired from Pfizer, Inc. in Groton, Connecticut, in March 2003. He and his wife, Nancy L. Dirlam, BS'66, MS'71, now live in Oshkosh, Wisconsin.

Gene Berg, Ph.D.'70 (Pecsok) has just received the Distinguished Faculty Chair (teacher of the year) at Moorepark College, California, where he has taught for 35 years. While he was a graduate student at UCLA, he received the TA of the Year award twice.

William R. Roush, BS'74, PhD'77, has just joined the Scripps Research Institute's new facility in Palm Beach Florida, where he is Professor of Chemistry, Executive Director of Medicinal Chemistry, and Dean of the Florida graduate programs. He has taught previously at MIT, Indiana University, and the University of Michigan.

Gary R. Kunkel, BS'75 (UCDavis), PhD'81 (Martinson) is Associate Professor of Biochemistry at Texas A&M University.

Howard Edan Katz, PhD'82 (Cram), after 22 years at Bell Labs, took a new position in September 2004 as Professor of Materials Science with a joint appointment in chemistry at John Hopkins University.

Ruby Si Loon Chen, BS'96, is now a life science research assistant in obstetrics and gynecology at Stanford University.

Xantippe Julia Jordanides, BS'96,

PhD'02 (UCBerkeley), did postdoctoral research ('02-'03 with Watt Webb at Cornell University.

Rudy M. Tedja, BS'03, is studying osteopathic medicine at Des Moines University.

Jiaying Huang, PhD'04 (Kaner) received one of four awards granted annually worldwide by The International Union of Pure and Applied Chemistry (IUPAC). This is to honor the best Ph.D. thesis in the chemical sciences as described in a 1000-word essay. Jiaying is now a Miller postdoctoral Fellow at the University of California, Berkeley.

Michelle Lee, BS'05 one of our departmental Summer Fellowship winners in the summer of 2002, graduated in 2005 and will attend the University of Pennsylvania Medical School in the Fall. Michelle did research in the Houk laboratories for 3 years, was a Piano Performance Major, Miss Los Angeles-Culver City in 2005 and 4th Runner-Up in the Miss California Pageant in June, 2005.

In Memoriam

Professor Henry J. Bruman, BA'35, a Berlin native who earned his undergraduate degree in Chemistry from UCLA before receiving a doctorate in geography from UC Berkeley in 1940, died of a heart attack on March 6, 2005.

He joined the UCLA Geography Department in 1945 and headed it from 1957 to 1962. His expertise included Latin American cultural-historical geography, plant geography and land use in the American West. He endowed an educational foundation, helped to establish the campus map library and underwrote a chamber music festival.

In 1983, Bruman established an educational foundation that created endowed chairs at UCLA in geography and German history. He made large donations to the UCLA library, which named its map library in his honor in 1987. He was also a major underwriter of a chamber music festival at UCLA that bore his name. In 1997, he made a challenge grant of matching funds for Chemistry Undergraduate Research Fellowships.

Mary Jane Leeds, BS'37, died

February 27, 2003, aged 88.

Seymour S. Schwartz, BS'38, died August 30, 2002, aged 87.

Rollin W. Monkman, BS'41, died May 13, 2003, aged 84.

David L. Hagmann, BS'42, PhD'50 (Young), JD'64 (U. San Francisco), died of cancer on April 18, 2005 in Orinda, CA, aged 89. He was a Naval Reserve Commander with duty in World War II and again in the Korean War, and was for two years the officer in charge of the Naval Research Laboratory in Oakland. He was a research chemist at Chevron and later, after obtaining his law degree, associated with Chevron's patent department. An avid camellia hybridizer, his most noted hybridized variety, an award winner, is the "Ruta Hagmann" *reticulata*, named after his wife.

George Gregory, BA'42, a great benefactor of this department, died March 16, 2005, at the age of 87. Born in Moscow in 1917, George was taken at age seven to Hamburg, Germany, from Riga, Latvia, where his family had fled after the Russian Revolution. Here his father, Max Bergmann, along with a partner, developed a process for extracting tin and steel from scrap metal. Their successful Jewish owned business soon attracted the attention of the Nazis. They sold the business, at far below market value, but for cash, which they smuggled out when they fled Germany in 1936. The family went to England, but George attended the University of Brussels in Belgium until he rejoined the family and attended the Imperial College of Science and Industry in London. Sometime after fleeing Germany, George changed his surname from Bergmann to Gregory.

Arriving in the United States on September 29, 1940, George was briefly employed in New York before coming to Los Angeles in January 1941, enrolling as a senior at UCLA, and graduating with a degree in January 1942. Following graduation, he was employed as a chemist at various companies until he became director of research for the Products Research and Chemical Corporation in 1948, a business specializing in chemicals for aerospace use. He rose to the post of President and Chief Executive Officer in 1966, retiring as chairman of the board in 1990.

George obtained a number of patents for

.....Continued on Page 11

Graduate Student Dissertation Awards

Saul and Sylvia Winstein Award to Scott Vignon; Physical Chemistry Award to Robin Hayes;
Biochemistry Award to Rebecca Nelson & Feng Qiao; Inorganic Chemistry Award to Shabnam Virji
Thomas L. and Ruth Jacobs Award to Christopher Suhrada

Undergraduate Student Awards

Alumni Undergraduate Summer Research Fellowship to Lauren May
Ronald S. Gabriel, M.D./Scrubs Unlimited Summer Research Fellowship to Tiffany Ly
Yoshie Kadota Undergraduate Summer Research Fellowship to Audrey Ross
Daniel Kivelson Undergraduate Research Fellowship to David Chiba
Arthur Furst Award for Excellence in Undergraduate Research to Gabriella Lutz Boulting
Dolores Cannon Southam Award for Excellence in Research to Jeffrey Minoru Yamada
Dunn Award for Excellence in Biochemistry to Joseph Kisung Hahn, Lung-Ching Lee,
Lung-Yi Lee, Ryan Murphy, Frederick Deechen Tsai
Geissman Award for Excellence in Organic Chemistry to Christine Fang & Jeffrey Minoru Yamada
Ramsey Award For Excellence in Physical Chemistry to Robert James Esposito & Zachary Gelfand Wright
Ethel Terry McCoy Award for Excellence in Chemistry & Biochemistry to Lindsey Hong-Sze Chan,
Nami Emily Chun, Karen Thanh Le, Grace Eunhae Lee, Jane A. Refela
Merck Index Award to Mandy Cheung, Michael Edward Cody, Eveline Hamdani, Sam Kohanof
Michael David Yashar & Artin Matthew Yeranossian
Hypercube Scholar to Christine Fang
Gold Family Foundation Award to Samuel Chan

Honored Guests, New Friends

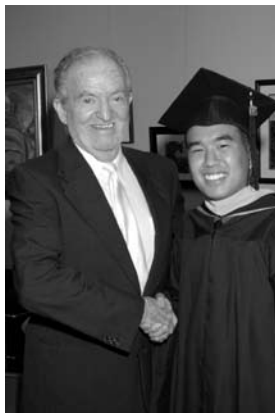
A reception was held in the Café Commons prior to the 2005 Chemistry and Biochemistry Commencement Ceremony on Saturday, June 18, 2005. The reception was attended by the department's donors, recipients of awards, their families, and department faculty.



Ms. Audrey Ross (recipient of the Yoshie Kadota Undergraduate Summer Research Fellowship) Ms. Ruthi Kadota and her daughter, Ms. Akiko Woods.



Mrs. Bobbie Boschan, Ms. Lauren May (recipient of the Alumni Undergraduate Summer Research Fellowship), Professor Guillaume Chanfreau (mentor to Ms. May) and Mr. Bob Boschan. The Alumni Undergraduate Summer Research Fellowship was established in 1997 by a pledge from alumnus Henry Bruman, followed by donations from other alumni, including a major donation from Bob and Bobbie Boschan.



Mr. Hillel Fierer and Mr. Jeffrey Yamada (recipient of the Dolores Cannon Southam Award for Excellence in Research)



Mr. Scott Vignon (recipient of the Saul and Sylvia Winstein Graduate Student Dissertation Award), Mrs. Sylvia Winstein and Professor J. Fraser Stoddart (mentor to Mr. Vignon).

New Ph.D. Degrees Conferred

Arthur Anderson (Hawthorne) "Metathesis Routes to Binary and Ternary Silicon Nitrides"

Melissa Baron (Bowie) "Underlying Architecture of the Post-Synaptic Density"

La-Mei Chen (Lee) "Global Analysis of Drug Resistance and Viral Fitness Mutations and Their Evolutionary Dynamics in HIV-1 from 50,000 HIV Positive Patient Samples"

Ryan Chiechi (Garcia-Garibay) "The Design and Synthesis of Electroactive and Luminescent Materials For Device Applications"

Shih-Ching Chuang (Rubin) "Nano Surgery of C₆₀"

Vincent Cocula (Carter) "Spin Dependent Pseudopotential Density Functional Theory"

Brian Duclos (Jung) "Synthetic Approaches to Pentacyclic Triterpenes Leading to Diastereoselective Carroll Rearrangements And Progress Toward the Total Synthesis of Betulinic Acid"

Eduardo Falcao (Wudl) "Carbonaceous Materials with Exotic Morphologies"

Mark Fleissner (Hubbell) "X-ray Structures of Nitroxide Side Chains in Proteins: A Basis for Interpreting Distance Measurements and Dynamic Studies by Electron Paramagnetic Resonance"

Robin Hayes (Carter) "First-Principles-Based Multiscale Modeling of Crystalline Materials Failure"

Edward Hsieh (Clarke, C.) "Characterization of the yeast gene *Abc1/Coq8* and its Role in Coenzyme Q biosynthesis"

David Hwang (Koehler) "Biogenesis of the mitochondrial inner membrane in the budding yeast *Saccharomyces cerevisiae*"

De-En Jiang (Carter) "Chemistry of Iron Surfaces and Interfaces from First Principles"

Robert Jost (Garrell) "Synthesis of Monodisperse Amphiphilic Block Copolymers"

Seogshin Kang (Stoddart) "Molecular Switches for Nanoscale Devices"

Taiho Kim (Felker) "Stimulated Raman Spectroscopy of Free Radicals"

Albert Lee (Chanfreau) "Post-Transcriptional Regulations During Iron Homeostasis in Yeast"

Jeremy McCallum (Foote) "Photosensitized Oxidation of 8-Oxo-7,8-Dihydroguanine Derivatives and Investigation into Singlet Oxygen Production from the Irradiation of Antibodies"

Sun-Jun Min (Jung) "Studies on Intramolecular Diels-Alder Reactions of Furan and Progress toward Total Synthesis of Arisugacins and Territrem"

Christopher Mortko (Garcia-Garibay) "Photodecarbonylation of Crystalline Beta,Gamma-Unsaturated Ketones and its Application to Preparative Scale Synthesis of Specialty Chemicals and Natural Products"

Rebecca Nelson (Eisenberg) "Structure and Properties of Yeast Prion Peptides"

Aaron Novack (Jung) "Novel [2+2] to [4+2] of Rearrangement of Cyclobutanes"

Amit Oberai (Bowie) "Estimating The Diversity of the Membrane Proteome"

Julie Orf (Hawthorne) "Synthesis and Characterization of Novel Camouflaged Closomers"

Feng Qiao (Bowie) "Structural and Functional studies on the Regulation of Yan and Pointed-P2 by Mae"

Christopher Rabbat (Merlic) "Synthetic Approaches for the Total Synthesis of Tubelactomicin A, Direct Functionalization of Tetrahydrofuran and Other Ethers with Trimethylsilylketene, and Synthesis and Reactions of (Phenyltricarboxylchromium)di azomethane"

Jefferson Rose (Baugh) "Nanosystems Via Self-Assembly: Size Distribution Control, Spatial Positioning and Wiring of Ge Dots on Si (111)"

Sourav Saha (Stoddart) "A Light-Harvesting Nanoscale Power Supply for Supramolecular and Molecular Machinery"

Jeffrey Selander (Merlic) "Preparation and Cyclization of Dienyl Chromium Carbene Complexes & Selectivity in Palladium Catalyzed Cross Coupling Reactions"

Christopher Smallwood (Schwartz) "Preparation and Cyclization of Dienyl Chromium Carbene Complexes & Selectivity in Palladium Catalyzed Cross Coupling Reactions"

Se Hui Sohn (Valentine, Garrell) "Biophysical studies of wild type and mutant copper-zinc superoxide dismutase"

Glenna Sowa (Reislker/Liu) "Phase Behavior of F-actin"

Christopher Suhrada (Houk) "Theoretical Insights on Product Selectivity in Diradical-Mediated Thermal Rearrangements"

Robert Tinder (Jung) "The Design and Synthesis of Estrogen and Androgen Receptor Antagonists"

Scott Vignon (Stoddart) "Exploring Dynamics and Stereochemistry in Mechanically Interlocked Compounds"

Shabnam Virji (Kaner,Garrell) "Polyaniline Nanofiber Sensors"



Professor Christopher Lee Hooding New Ph.D.,
La-Mei Chen

COMMENCEMENT UCLA 2005

The ceremony has a ritual and a rhythm to it. The new Ph.D.s are brought forward and hooded by their faculty advisors. This is a moment of great pride for those who have earned this most advanced degree. Every one of them has spent hours and years working in the labs, doing original research under faculty guidance while writing and perfecting a thesis. Some will go straight into industry jobs while others accept postdoctoral positions elsewhere.

Those who have earned a Master of Science are next. Graduate and Undergraduate prizes are awarded. Finally, the largest group of all, those receiving their Bachelor of Science degree ascend, one by one, to receive that precious diploma.



Serving the cake



Stage-managing the production



Their turn at last



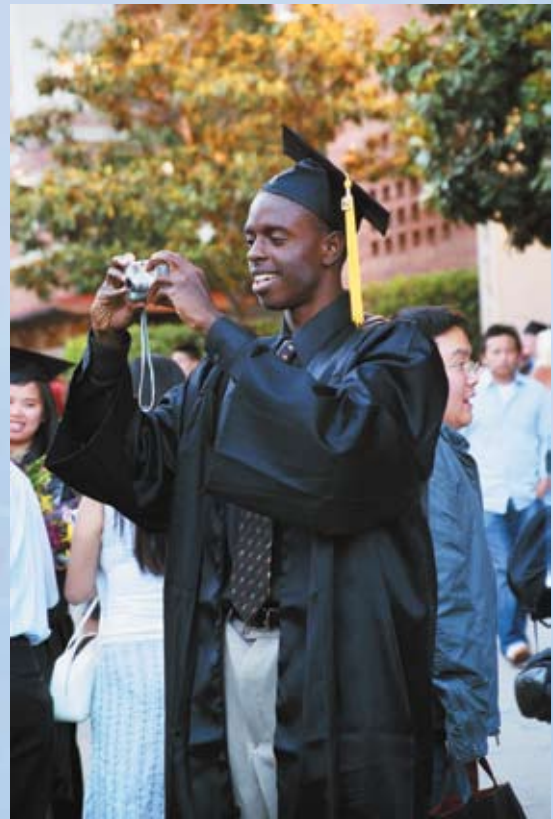
Delroy Baugh hoods new Ph.D., Jefferson Rose



Professor Garrell presents the Ethel Terry McCoy Award for Excellence in Chemistry & Biochemistry



Two friends graduating together



Preserving the moment - after the Commencement ends

Master of Science Degrees Awarded

Christopher Bird, Jeffrey Minoru Yamada, Melody Zaya

Bachelor of Science Degrees Awarded

Robert Clubb, Undergraduate Advisor, presented the Bachelor of Science degrees. Harold Martinson, Chair of Chemistry and Biochemistry, offered the closing remarks.

Bachelor of Science Highest Honors

Gabriella Lutz Boulting
Lindsey Hong-Sze Chan
Mandy Cheung
Nami Emily Chun
Michael Edward Cody
Robert James Esposito
Christine Fang
Joseph Kisung Hahn
Eveline Hamdani
Sam Kohanof
Karen Thanh Le
Grace Eunhae Lee
Lung-Ching Lee
Lung-Yi Lee
Ryan Murphy
Navapoln Ramakul
Jane A. Refela
Frederick Deechen Tsai
Zachary Gelfand Wright
Jeffrey Minoru Yamada
Michael David Yashar
Artin Matthew Yeranossian

Marie Jose Bouhamidi
Gabriella Lutz Boulting
Lesley Anne Bravin
Nikole Catherine Brown
Tiffany Santos Canlas
Lisa Cao
James Alan Carter
Mary Grace Castro
Princess May Delossantos Castro
Christy Ching Yan Chan
Lindsey Hong-Sze Chan
Sally C. Chan
Ji Young Chang
Patrick Y. Che
Denise Anne Chen
Tsu-Ping Chen
Mandy Cheung Φ
Yiu-Yiu Eunice Cheung
Yi Chin Chiou
Lubna Chitalwalla
Hyung Chul Cho
Kyunghee Cho
Tony I-Fan Chou
Kristine Pei-Ta Chu
Nami Emily Chun
Ga-Young Chung
Michael Edward Cody Φ
Christopher Cheney Coker
Jennifer Anne Cooper
Julie Dang
Tal Danino
Sumit Datta
Pablo Jose De Leon
Lucila R. Debuayan
Viam Dinh Φ
Ian Chu Dong
Anna Dorfman
Sandy Phat Duong
Robert James Esposito
Stanislas Mani Ethenoz
Christine Fang Φ
Saman Farr
Mikhail Faybyshev
Sophia May Fong
Grace Ah-Wo Fung
Cecilia Garcia
Sara Ghafouri
Michelle Martine Gonzales Φ
Jason E. Gruspe
Pritha Payel Gupta

Dat Man Ha
Joseph Kisung Hahn
Eveline Hamdani
Jiyang Han
Laura Takahashi Harsh-
barger
Brian Lee Hendricks
Me Her
Shing Kei Ho
Anhthu Bao Hoang
Ryan Horsley
Yao-Wen Eliot Hu
Ryan Craig Hutchinson
Richard Huynh
Liliane Idylle
Si Wan Jeong
Mansour George Jam-
mal
Jeannie Jeannie
Hyun Joe
Joshua K. Jung Δ
Natalie Jusman
Teddy J. Kang
Daniel Takeo Kasuga
Maria Ahmed Khan
Ali Khosh
Bo Kyu ang Kim
Julie Heui Kim
Tae Kyung Kim
Saman Kohanof
Sarah Maria Komin
Sarah Bethany Koo
Sharis Krekian
Hwasun Ku
Nino Benedict Chan
Kuo Tiong
Christopher Yan Chi
Kwan
Kimberly Kweon
Lily Kwong
Allison Linh Lam
Karen Kayan Lam
Oanh Amanda Lam Δ
Weng Si Lam
Yan Yan Nelly Lam
Alexis Lau
Betty Lau
Chun Hin Lau
Yikming Lau

Karen Thanh Le
Ahyoung Lee
Candace S. Lee
Elizabeth Lee
Grace Eunhae Lee Φ
Grant Oyat Lee Φ
Lung-Ching Lee Φ
Lung-Yi Lee Φ
Robert Ken Lee
Seunghyun Lee
Yueh-Jung Lee
Man-yin Leung
Wei Li
Cuiyi Liang
Michael H. Lin
Dien Liu
Tania Hagop Lucinian
Neil Evan Lum
Hai Thanh Luong
Ying Hui Luu
Ricki-Leigh Laura Malaguti
Kristine Ocampo Manlangit
Ilana Valeri Marcus
Kimberly Ann Miner
Anahita Mohammady
Ka Ho Stephen Mok
Jessica Lynn Murphy
Ryan Murphy
Richard Robert Napoleon
Victoria Elizabeth Nelson
Jimmy Nhan-Thanh Nguyen
Thomas Nguyen
Tung Thanh Nguyen
Valerie Kim Bao Huong Nhan
Anthony August Nielsen
Nima Nikaiyn
Stephen Tyson Norris
Trevor Kenji Oelrich
Ji Young Oh
Yosuke Jimmy Oishi
Adila Mohammed Omer
Sachiko Onishi
Pamela Panesar
Jihea Park
Youna Park
Whitney Lynn Pasch
Inna Pashkov
Chinal Patel
Keith Everett Penner

Bachelor of Science Honors

Sumit Datta
Michelle Martine Gonzales
Shing Kei Ho
Yao-Wen Eliot Hu
Karen Kayan Lam
Ricki-Leigh Laura Malaguti
Tanya Christineh Petrossian
Cynthia Ji Young Shin
Melisa Tirtaputra Susanto
Hsing-Hsien Tung
Katherine Ngoc Vu
Melody Zaya

Bachelor of Science

Arsen Alex Agoian
Kourosh Alavi
Asal Sami Al-salman
Latiffe Amelia Amado
Eugenio Aquino
Rei Asami
Amanuel Asmamaw
Vahe Michael Azarian
Jennifer Kaoru Bando
Jennie Lynn Barba
Aaron Thomas Birge
Jason Richard Bjorklund

Sumit Datta
Michelle Martine Gonzales Φ
Christopher Cheney Coker
Jennifer Anne Cooper
Julie Dang
Tal Danino
Sumit Datta
Pablo Jose De Leon
Lucila R. Debuayan
Viam Dinh Φ
Ian Chu Dong
Anna Dorfman
Sandy Phat Duong
Robert James Esposito
Stanislas Mani Ethenoz
Christine Fang Φ
Saman Farr
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(Departmental News, cont'd from page 2)

ICCOSS XVI UCLA

The 17th edition of the International Conference on the Chemistry of the Organic Solid State (ICCOSS, XVII) held at the University of California, Los Angeles from July 24 - 29, 2005. ICCOSS was a multidisciplinary meeting covering all areas of the organic solid state. Speakers came from all over the world, from universities and private industry, to give talks on such diverse topics as crystallization phenomena, polymorphism and phase transitions, reactions in crystals, crystallization phenomena, crystal engineering and supramolecular interactions, molecular machines and nanocrystals. Miguel Garcia-Garibay of the Organic Division organized the event.

Christopher S. Foote 1935-2005

Christopher Spencer Foote, the foremost authority on chemical reactions of singlet oxygen, died June 13 at his home in Santa Monica, California, from complications of brain cancer. He was 70.

A UCLA faculty member for his entire career, Foote made the groundbreaking discovery of the role of singlet oxygen – an electronically excited form of the oxygen in the air – in reactions of organic molecules caused by sunlight and ultraviolet light. Foote's discovery, established an independent chemical route to singlet oxygen. This became the fundamental principle that led to a rich career exploring the interactions of singlet oxygen with a broad range of chemicals, ranging from DNA and other biological molecules to nanomaterials.

His 43-year academic career at UCLA established him as a world leader in the field of physical organic chemistry. He earned many prestigious awards for his achievements, including an Alfred P. Sloan Fellowship, a Guggenheim Fellowship, and the Leo Hendrik Baekeland Award of the American Chemical Society, the Arthur C. Cope Scholar Award and the Tolman Medal of the Southern California Section of the American Chemical Society.

Foote served as Department Chair from 1978-1981, spearheaded construction of the Molecular Sciences Building and was a strong advocate in developing the department's commitment to hiring outstanding female scientists for faculty positions. He served the broader UCLA community in a variety of positions.

Donations may be made to UCLA Foundation with a notation that it is for the Christopher S. Foote Graduate Fellowship in Organic Chemistry, and sent to: Chair's Office, Department of Chemistry and Biochemistry, UCLA, P.O. Box 951569, Los Angeles, CA 90095-1569. Please write fund number 3805 on the donation.



FACULTY RESEARCH

Using self-Assembly to Make and Explore Nanostructured Materials

by Sarah H. Tolbert

The promise of nanoscience and nanotechnology has made it out of the lab and onto Wall Street. The idea is simple – by making things small, it should be possible both to put more interesting items in a finite space, and, more importantly, to produce materials with fundamentally new properties. While the former is vitally important for the next generation of Pentium chip, it is the latter that really makes nanoscience exciting. The focus of research in the Tolbert group is to learn more about how nanometer scale architecture can be used to tune the properties of materials.

In order to explore new nanostructured materials, one must first be able to produce these materials, and in the Tolbert group, the method we use is molecularly driven self-assembly. Instead of producing patterns lithographically using a mask (what is known as top-down fabrication), we tune the properties of molecules so that so that they spontaneously form complex structures in a “bottom-up” fabrication approach. This method has the advantage that it is easy and inexpensive to produce materials, as it generally employs standard solution techniques. The challenge is in finding ways to produce the desired, complex architectures using only intermolecular interactions.

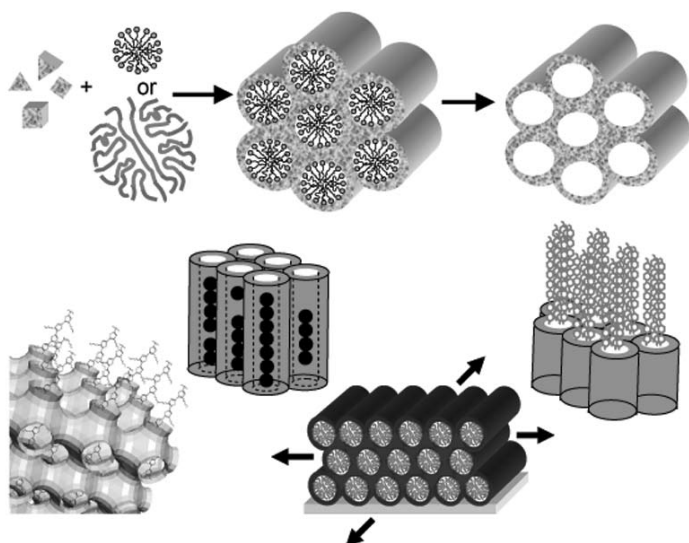
The Tolbert group uses a wide range of self-assembly techniques to produce nanostructured materials. We use inorganic colloids or nanocrystals as building blocks for periodic arrays. We also use biological cages such as viruses or vaults (a eukaryotic protein cage somewhat similar to a virus) to produce biocompatible species. The most versatile method employed by the Tolbert group, however, is the idea of inorganic-surfactant co-assembly. In this method, soluble inorganic precursors co-assemble with amphiphilic surfactants or block co-polymers to produce inorganic-organic composites. The materials have long range periodicity similar to liquid crystalline phase, but with a rigid crosslinked inorganic framework. More importantly, the inorganic component can be removed to produce periodic nanoporous inorganics with periodicity in the range from 2 – 20 nm. Materials can be made with hexagonal, cubic, or layered architectures. A number of groups have been working on producing these materials from oxides (silica, titania, etc), but the Tolbert group has recently shown that periodic nanoporous solids can also be made from a wide range of non-oxide semiconductors.

The Tolbert group then works to understand the new physics that comes from making nanostructured versions of materials. For example, the Tolbert group, working with the Gupta group in Mechanical and Aerospace Engineering, has shown that when one produces a periodic nanostructured polymer / silica structure, one can retain most of the stiffness of inorganic silica glass, but one can add to that remarkable elasticity and fracture toughness. The new mechanical properties come from a combination of the finite size scale of the composite (which prevents cracks from propagating), and from having a nanometer scale architecture that can deform in addition to the atomic scale bonds. For some other applications, however, the bare templated framework does not have the desired properties, and so the Tolbert group often fills the voids of the nanoporous solid with other materials to produce new properties. For example, stacking magnetic nanocrystals in the straight pores of a hexagonal honeycomb structured silica can produce magnetic materials with properties very different from the starting nanocrystals.

Another system that the Tolbert group has explored extensively is the properties of semiconducting polymers contained within nanoporous inorganics. The Tolbert group has shown that a confined pore system can be used to stretch out the polymer chains, producing highly polarized emission and potentially altered transport properties in these organic semiconductors. These stretched polymer chains can be produced both by diffusing polymers into pores after synthesis of the inorganic framework, or by directly co-assembling amphiphilic polymers with inorganic precursors. In addition to polarize luminescence, the semiconducting polymers also show some exciting new physical properties. For example, a film of aligned polymers-in-pores shows lasing (or its cavity free cousin, amplified

stimulated emission or ASE) at surprisingly low thresholds. The ASE light is highly polarized and directional and reflects the aligned nature of the semiconducting polymer chains in the pores.

Beyond new physical phenomena, the Tolbert group is also working to exploit some of the new phenomena discussed above for practical applications. For example, the Tolbert group is working the Schwartz and Rubin groups here in the department to produce more efficient solar cells through self-organization of semiconducting polymers. Again with the Schwartz group, they are exploring ways to make lower-threshold semiconducting polymer lasers. The Tolbert group is also working to use these techniques in the production of micro- and nano-scale batteries. The magnetic nanocrystal arrays may find applications in high density magnetic storage, and the work on mechanical properties of periodic composite solids is being examined for low dielectric layers and strain relief interlayers. While the range of physical phenomena is large, one thing is simple and clear – self-assembly is an effective way to make complex materials with unique and exciting physical properties.



STUDENT PROGRAMS

The UCLA GK-12 Program

Contributing editor, Smadar Gilboa



Sadaf Sehati (Valentine group) is working with eighth graders at John Muir Middle School, kids who are excited and focused on using computers to study molecules. The lesson involves learning about the structure and function of lipids, proteins, carbohydrates and nucleic acids – the macromolecules in living systems. The class is using wireless computers connected to the Internet to browse and learn from web pages specially developed by Sadaf.



Left to right: Lily Hsu, Mui Sam, Hanna Kang, Heather Johnson

During her GK-12 Fellowship last year, Mui Sam (PhD 2004, Mahdi Abu-Omar; Guillaume Chanfreau) created a wealth of inquiry-based experiments for her teachers, Lily Hsu, Hanna Kang, and Heather Johnson. In one experiment students demonstrated their mastery of the mole concept along with the scientific method by designing and carrying out Mui's experiment. "How Many Moles of Chalk Does it Take to Write your Name?"



Arlene Russell,
Principal Investigator

GK-12 Fellows and teachers collaborate to design and implement lessons that give mostly poor, racially, culturally and linguistically -diverse students an opportunity to explore science in a creative and fun way. These partnerships last for one year and begin in summer before the school year starts.

The GK-12 Program is needed because the limited time, resources and facilities available to teachers often restrict them to giving lectures and rote assignments, an approach that can leave their students viewing science and math as boring. The GK-12 Fellows, who possess both content expertise, enthusiasm and time, mingle with the kids almost as peers and open their eyes to what a fascinating pursuit science can be. The GK-12 Fellows, in turn, better-develop their communication, teaching and team building skills.

Michael Page of the Fred Hawthorne Group (front cover) reports that many students were fascinated that he was actually working to synthesize pharmaceutical drugs. "I received various questions that were quite humorous as well. One student asked me, 'Do you put vegetables into your drugs because those are good for you?' Another asked, 'If you spill your drugs on your hand will it hurt?' These questions amazed me because I had never viewed my research from the innocence and wonder of such youthful eyes. This was the first time many of the students realized the possibilities of research as a graduate student in the sciences."

Arlene Russell, Senior Lecturer at UCLA in both the Department of Chemistry and Biochemistry and the Department of Education, is the Primary Investigator of this NSF-Funded program, one of 123 such programs nation-wide. Fred Freking, also in Chemistry and Biochemistry, and Ted Gamelin in the Mathematics Department, are Co-Primary investigators. Smadar Gilboa, also of Chemistry & Biochemistry, is Program Manager. In the 2004-2005 school year, two students from the Biochemistry Division – Mui Sam and Sadaf Sehati – joined 14 others from such diverse disciplines as Mathematics, Physics, Molecular Biology, Evolution, Physiology, and Ecology as GK-12 fellows.

"I have noticed that the classes I visit each week realize they will likely be doing a "fun" science experiment whenever I'm there. While they may just enjoy 'getting their hands dirty,' at least I see enthusiasm about doing science from these students." -- Meredith Oltmann, a Science Fellow, of Biological Chemistry.

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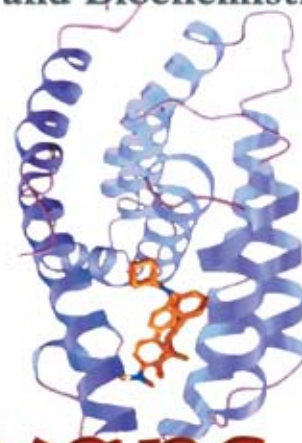
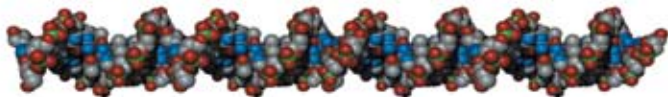
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