123rd Annual Commencement

CALIFORNIA INSTITUTE OF TECHNOLOGY

June 16, 2017

123rd Annual Commencement

CALIFORNIA INSTITUTE OF TECHNOLOGY

Friday, June 16, 2017
10:00 a.m.

ACADEMIC PROCESSION

Chief Marshal
Warren C. Brown, Ph.D.

Marshals
Shuki Bruck, Ph.D.
Richard C. Flagan, Ph.D.
David Prober, Ph.D.
Douglas C. Rees, Ph.D.
Peter Schröeder, Ph.D.

Faculty Officers
Kristine L. Haugen, Ph.D.
Mary B. Kennedy, Ph.D.

Marching Order
Candidates for the Degree of Bachelor of Science
Candidates for the Degree of Master of Science
Candidate for the Degree of Engineer
Candidates for the Degree of Doctor of Philosophy
Faculty Officers
The Faculty
The Chairs of the Divisions
The Deans
The Vice Provosts
The Provost
The Vice Presidents
The Trustees
The Commencement Speaker
The President
The Chair of the Board of Trustees

PROGRAM

Organ Prelude	Leslie J. Deutsch, Ph.D.
Processional	The Caltech Convocation Brass and Percussion Ensemble *Glenn D. Price, DMA, Conductor*
Presiding	David L. Lee, Ph.D. *Chair of the Board of Trustees* *California Institute of Technology*
Commencement Speaker	Dr. Mae C. Jemison *Physician, Engineer, NASA Astronaut*
Choral Selection "Ode to Joy" excerpts from Symphony No. 9 by Ludwig van Beethoven; Arranged by Dr. Deutsch *(Translation on page 59.)*	The Caltech Glee Club, the Caltech Convocation Brass and Percussion Ensemble, and Organ *Nancy Sulahian, M.M., Conductor*
Conferring of Degrees	Thomas F. Rosenbaum, Ph.D. *President* *Sonja and William Davidow Presidential Chair and Professor of Physics* *California Institute of Technology*

Presentation of Candidates for Degrees

For the Degree of Bachelor of Science	Kevin M. Gilmartin, Ph.D. *Dean of Undergraduate Students*
For the Degree of Master of Science	Douglas C. Rees, Ph.D. *Dean of Graduate Studies*
For the Degree of Engineer	Douglas C. Rees, Ph.D. *Dean of Graduate Studies*

For the Degree of Doctor of Philosophy

Biology and Biological Engineering	Stephen L. Mayo, Ph.D. *Division Chair*
Chemistry and Chemical Engineering	Jacqueline K. Barton, Ph.D. *Division Chair*
Engineering and Applied Science	Guruswami Ravichandran, Ph.D. *Division Chair*
Geological and Planetary Sciences	John P. Grotzinger, Ph.D. *Division Chair*
Humanities and Social Sciences	Cindy A. Weinstein, Ph.D. *Eli and Edythe Broad Professor of English*
Physics, Mathematics and Astronomy	Fiona Harrison, Ph.D. *Division Chair*

Announcement of Awards and Concluding Remarks	President Rosenbaum
Alma Mater "Hail CIT" by Manton Barnes, B.S. '21 *(The audience may join in; lyrics are on page 61.)*	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 2017 commencement ceremony will begin shortly before 10 a.m. on Friday, June 16, at www.caltech.edu.

Follow along with the day's events on Facebook, Twitter, Instagram, and Snapchat. Share your photos and join the celebration by using #Caltech2017. (See page 64 for more information.)

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 35 Nobel Prizes, 7 Crafoord Prizes, 13 National Medals of Technology and Innovation, and 58 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.

Caltech is a place where bold discoveries are possible—where visionary scholars advance the boundaries of knowledge. We celebrate today the 558 graduates who will earn 254 bachelor's degrees, 122 master's degrees, one engineer's degree, and 180 Ph.D. degrees, and who will contribute to Caltech's impressive legacy and record of achievement around the world.

ABOUT THE SPEAKER

Dr. Mae C. Jemison is an engineer, physician, and NASA astronaut who became the first woman of color in the world to go into space when she flew aboard the space shuttle *Endeavour* in 1992. Jemison has become an icon of both the women's rights and civil rights movements as well as a strong, committed global voice for science literacy.

In 1994, Jemison founded the international science camp The Earth We Share (TEWS) for students 12–16 years old from around the world. In 2011, she also launched the TEWS-Space Race, with the goal of improving science achievement for underserved Los Angeles-area students who are underrepresented in the sciences. Jemison continues to be a vocal advocate for improving education access and for greater inclusion of girls in science, technology, engineering, and math (STEM) programs. Jemison's book, *Find Where the Wind Goes*, tells the story of her childhood on the South Side of Chicago and the aspirations that led to her history-making journey into space.

Currently, Jemison leads The 100 Year Starship (100YSS), a joint initiative by NASA and the Defense Advanced Research Projects Agency that is focused on assuring the capability for human interstellar space travel to another star within the next century.

Jemison is a member of the National Academy of Medicine and was inducted into both the National Women's Hall of Fame and the International Space Hall of Fame. She is a recipient of the National Organization for Women's Intrepid Award and the Kilby Science Award.

Prior to NASA, Jemison was a Peace Corps Medical Officer in Sierra Leone and Liberia, overseeing the health care system. Jemison earned a B.S. degree in chemical engineering from Stanford University and her M.D. from Cornell University.

CANDIDATES FOR DEGREES

Bachelor of Science

Jacob Nunes Henriques Abrahams *Chicago, Illinois* Geophysics and Physics and English (Minor)

Kushal Arun Agarwal *Corvallis, Oregon* Computer Science and Applied and Computational Mathematics

Pallavi Aggarwal *Oakland Gardens, New York* Mathematics and Business, Economics, and Management

Yury Salavatovich Aglyamov *Austin, Texas* Geophysics

Jagriti Agrawal *Manhattan Beach, California* Computer Science

Roshan Chandra Agrawal *Pleasanton, California* Computer Science

Saaket Agrawal *Sacramento, California* Chemistry

Elliot Kyung Il Ahn *Istanbul, Turkey* Physics

Nasser Khalifa Al-Rayes *Doha, Qatar* Mechanical Engineering

Cole T. Allen *Torrance, California* Mechanical Engineering

Jeffrey An *Eagleville, Pennsylvania* Applied and Computational Mathematics and Computer Science (Minor)

Alexander Vladimir Anferov *Ann Arbor, Michigan* Applied Physics

Luc Zhang Angel *Laguna Beach, California* Chemical Engineering (Process Systems)

Katie An-yu Antilla *Redondo Beach, California* Chemical Engineering (Biomolecular)

Diana Alexandra Ardelean *Bucharest, Romania* Mathematics

Manasa Ashok *Simi Valley, California* Computer Science

Rahul Hemant Bachal *Seattle, Washington* Computer Science

Bolton Raymond Bailey *Palo Alto, California* Mathematics and Computer Science

Alexander Ruben Barreiro *Miami, Florida* Electrical Engineering

Benjamin Craig Bartlett *Lexington, South Carolina* Physics and Computer Science (Minor)

Rohan Batra *Davie, Florida* Computer Science

Michael Ulysses Bauer *Dunn Loring, Virginia* Chemical Engineering (Materials) and Computer Science (Minor)

Moriah Nicole Bischann *Mesa, Arizona* Engineering and Applied Science (Materials Science)

Aritra Biswas *Jackson, Mississippi* Physics and Computer Science (Minor)

† *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.*

Bachelor of Science continued

Fabian Kevin Boemer *San Diego, California* Computer Science and Applied and Computational Mathematics

Jordan Alexander Bonilla *Weston, Florida* Computer Science

Mary Maral Boyajian *Los Angeles, California* Chemical Engineering (Process Systems)

Christopher Powell Bradley *Half Moon Bay, California* Mechanical Engineering and Aerospace Engineering (Minor)

Alec Ryan Brenner *McLean, Virginia* Geology

Eugene Samuel Bulkin *Prairie View, Illinois* Computer Science and Business, Economics, and Management

Nicholas Anthony Buoniconti IV *Orlando, Florida* Mechanical Engineering and Business, Economics, and Management

Slava Stalina Butkovich *Blue Springs, Missouri* Chemical Engineering (Biomolecular)

Lyra Cao *San Diego, California* Astrophysics

Nancy Cao *North Potomac, Maryland* Computer Science

Kai-Tang Chang *Haverford, Pennsylvania* Physics

Kalyn Chenyin Chang *Arcadia, California* Computer Science

Kevin Chang *Plano, Texas* Computer Science

Caitlin Chen *Rancho Cucamonga, California* Computer Science

Ching-Hwa Anita Chen *San Diego, California* Chemistry and English (Minor)

Kevin Chia-lun Chen *Tustin, California* Applied Physics

Lily Ye Chen *Pittsburgh, Pennsylvania* Bioengineering

Lucy Chen *Boonton Township, New Jersey* Mechanical Engineering and English (Minor)

Sophia Yuenchih Chen *Newport Beach, California* Electrical Engineering

Jessica Cheng *Magnolia, Arkansas* Mechanical Engineering

Andrew James Chico *Tallahassee, Florida* Applied and Computational Mathematics

Archana Chintalacharuvu *Torrance, California* Computer Science and Business, Economics, and Management

Christine Seyuan Chou *New City, New York* Geochemistry

Daniel Chou *Blue Bell, Pennsylvania* Bioengineering

Andre Alexander Comella† *Whitehouse Station, New Jersey* Mechanical Engineering

Paulo Manuel I Costa *Manalapan, New Jersey* Business, Economics, and Management

Adrian Michael Costantino *Oakland, California* Mechanical Engineering and Aerospace Engineering (Minor)

Christopher Peter Cousté *Cabin John, Maryland* Mechanical Engineering

Melissa A. Cronin *Monrovia, Maryland* Chemical Engineering (Process Systems)

Connor Joseph Crowley *Bloomington, Indiana* Computer Science

Bachelor of Science continued

Marco A Cruz-Heredia *Mayaguez, Puerto Rico* Physics and Computer Science (Minor)
Bailey Kathleen Seamount Da Costa *Aptos, California* Electrical Engineering
Shival Vishnu Dasu *Sunnyvale, California* Mathematics and Computer Science (Minor)
Evan William Davis *Eugene, Oregon* Computer Science
Ryan Michael Dempsey *Vacaville, California* Chemistry and Environmental Science and Engineering (Minor)
Nishant Ravi Desai *Troy, Michigan* Mechanical Engineering and Business, Economics, and Management
Bogdan-Alexandru Dimitriu *Bucharest, Romania* Chemical Engineering (Process Systems)
Leon Ding *Blaine, Minnesota* Physics and Computer Science (Minor)
Mary Thuthuy Do *Carpentersville, Illinois* Computer Science
Avishek Dutta *San Ramon, California* Computer Science
Matthew Gene Edwards *Canyon Country, California* English
Henry Algernon Elbaum *Ann Arbor, Michigan* Computer Science
Benzi I. Estipona *Marion, Iowa* Chemistry
Katherine Anne Evans *Suwanee, Georgia* Geobiology
Martín Pablo Fabbri *Westchester, California* Computer Science
John David Feist *Richardson, Texas* Chemistry and Geological and Planetary Sciences (Minor)
Michael J. Feldman *Santa Barbara, California* Applied and Computational Mathematics and Computer Science (Minor)
John Jing Galden *Columbus, Ohio* Chemical Engineering (Process Systems) and English (Minor)
Patrick Joseph Galliani *Menlo Park, California* Computer Science and Economics
Amanda Claire Gao *San Diego, California* Computer Science
Kevin Wu Gao *Los Alamos, New Mexico* Chemical Engineering (Process Systems)
Albert F. Ge *San Jose, California* Computer Science
Temesgen Legesse Gebrekristos *Skokie, Illinois* Mechanical Engineering
Jaden Matthew Geller *Folsom, California* Computer Science
Evren Ahmet Gokcen *Gahanna, Ohio* Electrical Engineering
Carlos A. Gonzalez *Miami Lakes, Florida* Mechanical Engineering
Jalen Pham Green *Anaheim, California* Computer Science
Mara Yvonne Green *Scottsdale, Arizona* Engineering and Applied Science (Computation and Neural Systems)
Kshitij Grover *Campbell, California* Computer Science and Philosophy (Minor)
Daniel Gu *Miami, Florida* Computer Science
Jeffrey Gu *Pinecrest, Florida* Mathematics

Bachelor of Science continued

Songshan Guo *Cheshire, Connecticut* Computer Science and Mathematics
Nicholas Chase Haliday† *Springfield, Virginia* Computer Science
Cody Han *Pittsburgh, Pennsylvania* Computer Science
Sirus Kujung Han *Brooklyn, New York* Geochemistry and English
Victor Han *San Diego, California* Electrical Engineering and Computer Science (Minor)
Ali Harb† *Beirut, Lebanon* Economics and History (Minor)
Jacob Cole Harmon† *Camdenton, Missouri* Computer Science
Jianing Jenny He *Plano, Texas* Chemistry
Vivian Si-Min He *Shrewsbury, Massachusetts* Computer Science and English (Minor)
Morgan Spencer Hill *San Diego, California* Mechanical Engineering and History and Philosophy of Science
Stephanie Shuyue Hong *Novi, Michigan* Biology and English (Minor)
Patrick Chia-Han Hsu *Medina, Washington* Mechanical Engineering and Business, Economics, and Management
Richard Hu *Johns Creek, Georgia* Applied and Computational Mathematics and Computer Science (Minor)
Seong Bin Im *Leesburg, Virginia* Business, Economics, and Management
David Christopher Inglis *Seattle, Washington* Computer Science and History (Minor)
Myra Lisseth Interiano *Los Angeles, California* Engineering and Applied Science
Erin Marisa Isaza *Gainesville, Florida* Bioengineering and English (Minor)
Ryeen Fardeen Islam† *Jamaica, New York* Business, Economics, and Management
Vasant Iyer *Thousand Oaks, California* Electrical Engineering
Harrison Bublick Jacobs *Tucson, Arizona* Mechanical Engineering and Structural Mechanics (Minor)
Shubhankar Jain *San Jose, California* Computer Science and Business, Economics, and Management
Michael Andrew Jenson *Twinsburg, Ohio* Mechanical Engineering
Tiantian Jiao *San Diego, California* Computer Science
Matthew Jin *Fremont, California* Mathematics and Computer Science
Bhavana Jonnalagadda† *Folsom, California* Engineering and Applied Science (Computational and Neural Systems) and Computer Science (Minor)
Jonathan Youngha Joo *Glastonbury, Connecticut* Computer Science
Zofii Anna Kaczmarek *New York, New York* Applied Physics
Juliana Chase Kew *Worcester, Massachusetts* Mechanical Engineering and Computer Science
Hyun Min (Andy) Kim *Irvine, California* Bioengineering
Jaebin Kim *Seoul, Republic of Korea* Bioengineering

Bachelor of Science continued

Joon Sik Kim *Seoul, Republic of Korea* Computer Science
Seohyun Kim *San Ramon, California* Applied and Computational Mathematics and Computer Science (Minor)
Won Jun Kim *Seoul, Republic of Korea* Biology and Chemistry
Young Min Kim *Seoul, Republic of Korea* Applied and Computational Mathematics
Kai Anderson Kirk *San Jose, California* Mechanical Engineering
Nand Kishore *Centreville, Virginia* Computer Science
Milica Kolundžija *Novi Sad, Serbia* Mathematics and Computer Science (Minor)
Ross Alexander Koval *Boca Raton, Florida* Business, Economics, and Management
Harrison Casey Krowas *Boston, Massachusetts* Electrical Engineering
Ankit Kumar *Ashland, Massachusetts* Physics
Neil Ashwin Kumar† *San Diego, California* Electrical Engineering
Netgie Laguerre *Miami, Florida* Chemistry
Luke Robert Lango *San Diego, California* Business, Economics, and Management
Jake Patrick Larson *Miami, Florida* Mechanical Engineering
Minh Nhat Le *Ho Chi Minh City, Vietnam* Biology and Computer Science (Minor)
David Allen LeBaron *San Diego, California* Applied and Computational Mathematics
Morgan Reed Liem Lebby *Laguna Beach, California* Chemical Engineering (Process Systems)
Connor Tinghan Lee *Arcadia, California* Computer Science
Ga Yeong Lee *Seoul, Republic of Korea* Applied and Computational Mathematics and English
Lawrence Lee *Hong Kong, PRC* Mechanical Engineering and Business, Economics, and Management
Yoon Lee *Seoul, Republic of Korea* Applied and Computational Mathematics
Justin Ka-Chung Leong *Diamond Bar, California* Computer Science
Kate Lynn Lewis *San Antonio, Texas* Computer Science
Jessica Biyun Li *Moraga, California* Computer Science
John Li *Oviedo, Florida* Computer Science
Lauren Li *Albuquerque, New Mexico* Biology
Yicheng Li *Beijing, People's Republic of China* Electrical Engineering
Halston Brandon Lim *Charlotte, North Carolina* Physics
Matt Lim *Orinda, California* Computer Science and English (Minor)
Soon Wei Daniel Lim *Singapore, Singapore* Physics
Chih Wen Jennifer Lin *Taipei, Taiwan (ROC)* Electrical Engineering
Christina Lin *San Jose, California* Computer Science
Albert Zou Liu *Clarksville, Maryland* Biology
Eric Lee Liu *Foster City, California* Physics

Bachelor of Science continued

Kimberly Liu *San Diego, California* Mechanical Engineering
Alison Lui *Osprey, Florida* Chemical Engineering (Environmental)
Daniil Lukin *East Setauket, New York* Applied Physics
David Yicheng Luo *Acton, Massachusetts* Computer Science
Lilly Luo *Belle Mead, New Jersey* Applied and Computational Mathematics
Shaoxiong Luo *Shenzhen, People's Republic of China* Chemistry
Anthony Erich Lutz *Woodbridge, Virginia* Physics
David Calver Mace *San Jose, California* Computer Science
Sumana Mahata *San Diego, California* Biology
Edgar Alberto Tejeda Martinez† *Dixon, California* Physics
Nailen Thomas Matschke *Trumbull, Connecticut* Computer Science
Timothy Isaac Maxwell *Santa Clara, California* Physics
Emily Rachel Mazo *Bala Cynwyd, Pennsylvania* Computer Science
Daniel Estevan McAndrew *Northridge, California* Astrophysics and Computer Science (Minor)
Sean Patrick McKenna *Maple Grove, Minnesota* Applied and Computational Mathematics and Economics
Emily Louise Meany *Reno, Nevada* Bioengineering and History (Minor)
Keegan Victor Mendonca *San Jose, California* Applied and Computational Mathematics and Business, Economics, and Management and Computer Science (Minor)
Sean Alexander Mendoza *Louisville, Kentucky* Engineering and Applied Science (Materials Science)
Timothy Michael Menninger *Norristown, Pennsylvania* Computer Science
Christina Isabella Meyer *Briarcliff Manor, New York* Mechanical Engineering
Talia Grace Parker Minear *Westminster, California* Mechanical Engineering
Ismael Mireles *Long Beach, California* Astrophysics
Andrew Montequin *Cedar Hill, Texas* Bioengineering
Stephanie Jungyoon Moon *Lilburn, Georgia* Mechanical Engineering
Matthew Robert Morgan Jr. *Costa Mesa, California* Computer Science
Siddharth Murching *Sammamish, Washington* Computer Science
Colin Reede Murphy *San Diego, California* Mechanical Engineering
Sheila Murthy *Sammamish, Washington* Mechanical Engineering
Xinyi Angela Nan *Arden Hills, Minnesota* Geochemistry
Anirudh Neti† *Germantown, Maryland* Electrical Engineering
Suchita Patil Nety *Sunnyvale, California* Chemistry and English (Minor)
Willis Huang Nguy *Bellaire, Texas* Electrical Engineering

Bachelor of Science continued

Loc Thanh Nguyen *Ho Chi Minh City, Vietnam* Applied Physics
Chinmay Nirkhe *Sammamish, Washington* Mathematics and Computer Science
Won Jun Noh *Seoul, Republic of Korea* Bioengineering
Tyler Takeo Okamoto *Newcastle, Washington* Mechanical Engineering and Aerospace Engineering (Minor)
Suzannah Kate Osekowsky *Saratoga, California* Electrical Engineering
Berk Özdalyan *Istanbul, Turkey* Engineering and Applied Science
Jay S. Palekar *Purchase, New York* Applied Physics
Kyung Keun Park *Seoul, Republic of Korea* Mechanical Engineering
Ramruthwick Reddy Pathireddy *Irvine, California* Computer Science and Business, Economics, and Management
Ramsathwick Reddy Pathireddy *Irvine, California* Computer Science and Business, Economics, and Management
David Peña *Miami, Florida* Computer Science and Business, Economics, and Management
Rishabh Pipada *Princeton, New Jersey* Physics and Economics
Alexander Patrick McCormick Place *Arlington, Virginia* Physics
Anand-Markose Thomas Poozhikunnel *Wheaton, Illinois* Chemistry
Juliane Irine Preimesberger *San Diego, California* Mechanical Engineering
Anjali Premkumar *Wexford, Pennsylvania* Applied Physics
Federico Presutti *New York, New York* Applied Physics and Computer Science (Minor) and Aerospace Engineering (Minor)
Parul Pubbi *San Diego, California* Chemical Engineering (Process Systems) and Business, Economics, and Management
Abhijit Puranam *San Jose, California* Physics
Eric Qiao *Potomac, Maryland* Chemical Engineering (Biomolecular)
David Eric Qu† *Columbia, South Carolina* Computer Science
Adrian Ray Avalani *Princeton, New Jersey* Computer Science and English
J. Schaeffer Reed *Miami, Florida* Computer Science
Gerri Marie Roberts *Berthoud, Colorado* Chemistry
Constance Deborah Robinson *Cupertino, California* Chemistry and Computer Science (Minor)
Joseph Patrick Roddy *St. Louis, Missouri* Chemistry
Roel Rodriguez *Mission, Texas* Applied and Computational Mathematics
Jeffrey Neal Rosenberg *Los Angeles, California* Chemistry
Alexander Thomas Ryan *Carlsbad, California* Computer Science
Sarthak Suman Sahu *Herndon, Virginia* Computer Science

Bachelor of Science continued

Yuka Sakazaki *Sunnyvale, California* Chemistry

Robert Manuel Sanchez *Riverside, California* Geophysics and Environmental Science and Engineering (Minor)

Graham Pickering Schmidt *McLean, Virginia* Physics

Elizabeth Caldwell Schroder *Mooresville, North Carolina* Engineering and Applied Science

Kyle P. Seipp *Rockville Centre, New York* Computer Science

Parth Shah *Saratoga, California* Mechanical Engineering and Computer Science (Minor) and Control and Dynamical Systems (Minor)

Gauri Ganesh Shastri *West Lafayette, Indiana* Biology and English (Minor)

Jiemin Sheng *Ottawa, Canada* Applied Physics

Jingwei Shi *San Diego, California* Chemical Engineering (Biomolecular)

Ji Soo Shin *Peachtree City, Georgia* Electrical Engineering

Dayeon Judy Shon *Irvine, California* Chemistry

Emma Rachel Shupper† *Pasadena, California* Mechanical Engineering

Darius Duraine Simmons *Frisco, Texas* Computer Science

Nikita Anaar Sirohi *Issaquah, Washington* Computer Science

Evan Mitchell Sloan *Uxbridge, Massachusetts* Mechanical Engineering

Mojolaoluwa Joshua Sonola *Atlanta, Georgia* Chemical Engineering (Process Systems) and Computer Science (Minor)

Elijah Brittain Sorey *Paris, Arkansas* Computer Science

Johnathan Richard Stauffer *Elkton, Maryland* Physics

Taylor Ryan Strumwasser *Carlsbad, California* Computer Science

Surya Sundararajan *Sunnyvale, California* Computer Science

Alp Mehmet Sunol *Tampa, Florida* Chemical Engineering (Process Systems)

Henry John Swanson *Saint Paul, Minnesota* Mathematics and Computer Science

Lee Liyu Tang *Willowbrook, Illinois* Applied and Computational Mathematics and Computer Science (Minor)

Amal Fatima Tariq *Jubail, Saudi Arabia* Electrical Engineering

Elizabeth Terlinden *Long Beach, California* Chemistry

Torin Robert Thosath *Punta Gorda, Florida* Business, Economics, and Management

Tomas Tussie *Weston, Florida* Mechanical Engineering

Victor Venturi *Campinas, Brazil* Mechanical Engineering and Computer Science (Minor) and Aerospace Engineering (Minor)

Cameron Louis Voloshin *Highwood, Illinois* Applied and Computational Mathematics

Mugdha Girish Walke *Mahwah, New Jersey* Electrical Engineering

Bachelor of Science continued

Charles Huan-Chiao Wang *Arcadia, California* Engineering and Applied Science (Computation and Neural Systems)

Emily Ting Wang *Plano, Texas* Applied and Computational Mathematics and Business, Economics, and Management

Shannon Wang *Cerritos, California* Physics

Wujie Wang *Nanjing, People's Republic of China* Engineering and Applied Science (Materials Science)

Lindsey Amber Whitesides *Grand Junction, Colorado* Physics

JongSeok Won *McLean, Virginia* Computer Science

Michelle Wong *Palos Verdes Estates, California* Biology

Jiyun Xiao *Shanghai, People's Republic of China* Applied and Computational Mathematics

Xi Xu *Putian, People's Republic of China* Electrical Engineering

Yujie Xu *People's Republic of China* Mathematics

Ker Lee Yap *Sammamish, Washington* Computer Science

Chanud Nisakya Yasanayake *Queen Creek, Arizona* Electrical Engineering

Joon Young Yoon *Chuncheon, Republic of Korea* Chemistry

Chenchao You *Nanjing, People's Republic of China* Mathematics

Aaron William Young *Beijing, People's Republic of China* Mechanical Engineering

Ellen Yu *Irvine, California* Chemistry

Kristie Bo-Chi Yu *San Francisco, California* Biology

Lidan Yu *Singapore, Singapore* Electrical Engineering

Yizhen Yu *Beijing, People's Republic of China* Computer Science and Aerospace Engineering (Minor)

Yi Yuan *Dublin, California* Computer Science

Dominic Jeffrey Yurk *Benbrook, Texas* Physics and Computer Science (Minor)

Sasha Iris Zemsky *Mount Kisco, New York* Bioengineering and Philosophy (Minor)

Frank Zhou *Sharon, Massachusetts* Electrical Engineering

Yanbing Zhu *Cupertino, California* Physics and Computer Science (Minor)

Master of Science

Jason Paul Allmaras *(Applied Physics)* B.S., Yale University 2014.

Carmen Amo Alonso *(Space Engineering)* B.S., Universidad Politécnica de Madrid 2016.

Jiawei An *(Electrical Engineering)* B.E., Tsinghua University 2015.

Sung Won An *(Civil Engineering)* B.S., University of Illinois at Urbana-Champaign 2013.

Dustin James Anderson *(Physics)* B.A., Carleton College 2012.

Ron Appel *(Electrical Engineering)* B.Sc., University of Toronto 2006; M.Sc., 2008.

Ehsan Arbabi *(Electrical Engineering)* B.S., University of Tehran 2010; M.S., 2013.

Georgios Artavanis *(Biology)* B.A., M.S., University of Cambridge 2013.

Peyman Ayoubi *(Applied Mechanics)* B.Sc., University of Guilan 2012; M.Sc., Sharif University of Technology 2014.

Francesca Baldini *(Space Engineering)* B.S., University of Pisa 2013.

Jash Haren Banker *(Applied Physics)* B.Tech., Indian Institute of Technology Bombay 2015.

Benedikt Heinz Herbert Barthel *(Aeronautics)* B.S., University of California, Los Angeles 2015.

Manuel M. Bedrossian *(Medical Engineering)* B.S., University of California, Riverside 2015.

Joseph Anthony Biasi *(Geology)* B.S., Indiana University Bloomington 2015.

John Birmingham *(Chemical Engineering)* B.S., University of Delaware 2014.

Amanda Rose Bouman *(Mechanical Engineering)* B.S., Cornell University 2015.

Daniel James Brooks *(Applied Physics)* B.S., Cornell University 2012.

Alexandr Capsuc *(Social Science)* B.A., Boğaziçi University 2013.

Yuchen Chen *(Electrical Engineering)* B.E., Southeast University 2015.

Yuguang Chen *(Astrophysics)* B.S., Peking University 2015.

Zilong Chen *(Electrical Engineering)* B.E., Tsinghua University 2015.

Peishi Cheng *(Materials Science)* B.S., University of Florida 2014.

Richard Cheng *(Mechanical Engineering)* B.S.E., Princeton University 2015.

Ioana Craiciu *(Applied Physics)* B.S., University of Waterloo 2014.

Jonathan Chance Crompton *(Chemistry)* B.S., Harvey Mudd College 2013.

Eunice Michelle Chua Cua *(Medical Engineering)* B.A.S., B.S., Simon Fraser University 2011; M.A.S., 2014.

Sith Domrongkitchaiporn *(Electrical Engineering)* B.S., California Institute of Technology 2016.

Charles Jacob Dorn *(Space Engineering)* B.S., University of Wisconsin-Madison 2016.

Zachary Erickson *(Environmental Science and Engineering)* B.A., St. Olaf College 2012.

Ivanna Ashley Escala *(Astrophysics)* B.S., University of California, San Diego 2015.

Siteng Fan *(Planetary Science)* B.S., Peking University 2015.

Blake Farrow *(Materials Science)* B.S., University of Waterloo 2011.

Master of Science continued

Shane William Flynn *(Chemistry)* B.S., University of Massachusetts Boston 2015.

Anyesha Ghosh *(Electrical Engineering)* B.Tech., Indian Institute of Technology Kanpur 2015.

Ludovic André Georges Gil *(Space Engineering)* Diplôme d'Ingénieur, École Polytechnique 2016.

Stefan Patrick Haegeli Lohaus *(Space Engineering)* B.Sc., Swiss Federal Institute of Technology Zurich 2014; M.S., 2016.

Soichi Hirokawa *(Applied Physics)* B.A., Bowdoin College 2014.

Anna Yen Qin Ho *(Astrophysics)* S.B., Massachusetts Institute of Technology 2014.

Morgan Louise Hooper *(Aeronautics)* B.A.Sc., University of Toronto 2016.

Zi-Yu Huang *(Medical Engineering)* B.S., National Taiwan University 2015.

Jonathon Robert Hunacek *(Physics)* B.S., University of Michigan 2013.

Daniel Lee Johnson *(Geochemistry)* A.B., Washington University in St. Louis 2014.

Zoila Estefani Jurado Quiroga *(Mechanical Engineering)* B.S., University of Connecticut 2015.

Seyedeh Mahsa Kamali *(Electrical Engineering)* B.S., University of Tehran 2012.

Benjamin Kanevsky *(Chemical Engineering)* B.S., University of Illinois at Urbana-Champaign 2014.

Jong Hun Kang *(Chemical Engineering)* B.S., Seoul National University 2009.

Konstantinos Karapiperis *(Applied Mechanics)* Diplom, National Technical University of Athens 2012; M.S., University of California, Davis 2015.

Eunkyung Kim *(Environmental Science and Engineering)* M.E., Korea University 2013.

Hyungrok Kim *(Physics)* B.S., Stanford University 2011.

Seo-young Silvia Kim *(Social Science)* B.A., Seoul National University 2014.

Jonathan Miners Kindem *(Applied Physics)* B.A., Reed College 2013.

Danilo Smiljan Kusanovic *(Applied Mechanics)* M.S., Universidad Técnica Federico Santa María 2009; Licenciado, 2010.

Benjamin Joseph Laccetti *(Chemical Engineering)* B.A., Emory University 2013; B.S., Georgia Institute of Technology 2013.

Valere Regis Westbrooke Lambert *(Geophysics)* B.S., California Institute of Technology 2014.

Cat Phuoc Le *(Electrical Engineering)* B.S., Rutgers, The State University of New Jersey 2016.

Steven Lee *(Chemical Engineering)* B.S., University of Pennsylvania 2014.

Victoria Jin-Young Lee *(Mechanical Engineering)* Sc.B., Brown University 2015.

Madeline Janine Lewis *(Geology)* B.S., Indiana University Bloomington 2015.

Xiaomin Li *(Behavioral and Social Neuroscience)* B.E., Shanghai University of Finance and Economics 2013; M.A., New York University 2015.

Yimeng Li *(Social Science)* B.E., Central University of Finance and Economics 2014; M.Sc., The London School of Economics and Political Science 2015.

Master of Science continued

Tao Liang *(Electrical Engineering)* B.Eng., Beijing University of Posts and Telecommunications 2015.

Han-Hsin Lin *(Physics)* B.A., National Taiwan University 2012.

Jorge Domingo Llop Sayson *(Space Engineering)* Diplôme d'Ingénieur, Institut Supérieur de l'Aéronautique et de l'Espace 2014; M.S., Universitat Politècnica de Catalunya 2014.

Ana Helena Lobo *(Planetary Science)* B.A., Columbia University 2015.

Palma Alise den Nijs London *(Computer Science)* B.S., University of Washington 2014.

Danni Ma *(Electrical Engineering)* B.Eng., Zhejiang University 2015.

Leiya Ma *(Electrical Engineering)* B.E., Beijing Institute of Technology 2015.

Kimberley Ann Mac Donald *(Mechanical Engineering)* B.S., M.S., University of Miami 2014.

Mohit Singh Malik *(Space Engineering)* B.Tech., Indian Institute of Space Science and Technology 2016.

Michael Aaron Marshall *(Space Engineering)* B.S., Georgia Institute of Technology 2016.

Ryan Scott Marshall *(Applied Physics)* B.S., University of California, Berkeley 2014.

Daniel Albert Martin III *(Electrical Engineering)* B.S., The University of Arizona 2015.

Vadim Vadimovich Martynov *(Social Science)* B.M., National Research University Higher School of Economics 2015.

Alexander Keith McDonald *(Mathematics)* B.A., University of Rochester 2014.

Ahmed Mohamed Soliman Mohamed *(Electrical Engineering)* B.Sc., Benha University 2009; M.Sc., Ain Shams University 2014.

Bhawna Motwani *(Astrophysics)* M.Sc., Indian Institute of Technology Roorkee 2015.

Yashwanth Kumar Nakka *(Space Engineering)* B.S., Indian Institute of Space Science and Technology 2011.

Vinayak Narasimhan *(Medical Engineering)* B.E., National University of Singapore 2012.

Santiago Gustavo Navonne *(Electrical Engineering)* B.S., California Institute of Technology 2016.

Tomoyuki Oniyama *(Mechanical Engineering)* B.E., Keio University 2015.

Matthew Edward Orr *(Physics)* B.S., University of Southern California 2014.

Haeri Park *(Medical Engineering)* B.S., Seoul National University 2013.

Prakriti Paul *(Biology)* S.B., Massachusetts Institute of Technology 2015.

Antonio Pedivellano *(Space Engineering)* Laurea, Università degli Studi di Palermo 2014; M.S., 2016.

Mengchen Pei *(Electrical Engineering)* B.Eng., Beijing University of Posts and Telecommunications 2015.

Tung Minh Phan *(Mechanical Engineering)* A.S., Orange Coast College 2012; B.S., University of California, Berkeley 2014.

Master of Science continued

Adam Pieterick *(Applied Physics)* B.S., University of Minnesota, Twin Cities 2009.
Aryeh Joshua Price *(Biology)* B.S., University of Toronto 2016.
Hengjiang Ren *(Electrical Engineering)* B.S., Nanyang Technological University 2013.
Brenden Carlisle Roberts *(Physics)* B.S., Clemson University 2014.
Becky Roh *(Civil Engineering)* B.S., Cornell University 2015.
Donghun Ryu *(Electrical Engineering)* B.S., Gwangju Institute of Science and Technology 2015.
Surabhi Sachdev *(Physics)* B.Tech., Indian Institute of Technology Bombay 2013.
Claire Nicole Saunders *(Materials Science)* B.S., Duquesne University 2015.
Kaikai Sheng *(Electrical Engineering)* B.S., Shanghai Jiao Tong University 2015.
Bryan Jeffrey Sinkovec *(Space Engineering)* B.S., University of Wisconsin-Milwaukee 2015.
Nathaniel Thomas Stein *(Planetary Science)* A.B., Washington University in St. Louis 2015.
Yu Su *(Electrical Engineering)* B.S., University of Illinois at Urbana-Champaign 2015.
Kavya Sudhir *(Mechanical Engineering)* B.Tech., M.Tech., Indian Institute of Technology Madras 2015.
Ruijia Sun *(Electrical Engineering)* B.S., Shanghai Jiao Tong University 2015.
Annalise Regina Sundberg *(Electrical Engineering)* B.S., Northwestern University 2016.
Ying Shi Teh *(Mechanical Engineering)* B.Eng., National University of Singapore 2015.
Peida Tian *(Electrical Engineering)* B.S., The Chinese University of Hong Kong 2016.
Samaporn Tinyanont *(Astrophysics)* B.S., Harvey Mudd College 2015.
Stefan William Turkowski *(Electrical Engineering)* B.S., University of California, Davis 2015.
Alex Michael Turzillo *(Physics)* B.A., The University of Chicago 2013.
Erik Verlage *(Materials Science)* S.B., Massachusetts Institute of Technology 2011.
Andrey Vyatskikh *(Medical Engineering)* B.S., M.S., Bauman Moscow State Technical University 2013; M.S., Skolkovo Institute of Science and Technology 2015.
Siwen Wang *(Environmental Science and Engineering)* B.E., Tsinghua University 2011; M.E., 2014.
Joeson Wong *(Applied Physics)* B.S., University of Michigan 2015.
Xunyi Wu *(Environmental Science and Engineering)* B.S., University of California, Los Angeles 2015.
Hao Xie *(Geochemistry)* B.S., University of Science and Technology of China 2015.
Haixiang Xu *(Electrical Engineering)* B.E., Tsinghua University 2015.
Recep Can Yavas *(Electrical Engineering)* B.S., Bilkent University 2016.
Erika Ye *(Applied Physics)* S.B., Massachusetts Institute of Technology 2014; M.E., 2015.
Seunghee Ye *(Mathematics)* A.B., Dartmouth College 2010.
Young Dae Yoon *(Applied Physics)* B.S., Imperial College London 2014.

Master of Science *continued*

Erya Yu *(Electrical Engineering)* B.Eng., Beijing University of Posts and Telecommunications 2015.

Chenshuo Yue *(Electrical Engineering)* B.S., University of Illinois at Urbana-Champaign 2015.

Yanzhe Zhu *(Environmental Science and Engineering)* B.S., Washington University in St. Louis 2014.

Juba Ziani *(Computer Science)* B.S., École Supérieure d'Électricité 2011; M.S., Columbia University 2012.

Engineer

Brian Daffern Hong *(Electrical Engineering)* B.S., University of California, Los Angeles 2013; M.S., California Institute of Technology 2014.

Doctor of Philosophy

DIVISION OF BIOLOGY AND BIOLOGICAL ENGINEERING

Ken Yee Chan *(Biology)* B.S., Portland State University 2010.
Thesis: Engineered Viral Vectors and Developed Tissue Clearing Methods for Single-Cell Phenotyping in Whole Organs.

Katherine Irene Fisher *(Systems Biology)* B.S., The College of William & Mary 2006; M.S., California Institute of Technology 2016.
Thesis: Chromatin Topology and Transcription in Myogenesis.

Brad Kline Hulse *(Integrative Neurobiology)* B.S., University of Wisconsin-Madison 2009.
Thesis: Membrane Potential Dynamics of Hippocampal Neurons During Ripples in Awake Mice.

Hanqing Li *(Biology)* B.S., University of California, San Diego 2010.
Thesis: Development of a High-Throughput Protein Interaction Assay and Its Application.

Raymond Liu *(Biology)* B.S., Stanford University 2006.
Thesis: Mechanisms of Drp1 Recruitment to Mitochondria.

Jeremy Edward Sandler *(Genetics)* B.S., University of Washington 2007; M.S., California Institute of Technology 2016.
Thesis: Genome Activation and Regulation of Signaling in the Rapidly Dividing *Drosophila* Embryo.

Sheel Mukesh Shah *(Molecular Biology and Biochemistry)* B.S., University of North Carolina at Chapel Hill 2009.
Thesis: Highly Multiplexed Single Cell *In Situ* RNA Detection.

Anupama J Thubagere *(Bioengineering)* M.S., Boston University 2010.
Thesis: Programming Complex Behavior in DNA-Based Molecular Circuits and Robots.

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

Shoshana Bachman *(Chemistry)* B.A., Wellesley College 2012.
Thesis: Development of Cu- and Ni-Catalyzed C–C and C–N Bond Forming Reactions.

Kelvin Hamilton Bates *(Chemistry)* B.S., Davidson College 2012.
Thesis: Isoprene Oxidation Mechanisms and Secondary Organic Aerosol Formation Under HO_2-Dominated Conditions.

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*

Carl Michael Blumenfeld *(Chemistry)* B.A., M.S., Northwestern University 2011.
Thesis: Covalent Functionalization of Metal-Oxide Surfaces with Non-Traditional Ligands.

Adam Nathaniel Boynton *(Chemistry)* B.S., Trinity College 2012.
Thesis: Targeting DNA Mismatches with Luminescent Ruthenium Complexes.

Stephen Kramer Brand *(Chemical Engineering)* B.S., Northwestern University 2012; M.S., California Institute of Technology 2015.
Thesis: I. Tin Silsesquioxanes as Analogs for the Open and Closed Sites in Tin-Containing Zeotype Beta and II. Enantiomerically Enriched, Polycrystalline Molecular Sieves.

Lauren Marie Chapman *(Chemistry)* B.S., M.S., Northeastern University 2009.
Thesis: Development of a Synthetic Strategy Toward *Trans*-Cyclobutane-Containing Natural Products: Enantioselective Total Synthesis of (+)-Psiguadial B.

Sheldon Ting Fong Cheung *(Chemistry)* B.S., Carnegie Mellon University 2010.
Thesis: Discovery and Development of Small-Molecule Modulators for the Sulfation of Glycosaminoglycans and Studying the Role of *O*-GlcNAc on CREB through Semisynthesis.

Crystal Kitying Chu *(Chemistry)* B.S., University of California, Berkeley 2012.
Thesis: Advances in Selectivity and Reactivity in Transition Metal Catalysis: Carbon–Silicon Bond Formation, Wacker Oxidation, and Olefin Metathesis.

Tania Victoria Darnton *(Chemistry)* B.S., University of California, Santa Barbara 2011.
Thesis: Structures and Reactions of Diplatinum Complexes.

Sijia Dong *(Chemistry and Computational Science and Engineering)* B.S., The University of Hong Kong 2010.
Thesis: First-Principles-Based Simulations for G Protein-Coupled Receptor Activation and for Large-Scale Nonadiabatic Electron Dynamics.

Douglas Charles Duquette *(Chemistry)* A.B., A.M., Harvard College 2009.
Thesis: Highly Enantioselective Palladium-Catalyzed Allylic Alkylation Reactions of Carbocyclic Enaminones and Acyclic Substrates.

Katharine Yan Fang *(Chemical Engineering)* B.A.Sc., University of Toronto 2010; M.S., California Institute of Technology 2013.
Thesis: Modulating Biophysical Properties of Insulin with Non-Canonical Mutagenesis at Position B28.

Ian Alan Finneran *(Chemistry and Physics)* B.A., New College of Florida 2011.
Thesis: Terahertz and Microwave Spectroscopy of Liquids and Hydrogen-Bonded Clusters.

Doctor of Philosophy *continued*

Cristofer Addison Flowers *(Chemical Engineering)* B.S., University of Southern California 2011; M.S., California Institute of Technology 2014.
Thesis: Full Spectrum Ultrahigh Efficiency Photovoltaics: System Design, Integration, and Characterization.

Nathaniel Robert Glasser *(Biochemistry and Molecular Biophysics)* B.S., University of Wisconsin-Madison 2009.
Thesis: Physiological and Biochemical Mechanisms of Phenazine-Mediated Survival in *Pseudomonas aeruginosa*.

Matthew Everett Griffin *(Chemistry)* B.A., B.F.A., B.S., Tulane University 2010.
Thesis: Discovering Biological Roles of Glycosaminoglycans and Protein *O*-GlcNAcylation Using Chemical Tools.

Adam Reid Griffith *(Chemistry)* B.A., B.S., Rice University 2003.
Thesis: DarwinDock & GAG-Dock: Methods and Applications for Small Molecule Docking.

Shaobin Guo *(Biochemistry and Molecular Biophysics)* B.S., Xiamen University 2011.
Thesis: Prototyping Diverse Synthetic Biological Circuits in a Cell-Free Transcription-Translation System.

Jacob K. Hedelius *(Chemistry)* A.S., Snow College 2007; B.S., Brigham Young University 2012.
Thesis: What Can We Infer About the Atmospheric Composition Within the South Coast Air Basin from Remote Sensing?

Ryan Kenneth Henning *(Chemistry)* B.S., University of California, Davis 2007.
Thesis: Targeting Undruggable Oncoprotein Epitopes with Protein Catalyzed Capture Agents.

Nadia Herrera *(Biochemistry and Molecular Biophysics)* B.S., The University of Texas at El Paso 2011.
Thesis: Structure and Function of the Mycobacterial Mechanosensitive Channel of Large Conductance, MscL.

Yun-Hua Hong *(Chemistry)* B.S., National Taiwan University 2004; M.S., 2006.
Thesis: Theory of Dynamical Processes in Semiconductor Quantum Dots.

Bryan Michael Hunter *(Chemistry)* B.S., M.S., Yale University 2008; M.A., Loyola Marymount University 2010.
Thesis: Fuels and Materials from Sunlight and Water.

Michael Joseph Ignatowich *(Chemical Engineering and Materials Science)* B.S., M.S., University of Connecticut 2012; M.S., California Institute of Technology 2014.
Thesis: An Investigation of Nonstoichiometric Oxides for Solar-Driven Thermochemical Fuel Production.

Doctor of Philosophy *continued*

Yuewei Lucy Ji *(Chemical Engineering)* S.B., Massachusetts Institute of Technology 2012; M.S., California Institute of Technology 2015.
Thesis: Organic Structure-Directing Agent-Free Synthesis of Small Pore Zeolite Catalysts for the Methanol-to-Olefins Reaction.

Aron Kamajaya *(Biochemistry and Molecular Biophysics)* A.A., Pasadena City College 2006; B.S., University of California, Berkeley 2010.
Thesis: Structural Study of Piezo Channel, a Unique Family of Eukaryotic Mechanosensitive Channel.

Kelly E. Kim *(Chemistry)* B.S., Yale University 2011.
Thesis: The Synthesis and Late-Stage Diversification of the Cyanthiwigin Natural Product Core and Synthetic Insights Derived Therein.

Qi Wen Li *(Biochemistry and Molecular Biophysics)* B.S., Syracuse University 2011.
Thesis: Biophysical Characterization of an ABC L-methionine Transporter.

Seth Aharon Lieblich *(Biochemistry and Molecular Biophysics)* B.S., M.S., Brandeis University 2010.
Thesis: Non-Canonical Amino Acid Mutagenesis of Position B28 in Insulin with Proline Analogs.

Daniel Hanyang Lin *(Biochemistry and Molecular Biophysics)* B.S., Washington University in St. Louis 2011.
Thesis: The Architecture of the Nuclear Pore Complex.

Rachel Liontas *(Chemical Engineering and Materials Science)* B.S., Rice University 2012; M.S., California Institute of Technology 2014.
Thesis: Controlling Deformability in Metallic Glass Nanopillars and Nanolattices.

Laura Anna Mertens *(Chemistry)* B.A., Grinnell College 2010.
Thesis: Experiments on Gas Phase Chemistry with High Sensitivity Laser Spectroscopy.

Jee Young Mock *(Biochemistry and Molecular Biophysics)* B.A., Boston University 2011.
Thesis: The Bag6 Complex: Biological Complexity through Modularity.

Christine N. Morrison *(Chemistry)* B.S., University of Michigan 2010.
Thesis: Insights into the Mechanism of Biological Nitrogen Fixation through Characterization of the Nitrogenase Molybdenum-Iron Protein.

Nicholas R. O'Connor *(Chemistry)* B.A., Macalester College 2011.
Thesis: Methodological Developments and Synthetic Applications of Strained Rings and Allylic C–H Functionalization of Hindered Substrates.

Marat Orazov *(Chemical Engineering)* B.S., University of California, Berkeley 2012.
Thesis: Development and Characterization of Catalytic Systems for Biomass-Derived Chemical Feedstocks.

Doctor of Philosophy *continued*

Noah Thomas Plymale *(Chemistry)* B.S., Kent State University 2011.
Thesis: Spectroscopic, Electronic, and Mechanistic Studies of Silicon Surfaces Chemically Modified with Short Alkyl Chains.

Beau Patrick Pritchett *(Chemistry)* B.S., Tulane University 2012.
Thesis: Studies in Palladium-Catalyzed Allylic Alkylation: Enantioselective Total Syntheses of Structurally Diverse Alkaloids.

Peter B. Rapp *(Chemical Engineering)* B.S., University of Illinois at Urbana-Champaign 2011.
Thesis: Diffusion and Molecular Association in Artificial Protein Hydrogels.

Matthew Rienzo *(Chemistry)* A.B., M.A., Harvard College 2011.
Thesis: Non-Canonical Amino Acids as Biochemical Probes of Ligand-Gated Ion Channel Structure and Function.

Lauren Estelle Rosebrugh *(Chemistry)* B.S., University of California, Berkeley 2009.
Thesis: Stereoselective Olefin Metathesis Processes Using Cyclometalated Ruthenium Alkylidene Complexes.

Christopher William Roske *(Chemistry)* B.S., University of Idaho 2010.
Thesis: Towards a Hydrobromic Acid Splitting Device Using Earth-Abundant Materials.

David Anthony Selck *(Chemistry)* B.S., Brigham Young University 2011.
Thesis: Microfluidics for Molecular Measurements and Quantitative Distributable Diagnostics.

Sho C Takatori *(Chemical Engineering)* B.S., University of California, Berkeley 2012.
Thesis: Forces, Stresses, and the (Thermo?) Dynamics of Active Matter: The Swim Pressure.

Anton Alexandrovich Toutov *(Chemistry)* B.S., Queen's University 2011.
Thesis: Alkaline Salts of Sodium and Potassium: From C–X Reduction to C–H Functionalization and Beyond.

Tri Vu *(Biochemistry and Molecular Biophysics)* B.A., M.S., Brandeis University 2009.
Thesis: Studies of the N-end Rule Pathway in Bacteria and Mammals.

Mu Wang *(Chemical Engineering)* B.E., McGill University 2007; M.S., 2008; M.S., California Institute of Technology 2013.
Thesis: Constant Stress and Pressure Rheology of Dense Colloidal Suspensions.

Joshua David Wiensch *(Chemistry)* B.S., University of Wisconsin-Madison 2010.
Thesis: Differential Reactivity at Edge and Terrace Sites of Transition Metal Dichalcogenides.

Betty Ko Wong *(Biochemistry and Molecular Biophysics)* B.S., University of California, Berkeley 2010; M.S., California Institute of Technology 2016.
Thesis: Biophysical Studies of Ligand-gated Ion Channels.

Doctor of Philosophy *continued*

Bilin Zhuang *(Chemistry)* B.A., Wellesley College 2009.
Thesis: Dipolar Liquids and Their Mixtures: Equilibrium and Nonequilibrium Properties with Field-Theoretic Approaches.

DIVISION OF ENGINEERING AND APPLIED SCIENCE

Ron Appel *(Electrical Engineering)* B.Sc., University of Toronto 2006; M.Sc., 2008.
Thesis: Boosting Boosting.

Nicolas Anthony Batara *(Materials Science)* B.S., University of California, Santa Barbara 2011; M.S., California Institute of Technology 2014.
Thesis: Spontaneous Pattern Formation in Photoelectrodeposited Semiconductor Films.

Pinaky Bhattacharyya *(Civil Engineering)* B.Tech., Indian Institute of Technology Bombay 2010; M.S., California Institute of Technology 2011.
Thesis: Optimal Sensor Placement for Bayesian Parametric Identification of Structures.

Rahul Brian Bhui *(Computation and Neural Systems)* B.A., University of British Columbia 2010; M.S., California Institute of Technology 2013.
Thesis: Essays on Timing and Economic Behavior.

John Jacob Bruer *(Applied and Computational Mathematics)* B.A., New York University 2008.
Thesis: Recovering Structured Low-Rank Operators Using Nuclear Norms.

Thomas Anthony Catanach *(Applied and Computational Mathematics)* B.S., University of Notre Dame 2012.
Thesis: Computational Methods for Bayesian Inference in Complex Systems.

Krzysztof Chalupka *(Computation and Neural Systems)* M.Sc., University of Edinburgh 2011.
Thesis: Automated Macro-scale Causal Hypothesis Formation Based on Micro-scale Observation.

Yuhua (Richard) Chen *(Applied and Computational Mathematics and Social Science)* B.S., Tsinghua University 2009.
Thesis: Concentration Inequalities of Random Matrices and Solving Ptychography with a Convex Relaxation.

Albert Ren-Haur Chern *(Applied and Computational Mathematics)* B.S., National Taiwan University 2011; M.S., 2012.
Thesis: Fluid Dynamics with Incompressible Schrödinger Flow.

Hao Chu *(Applied Physics)* B.A., Princeton University 2010.
Thesis: Nonlinear and Ultrafast Optical Investigations of Correlated Materials.

Lincoln Nash Collins *(Materials Science)* B.S., University of Colorado Denver 2010.
Thesis: Optimal Design of Materials for Energy Conversion.

Doctor of Philosophy *continued*

Rachel Autumn Dixon Cummings *(Computing and Mathematical Sciences)* B.A., University of Southern California 2011; M.S., Northwestern University 2013.
Thesis: The Implications of Privacy-Aware Choice.

Sunita Darbe *(Materials Science)* S.B., Massachusetts Institute of Technology 2009.
Thesis: Optics for High-Efficiency Full Spectrum Photovoltaics.

Mélanie Delapierre *(Space Engineering)* Diplôme d'Ingénieur, École Polytechnique 2012; M.S., California Institute of Technology 2013.
Thesis: Dynamics and Stability of Spinning Membranes.

Ding Ding *(Applied Physics)* Sc.B., Brown University 2009.
Thesis: Nanoscale Thermal Transport with Photons and Phonons.

Eyrun Arna Eyjolfsdottir *(Computer Science)* B.S., University of Iceland 2007; M.S., University of California, Santa Barbara 2010; M.S., California Institute of Technology 2014.
Thesis: Computational Methods for Behavior Analysis.

Zeyu Guo *(Computer Science)* B.S., Fudan University 2010; M.S., California Institute of Technology 2014.
Thesis: P-schemes and Deterministic Polynomial Factoring Over Finite Fields.

Wael Halbawi *(Electrical Engineering)* B.S., Texas A&M University at Qatar 2011; M.S., California Institute of Technology 2012.
Thesis: Error-Correcting Codes for Networks, Storage and Computation.

David Christopher Hall *(Electrical Engineering)* B.E., B.S., The University of Melbourne 2010; M.S., California Institute of Technology 2013.
Thesis: Advancing a Machine's Visual Awareness of People.

Damian George Hirsch *(Aeronautics)* B.S., Swiss Federal Institute of Technology Zurich 2011; M.S., 2013.
Thesis: An Experimental and Theoretical Study of Active Flow Control.

Kristina Hogstrom *(Space Engineering)* B.S., Boston University 2011; M.S., California Institute of Technology 2012.
Thesis: Robotically Assembled Space Telescopes with Deployable Modules: Concepts and Design Methodologies.

Chun-Jen Hsueh *(Mechanical Engineering)* B.S., National Taiwan University 2009; M.S., 2011; M.S., California Institute of Technology 2014.
Thesis: Effective Toughness of Heterogeneous Materials.

Wentao Huang *(Electrical Engineering)* B.S., Nanjing University of Posts and Telecommunications 2008; M.S., Shanghai Jiao Tong University 2011; M.S., California Institute of Technology 2013.
Thesis: Coding for Security and Reliability in Distributed Systems.

Doctor of Philosophy *continued*

Esteban Antonio Lemus Hufstedler *(Aeronautics)* S.B., Massachusetts Institute of Technology 2009; M.S., California Institute of Technology 2011.
Thesis: Experimental Generation and Modeling of Vortical Gusts and Their Interactions with an Airfoil.

Ho-Il Ji *(Materials Science)* B.S., Seoul National University 2007; M.S., 2009.
Thesis: Redox Kinetics of Nonstoichiometric Oxides.

Samantha Jo Iva Johnson *(Materials Science)* B.S., University of Colorado at Boulder 2011.
Thesis: Computational Investigation of Small Molecule Catalysis by Cobalt, Rhodium, and Iridium Molecular Catalysts.

Aditya Shreyas Kher *(Applied Physics)* B.S., University of California, San Diego 2009; M.S., California Institute of Technology 2013.
Thesis: Superconducting Nonlinear Kinetic Inductance Devices.

Jinho Kim *(Electrical Engineering)* B.S., Seoul National University 2005; M.S., 2007; M.S., California Institute of Technology 2013.
Thesis: Compact Microscope System for Biomedical Applications.

Seyoon Kim *(Electrical Engineering)* B.S., Seoul National University 2005; M.S., 2007.
Thesis: Electronically Tunable Light Modulation with Graphene and Noble Metal Plasmonics.

Pengfei Liu *(Applied and Computational Mathematics)* B.S., Peking University 2012.
Thesis: Spatial Profiles in the Singular Solutions of the 3D Euler Equations and Simplified Models.

Evan Tsugio Miyazono *(Applied Physics)* B.S., Stanford University 2010; M.S., 2011; M.S., California Institute of Technology 2015.
Thesis: Nanophotonic Resonators for Optical Quantum Memories Based on Rare-Earth-Doped Materials.

Manuel Alejandro Monge Osorio *(Electrical Engineering)* B.S., Pontificia Universidad Católica del Perú 2008; M.S., California Institute of Technology 2010.
Thesis: Localization and Stimulation Techniques for Implantable Medical Electronics.

Maxwell Robert Murialdo *(Materials Science)* B.S., Stanford University 2011; M.S., California Institute of Technology 2013.
Thesis: Anomalous Thermodynamics of Nonideal Gas Physisorption on Nanostructured Carbons.

Neel Nadkarni *(Aeronautics)* B.Tech., Indian Institute of Technology Gandhinagar 2012; M.S., California Institute of Technology 2013.
Thesis: Nonlinear Dynamics of Transition Waves in Multi-Stable Discrete and Continuous Media.

Doctor of Philosophy *continued*

Parham Noorzad *(Electrical Engineering)* B.S., University of Tehran 2012; M.S., California Institute of Technology 2013.
Thesis: Network Effects in Small Networks: A Study of Cooperation.

Saneyuki Ohno *(Materials Science)* B.S., Keio University 2012; M.S., California Institute of Technology 2014.
Thesis: Phase Boundary Mapping for Exploring New Thermoelectric Zintl Compounds.

Steven Leslie Palm *(Aeronautics and Electrical Engineering)* B.S., California Institute of Technology 1991.
Thesis: Thermo-Acoustic Coupling and Dynamic Response of a Premixed Methane-Air Flame.

Carlos Andrés Pérez Arancibia *(Applied and Computational Mathematics)* Civil Engineer, M.S., Pontificia Universidad Católica de Chile 2010.
Thesis: Windowed Integral Equation Methods for Problems of Scattering by Defects and Obstacles in Layered-Media.

Paul Plucinsky *(Mechanical Engineering)* B.S., M.S., University of Michigan 2011.
Thesis: The Deformations of Thin Nematic Elastomer Sheets.

Paula Flor Popescu *(Applied Physics)* A.B., Harvard College 2007; M.S., California Institute of Technology 2012.
Thesis: An Optofluidic Ring Resonator Platform for Rapid and Robust Sensing.

Navaneetha Krishnan Ravichandran *(Mechanical Engineering)* B.Tech., M.Tech., Indian Institute of Technology Madras 2011; M.S., California Institute of Technology 2012.
Thesis: Theoretical and Experimental Investigation of Phonon Boundary Scattering in Thin Silicon Membranes.

Chris Roh *(Aeronautics)* B.S., Cornell University 2012; M.S., California Institute of Technology 2013.
Thesis: Hydrodynamics of Insects. Part 1. Jetting of the Dragonfly Larvae. Part 2. Honeybee at the Air-Water Interface: Surfing with the Capillary Wave.

Dzhelil Sabahatin Rufat *(Applied Physics)* B.S.E., Princeton University 2007; M.S., California Institute of Technology 2016.
Thesis: Spectral Exterior Calculus and Its Implementation.

Fadl Hussein Saadi *(Materials Science)* B.S., Stanford University 2010; M.S., 2011.
Thesis: Acid-Stable Electrocatalysts for the Solar Production of Fuels.

Akram Sarwat Sadek *(Computation and Neural Systems)* M.S., University College London 2002; B.A., University of Cambridge 2004.
Thesis: Wireless Nano and Molecular Scale Neural Interfacing.

Doctor of Philosophy *continued*

Amirreza Safaripour Tabbalvandani *(Electrical Engineering)* B.S., Sharif University of Technology 2010; M.S., California Institute of Technology 2012.
Thesis: Proximal-Field Radiation Sensors for Dynamically Controllable and Self-Correcting Integrated Radiators.

Constantine Sideris *(Electrical Engineering)* B.S., California Institute of Technology 2010; M.S., 2011.
Thesis: Electromagnetic Field Manipulation: Biosensing to Antennas.

Zachary Martin Sternberger *(Aeronautics)* B.S., Virginia Polytechnic Institute and State University 2011; M.S., California Institute of Technology 2012.
Thesis: Determining Strength of Materials Under Dynamic Loading Conditions Using Hydrodynamic Instabilities.

Myoung-Gyun Suh *(Applied Physics)* B.S., Korea Advanced Institute of Science and Technology 2004; M.S., National Taiwan University 2006; M.S., California Institute of Technology 2014.
Thesis: Nonlinear Optics in Chip-Based Microresonators and Their Applications.

Yanan Sui *(Computation and Neural Systems and Applied and Computational Mathematics)* B.E., Tsinghua University 2010.
Thesis: Online Learning for the Control of Human Standing via Spinal Cord Stimulation.

Dustin Summy *(Aeronautics)* B.S., The University of Texas at Austin 2010; M.S., California Institute of Technology 2011.
Thesis: Maximum Entropy Reconstruction for Gas Dynamics.

Erik Verlage *(Materials Science)* S.B., Massachusetts Institute of Technology 2011.
Thesis: High-Efficiency Solar Fuel Devices: Protection and Light Management Utilizing TiO_2.

Yuh-Shyang Wang *(Control and Dynamical Systems)* B.S., National Taiwan University 2011.
Thesis: A System Level Approach to Optimal Controller Design for Large-Scale Distributed Systems.

Lee L Wilson *(Aeronautics)* B.E., University of Canterbury 2010; M.S., California Institute of Technology 2012.
Thesis: Analysis of Packaging and Deployment of Ultralight Space Structures.

Ming Fai Wong *(Electrical Engineering)* B.Eng., University of Toronto 2010; M.S., California Institute of Technology 2012.
Thesis: A Study of Communication Networks through the Lens of Reduction.

Chen Xu *(Materials Science)* B.S., Peking University 2011.
Thesis: The Catalytic and Mechanical Properties of Lithium Battery Electrodes.

Doctor of Philosophy *continued*

Xu Yi *(Applied Physics)* B.S., Peking University 2012.
Thesis: Physics and Applications of Microresonator Solitons and Electro-Optic Frequency Combs.

Alex James Zelhofer *(Mechanical Engineering)* B.S., Milwaukee School of Engineering 2012; M.S., California Institute of Technology 2014.
Thesis: Computational Modeling of the Mechanics of Elastic Structural Lattices: Effects of Lattice Architecture and Hierarchy.

Pengchuan Zhang *(Applied and Computational Mathematics)* B.S., Tsinghua University 2011.
Thesis: Compressing Positive Semidefinite Operators with Sparse/Localized Bases.

Shell Xiaoxiao Zhang *(Electrical Engineering)* B.S., Texas A&M University 2011; M.S., California Institute of Technology 2013.
Thesis: Electrical Impedance Based Spectroscopy and Tomography Techniques for Obesity and Heart Diseases.

Haojiang Edward Zhou *(Electrical Engineering)* B.S., Tianjin University 2009; M.S., Zhejiang University 2012; M.S., California Institute of Technology 2014.
Thesis: Optical Focusing and Imaging through Scattering Media.

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

Tobias Bischoff *(Environmental Science and Engineering and Applied and Computational Mathematics and Computer Science)* M.S., University of Cambridge 2011; M.S., California Institute of Technology 2013.
Thesis: Dynamics of the Intertropical Convergence Zone.

Stephen Ellis Cox *(Geochemistry)* B.A., Columbia University 2009.
Thesis: New Techniques for Noble Gas Geochronometry and Thermochronometry.

Peter Gao *(Planetary Science)* B.A.Sc., University of British Columbia 2010; M.S., California Institute of Technology 2014.
Thesis: Clouds and Hazes in Planetary Atmospheres.

Asaf Inbal *(Geophysics)* B.Sc., Ben-Gurion University of the Negev 2007; M.Sc., 2010.
Thesis: Seismogeodetic Imaging of Active Crustal Faulting.

Mathieu Gaëtan André Lapôtre *(Geology)* B.S., University of Strasbourg 2009; Diplôme d'Ingénieur, École et Observatoire des Sciences de la Terre 2011; M.Sc., University of Strasbourg 2011; M.S., California Institute of Technology 2014.
Thesis: Sedimentary Processes on Earth and Mars: Canyon Erosion, Sand-Ripple Formation, and Mineral Composition.

Doctor of Philosophy *continued*

Cheng Li *(Planetary Science and Environmental Science and Engineering)* B.S., Peking University 2011; M.S., California Institute of Technology 2014.

Thesis: Convection in Planetary Atmospheres: Titan's Haze, Saturn's Storm and Jupiter's Water.

Semechah K. Y. Lui *(Geophysics)* B.S., University of Michigan 2011; M.S., California Institute of Technology 2014.

Thesis: Earthquake Source Characterization through Seismic Observations and Numerical Modeling.

Paul Macdonald Magyar *(Geochemistry)* A.B., Dartmouth College 2009; M.S., California Institute of Technology 2012.

Thesis: Insights into Pathways of Nitrous Oxide Generation from Novel Isotopologue Measurements.

Luca Claude Malatesta *(Geology)* B.S., Swiss Federal Institute of Technology Zurich 2010; M.S., 2011.

Thesis: Impact of Climate and Tectonics on the Morphodynamics of Alluvial Piedmonts, Implications for Sediment Transfer and the Stratigraphic Record.

Wilton Mui *(Environmental Science and Engineering)* B.S., University of Florida 2010; M.S., California Institute of Technology 2012.

Thesis: Development and Applications of Opposed Migration Aerosol Classifiers (OMACs).

Henry Hoang Khoi Ngo *(Planetary Science)* B.S., University of British Columbia 2010; M.Sc., Queen's University 2012; M.S., California Institute of Technology 2014.

Thesis: Formation and Migration Histories of Giant Exoplanets in Multi-Stellar Systems.

Joseph Ghilarducci O'Rourke *(Planetary Science)* B.S., Yale University 2012; M.S., California Institute of Technology 2014.

Thesis: The Divergent Evolution of Earth and Venus.

Lu Pan *(Planetary Science)* B.S., Peking University 2012; M.S., California Institute of Technology 2014.

Thesis: Insights into the Geologic History of Mars' Northern Lowlands from Near-Infrared Spectroscopy.

Jason Brian Price *(Geology)* M.S., Colorado School of Mines 2004; M.S., California Institute of Technology 2015.

Thesis: I: Normal Faulting on the Austroalpine 'Overthrust' Constrained by Thermochronometry and Kinematic Analysis, Central Alps, Graubünden Region, Switzerland. II: Clumped Isotope Thermometry of Carbonate Phases Associated with the Copper Deposits of Kennecott, Alaska.

Doctor of Philosophy *continued*

Bryan Valmonte Riel *(Geophysics)* B.S., The University of Texas at Austin 2008; M.S., 2010; M.S., California Institute of Technology 2014.
Thesis: Automatic Decomposition of Geodetic Time Series for Studies of Ground Deformation.

Katherine Michelle Saad *(Environmental Science and Engineering)* B.A., B.S., University of California, Berkeley 2008.
Thesis: Disentangling Spatiotemporal Signals in Global Atmospheric Methane Columns.

Rebecca Helen Schwantes *(Environmental Science and Engineering)* B.S., University of Virginia 2009; M.S., California Institute of Technology 2014.
Thesis: Identifying Isoprene and Toluene Gas-Phase Oxidation Products to Better Constrain Ozone and Secondary Organic Aerosol Formation in the Atmosphere.

Natalia Viatcheslavovna Solomatova *(Geophysics)* B.S., University of California, Los Angeles 2012; M.S., California Institute of Technology 2015.
Thesis: Iron-Bearing Oxides, Silicate Glasses and Carbonates at Lower Mantle Pressures.

Adam Vinay Subhas *(Geochemistry)* B.S., Haverford College 2009.
Thesis: Chemical Controls on the Dissolution Kinetics of Calcite in Seawater.

Alexander Pai-Chung Teng *(Environmental Science and Engineering)* B.S., University of California, Berkeley 2008.
Thesis: Insight on the Formation and Fate of Organic Nitrates in the Atmosphere from Field and Laboratory Observations.

Jennifer Marie Walker *(Environmental Science and Engineering)* B.S., University of Toronto 2004; M.S., 2006.
Thesis: Seasonal and Interannual Variability in South Asian Monsoon Dynamics.

Lewis Michael Ward *(Geobiology)* A.B., Harvard College 2011; M.S., California Institute of Technology 2014.
Thesis: Microbial Evolution and the Rise of Oxygen: The Roles of Contingency and Context in Shaping the Biosphere through Time.

Hang Yu *(Environmental Science and Engineering)* B.S., University of British Columbia 2010; M.S., California Institute of Technology 2013.
Thesis: Understanding the Symbiosis in Anaerobic Oxidation of Methane through Metabolic, Biosynthetic and Transcriptomic Activities.

Qiong Zhang *(Environmental Science and Engineering)* B.S., Peking University 2012; M.S., California Institute of Technology 2014.
Thesis: Accounting for Aerosol Scattering in the Remote Sensing of Greenhouse Gas.

Doctor of Philosophy *continued*

DIVISION OF HUMANITIES AND SOCIAL SCIENCES

Tatiana S. Mayskaya *(Social Science)* M.S., Lomonosov Moscow State University 2010; M.S., California Institute of Technology 2014.
Thesis: Essays on Information Collection.

Welmar Eduardo Rosado Buenfil *(Social Science)* B.A., Mexico Autonomous Institute of Technology 2011; M.S., California Institute of Technology 2014.
Thesis: Essays on the Political Economy of Subnational Public Finances.

Myungkoo Song *(Social Science)* B.A., B.B.A., B.S., Yonsei University 2010; M.A., 2012; M.S., California Institute of Technology 2014.
Thesis: Essays on the Impact of Information Asymmetry.

Jun Zhang *(Social Science)* B.S., Nanjing University of Science and Technology 2008; M.S., California Institute of Technology 2015.
Thesis: Essays on Matching Theory.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

Mislav Baloković *(Astrophysics)* M.Sc., University of Split 2010.
Thesis: Unveiling the Structure of Active Galactic Nuclei with Hard X-ray Spectroscopy.

Jonathan Lloyd Blackman *(Physics)* B.Sc., University of British Columbia 2011.
Thesis: Surrogate Models of Gravitational Waves from Numerical Relativity Simulations of Binary Black Hole Mergers.

Peter Burton *(Mathematics)* B.S., University of Toronto 2011; M.S., 2012.
Thesis: Approximation and Classification in the Ergodic Theory of Nonamenable Groups.

William Chan *(Mathematics)* B.A., The University of Chicago 2012.
Thesis: Aspects of Definability for Equivalence Relations.

Javier Mauricio Gonzalez Duarte *(Physics)* S.B., Massachusetts Institute of Technology 2010; M.S., California Institute of Technology 2015.
Thesis: Naturalness Confronts Nature: Searches for Supersymmetry with the CMS Detector.

Kevin Robert Fiedler *(Physics)* B.S., University of Colorado at Boulder 2011; M.S., California Institute of Technology 2015.
Thesis: Fundamentals of Thermocapillary Sculpting of Liquid Nanofilms and Applications to Thin Film Micro-Optics.

Lei Fu *(Mathematics)* B.S., Peking University 2011; M.S., California Institute of Technology 2014.
Thesis: Immersing Essential Surfaces in Odd Dimensional Closed Hyperbolic Manifolds.

Doctor of Philosophy *continued*

Evan Drew Hall *(Physics)* B.A., The University of Chicago 2012; M.S., California Institute of Technology 2016.
Thesis: Long-Baseline Laser Interferometry for the Detection of Binary Black-Hole Mergers.

Enrico Herrmann *(Physics)* Diplom, Julius-Maximilian's University of Wurzburg 2012.
Thesis: Scattering in N=4 Super-Yang-Mills and N=8 Supergravity.

Jonathan David Hood *(Physics)* B.S., University of Maryland, College Park 2009.
Thesis: Atom-Light Interactions in a Photonic Crystal Waveguide.

Rebecca Marie Jensen-Clem *(Astrophysics)* S.B., Massachusetts Institute of Technology 2012; M.S., California Institute of Technology 2014.
Thesis: A Toolbox for Exoplanet Exploration.

Melodie Minyu Kao *(Astrophysics)* S.B., Massachusetts Institute of Technology 2011; M.S., California Institute of Technology 2013.
Thesis: Constraining Substellar Magnetic Dynamos Using Brown Dwarf Radio Aurorae.

Chan U Lei *(Physics)* B.S., National Cheng Kung University 2009; M.S., 2011.
Thesis: Circuit Cavity Electromechanics in the Quantum Regime.

Marius Christopher Lemm *(Mathematics)* B.Sc., Ludwig Maximilian University of Munich 2010; M.Sc., 2012; M.A.S., University of Cambridge 2011.
Thesis: Mathematical Results on Quantum Many-Body Physics.

Nicole Renate Lingner *(Physics)* A.A., Santa Monica College 2007; B.A., University of California, Berkeley 2008; M.S., California Institute of Technology 2015.
Thesis: The Faint Intergalactic-medium Redshifted Emission Balloon: FIREBall-2 Scientific Camera and Cooling System.

Daodi Lu *(Mathematics)* B.S., Peking University 2011; M.S., California Institute of Technology 2016.
Thesis: Quasiparabolic Subgroups of Coxeter Groups and Their Hecke Algebra Module Structures.

Andrew Corby McClung *(Physics)* B.A., Carleton College 2010.
Thesis: Photonic Crystal Waveguides for Integration into an Atomic Physics Experiment.

Benjamin Tyler Montet *(Astrophysics)* B.S., University of Illinois at Urbana-Champaign 2011; M.S., California Institute of Technology 2013.
Thesis: Low-Mass Stars and Their Companions.

Evgeny Mozgunov *(Physics)* B.S., Moscow Institute of Physics and Technology 2009; M.S., 2011.
Thesis: Slow Drive of Many-Body Localized Systems.

Doctor of Philosophy *continued*

Juan Andres Muniz Silva *(Physics)* B.Sc., University of the Republic 2009.
Thesis: Nanoscopic Atomic Lattices with Light-Mediated Interactions.

Emad Nasrollahpoursamami *(Mathematics)* B.S., Sharif University of Technology 2010.
Thesis: Periods of Feynman Diagrams.

Zachary George Nicolaou *(Physics)* B.A., Northwestern University 2010; Master of Advanced Study, University of Cambridge 2011.
Thesis: Symmetry and Variational Analyses of Thin Film Partial Differential Equations.

Antonija Oklopčić *(Astrophysics)* M.S., University of Zagreb 2011.
Thesis: Radiative Processes in Astrophysical Gases: From the Intergalactic and Interstellar Medium to Exoplanetary Atmospheres.

Cristián Peña Herrera *(Physics)* Bachelor, Universidad Técnica Federico Santa María 2010; Master, 2011; M.S., California Institute of Technology 2015.
Thesis: Searches for New Physics at the Compact Muon Solenoid Experiment and Precision Timing Calorimetry.

John Sebastian Pineda *(Astrophysics)* S.B., Massachusetts Institute of Technology 2010; M.S., California Institute of Technology 2012.
Thesis: Multiwavelength Characterization of the Brown Dwarf Auroral Phenomenon - Establishing the Nature of the Electrodynamic Engine.

Jason Aaron Pollack *(Physics)* A.B., Princeton University 2012; M.S., California Institute of Technology 2016.
Thesis: Constraints on Cosmology and Quantum Gravity from Quantum Mechanics and Quantum Field Theory.

Grant Newton Remmen *(Physics)* B.S., University of Minnesota, Twin Cities 2012; M.S., California Institute of Technology 2015.
Thesis: Defining Gravity: Effective Field Theory, Entanglement, and Cosmology.

Ingmar Akira Saberi *(Physics)* A.B., Princeton University 2011; M.S., California Institute of Technology 2015.
Thesis: Knots, Trees, and Fields: Common Ground between Physics and Mathematics.

Chia Hsien Shen *(Physics)* B.S., National Taiwan University 2009.
Thesis: Aspects of Effective Field Theories from Scattering Amplitudes.

Jacqueline Rose Villadsen *(Astrophysics)* S.B., Massachusetts Institute of Technology 2009; M.S., California Institute of Technology 2013.
Thesis: The Search for Stellar Coronal Mass Ejections.

Seunghee Ye *(Mathematics)* A.B., Dartmouth College 2010.
Thesis: The Geometry of Moduli Spaces of Maps from Curves.

Melissa L. Yeung *(Mathematics)* B.S., The University of Chicago 2010.
Thesis: Applied Computational Topology for Point Clouds and Sparse Timeseries Data.

Doctor of Philosophy *continued*

Su-Peng Yu *(Physics)* B.S., National Taiwan University 2010.
Thesis: Nano-Photonic Platform for Atom-Light Interaction.

PRIZES AND AWARDS

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

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.

2017 Nikita Anaar Sirohi

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.

2017 Robert Manuel Sanchez

GEORGE W. HOUSNER AWARD

Formerly the Sigma Xi Award, awarded to a senior selected for an outstanding piece of original scientific research.

2017 Suchita Patil Nety

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 presented at the commencement ceremony.

ADVOCATING CHANGE TOGETHER (ACT) AWARD

The Caltech Y ACT Award allows students to learn about a global, national, or local issue by immersing themselves with activists working on a cause over the summer and then challenges them to educate others by creating and leading programs designed to raise awareness on campus the following year.

2014 Ryeen Islam

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 Seunghee Ye

2014 Peter Burton

2015 Seunghee Ye

2016 Peter Burton, Seunghee Ye

2017 Seunghee Ye

ROBERT P. BALLES 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.

2016 Diana Alexandra Ardelean, Yujie Xu

WILLIAM F. BALLHAUS PRIZE

Awarded to aeronautics students for outstanding doctoral dissertations.

2017 Damian George Hirsch

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. '87 Physics, in memory of his grandfather, Mag Raj Bhansali.)

2017 Joon Sik Kim

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.

2014 Yanbing Zhu

RICHARD G. BREWER PRIZE IN PHYSICS

Awarded to the freshman with the most interesting solutions to the Physics 11 "hurdles," in recognition of demonstrated intellectual promise and creativity at the very beginning of his or her Caltech education.

2013 Timothy Isaac Maxwell

2014 Dominic Jeffrey Yurk

ROLF D. BUHLER MEMORIAL AWARD IN AERONAUTICS

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

2017 Benedikt Heinz Herbert Barthel

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.

2015 Alec Ryan Brenner

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 Michael Andrew Jenson, Talia Grace Parker Minear

2015 Michael Andrew Jenson, Talia Grace Parker Minear, Jeffrey Neal Rosenberg

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.

2017 Albert Ren-Haur Chern, Pengchuan Zhang

BONNIE CASHIN PRIZE FOR IMAGINATIVE THINKING

Awarded each year to the entering freshman who has written the most imaginative essays in the Application for Freshman Admission.

2014 Jianing Jenny He, Shannon Wang

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.

2017 Paul Plucinsky

RICHARD BRUCE CHAPMAN MEMORIAL AWARD

Awarded to a graduate student in hydrodynamics who has distinguished himself or herself in research in the Division of Engineering and Applied Science.

2017 Chris Roh

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.

2016 Nishant Ravi Desai, Kate Lynn Lewis

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.

2017 Steven Leslie Palm

DEANS' CUP AND STUDENT LIFE 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.

2017 Sean Patrick McKenna, Student Life

2017 Andrew Montequin, Student Life

2017 Michelle Wong, Student Life

2017 Mojolaoluwa Joshua Sonola, Deans' Cup

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN BENIGN RENEWABLE ENERGY SOURCES OR RELATED FIELDS

Awarded annually to a Ph.D. candidate for the best thesis, publication, discovery, or related efforts in benign renewable energy sources 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.

2017 Bryan Michael Hunter

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.

2017 Manuel Alejandro Monge Osorio

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.

2016 Anton Toutov

2017 Ken Yee Chan

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.

2016 Anupama J Thubagere

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.

2017 Pinaky Bhattacharyya

CONSTANTIN G. ECONOMOU MEMORIAL PRIZE

Awarded to a chemical engineering graduate student distinguished by outstanding research accomplishments and exemplary attitude while fulfilling candidacy requirements for the Ph.D. degree.

2013 Mu Wang

2014 Sho C Takatori

EVERHART DISTINGUISHED GRADUATE STUDENT LECTURER AWARD

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

2016 Sho C Takatori, Anton Toutov

2017 Rebecca Marie Jensen-Clem

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.

2017 Jianing Jenny He

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.

2017 Ken Yee Chan, Jeremy Edward Sandler

RICHARD P. FEYNMAN PRIZE IN THEORETICAL PHYSICS

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

2017 Timothy Isaac Maxwell

HAREN LEE FISHER MEMORIAL AWARD IN JUNIOR PHYSICS

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

2016 Soon Wei Daniel Lim

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.

2016 Kushal Arun Agarwal, Nand Kishore, Kevin Chia-lun Chen, Charles Huan-Chiao Wang, Lidan Yu, Tyler Takeo Okamoto

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.

2016 Soon Wei Daniel Lim

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.

2015 *Saaket Agrawal*

2016 *Won Jun Noh*

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.

2017 *Jason Aaron Pollack*

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.

2017 *Yujie Xu*

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 of $500.

2017 *Nishant Ravi Desai*

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.

2017 Stephanie Shuyue Hong

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.

2016 Suchita Patil Nety, Kristie Bo-Chi Yu

JOHN H. HALL MEMORIAL SCHOLARSHIP

Awarded to an outstanding undergraduate student in Geological and Planetary Sciences.

2017 Xinyi Angela Nan

ALEXANDER P. AND ADELAIDE F. HIXON PRIZE FOR WRITING

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

2014 Jaden Matthew Geller

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.

2017 Damian George Hirsch

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.

2017 Jake Patrick Larson

SCOTT RUSSELL JOHNSON GRADUATE DISSERTATION PRIZE IN MATHEMATICS

Awarded for the best graduate dissertation in mathematics.

2017 *Peter Burton, William Chan, Marius Christopher Lemm*

SCOTT RUSSELL JOHNSON PRIZE FOR EXCELLENCE AS A FIRST-YEAR GRADUATE STUDENT

This prize is awarded for excellence in first-year graduate research.

2013 *Marius Christopher Lemm*

SCOTT RUSSELL JOHNSON PRIZE FOR EXCELLENCE IN GRADUATE STUDIES

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.

2014 *Marius Christopher Lemm*

2015 *Peter Burton, Marius Christopher Lemm*

2016 *William Chan, Marius Christopher Lemm*

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.

2017 *Yujie Xu*

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.

2017 *Ludovic André Georges Gil*

D. S. KOTHARI PRIZE IN PHYSICS

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

2017 Soon Wei Daniel Lim

MARGIE LAURITSEN LEIGHTON PRIZE

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

2015 Yanbing Zhu

LIBRARY FRIENDS' SENIOR THESIS PRIZE

This prize was established by the Friends of the Caltech Libraries in 2010 to recognize senior theses that exemplify research and the effective use of library information resources. The thesis is an extensive, independent written work produced during the senior year, usually within a senior thesis course series. The University Librarian and the Friends of the Caltech Libraries oversee evaluation and make recommendations to the Undergraduate Academic Standards and Honors Committee for final selection. An oral presentation may be requested. At the discretion of the Friends of the Caltech Libraries, more than one award, or none, may be made in any year.

2017 Soon Wei Daniel Lim

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.

2017 Mary Maral Boyajian

GORDON McCLURE MEMORIAL COMMUNICATIONS PRIZE

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

2016 Suchita Patil Nety

2017 Kshitij Grover, Zofii Anna Kaczmarek, Christina Lin

THE HERBERT NEWBY MCCOY AWARD

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

2017 Bryan Michael Hunter, Daniel Hanyang Lin

MARY A. EARL McKINNEY PRIZE IN LITERATURE

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

2015 Sirus Kujung Han

2016 Sirus Kujung Han, Matt Lim

2017 Daniel Estevan McAndrew

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.

2017 Stephanie Jungyoon Moon

MERCK INDEX AWARD

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

2017 Ellen Yu

JAMES MICHELIN SCHOLARSHIP

Given in memory of geologist James Michelin, who worked in the oil fields of Southern California in the 1930s and dreamed of returning to college at Caltech, this annual award recognizes undergraduate students for their contributions to the field of geology or geophysics.

2016 Robert Manuel Sanchez

2017 Alec Ryan Brenner

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.

2017 *Katherine Anne Evans, Tyler Takeo Okamoto, Jay S. Palekar, Kristie Bo-Chi Yu*

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.

2015 *Robert Manuel Sanchez*

2016 *Xinyi Angela Nan*

SANPIETRO 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.

2015 *Matthew Gene Edwards, Matt Lim, Suchita Patil Nety*

2016 *Willis Huang Nguy*

2017 *Christina Isabella Meyer, John David Feist, Jessica Biyun Li, Daniil Lukin*

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.

2017 *Saaket Agrawal*

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 Aerospace Laboratories of the California Institute of Technology). Preference is given to students working in structural mechanics.

2016 *Neel Nadkarni*

RENUKA D. SHARMA AWARD

Awarded to a sophomore chemistry major for outstanding performance during his or her freshman year.

2015 Saaket Agrawal

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.

2013 Michael Andrew Jenson

2014 Alison Lui, Elijah Brittain Sorey

2016 Moriah Nicole Bischan, Caitlin Chen, Jessica Cheng, Songshan Guo, Jeffrey Neal Rosenberg, Robert Manuel Sanchez

HALLETT SMITH PRIZE

Established in 1997 to commemorate Professor Smith's long career as one of the 20th century's most distinguished Renaissance scholars. The cash prize is given annually by the literature faculty to the undergraduate student who writes the finest essay on Shakespeare.

2014 Suchita Patil Nety

2017 Suchita Patil Nety, Gauri Shastri

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.

2012 Taylor Ryan Strumwasser (2012–2016)

2013 Rahul Hemant Bachal (2013–2017)

2013 Stephanie Jungyoon Moon (2013–2017)

JOHN STAGER STEMPLE MEMORIAL PRIZE IN PHYSICS

Awarded to a graduate student in physics for outstanding progress in research as demonstrated by an excellent performance on the oral Ph.D. candidacy examination.

2015 Grant Newton Remmen

PAUL STUDENSKI MEMORIAL FUND

A travel grant awarded to a Caltech undergraduate who would benefit from a period away from the academic community in order to obtain a better understanding of self and his or her plans for the future.

2016 Mara Yvonne Green

2017 Jessica Cheng

CHARLES AND ELLEN WILTS PRIZE

Awarded to a graduate student for outstanding independent research in electrical engineering leading to a Ph.D.

2017 Manuel Alejandro Monge Osorio

FREDERICK J. ZEIGLER MEMORIAL AWARD

Awarded to an outstanding sophomore or junior in pure or 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.

2015 Cameron Louis Voloshin

2016 Yujie Xu

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's Ninth Symphony excerpt, after the poem "An die Freude" ("Ode To Joy") by Johann Christoph Friedrich von Schiller (1759–1805)

Freude, schöner Götterfunken	Joy, beautiful spark of the gods
Tochter aus Elysium,	Daughter of Elysium,
Wir betreten feuertrunken,	We enter, drunk with fire,
Himmlische, dein Heiligtum!	Heavenly one, your sanctuary!
Deine Zauber binden wieder	Your magic reunites
Was die Mode streng geteilt;	What custom strictly divided.
Alle Menschen werden Brüder,	All men will become brothers,
Wo dein sanfter Flügel weilt.	Where your gentle wing rests.

Wem der große Wurf gelungen,	Whoever has had the great fortune
Eines Freundes Freund zu sein;	To be a friend's friend,
Wer ein holdes Weib errungen,	Whoever has married a beloved wife,
Mische seinen Jubel ein!	Let him mix in his jubilation!
Ja, wer auch nur eine Seele	Indeed, whoever can call even one soul
Sein nennt auf dem Erdenrund!	His own on this round earth!
Und wer's nie gekonnt, der stehle	And whoever was never able to, must creep
Weinend sich aus diesem Bund!	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 Alumni 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 have a profound and 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 2017.

Your Caltech degree offers you a place among and access to one of the most accomplished alumni networks of any institution. The Caltech Alumni Association will help you stay in touch with fellow graduates and—with more than 23,000 graduates around the world—help you realize the full potential of your extended family, personally and professionally.

Your Caltech alumni community is proud of you. We welcome you to the quest of exploration and innovation and we pledge our support as you create your own positive legacy in the world.

Dave Tytell (BS '99)

President, Board of Directors
Caltech Alumni Association
www.alumni.caltech.edu

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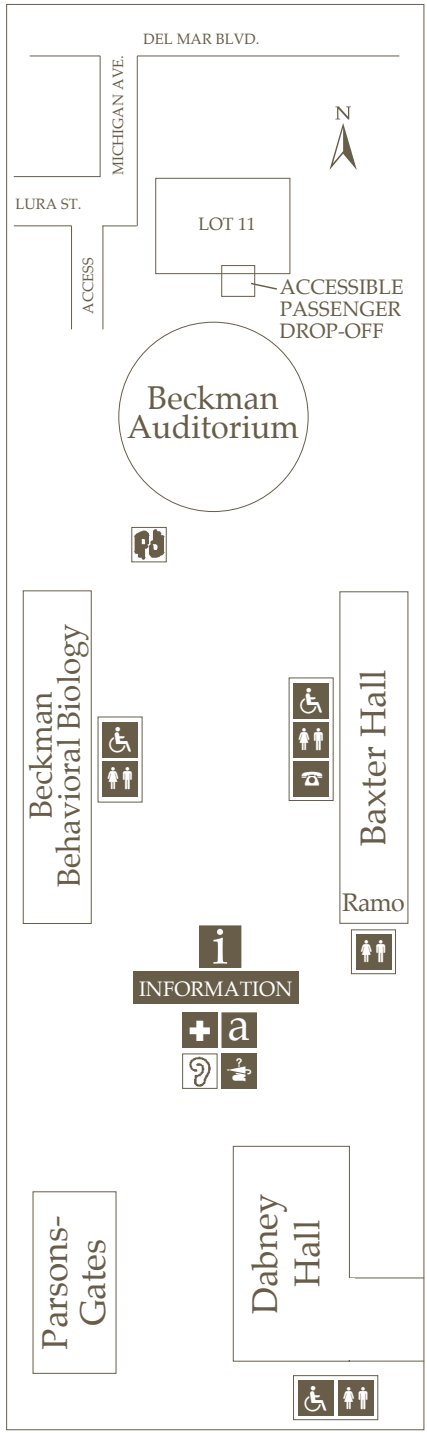

SERVICES FOR COMMENCEMENT GUESTS

PUBLIC TELEPHONES are available in Baxter Hall.

RESTROOMS are available in Baxter Hall, Beckman Behavioral Biology, Dabney Hall and Ramo.

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 9 to 10 a.m.

ACCESSIBLE SERVICES

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.

ACCESSIBLE SEATING is located on the eastside of the mid-section ceremony seating area.

ACCESSIBLE RESTROOMS are located on the first floors of Dabney Hall, Baxter Hall, and Beckman Behavioral Biology.

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.