



120th Annual Commencement
CALIFORNIA INSTITUTE OF TECHNOLOGY

June 13, 2014



120th Annual Commencement
CALIFORNIA INSTITUTE OF TECHNOLOGY

Friday, June 13, 2014
10:00 a.m.

LETTER FROM THE CHAIR AND THE PRESIDENT

Welcome to Caltech's 120th commencement ceremony!

It is an honor and a privilege to join you in celebrating Caltech's 2014 graduates.

Reaching this milestone is a significant accomplishment, and it is an achievement in which we hope every graduate and their family will take great pride. Caltech is known for its rigorous programs, and the goals of this rigor are to empower students for a lifetime with what you have learned here; to instill in you the confidence to try new things; to inspire you to become responsible citizens and leaders; and for you to thrive in whatever field—or fields—you choose to pursue after you graduate.

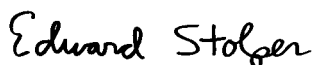
Today's graduates join a dynamic and accomplished community of alumni whose work spans academia and industry—from education to entertainment, and from aerospace to microbiology—and whose impact on the world is positive and profound.

We are proud of all our graduates and extend to every one of you our congratulations and best wishes.

Sincerely,



David K. Lee
*Chair of the Board of Trustees
California Institute of Technology*



Edward M. Stolper
*Interim President and Provost
California Institute of Technology*

ABOUT CALTECH

More than a century ago, in November 1891, Throop University opened its doors to six faculty members and 31 students. Within a few years, astronomer George Ellery Hale, chemist Arthur Amos Noyes, and physicist Robert Andrews Millikan had come together to transform Throop into a world-class science and engineering research and education institution.

Since then, Caltech has grown to nearly 300 professorial faculty, more than 600 postdocs, more than 1,200 graduate students, and almost 1,000 undergraduates—all of whom expand human knowledge and advance society through bold, collaborative explorations and creative, intensive scholarship in fundamental and applied sciences and engineering. Caltech scholars have accelerated life-changing discoveries and transformed the fields of energy, medicine, geoscience, and astrophysics. They have earned 32 Nobel Prizes, seven Crafoord Prizes, 13 National Medals of Technology and Innovation, and 57 National Medals of Science.

The Institute operates internationally recognized facilities for advanced research on its campus and oversees a seismological laboratory, NASA's Jet Propulsion Laboratory, and an unparalleled network of astronomical observatories.

At Caltech, Theodore von Kármán developed principles that influenced modern jet flight; today, Caltech and JPL scientists such as John Grotzinger and Bethany Ehlmann are advancing the robotic exploration of Mars. In 2012, Grotzinger, Ehlmann, and a team that included many JPL and Caltech engineers and scientists made history when they successfully landed NASA's newest Mars rover, Curiosity, on the Red Planet.

Charles Richter created the first logarithmic scale for measuring the magnitude of earthquakes; Thomas Hanks and Hiroo Kanamori reinvented the scale to provide more accurate readings of large quakes, from a greater distance; and today, K. Mani Chandu and R. Andreas Krause are working to adapt cell phones for use in earthquake forewarnings and detection.

Maarten Schmidt determined the nature of quasars; Mike Brown discovered an object larger than Pluto beyond the outer solar system, demoting Pluto to dwarf-planet status.

Clair Patterson's research on lead pollution prompted controls in the automobile industry; today, current faculty such as John Seinfeld, John Dabiri, Frances Arnold, and Sossina Haile are pioneering research into air quality and clean energy.

Linus Pauling determined the nature of the chemical bond; Max Delbrück helped inspire the creation of molecular genetics; today, David Baltimore is using gene therapy to aid in the fight against human HIV infections.

Caltech is a place where bold discoveries are possible—where visionary scholars advance the boundaries of knowledge. We celebrate today the 526 graduates who will earn 197 bachelor's degrees, 148 master's degrees, and 181 Ph.D. degrees, and who will contribute to Caltech's impressive legacy and record of achievement around the world.

ACADEMIC PROCESSION

Chief Marshal

Konstantinos P. Giapis, Ph.D.

Marshals

Geoffrey A. Blake, Ph.D.

Thomas F. Miller, III, Ph.D.

Richard M. Murray, Ph.D.

David Prober, Ph.D.

Joseph E. Shepherd, Ph.D.

Faculty Officers

John O. Dabiri, Ph.D.

John M. Eiler, Ph.D.

Kristine L. Haugen, Ph.D.

MARCHING ORDER

Candidates for the Degree of Bachelor of Science

Candidates for the Degree of Master of Science

Candidates for the Degree of Doctor of Philosophy

Faculty Officers

The Faculty

The Chairs of the Divisions

The Deans

The Vice Provosts

The Vice Presidents

The Trustees

The Commencement Speaker

The Interim President and Provost

The Chair of the Board of Trustees

PROGRAM

ORGAN PRELUDE	Leslie J. Deutsch, Ph.D.
PROCESSIONAL	The Caltech Convocation Brass and Percussion Ensemble <i>William W. Bing, M.M., Conductor</i>
PRESIDING	David L. Lee, Ph.D. <i>Chair of the Board of Trustees California Institute of Technology</i>
COMMENCEMENT SPEAKER	Daniel H. Yergin, Ph.D. <i>Pulitzer Prize-winning author and leading energy scholar</i>
CHORAL SELECTION “Ode to Joy” excerpts from Symphony No. 9 by Ludwig van Beethoven; Arranged by Dr. Deutsch (<i>Translation on page 58.</i>)	The Caltech Glee Club, the Caltech Convocation Brass and Percussion Ensemble, and Organ <i>Nancy Sulabian, M.M., Conductor</i>
CONFERRING OF DEGREES	Edward M. Stolper, Ph.D. <i>Interim President and Provost California Institute of Technology</i>
PRESENTATION OF CANDIDATES FOR DEGREES	
For the Degree of Bachelor of Science	Joseph E. Shepherd, Ph.D. <i>Dean of Graduate Studies</i>
For the Degree of Master of Science	Dr. Shepherd

For the Degree of Doctor of Philosophy

Biology and Biological Engineering	Stephen L. Mayo, Ph.D. <i>Division Chair</i>
Chemistry and Chemical Engineering	Jacqueline K. Barton, Ph.D. <i>Division Chair</i>
Engineering and Applied Science	Ares J. Rosakis, Ph.D. <i>Division Chair</i>
Geological and Planetary Sciences	Kenneth A. Farley, Ph.D. <i>Division Chair</i>
Humanities and Social Sciences	Jonathan N. Katz, Ph.D. <i>Division Chair</i>
Physics, Mathematics and Astronomy	B. Thomas Soifer, Ph.D. <i>Division Chair</i>

ANNOUNCEMENT OF AWARDS AND
CONCLUDING REMARKS

Dr. Stolper

ALMA MATER

“Hail CIT”

by Manton Barnes, B.S. ‘21
*(The audience may join in;
lyrics are on page 59.)*

The Caltech Glee Club, the Caltech
Convocation Brass and Percussion
Ensemble, and Organ

RECESSIONAL

The Caltech Convocation Brass
and Percussion Ensemble

Organ Postlude

“The Throop Institute March,”
composed by E. C. Kammermeyer
in 1900 for the Throop Institute
Guitar and Mandolin Society

Dr. Deutsch

*Live streaming of Caltech’s 2014 commencement ceremony will begin shortly before
10 a.m. on Friday, June 13, at www.caltech.edu.*

ABOUT THE SPEAKER

Pulitzer Prize-winning energy expert Dr. Daniel Yergin is vice chairman of IHS, a global information company, and the founder of Cambridge Energy Research Associates (CERA). Hailed by the *New York Times* as “America’s most influential energy pundit” and “a kind of one-man think tank,” Yergin is known around the world as the author of *The Prize: The Epic Quest for Oil, Money, and Power*, a *New York Times* best seller and winner of the 1992 Pulitzer Prize, and his new book, *The Quest: Energy, Security, and the Remaking of the Modern World*, which the *Economist* described as “masterly.”

A Los Angeles native, Yergin holds a B.A. from Yale University and a Ph.D. in international relations from the University of Cambridge, which he attended as a Marshall Scholar. Upon his return to the United States, Yergin taught at the Harvard Business School and the Harvard Kennedy School of Government, and coauthored the report on the Harvard Business School energy project, *Energy Future*. Yergin founded CERA in 1982. CERA was acquired by IHS in 2004 and continues to serve as an advisory and consulting group utilized by both government and industry to understand energy needs and strategies.

Yergin’s first book, *Shattered Peace*, was a comprehensive history of the origins of the Cold War. In addition to his work on energy resources, Yergin continues to research and publish on more general topics in global politics, such as the world economy and the role of Russia in a changing world.

The United States Energy Award, granted by the United States Energy Association (the U.S. member committee of the World Energy Council), was given to Yergin in 1997. In 2014, he received the Lifetime Achievement Award from the Prime Minister of India. Yergin serves on the U.S. Secretary of Energy Advisory Board and has chaired the U.S. Department of Energy’s Task Force on Strategic Energy Research and Development. He is a trustee of the Brookings Institution and serves on the board of the New America Foundation and the advisory boards of the Massachusetts Institute of Technology Energy Initiative and the Institute for 21st Century Energy.

CANDIDATES FOR DEGREES

Bachelor of Science

- Deeksha Agrawal* *Lucknow, India* Mechanical Engineering and Business Economics and Management
- Curie Ahn* *Pittsburgh, Pennsylvania* Biology
- Eli Alster* *Tucson, Arizona* Chemical Engineering (Materials)
- Anthony Elias Alvarez-Gerritsen* *Northbrook, Illinois* Physics and Business Economics and Management and Computer Science (Minor)
- Manuel Chukwuemeka Arene* *Anambra, Nigeria* Computer Science
- Patricio Arrangoiz-Arriola* *Cuernavaca, Mexico* Physics
- Sidhi Assawaworrarit* *Singburi, Thailand* Electrical Engineering
- Susan Margaret Ballentine *Richmond, Virginia* Applied and Computational Mathematics and Business Economics and Management
- Aniruddha Anand Bapat* *Pune, India* Physics
- Andrew William Bartlett *Irvine, California* Chemical Engineering (Process Systems)
- Nathaniel Jacob Kahane Baskin *West Hills, California* Planetary Science
- Juliette Campbell Becker* *Mill Creek, Washington* Astrophysics and English (Minor)
- Liana Braun† *Weston, Florida* Mechanical Engineering
- Julia Alexandra Brown *Poway, California* Biology
- Pallavi Bugga* *Arcadia, California* Chemistry
- Iryna Butsky *San Jose, California* Astrophysics
- Sevan Chanakian *Sunland-Tujunga, California* Engineering and Applied Science (Materials Science)
- Arjun Chandrasekhar *Chandler, Arizona* Computer Science
- James Chang† *Newbury Park, California* Computer Science
- Chih-ping Chen* *Lexington, Kentucky* Bioengineering
- Kevin Brian Chen* *Northridge, California* Computer Science
- Pinting Chen* *Fountain Valley, California* Biology and English (Minor)
- Christine Cheng *Fremont, California* Chemical Engineering (Materials) and English (Minor)
- Puikei Cheng *Franklin Square, New York* Mechanical Engineering and Structural Mechanics (Minor)

* Students whose names are followed by an asterisk are being graduated with honor in accordance with a vote of the faculty.

† Students whose names are followed by a dagger are close to completion and will receive diplomas at the end of the academic year in which all graduation requirements are met.

Benjamin Mathias Clark* *Lancaster, Pennsylvania* Physics

Connor Wilson Coley* *Columbus, Ohio* Chemical Engineering (Materials)

Brandon Robert Comella *Whitehouse Station, New Jersey* Physics

Cutter Adam Coryell† *Los Gatos, California* Physics

Benjamin Leverett Cosman* *San Diego, California* Computer Science

Erika Alden DeBenedictis* *Albuquerque, New Mexico* Computer Science

Connor James Tanaka DeFanti* *San Diego, California* Computer Science

Rachel Elizabeth Deghucc *San Jose, California* Mechanical Engineering and Business
Economics and Management and Geological and Planetary Sciences (Minor)

Neal Bakul Desai *Overland Park, Kansas* Bioengineering

Michael Gerald Dieterle* *Loch Lloyd, Missouri* Biology

Monisha Dilip* *Cupertino, California* Biology

David Wayne Ding* *San Diego, California* Mathematics and Computer Science

William Phillip Dooris* *Seattle, Washington* Mechanical Engineering and History

Matthew Chalfin Dughi† *Miami, Florida* Computer Science

Irina Ene* *Prabova, Romania* Physics

Sandra Yuqian Fang* *San Marcos, California* Mechanical Engineering

Joshua Wolff Fromm* *Lincoln, Nebraska* Electrical Engineering and Computer Science (Minor)

Eric Joseph Gomez *Vancouver, Washington* Computer Science

Angela Chucai Gong* *Cupertino, California* Computer Science

Eduardo Martín González *Virginia Beach, Virginia* Computer Science

Li Gu* *Frederick, Maryland* Computer Science and English (Minor)

Trisha Guchait *Franklin Park, New Jersey* Mechanical Engineering and Business Economics and
Management

Ashley Zhang Guo *Cary, North Carolina* Chemical Engineering (Materials)

Garima Gupta *Jacksonville, Florida* Mechanical Engineering and Aerospace Engineering
(Minor)

Karan Gupta *Delhi, India* Applied Physics and Business Economics and Management and
Computer Science (Minor)

Jeff Ning Han* *Palo Alto, California* Electrical Engineering and Computer Science (Minor)

Hima Jennifer Hassenruck-Gudipati *La Cañada, California* Mechanical Engineering and
Geological and Planetary Science (Minor)

Monica He† *Pewaukee, Wisconsin* Astrophysics and Geological and Planetary Sciences (Minor)

Rachel Egan Hess *Lancaster, Pennsylvania* Mechanical Engineering

Max Jacob Hirschhorn* *West Bloomfield, Michigan* Computer Science

Michael Teoh Hirshleifer* *Irvine, California* Computer Science

Maxwell Christian Horton* *Seattle, Washington* Physics and Computer Science

Bachelor of Science continued

- Sophia Hsien* *Jericho, New York* Biology
- Jessica Wenshan Hsu* *Cupertino, California* Chemistry
- Victor Wei-Hwa Hsu* *Fairfax, Virginia* Computer Science and Business Economics and Management
- Benjamin Hu† *Alpharetta, Georgia* Applied and Computational Mathematics
- Tiffany Amy Huang* *Houston, Texas* Mechanical Engineering
- Ka Kin Kenneth Hung* *Kowloon City, Hong Kong* Mathematics and Computer Science (Minor)
- Gregory Russell Izatt* *Raleigh, North Carolina* Computer Science and Engineering and Applied Science (Computation and Neural Systems)
- Lawrence Jenkins *Washington, District of Columbia* Computer Science
- Julia Dorothy Jester *Coronado, California* Electrical Engineering
- Siduo (Stone) Jiang* *An Hui, People's Republic of China* Chemistry and Biology
- Muhammad Musab Jilani† *Karachi, Pakistan* Electrical Engineering
- Brock Anthony Jones *Denver, Colorado* Computer Science
- Alex Benjamin Jose* *Atlanta, Georgia* Computer Science
- Devashish Sanjeev Joshi *Sunnyvale, California* Bioengineering
- Raj Michael Katti* *Shorewood, Minnesota* Physics
- Sean William Keenan* *Philadelphia, Pennsylvania* Electrical Engineering
- Sohini Khan* *San Jose, California* Biology
- Ishan Khetarpal *Germantown, Maryland* Computer Science
- Justin Turner Khim* *Thompson's Station, Tennessee* Mathematics
- Caroline Haejin Kim *Seongnam, Republic of Korea* Electrical Engineering
- Isaac S. Kim *Chatsworth, California* Computer Science
- SooEun Kim* *Seoul, Republic of Korea* Chemical Engineering (Materials)
- Jocelyn Yoshiko Kishi* *Tucson, Arizona* Computer Science
- Rebekah Zang Kitto *Jacksonville, Florida* Chemistry
- Kathryn Knister* *Clarendon Hills, Illinois* Computer Science
- Chan-Hee Koh* *Los Angeles, California* Mechanical Engineering
- Christophe Olivier Kunesch *Oceanside, California* Computer Science
- Thomas Tai-min Kwok* *San Francisco, California* Chemical Engineering (Biomolecular)
- Sung Min Kwon *Seoul, Republic of Korea* Chemical Engineering (Materials)
- Stephanie Midori Laga* *Northridge, California* Chemistry
- Valère Régis Westbrooke Lambert* *Coronado, California* Physics
- Michael David Lauria* *New Orleans, Louisiana* Computer Science
- Albert Kenneth Lavin *Westerville, Ohio* Mechanical Engineering

Bachelor of Science continued

- Jetson Leder-Luis* *Yonkers, New York* Applied and Computational Mathematics and Economics
- Christina Colleen Lee *Vancouver, Washington* Physics
- Lisa Mannan Lee *Sunnyvale, California* Physics
- Tae Je Lee *Phymouth, Minnesota* Bioengineering
- Theresa Yaho Lee* *San Diego, California* Computer Science and Business Economics and Management
- James Hultquist Leet* *San Jose, California* Mechanical Engineering and Business Economics and Management
- Erica Mun-Chi Leung *Piedmont, California* Chemical Engineering (Process Systems)
- Jarvis Li *Troy, Michigan* Physics
- Jingyuan Li *Chicago, Illinois* Geochemistry and Environmental Science and Engineering (Minor)
- Suna Li* *Greensboro, North Carolina* Biology
- Benjamin Craig Lieber* *Millburn, New Jersey* Electrical Engineering
- Daisy Daiqi Lin *San Jose, California* Engineering and Applied Science (Computation and Neural Systems) and Computer Science (Minor)
- Randall Lin *Rancho Cucamonga, California* Physics and Computer Science (Minor)
- Yuchen Lin† *Pearland, Texas* Mathematics and Computer Science
- Audrey Liu* *Fresno, California* Biology
- Iris Zhengzheng Liu* *Naperville, Illinois* Computer Science and Business Economics and Management
- Jiabin Liu *Beijing, People's Republic of China* Applied Physics
- Tianxiang (Albert) Liu* *Jiangsu, People's Republic of China* Chemical Engineering (Materials)
- William Peter Livingston* *Federal Way, Washington* Physics
- Daniel Yiu Wah Lo* *Singapore, Republic of Singapore* Physics and Planetary Science and Philosophy (Minor)
- Paige Down Logan* *Los Altos, California* Geophysics and Engineering and Applied Science (Environmental Science and Engineering)
- David Lu *Raleigh, North Carolina* Applied Physics
- James J. Lu *Hollis, New Hampshire* Applied and Computational Mathematics
- Katja Edeltrud Luxem* *Durham, New Hampshire* Chemistry
- James Francis Macdonald† *Chicago, Illinois* Computer Science
- Sei Masuoka *Tokyo, Japan* Electrical Engineering and Computer Science (Minor)
- Ella Miriam Mathews† *Mercer Island, Washington* Computer Science
- Grant W. Maxson *Lopez Island, Washington* Applied and Computational Mathematics
- Luka Mernik* *Maribor, Slovenia* Mathematics

Bachelor of Science continued

Omar Mezenner* *Richardson, Texas* Electrical Engineering
Alfred Lewis Mikula, Jr. *Los Angeles, California* Engineering and Applied Science
Neeli Mishra *Princeton Junction, New Jersey* Bioengineering
Abel Misrak *Dallas, Texas* Physics
Marlyn Joanna Moore* *Elmira, New York* Biology
Robert Wesley Morgan *Middleton, Massachusetts* Mechanical Engineering
Eric S. Mukherjee* *Watertown, Massachusetts* Astrophysics and History
Nandini Mukherjee *Fremont, California* Mechanical Engineering
John Christopher Napp* *Berwyn, Pennsylvania* Physics
Pushpa Neppala* *Mount Kisco, New York* Biology
Kanenori Okamoto* *Pasadena, California* Chemical Engineering (Biomolecular)
Brian Chibueze Okoro† *Chino, California* Economics and Computer Science (Minor)
Bertrand Julien Ottino-Loffler* *Winnetka, Illinois* Mathematics and Physics
Bryance Oyang* *Palos Verdes, California* Physics
Michael Ryan Paluchniak* *Oostburg, Wisconsin* Business Economics and Management and
Computer Science
Ketaki Milind Panse* *Riverside, California* Biology
Jungsoo Park *Atlanta, Georgia* Mechanical Engineering
Nina Park* *Newport Beach, California* Biology
Evan James Patterson* *Austin, Texas* Physics and Mathematics
John Angelo Higgs Pharo *Evansville, Indiana* Astrophysics
Jacquelyn Lee Phillips* *Camarillo, California* Biology
Daniel Micah Pipe-Mazo* *Barnstable, Massachusetts* Electrical Engineering
Samantha Piskiewicz *Laguna Beach, California* Chemistry
Ralph Edward Pursifull III *Mountain View, California* Bioengineering
Mike Qian* *Boca Raton, Florida* Computer Science
Misha Raffiee† *Reno, Nevada* Bioengineering and Business Economics and Management
Angad Singh Rekhi* *Carol Stream, Illinois* Electrical Engineering
Andrea Jean Ritch* *St. Petersburg, Florida* Geochemistry
Zachary Adam Rivkin *New York, New York* Mathematics
Anna Katherine Ross* *Eden Prairie, Minnesota* Chemical Engineering (Process Systems)
Iva Rreza* *Rocky River, Ohio* Chemistry
Samuel Jacob Rush* *McLean, Virginia* Computer Science
Elizabeth Hart Ryan* *San Francisco, California* Biology and English (Minor)
Jesse Matthew Salomon *Boca Raton, Florida* Mathematics and Computer Science
Laura Frances Santoso* *Northborough, Massachusetts* Bioengineering

Bachelor of Science continued

Brooklyn Lisa Schlamp *Sulphur, Louisiana* Computer Science
Jonathan Samuel Schor* *Rochester, New York* Biology and Chemistry
Stanford Jeremy Schor* *Rochester, New York* Biology and Chemistry
David Alexander Sell* *Phoenix, Arizona* Applied Physics
Bhargav Setlur* *Cupertino, California* Electrical Engineering
Amanda Nicole Shelton* *Loveland, Ohio* Biology
Jeff Shen* *Walnut, California* Chemical Engineering (Biomolecular)
Jeffrey Daniel Sherman* *Wayne, Pennsylvania* Electrical Engineering
Rory Jesse Shevin *Calabasas, California* Mechanical Engineering
Miceala Marie Shocklee *St. Louis, Missouri* Biology and English
Prastuti Singh* *Pullman, Washington* Physics
Russell Gordon Smith *La Cañada, California* Mechanical Engineering
Seorim Song *Arlington, Texas* Chemical Engineering (Materials)
Kelsey Marie Spaur* *Highlands Ranch, Colorado* Bioengineering
Julia Yijia Jaw Su* *Aliso Viejo, California* Biology and English (Minor)
Qunchao Sun† *Ningbo, People's Republic of China* Applied and Computational Mathematics
Kalpana Suraesh* *Collegeville, Pennsylvania* Computer Science
Benjamin Adam Suslick* *Champaign, Illinois* Chemistry
Alison Tan* *Plano, Texas* Bioengineering and English
Michelle Tang* *Temecula, California* Bioengineering
Brent Blocker Terry-Penak *Park Ridge, Illinois* Mathematics
David Tolnay* *Rockville, Maryland* Applied and Computational Mathematics
Joseph Francisco Torres *San Jose, California* Computer Science
Gautam Ramachandra Upadhy* *Rockville, Maryland* Physics
Atharv Vaish* *West Windsor, New Jersey* Computer Science and Business Economics and Management
David Vartanyan* *Glendale, California* Astrophysics
Malvika Verma* *Sunnyvale, California* Bioengineering
Eugene Vinitsky* *Stamford, Connecticut* Physics
Matthew Gregory Voss *Solana Beach, California* Chemistry and Engineering and Applied Science (Materials Science)
Eric Erjie Wang* *Hollister, California* Electrical Engineering and Computer Science (Minor)
Kening Wang *Chapel Hill, North Carolina* Bioengineering and Business Economics and Management
Yizhen Wang* *Anhui, People's Republic of China* Computer Science

Bachelor of Science continued

- Yuchen Carrie Wang *Suffern, New York* Engineering and Applied Science (Computation and Neural Systems) and English (Minor)
- Benjamin Nachmani Waxer* *Carmel, California* Physics and Business Economics and Management
- Michael Shane Williamson *Reno, Nevada* Mechanical Engineering
- Alexander Wayne Wilson *Bentonville, Arkansas* Electrical Engineering
- Nicholas David Woodward *Tampa, Florida* Mathematics
- Anjian Wu* *Santa Barbara, California* Electrical Engineering
- Nancy Yue Wu* *Houston, Texas* Applied Physics
- Ted Guoning Xiao* *San Dimas, California* Bioengineering
- Cheng (Teresa) Xu† *Santa Monica, California* Business Economics and Management
- Conway Xu* *Potomac, Maryland* Biology
- Zihao Yan* *Dalian, People's Republic of China* Biology
- Perren Yang† *San Diego, California* Geochemistry and Computer Science (Minor)
- Hwan Seung Yeo† *Daegu, Republic of Korea* Computer Science
- Jessica Sukfun Yeung* *Jacksonville, Florida* Chemistry
- Yanwen You *St. Louis, Missouri* Chemical Engineering (Materials)
- Michael Mark Young *Salt Lake City, Utah* Mathematics
- Caroline Yizhu Yu* *San Diego, California* Biology and English (Minor)
- Jessica Hepu Yu* *Novi, Michigan* Computer Science and Business Economics and Management
- Ben Ze Yuan* *Hayward, California* Computer Science
- Michael Christopher Yurko *Canton, Michigan* Computer Science
- Klavdia Olegovna Zemlianova* *Oceanside, California* Mathematics
- Daniel P. Zhang *New York, New York* Applied and Computational Mathematics
- Melissa Li Zhang* *Wayne, New Jersey* Mathematics
- Michael Ye Zhang *Sammamish, Washington* Applied and Computational Mathematics
- Yuqian Christina Zheng* *Swarthmore, Pennsylvania* Mechanical Engineering and Business Economics and Management and Aerospace Engineering (Minor)
- Yu Zhou* *Fort Lee, New Jersey* Applied and Computational Mathematics
- Julia Christine Ziak *Niskayuna, New York* Physics
- Tianyang Zou* *Ann Arbor, Michigan* Applied and Computational Mathematics

Master of Science

- Abhinav Agarwal (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Guwahati 2013.
- Tanvir Ahamed Bhuyain (*Mathematics*) B.S., California Institute of Technology 2012.
- Marin Mallory Anderson (*Astrophysics*) B.A., University of California, Berkeley 2011.
- Scott Alexander Barenfeld (*Astrophysics*) B.S. (*Astronomy*), B.S. (*Physics*), University of Rochester 2012.
- Nicolas Anthony Batara (*Materials Science*) B.S., University of California, Santa Barbara 2011.
- Timothy Dobson Blasius (*Physics*) B.S., The University of Michigan 2010.
- Noah Oakley Braun (*Aeronautics*) B.S., North Carolina State University 2013.
- Ana Maii Brown (*Applied Physics*) B.S., Stanford University 2010.
- Ian David Brownstein (*Space Engineering*) Sc.B., Brown University 2013.
- Marta Levesque Bryan (*Astrophysics*) A.B., Harvard College 2012.
- Nicholas Burali (*Mechanical Engineering*) Laurea, Università degli Studi di Roma "La Sapienza" 2010; Laurea Magistrale, 2012.
- Matthew Ryan Burkhardt (*Mechanical Engineering*) B.S., University of Washington 2012.
- Taryn Langley Campbell (*Chemistry*) B.A., Connecticut College 2012.
- Utkan Onur Candogan (*Electrical Engineering*) B.S., Bilkent University 2013.
- Xiaofei Chang (*Computer Science*) B.S., National University of Singapore 2008; M.S., 2010.
- Aaditya Nitin Chaphalkar (*Space Engineering*) B.Tech., Indian Institute of Space Science and Technology 2013.
- Niangjun Chen (*Computer Science*) B.A., University of Cambridge 2011.
- Samson Chen (*Electrical Engineering*) B.S., California Institute of Technology 2012.
- Victoria Fay Chernow (*Materials Science*) B.S., Harvard College 2011.
- Brian John Chmielewicz (*Chemical Engineering*) S.B., Massachusetts Institute of Technology 2012.
- Clément Antoine Cid (*Environmental Science and Engineering*) B.S., Ecole Normale Supérieure de Lyon 2009; M.S., 2011.
- Liam Francis Clegg (*Social Science*) B.S., Tufts University 2011.
- Michelle Siobhan Dee (*Chemical Engineering*) B.S., University of Southern California 2012.
- Arnold Durel Deffo Nde (*Aeronautics*) B.S. (*Aerospace Engineering*), B.S. (*Mathematics*), Wichita State University 2013.
- Mark Austin Deimund (*Chemical Engineering*) B.S., Texas A&M University 2010; M.Phil., University of Cambridge 2011.
- Laura Anne De Lorenzo (*Applied Physics*) B.A., Dartmouth College 2010.
- Nicholas Gang Dou (*Mechanical Engineering*) S.B., Massachusetts Institute of Technology 2012.
- Michael William Eastwood (*Astrophysics*) B.S., Rice University 2012.

Master of Science continued

- Carissa Nicole Eisler (*Chemical Engineering*) B.S., University of California, Los Angeles 2010.
- Eyrun Arna Eyjolfssdottir (*Computer Science*) B.Sc., University of Iceland 2007; M.S., University of California, Santa Barbara 2010.
- Christian A. Fagan (*Social Science*) B.Phil., University of Pittsburgh 2012.
- Matthew Nicholas Faulkner (*Computer Science*) S.B., Massachusetts Institute of Technology 2008; M.Eng., 2011.
- Isaac Steven Fees (*Chemical Engineering*) B.S., University of Kansas 2012.
- Cristofer Addison Flowers (*Chemical Engineering*) B.S., University of Southern California 2011.
- Anthony Thomas Fragoso (*Aeronautics*) B.S., Yale College 2013.
- William Roger Frankland (*Electrical Engineering*) B.S., New Mexico Institute of Mining and Technology 2012.
- Spencer Eric Freeman (*Space Engineering*) B.S., Florida Institute of Technology 2013.
- Lei Fu (*Mathematics*) B.S., Peking University 2011.
- Qiurui Fu (*Electrical Engineering*) B.E., B.S., The Chinese University of Hong Kong 2012.
- Peter Gao (*Planetary Science*) B.A.Sc., University of British Columbia 2010.
- Ilana Batya Gat (*Space Engineering*) B.S., New York University 2013.
- Chian Yeh Goh (*Aeronautics*) B.S., Cornell University 2013.
- Daniel Gonzalez Plaza (*Electrical Engineering*) Ingeniero, Universidad de Cantabria 2012.
- Xun Gu (*Chemical Engineering*) B.S., University of California, Berkeley 2005.
- Zeyu Guo (*Computer Science*) B.S., Fudan University 2010.
- Natalie Sarah Ann Higgins (*Mechanical Engineering*) B.S., University of Portland 2011.
- Brian Daffern Hong (*Electrical Engineering*) B.S., University of California, Los Angeles 2013.
- Chun-Jen Hsueh (*Mechanical Engineering*) B.S., National Taiwan University 2009; M.S., 2011.
- Kun Huang (*Electrical Engineering*) B.S., Zhejiang University 2012.
- David P. Huynh (*Aeronautics*) B.S., The Ohio State University 2013.
- Michael Joseph Ignatowich (*Chemical Engineering*) B.S., M.S., University of Connecticut 2012.
- Rebecca Marie Jensen-Clem (*Astrophysics*) S.B., Massachusetts Institute of Technology 2012.
- Katherine Elizabeth Kaufman (*Astrophysics*) B.S., University of California, Los Angeles 2011.
- Reid Y. Kawamoto (*Civil Engineering*) B.S., University of Southern California 2012.
- Mark Kruesi Kendall (*Applied Physics*) B.S., Columbia University 2005.
- Richard Edward Kennedy (*Aeronautics*) B.S., The State University of New York, Buffalo 2013.
- Christian Kettenbeil (*Space Engineering*) Diploma, Dresden University of Technology 2013.
- Aroutin Khachaturian (*Electrical Engineering*) B.S., California Institute of Technology 2013.
- Joey D. Kim (*Chemical Engineering*) B.S., University of Delaware 2012.
- Kunmo Kim (*Electrical Engineering*) B.S., Texas A&M University 2011.

Master of Science continued

- Trenton Thomas Kirchdoerfer (*Aeronautics*) B.S., University of Wisconsin-Madison 2006; M.S., 2008.
- Maria Alexandrovna Kleshcheva (*Planetary Science*) B.A., B.S., The University of Chicago 2010.
- Franklin William Koch (*Geophysics*) B.A., Washington University in St. Louis 2010.
- Junlong Kou (*Electrical Engineering*) B.S., Nanjing University 2010; M.S., 2013.
- Alexander Grey Krause (*Applied Physics*) B.A., Boston University 2009.
- Christopher James Kucharczyk (*Materials Science*) B.S., Stanford University 2011.
- Kyle Otto Lakatos (*Biochemistry and Molecular Biophysics*) B.S., University of California, Santa Cruz 2012.
- Mathieu Gaëtan André Lapôtre (*Planetary Science*) Licence, Université de Strasbourg 2009; M.Sc., 2011; Diplôme de Ingénieur, École et Observatoire des Sciences de la Terre 2011.
- Yi-Shan Lee (*Electrical Engineering*) B.A., National Chiao Tung University 2006; M.S., 2008.
- Cheng Li (*Planetary Science*) B.S., Peking University 2011.
- Daiqi Linghu (*Applied and Computational Mathematics*) B.S., University of Science and Technology of China 2010.
- Rachel Liontas (*Chemical Engineering*) B.S., Rice University 2012.
- Ka Yan Semechah Lui (*Geophysics*) B.S., The University of Michigan 2011.
- Ji Luo (*Electrical Engineering*) B.E., Tsinghua University 2012.
- Katja Edeltrud Luxem (*Geobiology*) B.S., California Institute of Technology 2014.
- Kazuki Maeda (*Mechanical Engineering*) B.E., The University of Tokyo 2013.
- Eloïse Sophie Hélène Marteau (*Applied Mechanics*) B.S., École Polytechnique Fédérale de Lausanne 2010; M.S., 2012.
- Nathan Koon-Hung Martin (*Aeronautics*) B.S., Rice University 2013.
- Manuel Martinez Sanchez (*Space Engineering*) B.S., University of Seville 2013.
- Anthony Thomas Massari (*Applied Mechanics*) B.S., New Jersey Institute of Technology 2007; M.S., 2008.
- Arturo Jose Mateos (*Space Engineering*) B.S., Texas A&M University 2013.
- Tatiana S. Mayskaya (*Social Science*) B.S., Lomonosov Moscow State University 2010; M.A., New Economic School 2012.
- Ryan Michael McMullen (*Aeronautics*) B.S., Ohio State University 2013.
- Renee Catherine McVay (*Chemical Engineering*) B.S., Texas A&M University 2011.
- Sarah Louise Mitchell (*Mechanical Engineering*) B.E., University of Auckland 2012.
- Ryan McKay Monroe (*Electrical Engineering*) B.S., Georgia Institute of Technology 2011.
- William Joseph Napier (*Chemical Engineering*) B.S., Lehigh University 2012.
- Matthew Gregory Newman (*Aeronautics*) S.B., Harvard College 2013.

Master of Science continued

- Henry Ngo (*Planetary Science*) B.Sc., University of British Columbia 2010; M.S., Queen's University 2012.
- Dong Yoon Oh (*Applied Physics*) B.S., California Institute of Technology 2012.
- Saneyuki Ohno (*Materials Science*) B.S., Keio Gijuku University 2012.
- Joseph Ghilarducci O'Rourke (*Planetary Science*) B.S., Yale College 2012.
- Lu Pan (*Planetary Science*) B.S., Peking University 2012.
- Stephen Michael Perry (*Geophysics*) B.S., Cornell University 2011.
- Yamuna Dilip Phal (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Roorkee 2011.
- Danielle Piskorz (*Planetary Science*) S.B., Massachusetts Institute of Technology 2011.
- Theodore Michael Present (*Geochemistry*) B.S., The Pennsylvania State University 2011.
- Jay Yan Qi (*Mechanical Engineering*) B.S.E., Princeton University 2012.
- Daven Patel Quinn (*Geology*) B.S., University of North Carolina at Chapel Hill 2011.
- Francesco Restuccia (*Mechanical Engineering*) M.Eng., University of Edinburgh 2012.
- Bryan Valmonte Riel (*Geophysics*) B.S., University of Texas at Austin 2008; M.S., 2010.
- Tabish Syed Rizvi (*Electrical Engineering*) B.E., The University of New South Wales 2011.
- Welmar Eduardo Rosado Buenfil (*Social Science*) Licenciatura, Instituto Tecnológico Autónomo de México 2011.
- Paul Michael Ryan (*Electrical Engineering*) B.S., University of Washington 2009.
- Maria Sakovsky (*Space Engineering*) B.A.Sc., University of Toronto 2013.
- Jason Robert Schulp (*Aeronautics*) B.S., Kansas State University 2011; M.S., 2013.
- Rebecca Helen Schwantes (*Environmental Science and Engineering*) B.A., B.S., University of Virginia 2009.
- Brian Paul Skinner (*Mathematics*) B.A.Sc., University of Toronto 2008; M.Sc., 2009.
- Benjamin W. Slone (*Materials Science*) B.S., Centre College 2013.
- Li Song (*Social Science*) B.A., B.S., Peking University 2012.
- Myungkoo Song (*Social Science*) B.A., B.B.A., B.S., Yonsei University 2010; M.A., 2012.
- Bernardo Sosa Padilla Araujo (*Biochemistry and Molecular Biophysics*) Licenciado, Universidad Nacional de Tucumán 2007.
- Francis Joseph Sousa (*Geology*) B.S., University of California, Davis 2009; M.A., Columbia University 2010.
- Akshay Sridhar (*Space Engineering*) B.E., University of Canterbury 2013.
- Victoria Louise Stevens (*Geology*) B.A., Cambridge University 2010; M.Sc., 2011.
- Myoung-Gyun Suh (*Applied Physics*) B.S., Korea Advanced Institute of Science and Technology 2004; M.S., National Taiwan University 2006.
- Dingyi Sun (*Mechanical Engineering*) Sc.B., Brown University 2012.
- Simone Surdi (*Physics*) Laurea Triennale, University of Pisa 2010; Laurea Specialistica 2012.
- Armeen Taeb (*Electrical Engineering*) B.S. (*Applied Mathematics*), B.S. (*Electrical Engineering*), University of Colorado at Boulder 2013.

Master of Science continued

- Ithibaud Talon (*Space Engineering*) Diplôme d'Ingénieur, Ecole Polytechnique 2013.
- Yinglu Tang (*Materials Science*) B.S., Beihang University 2008; Diplôme d'Ingénieur, École Nationale Supérieure d'Arts et Métiers 2010.
- Ishan Tembhekar (*Mechanical Engineering*) B.Tech., Indian Institute of Technology, Gandhinagar 2012.
- Srikanth Venkata Tenneti (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Bombay 2012.
- Fabio Ricardo Paseiro Polpo Ussher (*Electrical Engineering*) B.S., Rice University 2013.
- Albert Stevan Johan van Heerden (*Aeronautics*) B.Eng., University of Pretoria 2009.
- Venkata Vijay Ventrapragada (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Madras 2012.
- Jay Naoya Kealii Vilorio (*Social Science*) B.S., University of Hawaii at Manoa 2010.
- Teagan Rose Wall (*Behavioral and Social Neuroscience*) B.A., B.S., University of Arizona 2010.
- Cong Wang (*Aeronautics*) B.S., National University of Singapore 2013.
- Lewis Michael Ward (*Geobiology*) A.B., Harvard College 2011.
- Ho-Hsuan Wei (*Environmental Science and Engineering*) B.S., National Taiwan University 2010; M.S., 2012.
- Yuchen Wei (*Space Engineering*) B.E., Beijing University of Aeronautics and Astronautics 2010.
- John Philip Wendell (*Physics*) B.A., Bowdoin College 2011.
- Kelsey Adele Whitesell Horowitz (*Electrical Engineering*) B.S., M.S., University of Colorado at Boulder 2011.
- Daniel Karl Wilhelm (*Computation and Neural Systems*) B.S., Purdue University 2006.
- Michael L. Wong (*Planetary Science*) B.A., University of California, Berkeley 2012.
- Hao Wu (*Electrical Engineering*) B.E., Tsinghua University 2012.
- Zhaoqian Steven Xie (*Control and Dynamical Systems*) B.S., University of Hong Kong 2009.
- Jin Yang (*Mechanical Engineering*) B.S., Tsinghua University 2013.
- Shengxuan Ye (*Computation and Neural Systems*) B.S., University of Virginia 2012.
- Lucy Yin (*Civil Engineering*) B.A.Sc., University of Toronto 2012.
- Junjie Yu (*Geophysics*) B.S., Nanjing University 2009; M.S., Chinese Academic of Sciences 2012.
- Alex James Zelhofer (*Mechanical Engineering*) B.S., Milwaukee School of Engineering 2012.
- Qiong Zhang (*Environmental Science and Engineering*) B.S., Peking University 2012.
- Tianlu Caron Zhang (*Electrical Engineering*) B.S., University of California, Los Angeles 2013.
- He Zhao (*Electrical Engineering*) B.S., Tsinghua University 2012.
- Baoqing Zhou (*Chemistry*) B.A., Cornell University 2011.
- Haojiang Zhou (*Electrical Engineering*) B.S., Tianjin University 2009; M.S., Zhejiang University 2012.

Doctor of Philosophy

DIVISION OF BIOLOGY AND BIOLOGICAL ENGINEERING

Anna C. T. Abelin (*Biology*) M.S., KTH Royal Institute of Technology 2007.

Thesis: A Ratiometric-Based Measure of Gene Co-Expression.

Anna Basalova Buchman (*Biology*) B.S., Sam Houston State University 2006; M.S., 2008.

Thesis: Engineered Underdominance as a Method of Insect Population Replacement and Reproductive Isolation.

Mohsen Chitsaz (*Biochemistry and Molecular Biophysics and Computer Science*) B.S. (*Civil Engineering*), B.S. (*Computer Software Engineering*), Sharif University of Technology 2007; M.S., California Institute of Technology 2008.

Thesis: Protein Structure Refinement Algorithms.

Cindy Nicole Chiu (*Neurobiology*) B.A., Columbia University 2001.

Thesis: A Perfect Day for Zebrafish: Neuromodulation of Sleep in a Diurnal Vertebrate.

Elly Suk Hen Chow (*Biology*) B.S., City University of Hong Kong 2000; M.Phil., 2004.

Thesis: The *C. elegans* ALA Neuron: Its Transcriptions and Roles in Inducing Sleep.

Samy Hamdouche (*Biochemistry and Molecular Biophysics*) B.S., Stanford University 2009.

Thesis: Engineered Antibody and Monobody Domains with T Cell Receptor-Like Selectivity for Tumor Associated Peptide-MHA Antigens.

Hidehiko Inagaki (*Biology*) B.S., University of Tokyo 2007.

Thesis: Neuronal Mechanism of State Control in *Drosophila melanogaster*.

Arya Khosravi (*Biology*) B.S., University of California, San Diego 2004.

Thesis: Gut Microbiota Promote Hematopoiesis to Control Bacterial Infection.

Anthony G. Kirilusha (*Biology*) B.A., B.S., University of Richmond 2001; M.S., California Institute of Technology 2006.

Thesis: Transcription Factor Occupancy in Skeletal Muscle Differentiation.

Eugene Yongshik Kym (*Biology*) B.A., University of California, San Diego 2006; M.S., Seoul National University 2008.

Thesis: Engineered Discoidin Domain from Factor VIII Binds $\alpha v \beta 3$ Integrin with Antibody-like Affinity.

Amit Lakhanpal (*Biology*) A.B., M.A., Harvard College 2006.

Thesis: Experimental and Theoretical Studies of Notch Signaling-Mediated Spatial Pattern.

When more than one field of study is listed, the first is the major and the second and others are minors.

Doctor of Philosophy continued

Toni Marie Lee (*Biochemistry and Molecular Biophysics*) B.S., M.S., University of California, Los Angeles 2007.

Thesis: Computationally-Guided Thermostabilization of the Primary Endoglucanase from *Hypocrea jecorina* for Cellulosic Biofuel Production.

Oliver Calvin Losón (*Biology*) B.S., University of California, Riverside 2007.

Thesis: Regulation of Mitochondrial Division by the Drp1 Receptors.

Geoffrey A. Lovely (*Biochemistry and Molecular Biophysics*) B.S., University of California, Davis 2007.

Thesis: Biophysics of V(D)J Recombination and Genome Packaging: In Singulo Studies on RAG, HMGB1 and TFAM.

Georgi K. Marinov (*Biology*) S.B., Massachusetts Institute of Technology 2008.

Thesis: Functional Genomic Studies of the Structure and Regulation of Eukaryotic Transcriptomes.

Weston A. Nichols (*Biology*) B.S., Cornell University 2008.

Thesis: Lynx1 and the $\beta 2V287L$ Mutation Affect the Stoichiometry of the $\alpha 4\beta 2$ Nicotinic Acetylcholine Receptor.

Shay Ohayon (*Computation and Neural Systems*) B.S., Technion - Israel Institute of Technology 2003; M.S., 2007.

Thesis: Dissecting Neural Circuits for Vision in Nonhuman Primates using fMRI-Guided Electrophysiology and Optogenetics.

Michael E. Rome (*Biology*) B.S., University of California, Los Angeles 2007.

Thesis: The Get3 ATPase Drives Unidirectional Targeting of Tail-Anchored Membrane Proteins.

Bernardo Sosa Padilla Araujo (*Biochemistry and Molecular Biophysics*) Licenciado, Universidad Nacional de Tucumán 2007; M.S., California Institute of Technology 2014.

Thesis: Computational Enzyme Design.

Tsu-Te Judith Su (*Biochemistry and Molecular Biophysics*) S.B., Massachusetts Institute of Technology 2002; S.M., 2004.

Thesis: Label-free Detection of Single Molecule Using Microtoroid Optical Resonators.

Devin Lee Trudeau (*Bioengineering*) B.Sc., University of Toronto 2009.

Thesis: Engineering Enzyme Systems by Recombination.

Ward Gale Walkup IV (*Biochemistry and Molecular Biophysics*) B.S., Butte College 2003; B.S., California State University, Chico 2003; B.S., Canada College 2003.

Thesis: Biochemical Studies of the Postsynaptic Density Signaling Proteins with a Focus on Synaptic GTPase Activating Protein and PDZ Domains.

Doctor of Philosophy continued

Yun Elisabeth Wang (*Biology*) B.A., University of Pennsylvania 2007.

Thesis: Characterizing the Regulation of Mitochondrial Nucleoids.

Brian Robert Wolfe (*Bioengineering*) B.S., University of Washington 2008.

Thesis: Design and Analysis of Nucleic Acid Reaction Pathways.

Jiun-Yann Yu (*Bioengineering*) B.S., National Taiwan University 2005; M.S., 2007.

Thesis: Innovations of Wide-Field Optical-Sectioning Fluorescence Microscopy: Toward High-Speed Volumetric Bio-Imaging with Simplicity.

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

Artemis Ailianou (*Chemical Engineering*) B.S., The University of Texas at Austin 2008; M.S., California Institute of Technology 2010.

Thesis: Development of Semicrystalline Morphology of Poly (L-lactic Acid) during Processing of a Vascular Scaffold.

David Akopian (*Biochemistry and Molecular Biophysics*) B.S., University of California, Los Angeles 2003; M.S., California State University, Northridge 2007.

Thesis: Phospholipids and a Protein-Conducting Channel Regulate Cotranslational Protein Targeting.

John Stuart Anderson (*Chemistry*) B.S., M.S., The University of Chicago 2008.

Thesis: Catalytic Conversion of Nitrogen to Ammonia by an Iron Model Complex.

Aileen Renia Ariosa (*Biochemistry and Molecular Biophysics*) B.S., California State University, Los Angeles 2008.

Thesis: Mechanisms of Substrate Selection by the Signal Recognition Particle.

Joseph Allen Beardslee (*Chemistry*) B.A., Pomona College 2008.

Thesis: Magnetic Alignment of High-Aspect Ratio Microwires into Vertical Arrays.

Ricardo Bermejo De Val (*Chemical Engineering and Chemistry*) B.Sc., M.S., Universidad de Valencia 2010.

Thesis: Reaction of Glucose Catalyzed by Framework and Extraframework Tin Sites in Zeolite Beta.

Alexandria H. Berry (*Biochemistry and Molecular Biophysics*) B.S., University of Florida 2008.

Thesis: Designing Conformational Control of Human Tissue Transglutaminase.

Evans Boney (*Chemistry*) S.B. (*Chemistry*), S.B. (*Physics*), Massachusetts Institute of Technology 2006.

Thesis: Vibrational Pooling and Constrained Equilibration on Surfaces.

Jeffrey Paul Bosco (*Chemical Engineering*) B.E., University of Delaware 2009.

Thesis: Rational Design of Zinc Phosphide Heterojunction Photovoltaics.

Doctor of Philosophy continued

- Joshua Micah Brown (*Biochemistry and Molecular Biophysics*) B.S., University of California, San Diego 2006; M.S., California Institute of Technology 2010.
Thesis: Investigation of Receptors for the Modulation of Neuronal Growth by Chondroitin Sulfate.
- Julian Andrew Codelli (*Chemistry*) B.S., University of California, Berkeley 2008.
Thesis: The Development of a Synthetic Strategy Toward Dihydrooxepine-Containing Epipolythiodiketopiperazines: Enantioselective Total Synthesis of (-)-Acetylarnotin and Related Investigations.
- Kristina Nicole-McCleary Daeffler (*Chemistry*) B.S., University of Connecticut 2007; M.S., 2008.
Thesis: Functional Evaluation of Noncovalent Interactions in Neuroreceptors and Progress toward the Expansion of Unnatural Amino Acid Methodology.
- Kaycie Marie Deyle (*Chemistry*) B.S., Indiana University of Pennsylvania 2008.
Thesis: Development of Protein-Catalyzed Capture (PCC) Agents with Application to the Specific Targeting of the E17K Point Mutation of AKt1.
- Crystal Noelle Dilworth (*Chemistry*) A.A., Diablo Valley College 2003; B.S., University of California, San Diego 2006.
Thesis: Fluorescence Microscopy of Nicotinic Acetylcholine Receptors.
- Noah Hanville Duffy (*Chemistry*) B.S. (*Biochemistry*), B.S. (*Chemistry*), University of Nevada, Reno 2006.
Thesis: Studies of the Serotonin Type 3A Receptor and the Chemical Preparation of tRNA.
- Maraia Emily Ener (*Chemistry*) B.A., Carleton College 2008.
Thesis: Electron Flow through Cytochrome P450.
- Joseph James Ensberg (*Chemical Engineering and Environmental Science and Engineering*) B.S., University of California, Irvine 2009; M.S., California Institute of Technology 2011.
Thesis: Studies of Ambient Organic and Inorganic Aerosol in Southern California.
- Ross Fu (*Chemistry*) S.B., Massachusetts Institute of Technology 2007.
Thesis: Iridium and Rhodium Analogues of the Shilov Cycle Catalyst; and the Investigation and Applications of the Reduction-Coupled Oxo Activation (ROA) Mechanistic Motif towards Alkane Upgrading.
- David Gleason-Rohrer (*Chemistry*) B.A., B.S., Point Loma Nazarene University 2004.
Thesis: Measurement of the Band Bending and Surface Dipole at Chemically Functionalized Si(111)/ Vacuum Interfaces.
- Jason Daniel Goodpaster (*Chemical Engineering and Chemistry*) B.S., University of Illinois at Urbana-Champaign 2008; M.S., California Institute of Technology 2011.
Thesis: Density Functional Theory Embedding for Correlated Wavefunctions.

Doctor of Philosophy continued

Myles Benton Herbert (*Chemistry*) B.S., University of California, Berkeley 2009.

Thesis: Z-Selective Olefin Metathesis using Chelating Ruthenium Alkylidene Catalysts.

Jeffrey Clinton Holder (*Chemistry*) A.B., Harvard College 2009.

Thesis: The Development of an Asymmetric Palladium-Catalyzed Conjugate Addition and Its Application toward the Syntheses of Taiwaniaquinoid Natural Products.

Daniel Brian Holland (*Chemistry*) B.A., Albion College 2003.

Thesis: Design, Construction, and Applications of a High-Resolution Terahertz Time-Domain Spectrometer.

Seokmin Jeon (*Chemistry*) B.S., Yonsei University 2004; M.S., Korea Advanced Institute of Science and Technology 2006.

Thesis: Structure, Chemistry, and Energetics of Organic and Inorganic Adsorbates on Ga-rich GaAs and GaP(001) Surfaces.

Paul Kelley (*Chemistry*) B.S., Catholic University of America 2008.

Thesis: Fundamental Studies of Carbon Oxygen Bond Activation in Nickel Diphosphine Ether Complexes and Metallomacrocycles as Ligands: Synthesis and Characterization of Aluminum-Bridged Bisglyoximate Complexes of Iron and Cobalt.

Rachel Christine Klet (*Chemistry*) B.S., University of Virginia 2007.

Thesis: Carbon-Carbon Bond Forming Reactions from Bis(carbene)-Platinum(II) Complexes and Olefin Polymerization and Oligomerization using Group 4 Post-Metallocene Complexes.

Alexis Christine Komor (*Chemistry*) B.S., University of California, Berkeley 2008.

Thesis: Design, Synthesis, and Biological Activity of Rhodium Metallocenes.

Judith Rebecca Cabelli Lattimer (*Chemistry*) B.A., M.S., Brandeis University 2006.

Thesis: Functionalization of Si(III) Surfaces and the Formation of Mixed Monolayers for the Covalent Attachment of Molecular Catalysts in Photoelectrochemical Devices.

Taylor Nichole Baker Lenton (*Chemistry*) B.A., Wellesley College 2008.

Thesis: Bis(thiophenolate)pyridine Pincer Ligands and Trivalent Zirconocene Complexes Relevant to Early Transition Metal Polymerization Catalysts.

Sibo Lin (*Chemistry*) B.S., Indiana University 2008.

Thesis: Chelation-Enforced Metal-Arene Interactions: Insights into Substrate Binding and Catalysis by Late Transition Metal Complexes.

Wei-Guang Liu (*Chemistry and Physics*) B.S., National Taiwan University 2003; M.S., 2005.

Thesis: First-Principle Studies of the Initiation Mechanism of Energetic Materials.

Ying Ying Lu (*Chemistry*) B.S., University of California, Berkeley 2006.

Thesis: Revealing, Illuminating, and Modifying Proteins in Human Diseases using Noncanonical Amino Acids.

Doctor of Philosophy continued

Artur R. Menzeleev (*Chemistry*) B.A., University of Pennsylvania 2007.

Thesis: Direct Simulation of Quantum Dynamics in Complex Systems.

Paul Joseph Minor (*Biochemistry and Molecular Biophysics*) B.S., Auburn University 2006.

Thesis: Wnt and FGF Signaling in *C. elegans* Vulval Cell Lineage Polarity.

Yun Mou (*Chemistry*) B.S., National Taiwan University 2004; M.S., 2006; M.S., California Institute of Technology 2011.

Thesis: Computational Design of Self-Assembling Proteins and Protein-DNA Nanowires.

Timothy Paul Mui (*Chemistry*) B.S., University of Illinois at Urbana-Champaign 2008.

Thesis: Expanding the Repertoire of DNA-Mediated Signaling in DNA Repair.

Raul Navarro (*Chemistry*) B.S., Yale College 2008.

Thesis: New Strategies for the Total Synthesis of Aza-Propellane Natural Products.

Jessica A. Pfeilsticker (*Chemistry*) A.A., Manatee Community College 2005; B.S., University of Florida 2007.

Thesis: A Cocktail of Thermally Stable, Chemically Synthesized Capture Agents for the Efficient Detection of Anti-Gp41 Antibodies from Human Sera and Techniques.

Catrina Gale Pheeney (*Chemistry*) B.S., McGill University 2008.

Thesis: Multiplexed DNA-Mediated Electrochemistry.

Paul Peter Pirogovsky (*Chemical Engineering*) B.S., Oregon State University 2007; M.S., California Institute of Technology 2012.

Thesis: Intramolecular Conflict: Conformation and Self-Assembly of Architecturally Complex Macromolecules in Solution.

Madalyn Rachel Radlauer (*Chemistry*) B.S., Stanford University 2008.

Thesis: Bimetallic Olefin Polymerization Catalysis: Mechanisms and Applications of Proximal Effects.

Lindsay Michelle Repka (*Chemistry*) B.A., Barnard College 2008.

Thesis: Enantioselective Synthesis of Pyrroloindolines and Tryptophan Derivatives by an Asymmetric Protonation Reaction.

Caitlin Eileen Scott (*Chemistry*) B.A., Mount Holyoke College 2007.

Thesis: Role of Conformational Changes in G Protein-Coupled Receptor Activation.

Gloria J. Sheng (*Chemistry*) B.A., Dartmouth College 2006; M.Phil., University of Cambridge 2007.

Thesis: Tunable Heparan Sulfate Glycomimetics for Modulating Chemokine Activity.

Bing Sun (*Chemistry*) B.S., Peking University 2008; M.S., The University of Chicago 2009.

Thesis: Mechanistic Studies of Reactions at the Single-Molecule Level using Microfluidics with Applications in Molecular Diagnostics.

Doctor of Philosophy continued

Benjamin Ragnar Sveinbjörnsson (*Chemistry*) B.S., University of Iceland 2009.

Thesis: Self-Assembly of Brush Polymers.

Frederick Eng Houw Tan (*Biochemistry and Molecular Biophysics*) S.B., Massachusetts Institute of Technology 2005.

Thesis: Brf1 Post-Transcriptionally Regulates Pluripotency and Differentiation Responses Downstream of Erk MAP Kinase.

Emily Yuan Tsui (*Chemistry*) S.B., Massachusetts Institute of Technology 2008.

Thesis: Transition Metal Clusters Supported by Multinucleating Ligand Frameworks as Models of Biological Active Sites.

Ethan B. Van Arnam (*Chemistry*) A.B., Bowdoin College 2007.

Thesis: Chemical-Scale Studies of G Protein-Coupled Receptors and Ligand-Gated Ion Channels.

Joseph Varghese (*Chemical Engineering*) B.E., The Cooper Union 2007.

Thesis: Scanning Probe Studies of Thin Films.

James Vincent Vowles (*Chemistry*) Sc.B., Brown University 2007.

Thesis: Cell-Targeted Regulation of Gene Expression through Synthetic RNA Devices.

Ming-Hsin Wei (*Chemical Engineering*) B.S., National Taiwan University 2000; M.S., 2002.

Thesis: Synthesis and Potency of Long End-Associative Polymers for Mist Control.

David Craig Wiggenhorn (*Chemistry*) B.S., The Ohio State University 2004.

Thesis: Nanostructured Tungsten Trioxide Photoanodes for Solar Energy Conversion.

Fei Yang (*Chemistry*) B.S. (*Chemistry*), B.S. (*Genetics*), University of Georgia 2006.

Thesis: Antitumor Activity of Py-Im Polyamides.

John Thomas Schafer Yeoman (*Chemistry*) B.A., Grinnell College 2008.

Thesis: A Unified Strategy to Ent-Kauranoid Natural Products: Total Syntheses of (-)-Maoecrystal Z, (-)-Trichorabdol A, and (-)-Longikaurin E.

DIVISION OF ENGINEERING AND APPLIED SCIENCE

Hyoungh Jun Ahn (*Applied and Computational Mathematics*) B.S., Seoul National University 2003; M.S., 2008.

Thesis: Random Propagation in Complex Systems: Nonlinear Matrix Recursions and Epidemic Spread.

Faisal Amlani (*Applied and Computational Mathematics*) B.A., Rice University 2006.

Thesis: A New High-Order Fourier Continuation-Based Elasticity Solver for Complex Three-Dimensional Geometries.

Doctor of Philosophy continued

Arnar Bjorn Bjornsson (*Civil Engineering*) B.Sc., University of Iceland 2009; M.S., California Institute of Technology 2010.

Thesis: A Retrofitting Framework for Pre-Northridge Steel Moment-Frame Buildings.

Subhonmesh Bose (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Kanpur 2009; M.S., California Institute of Technology 2012.

Thesis: An Integrated Design Approach to Power Systems: From Power Flows to Electricity Markets.

Steven Michael Bowers (*Electrical Engineering*) B.S., University of California, San Diego 2007; M.S., California Institute of Technology 2009.

Thesis: Dynamically Controllable Integrated Radiation and Self-Correcting Power Generation in mm-Wave Circuits and Systems.

Phares Lynn Carroll (*Mechanical Engineering*) B.S., Georgia Institute of Technology 2010; M.S., California Institute of Technology 2012.

Thesis: Towards Understanding the Mixing Characteristics of Turbulent Buoyant Flows.

Jay Han-Chieh Chang (*Electrical Engineering*) B.S., National Taiwan University 2004; M.S., 2006; M.S., California Institute of Technology 2010.

Thesis: Wireless Parylene-Based Retinal Implant.

Ming Hei Cheng (*Civil Engineering and Social Science*) B.E., University of Hong Kong 2008; M.S., California Institute of Technology 2009.

Thesis: New Applications that Come from Extending Seismic Networks into Buildings.

Maolin Ci (*Applied and Computational Mathematics*) B.S., Peking University 2008.

Thesis: Multiscale Model Reduction Methods for Deterministic and Stochastic Partial Differential Equations.

Julia Theresa Cossé (*Aeronautics*) B.S., University of Rochester 2008; M.S., California Institute of Technology 2009.

Thesis: On the Behavior of Pliable Plate Dynamics in Wind: Application to Vertical Axis Wind Turbines.

Gerry V. Della Rocca (*Mechanical Engineering*) Sc.B., Brown University 2009; M.S., California Institute of Technology 2010.

Thesis: A Novel Methodology for Simulating Contact-Line Behavior in Capillary-Driven Flows.

Steven Brian Demers (*Materials Science*) B.S., Cornell University 1996; M.S., University of Southern California 1997; M.S., California Institute of Technology 2011.

Thesis: Advanced Density Functional Theory Methods for Materials Science Applications.

Doctor of Philosophy continued

- Thomas Anthony Desautels (*Mechanical Engineering and Computation and Neural Systems*) B.S., University of California, Davis 2008; M.S., California Institute of Technology 2010.
Thesis: Spinal Cord Injury Therapy through Active Learning.
- Matthew Nicholas Faulkner (*Computer Science*) S.B., Massachusetts Institute of Technology 2008; M.Eng., 2011; M.S., California Institute of Technology 2014.
Thesis: Selective Data Gathering in Community Sensor Networks.
- William Jason Fefferman (*Computer Science*) B.S., The University of Chicago 2008; M.S., California Institute of Technology 2011.
Thesis: The Power of Quantum Fourier Sampling.
- Fernando Ferrari de Goes (*Computer Science*) B.E., UNICAMP 2006; M.Sc., 2009; M.S., California Institute of Technology 2011.
Thesis: Geometric Discretization through Primal-Dual Meshes.
- Mihai Florian (*Computer Science*) Diploma, Politehnica University of Bucharest 2007; M.S., California Institute of Technology 2010.
Thesis: Analysis-Aware Design of Embedded Systems Software.
- Landry Fokoua Djodom (*Aeronautics*) Diplôme d'Ingénieur, École Polytechnique 2009; M.S., California Institute of Technology 2010.
Thesis: Optimal Scaling in Ductile Fracture.
- Virgil Griffith (*Computation and Neural Systems*) B.A., Indiana University 2007.
Thesis: Quantifying Synergistic Information.
- Shabnam Hakimi (*Computation and Neural Systems*) B.A., Stanford University 2006.
Thesis: Characterization of the Neural Mechanisms Supporting the Implementation of Cognitive Control in Human Decision Making.
- Shuo Han (*Electrical Engineering*) B.E., Tsinghua University 2003; M.E., Tsinghua University 2006; M.S., California Institute of Technology 2008.
Thesis: Optimal Uncertainty Quantification via Convex Optimization and Relaxation.
- Vanessa Heckman (*Civil Engineering and Geophysics*) B.S., California Institute of Technology 2006; M.S., 2011.
Thesis: Damage Detection in Civil Structures using High-Frequency Seismograms.
- Nicholas A. Heinz (*Materials Science*) B.S., University of Southern California 2008.
Thesis: Microstructure Control and Evaluation of Iodine Doping in Bismuth Telluride.
- Matanya Benasher Horowitz (*Control and Dynamical Systems*) B.A., B.S., M.S., University of Colorado, Boulder 2010.
Thesis: Efficient Methods for Stochastic Optimal Control.
- Xiaodi Hou (*Computation and Neural Systems*) B.E., Shanghai Jiaotong University 2008.
Thesis: Computational Modeling and Psychophysics in Low- and Mid-Level Vision.

Doctor of Philosophy continued

- Joseph Stephen Jewell (*Aeronautics and History*) B.S., California Institute of Technology 2004; M.S.E., The University of Michigan 2005; M.Sc., University of Oxford 2007.
Thesis: Boundary-Layer Transition on a Slender Cone in Hypervelocity Flow with Real Gas Effects.
- Kristen Kathleen John (*Aeronautics*) B.S., The University of Texas at Austin 2008; M.S., California Institute of Technology 2010.
Thesis: Strength of Tantalum at High Pressures through Richtmyer-Meshkov Laser Compression Experiments and Simulations.
- Daniel L. Jones III (*Applied Physics*) B.A., Cornell University 2007; B.S., Tufts University 2007.
Thesis: Sequence-Function Relationships in *E. coli* Transcriptional Regulation.
- Sean Jason Keller (*Computer Science*) B.S., Cornell University 2002; M.E., 2004; M.S., University of Illinois at Urbana-Champaign 2004.
Thesis: Robust Near-Threshold QDI Circuit Analysis and Design.
- Kun Woo Kim (*Applied Physics*) B.S., California Institute of Technology 2008.
Thesis: Electronic States in Disordered Topological Insulators.
- Tian Lan (*Applied Physics and Electrical Engineering*) B.S., Nanjing University 2006; M.S., California Institute of Technology 2011.
Thesis: Studies of Phonon Anharmonicity in Solids.
- Lauren LeBon (*Computation and Neural Systems*) S.B., Massachusetts Institute of Technology 2006.
Thesis: The Logic of Receptor-Ligand Interactions in the Notch Signaling Pathway.
- Seung Ah Lee (*Electrical Engineering*) B.S., Seoul National University 2007; M.S., 2009; M.S., California Institute of Technology 2011.
Thesis: Bright-Field and Fluorescence Chip-Scale Microscopy for Biological Imaging.
- Xiao Liu (*Materials Science*) B.S., Tsinghua University 2008; M.S., California Institute of Technology 2010.
Thesis: A Study on Iron-Based Amorphous Alloys: Alloy Development, Thermodynamics and Soft Magnetism.
- Zhenhua Liu (*Computer Science*) B.E., Tsinghua University 2006; M.S., 2009; M.S., California Institute of Technology 2011.
Thesis: Sustainable IT and IT for Sustainability.
- Kaitlyn Shae Lucey (*Environmental Science and Engineering*) B.A., Wellesley College 2008; M.S., California Institute of Technology 2010.
Thesis: Catechol 2,3-Dioxygenase-Assisted Cleavage of Aromatics by "Anaerobic" Termite Gut Spirochetes and Genomic Evidence of a Complete Meta-Pathway.

Doctor of Philosophy continued

- Bradley Joseph Lyon (*Aeronautics*) B.S., Cornell University 2009; M.S., California Institute of Technology 2010.
Thesis: A Multi-Scale Approach to Shaping Carbon Nanotube Structures for Hollow Microneedles.
- Imran Raouf Malik (*Electrical Engineering*) B.E., National University of Science and Technology 1992; M.S., California Institute of Technology 2009.
Thesis: Point of Care Molecular Diagnostics for Humanity.
- Ignacio Maqueda Jiménez (*Aeronautics*) Ingeniero Aeronáutico, Universidad Politécnica de Madrid 2007; M.S., California Institute of Technology 2010.
Thesis: High Strain Composites and Dual-Matrix Composite Structures.
- Madeline Diane Miller (*Mechanical Engineering*) B.S., Stanford University 2007; M.S., California Institute of Technology 2009.
Thesis: The Deep Ocean Density Structure at the Last Glacial Maximum: What Was It and Why?
- Nisha Mohan (*Space Engineering*) B.E., Anna University 2010; M.S., California Institute of Technology 2011.
Thesis: Extracting Material Response from Simple Mechanical Tests on Hardening-Softening-Hardening Viscoplastic Solids.
- Muhammad Mujeeb-U-Rahman (*Electrical Engineering*) B.S., University of Engineering and Technology 2007; M.S., California Institute of Technology 2010.
Thesis: Integrated Microsystems for Wireless Sensing Applications.
- Michael James Olson (*Computer Science*) B.S., Carnegie Mellon University 2004; M.S., California Institute of Technology 2012.
Thesis: Cloud Computing Services for Seismic Networks.
- Keith D. Patterson (*Aeronautics*) B.S., Rensselaer Polytechnic Institute 2007; M.S., California Institute of Technology 2009.
Thesis: Lightweight Deformable Mirrors for Future Space Telescopes.
- Jason Rabinovitch (*Aeronautics*) B.S., Yale College 2008; M.S., California Institute of Technology 2009.
Thesis: Advancing EDL Technologies for Future Space Missions: From Ground Testing Facilities to Ablative Heatshields.
- Aditya Rajagopal (*Electrical Engineering*) B.S., California Institute of Technology 2008; M.S., 2010.
Thesis: Micro-fabricated Tools and Engineering Methods for Sensing Bioanalytes.

Doctor of Philosophy continued

- Debajyoti Ray (*Computation and Neural Systems*) B.S., University of Toronto 2006.
Thesis: Efficient Methods for Empirical Tests of Behavioral Economics Theories in Laboratory and Field Experiments.
- Victoria Stolyar Richmond (*Space Engineering*) S.B., Massachusetts Institute of Technology 2009; M.S., California Institute of Technology 2010.
Thesis: Techniques for Strength Measurement at High Pressures and Strain-Rates using Transverse Waves.
- Scott N. Roberts (*Materials Science*) B.S., Carnegie Mellon University 2006; M.S., California Institute of Technology 2009.
Thesis: Developing and Characterizing Bulk Metallic Glasses for Extreme Applications.
- Namiko Saito (*Aeronautics*) B.S., University of Washington 2009; M.S., California Institute of Technology 2010.
Thesis: Large-Eddy Simulations of Fully Developed Turbulent Channel and Pipe Flows with Smooth and Rough Walls.
- Patrick David Sanan (*Applied and Computational Mathematics*) B.A., B.S., University of California, San Diego 2006; M.S., University of Manchester 2007.
Thesis: Geometric Elasticity for Graphics, Simulation, and Computation.
- Penvipha Satsanarukkit (*Electrical Engineering*) B.E., Kasetsart University 2001; M.E., King Mongkut's University of Technology 2004; M.S., California Institute of Technology 2008.
Thesis: Development of Integrated Parylene Fluidic Devices for Use as a Microbial Monitoring System in Wastewater Treatment.
- Rangoli Sharan (*Control and Dynamical Systems*) B.Tech., Indian Institute of Technology, Kharagpur 2007.
Thesis: Formal Methods for Control Synthesis in Partially Observed Environments: Application to Autonomous Robotic Manipulation.
- Hillary Leigh Smith (*Materials Science*) B.A., Bryn Mawr College 2006.
Thesis: Phase Transformations and Entropy of Non-Equilibrium Materials.
- Shiyan Song (*Civil Engineering*) B.E., Tsinghua University 2008; M.S., California Institute of Technology 2009.
Thesis: A New Ground Motion Intensity Measure, Peak Filtered Acceleration (PFA), to Estimate Collapse Vulnerability of Buildings in Earthquakes.
- Scott Tiedeman Steger (*Electrical Engineering*) B.S., Rice University 2008; M.S., California Institute of Technology 2010.
Thesis: A Fundamental Approach to Phase Noise Reduction in Hybrid Si/III-V Lasers.

Doctor of Philosophy continued

- Marie Patricia Suver (*Computation and Neural Systems*) B.S., University of Washington 2007.
Thesis: Octopamine Neurons Mediate Flight-Induced Modulation of Visual Processing in *Drosophila melanogaster*.
- Peyman Tavallali (*Applied and Computational Mathematics*) B.Sc., Shiraz University 2006; M.Eng., Nanyang Technological University 2009.
Thesis: Sparse Time-Frequency Data Analysis: A Multi-Scale Approach.
- Tomasz M. Tyranowski (*Applied and Computational Mathematics*) M.S., Jagiellonian University 2007.
Thesis: Geometric Integration Applied to Moving Mesh Methods and Degenerate Lagrangians.
- Floris van Breugel (*Control and Dynamical Systems*) B.S., Cornell University 2008.
Thesis: Complex Behavior and Perception in *Drosophila* Emerges from Iterative Feedback-Regulated Reflexes.
- Siddhartha Verma (*Aeronautics*) B.S., Georgia Institute of Technology 2009; M.S., California Institute of Technology 2010.
Thesis: Velocity Resolved – Scalar Modeled Simulations of High Schmidt Number Turbulent Transport.
- Heng Wang (*Materials Science*) B.E., Tsinghua University 2005; M.E., 2008; M.E., Tokyo Institute of Technology 2008.
Thesis: High Temperature Transport Properties of Lead Chalcogenides and Their Alloys.
- Shuo Wang (*Computation and Neural Systems*) B.Sc., National University of Singapore 2009.
Thesis: Social Saliency: Visual Psychophysics and Single-Neuron Recordings in Humans.
- Emily C. Warmann (*Mechanical Engineering*) S.B., Massachusetts Institute of Technology 2001; S.M., 2004.
Thesis: Design Strategies for Ultra-high Efficiency Photovoltaics.
- Wei Wei (*Materials Science*) B.S., Tsinghua University 2005; M.S., University of California, San Diego 2008.
Thesis: Microfluidics-Based Single-Cell Functional Proteomics Microchip for Portraying Protein Signal Transduction Networks within the Framework of Physicochemical Principles, with Applications in Fundamental and Translational Cancer Research.
- Eric McKenzie Wolff (*Control and Dynamical Systems*) B.S., Cornell University 2010.
Thesis: Control of Dynamical Systems with Temporal Logic Specifications.
- Stephen Wu (*Civil Engineering and Geophysics*) B.S., The University of Michigan 2008; M.S., California Institute of Technology 2009.
Thesis: Future of Earthquake Early Warning: Quantifying Uncertainty and Making Fast Automated Decisions for Applications.

Doctor of Philosophy continued

Yuan Xuan (*Aeronautics*) Diplôme d'Ingénieur, Ecole Polytechnique 2010; M.S., California Institute of Technology 2011.

Thesis: Progress in Numerical Modeling of Non-Premixed Combustion.

Alexandra Zevalkink (*Materials Science*) B.S., Michigan Technological University 2008.

Thesis: Chain-Forming Zintl Antimonides as Novel Thermoelectric Materials.

Yu Zhao (*Electrical Engineering*) B.S., Peking University 2008; M.S., California Institute of Technology 2009.

Thesis: Flexible Micro Implants for *in vivo* Sensing.

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

Sara Lyn Dougherty (*Geophysics*) B.A., Boston University 2006; B.S., Boston College 2008.

Thesis: Seismic Structure along Transitions from Flat to Normal Subduction: Central Mexico, Southern Peru, and Southwest Japan.

Yihe Huang (*Geophysics*) B.S., Tianjin University 2007; M.S., 2009; M.S., California Institute of Technology 2011.

Thesis: Dynamic Rupture Simulation Integrated with Earthquake Observations.

Alexandra Charlotte Lockwood (*Planetary Science*) B.S., University of Maryland, College Park 2007; M.S., California Institute of Technology 2010.

Thesis: Understanding Planet Formation through High Precision Photometry and Spectroscopy.

Margaret A. Rosenburg (*Planetary Science and Geophysics and History and Philosophy of Science*) S.B., Massachusetts Institute of Technology 2007; M.S., California Institute of Technology 2010.

Thesis: Interpretation of Lunar Topography: Impact Cratering and Surface Roughness.

Daniel Aaron Stolper (*Geobiology*) A.B., Harvard College 2008; M.S., California Institute of Technology 2011.

Thesis: New Insights into the Formation and Modification of Carbonate-Bearing Minerals and Methane Gas in Geological Systems using Multiply Substituted Isotopologues.

Marion Y. Thomas (*Geology*) Licence, Université de Bretagne Occidentale 2005; M.S., 2007; M.S., California Institute of Technology 2011.

Thesis: Frictional Properties of Fault: From Observations on the Longitudinal Valley Fault, Taiwan, to Dynamic Simulations.

Da Yang (*Environmental Science and Engineering*) B.S., Beijing University 2008; M.S., California Institute of Technology 2010.

Thesis: The Madden-Julian Oscillation: Observation, Modeling, and Theory.

Doctor of Philosophy continued

Zhongwen Zhan (*Geophysics*) B.S., University of Science and Technology of China 2006; M.S., 2008.

Thesis: Exploiting Seismic Waveforms of Ambient Noise and Earthquakes.

DIVISION OF HUMANITIES AND SOCIAL SCIENCES

Federico Tadei (*Social Science*) Laurea Triennale, Università degli Studi di Torino 2006; Laurea Specialistica 2008; Diploma, Collegio Carlo Alberto 2009; M.S., California Institute of Technology 2011.

Thesis: Extractive Institutions in Colonial Africa.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

Jonathan Mark Arnold (*Physics*) B.S., California Institute of Technology 2008.

Thesis: Baryon and Lepton Numbers in Particle Physics beyond the Standard Model.

Kimberly K. Boddy (*Physics*) S.B., Massachusetts Institute of Technology 2007.

Thesis: Cosmological Consequences of Dark Matter Interactions and Vacuum Fluctuations.

Tara Chalermongsak (*Physics*) B.S., Columbia University 2007.

Thesis: High Fidelity Probe and Mitigation of Mirror Therapy Fluctuations.

Hee Joong Chung (*Physics*) B.S., Yonsei University 2007.

Thesis: Three-Dimensional Superconformal Field Theory, Chern-Simons Theory, and Their Correspondence.

Gerald Joseph Daigle III (*Mathematics*) B.A., Pomona College 2008.

Thesis: On the Local Tamagawa Number Conjecture for Tate Motives.

Constantine Glen Evans (*Physics*) A.A., San Diego Mesa College 2002; B.S., University of California, San Diego 2005; M.S., California Institute of Technology 2011.

Thesis: Crystals that Count! Physical Principles and Experimental Investigations of DNA Tile Self-Assembly.

Bartosz Fornal (*Physics*) M.S., Jagiellonian University 2008.

Thesis: Baryon Number Violation beyond the Standard Model.

Liling Gu (*Mathematics*) B.S., University of Science and Technology of China 2008; M.S., California Institute of Technology 2011.

Thesis: Integral Finite Surgeries on Knots in S^3 .

Kari Alison Hodge (*Physics*) B.S., University of Southern California 2007.

Thesis: The Search for Gravitational Waves from the Coalescence of Black Hole Binary Systems in Data from the LIGO and Virgo Detectors. Or: A Dark Walk through a Random Forest.

Jeffrey Daniel Kaplan (*Physics*) B.A., Northwestern University 2007.

Thesis: Where Tori Fear to Trend: Hypermassive Neutron Star Remnants and Absolute Event Horizons or Topics in Computational General Relativity.

Doctor of Philosophy continued

Emily Dell Kosten (*Physics*) A.B., Princeton University 2008.

Thesis: Optical Designs for Improved Solar Cell Performance.

Michael Praetorius Mendenhall (*Physics*) B.A., Washington University in St. Louis 2006.

Thesis: Measurement of the Neutron Beta Decay Asymmetry using Ultracold Neutrons.

Timothy Davies Morton (*Astrophysics*) A.B., Harvard College 2006; M.S., California Institute of Technology 2009.

Thesis: Demographic Studies of Extrasolar Planets.

Chan Youn Park (*Physics*) B.S., Seoul National University 2007.

Thesis: Branes and Supersymmetric Quantum Field Theories.

Stephen M. Privitera (*Physics*) B.S., University of Rochester 2007.

Thesis: The Importance of Spin for Observing Gravitational Waves from Coalescing Compact Binaries with LIGO and Virgo.

Mattias Rydenfelt (*Physics*) M.S., Lund Institute of Technology 2008.

Thesis: The Combinatorics of Transcriptional Regulation.

Riccardo Schmid (*Physics*) B.A., Bowdoin College 2005; M.S., California Institute of Technology 2011.

Thesis: New Search for the Neutron Electric Dipole Moment Using ultracold Neutrons at the Spallation Neutron Source.

Erik W. Schomburg (*Physics*) B.S.E., The University of Michigan 2005; M.S., California Institute of Technology 2007.

Thesis: Biophysical and Network Mechanisms of High Frequency Extracellular Potentials in the Rat Hippocampus.

Matthew Alan Stevenson (*Astrophysics*) B.Sc., University of Victoria 2006; M.S., California Institute of Technology 2008.

Thesis: Observational and Theoretical Advances in Cosmological Foreground Emission.

Shriharsh P. Tendulkar (*Astrophysics*) B.Tech., Indian Institute of Technology, Bombay 2008; M.S., California Institute of Technology 2010.

Thesis: Beyond the Blur: Construction and Characterization of the First Autonomous AO System and an AO Survey of Magnetar Proper Motions.

Rebecca Suzanne Tucker (*Physics*) B.S., Georgia Institute of Technology 2008; M.S., California Institute of Technology 2012.

Thesis: Characterization of Detectors and Instrument Systematics for the SPIDER CMB Polarimeter.

Fan Zhang (*Physics*) B.A., University of Cambridge 2004; M.Sc., 2005; M.S., California Institute of Technology 2013.

Thesis: Tools for the Study of Dynamical Spacetimes.

PRIZES AND AWARDS

Prizes and awards are listed only for those students receiving degrees in 2014, and include prizes and awards received by them in previous years.

FREDERIC W. HINRICHS, JR., MEMORIAL AWARD

Awarded to the seniors who, in the opinion of the undergraduate deans, have made the greatest undergraduate contribution to the welfare of the student body and whose qualities of leadership, character, and responsibility have been outstanding.

2014 Connor Wilson Coley

MABEL BECKMAN PRIZE

Awarded to an undergraduate woman upon completion of her junior or senior year in recognition of demonstrated academic and personal excellence, contributions to the Institute community, and outstanding qualities of character and leadership.

2014 Katja Edeltrud Luxem, Michelle Tang

GEORGE W. HOUSNER AWARD

Awarded annually to a senior in the upper 20 percent of his or her class who has demonstrated excellence in scholarship and in the preparation of an outstanding piece of original scientific research.

2014 Siduo "Stone" Jiang

MILTON AND FRANCIS CLAUSER DOCTORAL PRIZE

Awarded to the Ph.D. candidate whose research is judged to exhibit the greatest degree of originality as evidenced by its potential for opening up new avenues of human thought and endeavor as well as by the ingenuity with which it has been carried out.

Name of recipient to be announced at commencement.

The prizes above are announced at the commencement ceremony.

APOSTOL AWARD FOR EXCELLENCE IN TEACHING IN MATHEMATICS

Named in honor of Tom Apostol, who was a great teacher at Caltech for over 50 years, the award recognizes excellence in teaching by our graduate and undergraduate teaching assistants.

2013 Daiqi Linghu

CHARLES D. BABCOCK AWARD

Awarded, by vote of the aeronautics faculty, to a graduate student whose achievements in teaching or other assistance to students have made a significant contribution to the aeronautics department.

2011 Bradley Joseph Lyon, Victoria Stolyar Richmond

2013 Julia Theresa Cossé

ROBERT P. BALLE CALTECH MATHEMATICS SCHOLARS AWARD

Awarded to the mathematics major entering his or her senior year who has demonstrated the most outstanding performance in mathematics courses completed in the student's first three years at Caltech.

2013 Ka Kin Kenneth Hung

WILLIAM F. BALLHAUS PRIZE

Awarded to aeronautics students for outstanding doctoral dissertations.

2014 Bradley Joseph Lyon, Keith D. Patterson

BHANSALI PRIZE IN COMPUTER SCIENCE

Awarded to an undergraduate student for outstanding research in computer science in the current academic year. Awardees are selected by a committee of computer science faculty. (The award was established in 2001 by Vineer Bhansali (B.S., M.S. 1987 Physics) in memory of his grandfather, Mag Raj Bhansali.)

2014 *Iris Zhengzheng Liu*

AMASA BISHOP SUMMER STUDY ABROAD PRIZE

Awarded to one or more freshman, sophomore, or junior to fund summer study abroad in an organized program with the aim of gaining exposure to foreign language and international issues or cultures, including global issues in the sciences and engineering.

2012 *Eugene Vinitsky*

ROLF D. BUHLER MEMORIAL AWARD IN AERONAUTICS

Awarded to an aeronautics student for outstanding academic achievement in the Master's program.

2014 *Chian Yeh Goh*

FRITZ B. BURNS PRIZE IN GEOLOGY

Awarded to an undergraduate who has demonstrated both academic excellence and great promise of future contributions in the fields represented by the Division of Geological and Planetary Sciences.

2013 *Daniel Yiu Wah Lo*

CALTECH ALUMNI ASSOCIATION SPIRIT AWARD

Commemorates extraordinary activities by Caltech undergraduate students, graduate students, and postdoctoral scholars who best exemplify the spirit, tradition, and values of Caltech. This award is given only when the Association finds that exceptional activities have occurred which merit this special recognition.

2014 *Gregory Russell Izatt, Julia Dorothy Jester, Samantha Piszkiwicz*

THE W. P. CAREY & CO., INC., PRIZE IN APPLIED MATHEMATICS

Awarded to a student receiving a Doctor of Philosophy degree for an outstanding doctoral dissertation in applied mathematics or pure mathematics.

2014 *Faisal Amlani, Peyman Tavallali*

CENTENNIAL PRIZE FOR THE BEST THESIS IN MECHANICAL AND CIVIL ENGINEERING

Awarded each year to a candidate for the degree of Doctor of Philosophy in applied mechanics, civil engineering, or mechanical engineering whose doctoral thesis is judged to be the most original and significant by a faculty committee appointed annually by the executive officer for mechanical and civil engineering. This prize was established with gifts from alumni following the Mechanical Engineering Centennial Celebration in 2007.

2014 *Gerry V. Della Rocca*

DONALD S. CLARK MEMORIAL AWARD

Awarded to two juniors in recognition of service to the campus community and academic excellence. Preference is given to students in the Division of Engineering and Applied Science and to those in Chemical Engineering.

2013 *Laura Frances Santoso, Michelle Tang*

THE DONALD COLES PRIZE IN AERONAUTICS

Awarded to the graduating Ph.D. student in aeronautics whose thesis displays the best design of an experiment or the best design for a piece of experimental equipment.

2014 *Julia Theresa Cossé*

DEANS' CUP AND STUDENT LIFE AND MASTER'S AWARDS

Two awards, selected by the deans, the director of student life, and the master of student houses, presented to undergraduates whose concern for their fellow students has been demonstrated by persistent efforts to improve the quality of undergraduate life and by effective communication with members of the faculty and administration.

2013

Misha Raffiee, Deans' Cup

Anna Katherine Ross, Deans' Cup

Paige Down Logan, Student Life and Master's

Pushpa Neppala, Student Life and Master's

2014

Erika Alden DeBenedictis, Deans' Cup

Rachel Elizabeth Deghuee, Deans' Cup

Julia Dorothy Jester, Student Life and Master's

Valère Régis Westbrooke Lambert, Student Life and Master's

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN BIOTECHNOLOGY OR RELATED FIELDS

Awarded annually to a Ph.D. candidate for the best thesis, publication, or discovery in biotechnology or related fields at the Institute in the preceding 12 months. Winners are selected by the bioengineering faculty. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades, Eng '58.

2014 *Imran Raouf Malik*

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN ENTREPRENEURSHIP OR RELATED FIELDS

Awarded annually for the best business plan or proposal, start-up, thesis, publication, discovery, or related efforts by student(s) in entrepreneurship or related fields at the Institute in the preceding 12 months. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades, Eng '58.

2009 *Virgil Griffith*

2013 *Aditya Rajagopal*

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN NANOTECHNOLOGY OR RELATED FIELDS

Awarded annually to a Ph.D. candidate for the best thesis, publication, or discovery in nanotechnology or related fields at the Institute in the preceding 12 months. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades, Eng '58.

2014 *Bradley Joseph Lyon, Muhammad Mujeeb-U-Rahman*

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN SEISMO- ENGINEERING, PREDICTION, AND PROTECTION

Awarded annually to a Ph.D. candidate for the best thesis, publication, or discovery in seismo-engineering, prediction, and protection at the Institute in the preceding 12 months. Winners are selected by the faculty. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades, Eng '58.

2011 *Matthew Nicholas Faulkner*

2013 *Michael James Olson*

2014 *Faisal Amlani*

EVERHART DISTINGUISHED GRADUATE STUDENT LECTURER AWARD

Awarded to a graduate student who has demonstrated exemplary presentation ability and graduate research.

2014 *Julia Theresa Cossé, Kaycie Marie Deyle*

DORIS EVERHART SERVICE AWARD

Awarded annually to an undergraduate who has actively supported and willingly worked for organizations that enrich not only student life, but also the campus and/or community as a whole, and who has, in addition, exhibited care and concern for the welfare of students on a personal basis. The award was established in 1999 by Martin and Sally Ridge in honor of Doris Everhart.

2014 *Zachary Adam Rivkin*

LAWRENCE L. AND AUDREY W. FERGUSON PRIZE

Awarded to the graduating Ph.D. candidate in biology who has produced the outstanding doctoral thesis for the past year.

2014 *Anna Basalova Buchman*

RICHARD P. FEYNMAN PRIZE IN THEORETICAL PHYSICS

Awarded to a senior on the basis of excellence in theoretical physics.

2014 *John Christopher Napp*

HAREN LEE FISHER MEMORIAL AWARD IN JUNIOR PHYSICS

Awarded to a junior physics major who demonstrates the greatest promise of future contributions in physics.

2013 *John Christopher Napp*

HENRY FORD II SCHOLAR AWARD

Awarded either to the engineering student with the best academic record at the end of the third year of undergraduate study, or to the engineering student with the best first-year record in the graduate program.

2012 *Michael Teoh Hirschleifer*

2013 *Kevin Brian Chen*

JACK E. FROEHLICH MEMORIAL AWARD

Awarded to a junior in the upper 5 percent of his or her class who shows outstanding promise for a creative professional career.

2013 *Tianxiang (Albert) Liu*

BARRY M. GOLDWATER SCHOLARSHIP

The Scholarship Program honoring Senator Barry Goldwater was designed to foster and encourage outstanding students to pursue careers in the fields of mathematics, the natural sciences, and engineering. The Goldwater Scholarship is the premier undergraduate award of its type in these fields.

2013 *Michael Gerald Dieterle, Siduo (Stone) Jiang*

GRADUATE DEANS' AWARD FOR OUTSTANDING COMMUNITY SERVICE

Awarded to a Ph.D. candidate who, throughout his or her graduate years at the Institute, has made great contributions to graduate life and whose qualities of leadership and responsibility have been outstanding.

2014 *Alexandra Charlotte Lockwood, Raul Navarro*

GEORGE W. AND BERNICE E. GREEN MEMORIAL PRIZE

Awarded annually to an undergraduate student in any class for original research, an original paper or essay, or other evidence of creative scholarship beyond the normal requirements of specific courses. The student is selected by the deans and the Undergraduate Academic Standards and Honors Committee.

2014 *Michael Gerald Dieterle*

DAVID M. GRETHER PRIZE IN SOCIAL SCIENCE

Awarded to the undergraduate student who demonstrates outstanding performance and creativity in one of the social science options. Funded by Susan G. Davis in recognition of David M. Grether's contributions to econometrics and experimental economics and his service to the Division of the Humanities and Social Sciences, the prize is awarded annually by a committee of social science faculty and carries a cash award.

2014 *Jetson Leder-Luis*

THE LUCY GUERNSEY SERVICE AWARD

Awarded to one or two students who have provided exceptional service to the Caltech Y and/or the community, are involved with service projects, have demonstrated leadership in community and volunteer service efforts, and who exemplify a spirit of service.

2012 *Katja Edeltrud Luxem*

2014 *Jocelyn Yoshiko Kishi*

ARIE J. HAAGEN-SMIT MEMORIAL AWARD

Awarded to a sophomore or junior in biology or chemistry who has shown academic promise and who has made recognized contributions to Caltech.

2012 *Marlyn Joanna Moore, Zihao Yan*

2013 *Siduo "Stone" Jiang, Jonathan Samuel Schor, Stanford Jeremy Schor*

ALEXANDER P. AND ADELAIDE F. HIXON PRIZE FOR WRITING

Awarded annually in recognition of the best writing in freshman humanities courses.

2010 *Evan James Patterson*

2011 *Eric S. Mukherjee*

HANS G. HORNUNG PRIZE

Awarded for the best oral Ph.D. defense presentation by a student advised by aerospace faculty. The decision is made by a committee of students who attend all thesis presentations for the year.

2014 *Bradley Joseph Lyon*

BIBI JENTOFT-NILSEN MEMORIAL AWARD

Awarded to an upperclass student who exhibits outstanding qualities of leadership and who actively contributes to the quality of student life at Caltech.

2014 *Samantha Piszkievich*

SCOTT RUSSELL JOHNSON UNDERGRADUATE MATHEMATICS PRIZE

Awarded for the best graduating mathematics major. Special consideration is given to independent research done as a senior thesis or SURF project.

2014 *Ka Kin Kenneth Hung, Evan James Patterson*

SCOTT RUSSELL JOHNSON PRIZE FOR EXCELLENCE IN GRADUATE STUDY IN MATHEMATICS

Awarded to continuing graduate students for excellence in one or more of the following: extraordinary progress in research, excellence in teaching, or excellent performance as a first-year graduate student.

2011 *Daiqi Linghu*

KALAM PRIZE FOR AEROSPACE ENGINEERING

Awarded to a student in the aerospace engineering Master's program whose academic performance was exemplary and who shows high potential for future achievements at Caltech. This prize was made possible through the generosity of Dr. Abdul Kalam, the 11th president of India, himself an aerospace engineer.

2014 *Aaditya Nitin Chaphalkar*

D. S. KOTHARI PRIZE IN PHYSICS

Awarded to a graduating senior in physics who has produced an outstanding research project during the year.

2014 *Jarvis Li*

MARGIE LAURITSEN LEIGHTON PRIZE

Awarded to one or two undergraduate women who are majoring in physics or astrophysics, and who have demonstrated academic excellence.

2012 *Irina Ene*

LIBRARY FRIENDS' SENIOR THESIS PRIZE

This prize was established in 2010 to recognize a senior thesis that exemplifies scholarly research, including the effective use of library resources and other bibliographic materials. A cash award accompanies the citation. The senior thesis is an extensive, independent written work usually undertaken during a senior thesis course series. The University Librarian and the Friends of Caltech Libraries oversee the evaluation and nomination process and make recommendations to the Undergraduate Academic Standards and Honors Committee for final selection. At the discretion of the Friends of Caltech Libraries, more than one award, or none, may be made in any year.

2014 Stephanie Midori Laga, Eric S. Mukherjee

MARI PETERSON LIGOCKI ('81) MEMORIAL AWARD

Awarded to a student who has improved the quality of student life at Caltech through his or her personal character.

2014 Jesse Matthew Salomon

MECHANICAL ENGINEERING AWARD

Awarded to a candidate for the degree of Bachelor of Science in mechanical engineering whose academic performance has demonstrated outstanding original thinking and creativity, as judged by a faculty committee appointed each year by the executive officer for mechanical engineering. The prize consists of a citation and a cash award.

2014 Robert Wesley Morgan, Russell Gordon Smith

GORDON MCCLURE MEMORIAL COMMUNICATIONS PRIZE

Awarded to undergraduate students for excellence in essay writing in three subjects: English, history, and philosophy.

2011 Connor James Tanaka DeFanti

2013 Caroline Yizhu Yu, Eric S. Mukherjee

THE HERBERT NEWBY MCCOY AWARD

Awarded to chemistry doctoral students for outstanding contributions to the science of chemistry.

2014 John Stuart Anderson, Alexis Christine Komor, Emily Yuan Tsui

MARY A. EARL MCKINNEY PRIZE IN LITERATURE

Awarded to undergraduate students for excellence in writing, in two categories: poetry and prose fiction.

2012 *Jonathan Samuel Schor*

2013 *Suna Li*

2014 *Marlyn Joanna Moore*

MERCK INDEX AWARD

Awarded to one or more graduating students who have demonstrated outstanding achievement in the field of chemistry.

2014 *Tianxiang (Albert) Liu*

ROBERT L. NOLAND LEADERSHIP SCHOLARSHIP

Awarded to undergraduate students who exhibit qualities of outstanding leadership, which are most often expressed as personal actions that have helped other people and that have inspired others to fulfill their capabilities.

2014 *Laura Frances Santoso, Jeffrey Daniel Sherman,
Gautam Ramachandra Upadhyaya, Malvika Verma*

HOWARD REYNOLDS MEMORIAL PRIZE IN GEOLOGY

Awarded to a sophomore or junior who demonstrates the potential to excel in the field of geology and who actively contributes to the quality of student life at Caltech.

2012 *Andrea Jean Ritch*

HERBERT J. RYSER MEMORIAL SCHOLARSHIPS

Awarded to undergraduate students for academic excellence, preferably in mathematics.

2013 *Ka Kin Kenneth Hung*

SAN PIETRO TRAVEL PRIZE

Awarded to one or more sophomore, junior, or senior to fund an adventurous and challenging summer travel experience that expands the recipient's cultural horizons and knowledge of the world.

2012 *Maxwell Christian Horton, Erica Mun-Chi Leung, Suna Li*

2013 *Hima Jennifer Hassenruck-Gudipati, Stanford Jeremy Schor*

2014 *David Wayne Ding, Andrea Jean Ritch, Jeffrey Daniel Sherman*

RICHARD P. SCHUSTER MEMORIAL PRIZE

Awarded to one or more juniors or seniors in chemistry or chemical engineering on the basis of financial need and academic promise.

2014 *Siduo (Stone) Jiang*

ERNEST E. SECHLER MEMORIAL AWARD IN AERONAUTICS

Awarded to an aeronautics student who has made the most significant contribution to the teaching and research efforts of GALCIT (Graduate Aeronautical Laboratories of the California Institute of Technology). Preference is given to students working in structural mechanics.

2014 *Keith D. Patterson, Jason Rabinovitch*

DON SHEPARD AWARD

Awarded to students who would find it difficult, without additional financial help, to engage in extracurricular and cultural activities. The recipients are selected on the basis of their capacity to take advantage of and to profit from these activities rather than on the basis of their scholastic standing.

2010 *Connor Wilson Coley*

2011 *Juliette Campbell Becker, David Wayne Ding, Raj Michael Katti, Yuchen Lin*

2012 *Lawrence Jenkins, Suna Li, Laura Frances Santoso*

2013 *Monica He, Jiabin Liu, Tianxiang (Albert) Liu, Katja Edeltrud Luxem*

PENELOPE W. AND E. ROE STAMPS IV LEADERSHIP SCHOLAR AWARDS PROGRAM

The Stamps Leadership Scholarship Program recognizes and rewards exceptional students who exemplify leadership, perseverance, scholarship, service, and innovation.

2014 Jetson Leder-Luis, Randall Lin, Ted Guoning Xiao

MORGAN WARD PRIZE

Awarded for the best problems and solutions in mathematics submitted by a freshman or sophomore.

2014 Conway Xu

FREDERICK J. ZEIGLER MEMORIAL AWARD

Awarded to an outstanding sophomore or junior in pure applied mathematics, for excellence in scholarship as demonstrated in class activities or in the preparation of an original paper or essay in any subject area.

2012 Ka Kin Kenneth Hung

THE MEANING OF ACADEMIC DRESS

The costumes of those in the academic procession have a specific symbolism that dates back to at least the 14th century. Academic institutions in the United States adopted a code of academic dress in 1895 that has been revised from time to time. The dress of institutions in other countries varies, and there is not a worldwide code, but the basic elements are present in all academic costumes.

Caltech's David Elliot (1917-2007), professor of history, emeritus, wrote the following about academic costumes:

"Of particular interest is the cap or mortarboard. In the form of the biretta, it was the peculiar sign of the master. Its use has now spread far beyond that highly select group to school girls and choir boys and even to the nursery school. *Sic transit* . . .

"The gown, of course, is the basic livery of the scholar, with its clear marks of rank and status—the pointed sleeves of the bachelor, the oblong sleeves of the master, the full sleeves and velvet trimmings of the doctor. The doctors, too, may depart from basic black and break out into many colors—Harvard crimson or Yale blue or the scarlet splash of Oxford.

"Color is the very essence of the hood: color in the main body to identify the university; color perhaps in the binding to proclaim the subject of the degree—orange for engineering, gold for science, the baser copper for economics, white for arts and letters, green for medicine, purple for law, scarlet for theology, and so on.

"With this color and symbolism, which is medieval though mutated, we stage our brief moment of pageantry, paying homage to that ancient community of scholars in whose shadow we stand, and acknowledging our debt to the university as one of the great institutional constructs of the Middle Ages."

ODE TO JOY

*Text of Beethoven Ninth Symphony excerpt, after the poem "An die Freude ("To Joy")
by Johann Christoph Friedrich von Schiller (1759–1805)*

*Freude, schöner Götterfunken
Tochter aus Elysium,
Wir betreten feuertrunken,
Himmlische, dein Heiligtum!
Deine Zauber binden wieder
Was die Mode streng geteilt;
Alle Menschen werden Brüder,
Wo dein sanfter Flügel weilt.*

Joy, beautiful spark of the gods
Daughter of Elysium,
We enter, drunk with fire,
Heavenly one, your sanctuary!
Your magic reunites
What custom strictly divided.
All men will become brothers,
Where your gentle wing rests.

*Wem der große Wurf gelungen,
Eines Freundes Freund zu sein;
Wer ein holdes Weib errungen,
Mische seinen Jubel ein!
Ja, wer auch nur eine Seele
Sein nennt auf dem Erdenrund!
Und wer's nie gekonnt, der stehle
Weinend sich aus diesem Bund!*

Whoever has had the great fortune
To be a friend's friend,
Whoever has married a beloved wife,
Let him mix in his jubilation!
Indeed, whoever can call even one soul
His own on this round earth!
And whoever was never able to, must creep
Tearfully away from this band!

HAIL CIT

(Caltech alma mater)

by Manton Barnes, B.S. '21

In Southern California with grace and splendor bound,
Where the lofty mountain peaks look out to lands beyond,
Proudly stands our Alma Mater, glorious to see;
We raise our voices proudly, hailing, hailing thee.
Echoes ringing while we're singing over land and sea,
The halls of fame resound thy name, noble CIT.

CALTECH



ASSOCIATION

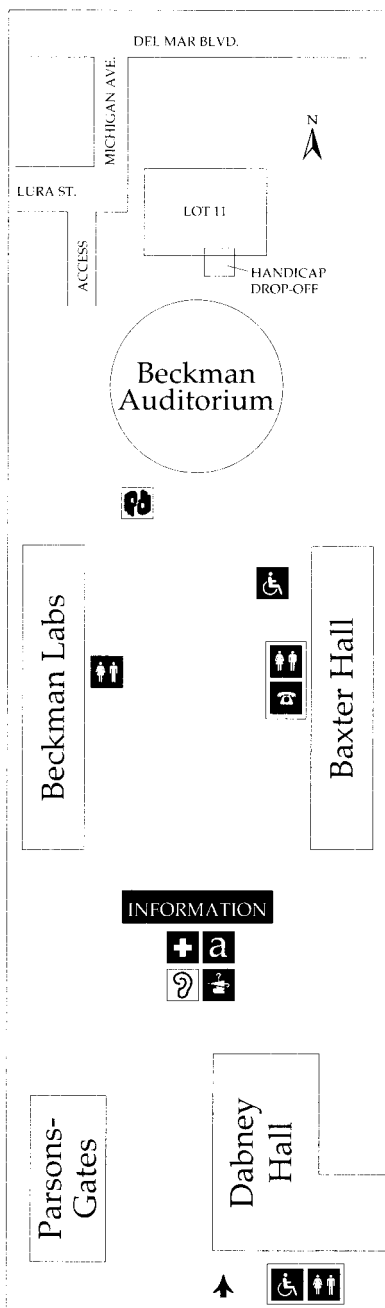
Congratulations to today's graduates. We welcome you to the family of Caltech alumni!

For more than 100 years, Caltech's alumni have gone forward from this day to make a positive impact in the world. We know this year's class will do the same, and that future Techers will be inspired by the achievements of the Class of 2014.

Your Caltech degree offers you a place among—and access to—one of the most accomplished alumni networks of any institution, with more than 23,000 graduates around the world. The Caltech Alumni Association, in partnership with Caltech, works to help you realize the full potential of that network, personally and professionally.

Graduates, your alumni community is proud of you. We encourage you to venture out to explore, invent, build, and innovate. Follow your passion, and in turn, make the world a better place.

Samantha Foster (B.S. '98)
President, Board of Directors
Caltech Alumni Association
www.alumni.caltech.edu



SERVICES FOR COMMENCEMENT GUESTS

-  PUBLIC TELEPHONES are available in Baxter Hall.
-  RESTROOMS are available in Baxter Hall, Beckman Labs, and Dabney Hall.
-  FIRST AID SERVICES are available at the information booth.
-  LOST AND FOUND items may be reported and/or claimed at the information booth.

ATHENAEUM luncheon tickets will be on sale at the information booth from 8 to 10 a.m.

SPECIAL SERVICES FOR PERSONS WITH DISABILITIES

-  ASSISTIVE LISTENING DEVICES are available at the information booth. A driver's license or state-issued ID card is required.
-  LARGE-TYPE PROGRAMS (abridged) are available at the information booth.
-  AMERICAN SIGN LANGUAGE (ASL) interpreters are stationed at the west front of the ceremony seating area.
-  PEOPLE WHO USE WHEELCHAIRS, and their guests, will find a special section near the east front of the ceremony seating area.
-  RESTROOMS ACCESSIBLE TO PEOPLE WHO USE WHEELCHAIRS are located on the first floors of Dabney Hall and Baxter Hall.

*The passing of the torch
symbolizes the spirit of research
going from one hand to the next,
from one generation to the next,
from youth to maturity.*