

# Periodic Tabloid

Chemistry and Chemical Engineering Division at Caltech

Vol 2, No 3, Summer 2010

## Caltech awarded \$122 million by DOE to build an Energy Innovation Hub

Dr. Nate Lewis, George L. Argyros Professor of Chemistry, has been awarded \$122 Million by the U.S. Department of Energy (DOE) to establish a center with researchers from Caltech (including Dr. Harry Atwater) and the Lawrence Berkeley National Laboratory to develop ways to generate fuel directly from sunlight.

As part of a broad effort to achieve breakthrough innovations in energy production, U.S. Deputy Secretary of Energy Daniel Poneman announced on July 22 an award of up to \$122 million over five years to a multidisciplinary team of top scientists to establish an Energy Innovation Hub aimed at developing revolutionary methods to generate fuels directly from sunlight.

The Joint Center for Artificial Photosynthesis (JCAP), to be led by the California Institute of Technology (Caltech) in partnership with the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab), will bring together leading researchers in an ambitious effort aimed at simulating nature's photosynthetic apparatus for practical energy production. The goal of the Hub is to develop an integrated solar energy-to-chemical fuel conversion system and move this system from the bench-top discovery phase to a scale where it can be commercialized.

JCAP research will be directed at the discovery of the functional components necessary to assemble a complete artificial photosynthetic system: light absorbers, catalysts, molecular linkers, and separation membranes. The Hub will then integrate those components into an operational solar fuel system and develop scale-up strategies to move from the laboratory toward commercial viability. The ultimate objective is to drive the field of solar fuels from fundamental research, where it has resided for decades, into applied research and technology development, thereby setting the stage for the creation of a direct solar fuels industry.

The Hub will be directed by Nathan S. Lewis, George L. Argyros Professor and Professor of Chemistry, Caltech. Other members of the Hub leadership team include: Bruce Brunschwig (Caltech), Peidong Yang (UC Berkeley/Berkeley Lab), and Harry Atwater (Caltech). In addition to the major partners, Caltech and Berkeley Lab, other participating institutions include SLAC National Accelerator Laboratory, Stanford, California; the University of California, Berkeley; the University of California, Santa Barbara; the University of California, Irvine; and the University of California, San Diego.

The JCAP Proposal Leadership team includes Heinz Frei and Elaine Chandler of Berkeley Lab, as well as Eric McFarland of the University of California, Santa Barbara, and Jens Norskov of Stanford University and the SLAC National Accelerator Lab. Also involved at Caltech will be Harry Gray, the Arnold O. Beckman Professor of Chemistry; Jonas Peters, the Bren Professor of Chemistry; and Michael Hoffman, the James Irvine Professor of Environmental Science.





## CCE congratulates the students who received awards in 2010

The 2010 Herbert Newby McCoy Award Seminar took place on Thursday, June 10<sup>th</sup>, at the Sturdivant Lecture Hall (153 Noyes). The McCoy Award is given in recognition of outstanding achievement in research by Chemistry graduate students. This year's awardees were Morgan Cable, Xin Cheng, and Hyungjun Kim, who spoke of their research to CCE faculty, students, staff, and to visiting family and friends. The seminar was followed by a reception at the new Schlinger building courtyard.



Wilson C. Ho was the recipient of the Renuka D. Sharma prize, which was established in 2009 by Prof. Brahma D. Sharma, in memory of his daughter Renuka D. Sharma, to be given to the sophomore student who has achieved outstanding performance in Chemistry during his or her freshman year. This prize, consisting of a cash award of \$1000, was donated to encourage scholastic achievement early in a student's career and is administered by CCE.

Other prizes included the Richard P. Schuster Award, received by CCE undergraduates Carolyn Valdez, Vadim Baidin, and James Dama. It is given based on financial need and academic promise.





# Congratulations to the CCE Grads of 2010!

Caltech's 116th annual commencement ceremony took place at 10 a.m. on Friday, June 11, at Beckman Mall. Charles F. Bolden, Administrator, National Aeronautics and Space Administration, presented the keynote address. Charles Bolden's 34-year career with the Marine Corps included 14 years as a member of NASA's Astronaut Office. (Complete coverage available at [pr.caltech.edu/commencement](http://pr.caltech.edu/commencement))



## Bachelor of Science

Vadim Baidin  
Edward Hing Bramston-Cook  
Abraham Nataniel Buditama  
Stephanie S. Chang  
Kangway V. Chuang  
Sunny Chun  
Jaeyoon Chung  
Daryl Bennett Coleman  
James Farris Dama  
Alan Deng  
Ali Ebrahim  
Andrew Michael Freddo  
Connie Gao  
Kathryn Harris Gunn  
Steve Sidi He  
Kimberley Phoebe Ho  
Sarah Hunt  
Misha Imtiaz  
Tony Z. Jia  
Robert Bryant Kaspar  
Heejae Kim  
David Kratz  
Changyi Li  
Benjamin Lin  
Ankita Mishra

Caleb Enoch Ng  
James Price Pellegren  
Diane Jennifer Plummer  
Japheth Kiplangat Cheruiyot Rono  
Nicholas Rosa  
Daniel Roland Sanchez  
Stephanie Elizabeth Stangl Schulze  
Cherrie Soetjpto  
Amber Wai Valdes  
Carolyn Nicole Valdez  
Heather Nicole Widgren  
Stephen Kenneth Wilke

## Master of Science

Artemis Ailianou  
Jennifer Sigrid Barklund  
Yashodhan Bhawe  
Jill Suzanne Craven  
Amanda Marie Grantz  
Christine Lauren Loza  
Darren Takeshi Nakamura  
Yoshie Narui  
Matthew Edward Thornton  
Zachary James Williams

## Doctor of Philosophy

Heather Dawn Agnew  
Kevin McCormack Allan  
Amos Gerald Anderson  
Kiowa S. Bower  
Rogier Braakman  
Jenelle Kiara Bray  
Nicholas Anthony Brunelli  
Morgan Leigh Cable  
Tammy Y. Campbell  
Martina Nini Carbone  
John Reeves Carpenter, III  
Diane Elizabeth Carrera  
Arthur Wing Hong Chan  
George Shuxiong Chen  
Michelle E. Farkas  
Daniel Ross Fisher  
Anna Barr Folinsky  
Alexander C. Gagnon  
Joseph Charles Genereux  
Kristin Rule Gleitsman  
Suzanne R. Golisz  
Heather Kristine Hunt  
Michael Raymond Krout  
Kevin Michael Kuhn  
Paul Eulehwann Lee  
Yu Liu

Brendan Cahill Mack  
Neal P. Mankad  
John B. Matson  
Andrew Friedrich May  
Kathryn Anna McMenimen  
Justin Thomas Mohr  
Jonathan Edward Mueller  
Evan Lyle Neidholdt  
Aaron Craig Noell  
Valerie Ann Norton  
Tod Augustin Pascal  
Cindy Ann Puckett  
Morgan C. Putnam  
Jennifer Lyn Roizen  
Diana Sergeievna Smirnova  
Joshua Michael Spurgeon  
Jason Douglas Surratt  
James W. Swan  
Manuj Swaroop  
Hwan-Ching Tai  
Jennifer Elisabeth Witman  
Yan Xia  
Melanie Anne Pribisko Yen  
Laurence Yip-Lun Yeung  
Brian Matthew Zeglis  
Xin Zhang

## BI Lawn Party

While researchers in Schlinger enjoyed the move into their new labs, Beckman Institute (BI) researchers longed for their cherished BI lawn, as summer approached. The lawn was housing construction crews, and was finally cleared again as Schlinger opened its doors. On August 19<sup>th</sup>, the Gray and Lewis groups treated everyone to a festive lawn party, which included great food and exciting contests, in which CCE faculty, students, and staff participated.



## CCE welcomes Jeff Mendez in the UG Lab

Jeff Mendez joined CCE on August 25th, 2010 as instructor in the chemistry undergraduate laboratory, replacing Jane Raymond, who retired last Fall. Jeff has spent most of his adult life at Caltech and is excited to be returning to teach. Jeff will be teaching the traditional Chem 3 and Chem 4 lab series, as well as developing new versions of Chem 3, and being responsible for Mead Laboratory. Jeff began teaching while he was in high school, lecturing on ocean biology and coastal pollution in nearby elementary schools. Jeff attended Caltech as an undergraduate, majoring in chemistry and participating in research projects with Dr. Seth Marder (now at Georgia Tech) and Prof. John Bercaw. While Jeff was an undergrad, he continued to give science lectures to both middle and high school students in his home town of Huntington Beach. Jeff graduated with honors in 1999 and went on to graduate school at UC Berkeley, studying atmospheric chemistry. However, he soon returned to Caltech in the Department of Environmental Science and Engineering to complete his Ph.D. in chemical oceanography with Prof. Jess Adkins. Jeff continued teaching while in graduate school, this time as an adjunct professor in oceanography at Pasadena City College. Upon graduation from Caltech, Jeff began a post-doc fellowship at USC and continued teaching at PCC, this time in chemistry. After he completed his post-doc, Jeff decided to pursue teaching full-time and taught at both PCC and Glendale Community College in the departments of Chemistry and Geology. Jeff is in the unique position of having taken Chem 3 and Chem 4, been a TA for Chem 3 and Chem 4, and looks forward to now teaching and updating Chem 3 and Chem 4.



## Two members of CCE married

Silva Stepanian and Scott Virgil were married on May 23, 2010 on the patio of the Athenaeum. The ceremony was followed by a dinner and dancing reception in the main dining room. Silva and Scott met while working in CCE. Silva has worked on campus for 24 years. She is currently on the information technology (IT) team of the CCE Division. Scott earned his BS degree in Chemistry from Caltech, and his PhD from Harvard. He runs the Center for Catalysis and Chemical Synthesis (CCCS), which is located in the new Schlinger Building. After a honeymoon trip to Italy, the couple returned home to Pasadena, California.



## Tuyen Dang welcomes her first baby

Tuyen Dang, a CCE grant manager, welcomed her first baby, Emma, on April 27, 2010. Tuyen's baby daughter weighed 6 lbs. and 2 oz. Tuyen has now returned to her normal work schedule, managing grants in her Crellin and Spalding offices.

Employment opportunities for undergraduate, graduate students, and postdocs:

[www.cce.caltech.edu/undergradjobs](http://www.cce.caltech.edu/undergradjobs)

[www.cce.caltech.edu/gradjob](http://www.cce.caltech.edu/gradjob)



Ahmed H. Zewail



Jacqueline K. Barton



Dennis A. Dougherty



David A. Tirrell



Aron Kuppermann

## Faculty Updates

- **Ahmed H. Zewail**, the Linus Pauling Professor of Chemical Physics & Professor of Physics and the 1999 Chemistry Nobel Laureate, has received the 2011 Priestley Medal by the American Chemical Society, in recognition of "his development of revolutionary methods for the study of ultrafast processes in chemistry, biology, and materials science."
- **Jacqueline K. Barton**, the Arthur and Marian Hanisch Memorial Professor of Chemistry and chair of CCE, has received an honorary Doctor of Science degree from Columbia University.
- **Dennis A. Dougherty**, the George Grant Hoag Professor of Chemistry, has been awarded Caltech's most prestigious teaching honor, the Richard P. Feynman Prize for Excellence in Teaching. Prof. Dougherty was selected for his "exceptional ability to render difficult concepts in organic chemistry accessible to a broad cross section of undergraduate and graduate students," a skill that has led some of his students to call him "the best lecturer at Caltech."
- **David A. Tirrell**, the McCollum-Corcoran Professor and Professor of Chemistry and Chemical Engineering, has received the 2010 ASCIT (Associated Students of Caltech) Teaching Award.
- **Aron Kuppermann**, Professor of Chemical Physics, was awarded the The 2010 Classroom Teaching Award by the Caltech Graduate Student Council (GSC).

### *Periodic Tabloid*

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