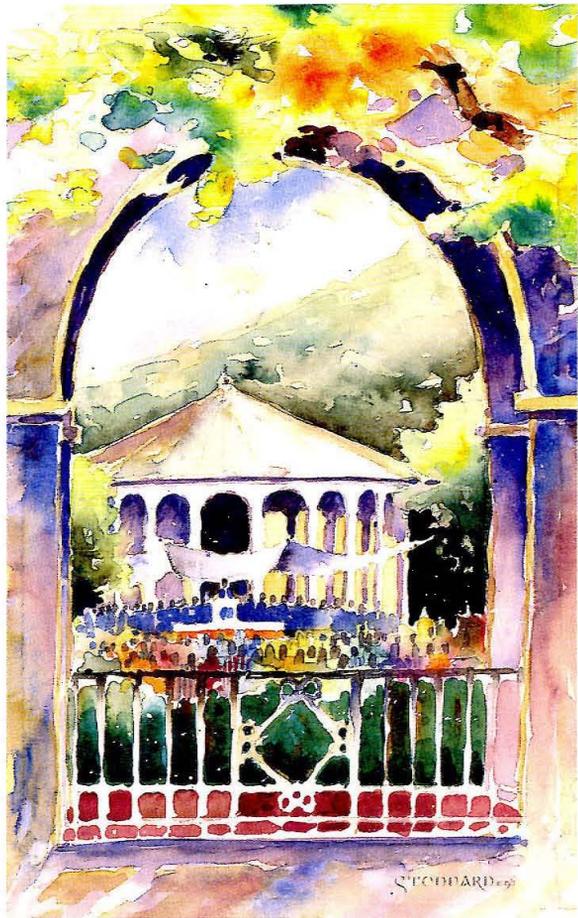




CALIFORNIA INSTITUTE of TECHNOLOGY

*One Hundred and Seventh Annual Commencement
June 15, 2001*



Cover: Caltech's commencement ceremony,
by Joseph Stoddard. © 2001, California Institute of Technology

This program is produced by the Public Relations Office.

Editor: Emily Adelson

Contributors: Michael Farquhar, Natalie Gilmore, Linda J. King

CALIFORNIA INSTITUTE
of TECHNOLOGY

*One Hundred and Seventh
Annual Commencement*

Friday Morning at Ten O'Clock
June Fifteenth, Two Thousand One

IN HIS DIARY ENTRY of September 1, 1891, Pasadena philanthropist Amos Throop wrote, “Planted potatoes, cleaned a water pipe, husked the corn . . . In afternoon, saw Mr. Wooster and rented his block for five years . . . and hope I have made no mistake.” Were he here today, Throop could rest assured in his decision. For the building of which he wrote, the Wooster Block, was rented for the purpose of establishing Throop University—the forerunner of Caltech.

In November of that year, Throop University opened its doors to 31 students and a six-member faculty. Could anyone have imagined then that the school would become a world center for science and engineering research and education? Perhaps . . . for in the first year, the board of trustees began to reconsider the mission of the school. In 1892, they decided to emphasize industrial training, and in 1893, reflecting this new focus, renamed the school Throop Polytechnic Institute.

Throop might have remained just a good local school had it not been for the arrival in Pasadena of George Ellery Hale. A faculty member at the University of Chicago and a noted astronomer, Hale settled here in 1903. From that time until his death in 1938, he made significant contributions to Pasadena and Southern California: he established the Mount Wilson Observatory, raised funds for Palomar Observatory and its 200-inch telescope, participated in the creation of the Huntington Library and Art Gallery, helped design the Civic

Center in downtown Pasadena, and—perhaps his single greatest achievement—set the course for the development of Throop into the California Institute of Technology, a school he envisioned as a scientific institution of the highest rank.

In 1913, Hale convinced Arthur Amos Noyes, professor of chemistry and former president of the Massachusetts Institute of Technology, to join him in Pasadena. With the arrival in 1917 of Robert Andrews Millikan, professor of physics at the University of Chicago, Hale had assembled the founders of the new institution. The world center of scientific and engineering research and education he had imagined soon took shape under a new name, the California Institute of Technology, administered by Millikan and enriched with the scientific talents of Noyes and his faculty colleagues.

Caltech today has a 124-acre campus and operates seven off-campus astronomical, seismological, and marine biological facilities, and administers NASA's Jet Propulsion Laboratory as well. At present, the Institute has an enrollment of some 2,000 students, more than half of whom are in graduate studies; about 280 professorial faculty members, including four Nobel laureates and four Crafoord laureates; and more than 200 research faculty members. Today, Caltech will award 204 students the B.S. degree; 120 students the M.S. degree; 1 scholar the degree of Engineer; and 159 doctoral candidates the Ph.D. degree, for a total of 484 graduates—quite a leap from the one man and one woman who constituted the first collegiate graduating class of Throop Polytechnic Institute.

Please note:

Video footage of commencement may be viewed on the Caltech Web site at

<http://pr.caltech.edu/commencement/01/index.html>. Broadcast is scheduled to begin after 3:00 p.m. and will be available throughout the year.

FORTY-SEVEN YEARS AGO, as a 25-year-old student, Gordon Moore stood among 69 other PhD candidates who were waiting to receive diplomas at Caltech's graduation ceremony. When he addresses the candidates at this year's commencement ceremony, he stands *sans pareil* at the summit of an extraordinary career.

A few years after graduating from Caltech, Moore cofounded Fairchild Semiconductor Corporation in Mountain View. He managed the corporation's engineering department and later directed Fairchild's research and development when the company produced the first commercial integrated circuit. Then, in 1968, he and a few of his colleagues at Fairchild decided to start a company focusing on large-scale integrated products. They typed a one-page business plan, received \$2.5 million in venture capital in two days, and named the company Intel, short for "integrated electronics."

Their first commercial product, the 3101 Schottky bipolar 64-bit static random access memory chip, was moderately successful, but when they designed a general-purpose logic chip that could be programmed to take instructions, they had hit their stride. This chip changed history by making programmable intelligence so cheap it could be embedded into household appliances and so powerful that people could have computers of their own. Within a decade, the microprocessor was hailed as one of the top inventions in the history of American technology, ranking with the invention of the light bulb, the telephone, and the airplane. (In 1974, Moore remarked of the chip's impact,

"I'd like to think that we're the real revolutionaries in the world. Things are being revolutionized a lot more by electronics technology than by some political things going on.")

Moore was chief executive officer at Intel from 1975 to 1987, and is now chairman emeritus. He is widely known for "Moore's law," which he formulated in 1965. The law states that the number of transistors the industry would be able to place on a computer chip would double every year. Ten years later, he updated his prediction to once every two years. While originally intended as a rule of thumb, it has become the guiding principle for the industry, which continues to deliver ever more powerful semiconductor chips at proportionate decreases in cost.

Moore has been a Caltech trustee for 18 years, and served as chairman of the board from January 1994 to 2000. His generosity to the Institute has included the establishment of programs for visiting scholars, for fellowships, and for undergraduate scholarships; the funding of a professorship in engineering; and funding for the Gordon and Betty Moore Laboratory of Engineering.

Moore is a director of Varian Associates, Gilead Sciences Inc., and Transamerica Corporation. He is a member of the National Academy of Engineering, and a fellow of the Institute of Electrical and Electronics Engineers. In 1990, he received the National Medal of Technology from then-president George Bush.

THESE TRIBAL RITES have a very long history. They go back to the ceremony of initiation for new university teachers in mediaeval Europe. It was then customary for students, after an appropriate apprenticeship to learning and the presentation of a thesis as their masterpiece, to be admitted to the Guild of Masters of Arts and granted the license to teach. In the ancient University of Bologna this right was granted by authority of the Pope and in the name of the Holy Trinity. We do not this day claim such high authority.

As in any other guild, whether craft or merchant, the master's status was crucial. In theory at least, it separated the men from the boys, the competent from the incompetent. On the way to his master's degree, a student might collect a bachelor's degree in recognition of the fact that he was half-trained, or partially equipped. The doctor's degree was somewhat different. Originally indistinguishable from the master's, the doctor's gradually emerged by a process of escalation into a super magisterial role—first of all in the higher faculties of theology, law, and medicine. It will come as no surprise that the lawyers had a particular and early yen for this special distinction.

These graduations and distinctions are reflected in the quaint and colorful niceties of academic dress.

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. Size is a further variable, as the hoods tend to lengthen from the three feet of the bachelor to the four of the doctor. So the birds are known by their plumage.

With this color and symbolism, which is mediaeval 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. While looking back, however, we also celebrate the achievements of this present generation of students and look forward to the future of these our younger colleagues, whom we now welcome to our midst.

David C. Elliot

Professor of History, Emeritus

ACADEMIC PROCESSION

Chief Marshal

Gary A. Lorden, Ph.D.

Marshals

Diana L. Barkan, Ph.D.

Barbara C. Green, Ph.D.

D. Roderick Kiewiet, Ph.D.

Christoph Koch, Ph.D.

Rudolph A. Marcus, Ph.D.

Jean-Paul Revel, Ph.D.

Faculty Officers

Kim C. Border, Ph.D.

Paul H. Patterson, Ph.D.

Ward Whaling, Ph.D.

MARCHING ORDER

Candidates for the Degree of Bachelor of Science

Candidates for the Degree of Master of Science

Candidates for the Degree of Engineer

Candidates for the Degree of Doctor of Philosophy

Faculty Officers

The Faculty

The Chairs of the Divisions

The Deans

The Provost

The Trustees

The Commencement Speaker

The President

The Chairman of the Board of Trustees

PROGRAM

<i>Organ Prelude</i>	Leslie J. Deutsch, Ph.D.
PROCESSIONAL	The Caltech Convocations Brass and Percussion Ensemble <i>William Bing, M.M., Conductor</i>
PRESIDING	Benjamin M. Rosen <i>Chairman of the Board of Trustees California Institute of Technology</i>
COMMENCEMENT SPEAKER	Gordon E. Moore, Ph.D. <i>Chairman Emeritus, Intel Corporation; Chairman of the Board of Trustees, Emeritus California Institute of Technology</i>
CHORAL SELECTION	The Caltech Glee Clubs <i>Donald G. Caldwell, D.M.A., Conductor</i>
“Hallelujah,” from <i>Messiah</i> George Frideric Handel	
CONFERRING OF DEGREES	David Baltimore, Ph.D. <i>President California Institute of Technology</i>
PRESENTATION OF CANDIDATES FOR DEGREES	
For the Degree of Bachelor of Science	Jean-Paul Revel, Ph.D. <i>Dean of Students</i>
For the Degree of Master of Science	Christopher E. Brennen, Ph.D. <i>Vice President for Student Affairs</i>
For the Degree of Engineer	D. Roderick Kiewiet, Ph.D. <i>Dean of Graduate Studies</i>
For the Degree of Doctor of Philosophy	Dr. Kiewiet
Biology	Elliot M. Meyerowitz, Ph.D. <i>Division Chair</i>

Chemistry and Chemical Engineering	David A. Tirrell, Ph.D. <i>Division Chair</i>
Engineering and Applied Science	Richard M. Murray, Ph.D. <i>Division Chair</i>
Geological and Planetary Sciences	Edward M. Stolper, Ph.D. <i>Division Chair</i>
The Humanities and Social Sciences	John O. Ledyard, Ph.D. <i>Division Chair</i>
Physics, Mathematics and Astronomy	Thomas A. Tombrello, Ph.D. <i>Division Chair</i>

ANNOUNCEMENT OF AWARDS
AND CONCLUDING REMARKS

President Baltimore

ALMA MATER

The Caltech Glee Clubs,
The Caltech Convocations Brass and
Percussion Ensemble, and Organ

“Caltech Alma Mater”

By Manton Barnes, BS '21 EE

*(The audience may join in;
lyrics are found on page 46.)*

RECESSIONAL

The Caltech Convocations Brass
and Percussion Ensemble

Organ Postlude

Dr. Deutsch

You are invited to attend a reception on the
Athenaeum West Lawn following the program.

CANDIDATES FOR DEGREES

Bachelor Of Science

Orkun Akin* *Istanbul, Turkey* Biology
Meredith Ann Alden *Cincinnati, Ohio* Independent Studies Program
Ron Alterovitz* *Rocky River, Ohio* Engineering and Applied Science
Abraham Kwabena Ankumah *Accra, Ghana* Electrical Engineering
David Christopher Antonio *Dallas, Texas* Engineering and Applied Science
Mark Christian Arnesen* *Bloomington, Minnesota* Physics
Jorge Eduardo Avelar *Los Angeles, California* Chemistry
Boris Semyonovich Axelrod *Eagan, Minnesota* Engineering and Applied Science
Kevin Robinson Babcock *Sun Prairie, Wisconsin* Engineering and Applied Science
Onureena Banerjee* *Palo Alto, California* Engineering and Applied Science
Christoph James Baranec *Melbourne, Australia* Astronomy
Mark Orrin Barrett *Vernon Hills, Illinois* Engineering and Applied Science (Mechanical Engineering)
Jeffrey Evan Barrick* *Lubbock, Texas* Chemistry
Alexandra Baugher *Idaho Falls, Idaho* Engineering and Applied Science
Philip Wesley Bell *Atlanta, Georgia* Chemical Engineering
Samantha Robin Bench *Whitefish, Montana* Engineering and Applied Science
Matthew Ryan Bergeron* *Eagle Rock, California* Electrical Engineering
Stephen Michael Bird* *Portage, Michigan* Engineering and Applied Science
Adam Peter Blake *Riverside, Illinois* Physics
Florian Bohn* *Flensburg, Germany* Electrical Engineering
Amanda Lynn Booth *Anchorage, Alaska* Geochemistry
Jeremy Todd Boulton *Eugene, Oregon* Engineering and Applied Science
Laura Anne Brogoch *Vermilion, Ohio* Engineering and Applied Science
Alan Harold Brothers *Dayton, Ohio* Engineering and Applied Science
Scott Samuel Woodruff Bruce *Gilbert, South Carolina* Engineering and Applied Science
Carrie Lynn Bunce *Pittsfield, Massachusetts* Engineering and Applied Science
Timothy Joseph Buschman *North Potomac, Maryland* Biology
Augusto Daniel Callejas *Miami, Florida* Engineering and Applied Science
Jason Custodio Cardema *San Jose, California* Electrical Engineering
Scott Huai-Lei Carnahan* *Niskayuna, New York* Mathematics
Deanna Marie Carrick *Fort Mill, South Carolina* Biology
James A. Catherwood* *Atlanta, Georgia* Chemical Engineering
Christopher Chung-Tien Chang *Palo Alto, California* Mathematics

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

Bachelor of Science continued

- Jim Yu-Chen Chang *Yorba Linda, California* Engineering and Applied Science (Mechanical Engineering)
- Joseph Yu-Shuan Chang* *Houston, Texas* Electrical Engineering
- Kevin Zi-Jun Chao* *Alhambra, California* Biology
- Regina Kar Wuen Cheung *Freehold, New Jersey* Engineering and Applied Science (Mechanical Engineering)
- Elizabeth Chen Chiang* *Beachwood, Ohio* Engineering and Applied Science
- Jit Kee Chin* *Selangor, Malaysia* Physics and Literature
- Daniel Hung-Yeh Chou *Tustin, California* Mathematics
- Herman Chow* *Singapore, Singapore* Mathematics
- Vivian Fung-Mei Chow* *Alhambra, California* Biology
- Faria Rana Chowdhury *Boca Raton, Florida* Electrical Engineering
- Jason Han Chua *Laguna Hills, California* Biology
- Steve Chung *Memphis, Tennessee* Engineering and Applied Science
- Helen Chong Claudio *Richmond, California* Engineering and Applied Science
- Kristin Diane Commer *Shawnee, Kansas* Astronomy
- Joseph V.L. Cook *Bloomington, Illinois* Literature
- James Edward Cooley *Baltimore, Maryland* Physics
- Lisa Cowan *Brownsville, Texas* Chemical Engineering
- Elizabeth Rose Cutler* *Palatine, Illinois* Engineering and Applied Science
- Daniel Patrick Daly *Springfield, Virginia* Applied Physics
- Thomas Anthony Daula *Glen Rock, New Jersey* Applied and Computational Mathematics
- Matthew Zachary Davis* *Greenbelt, Maryland* Engineering and Applied Science
- Yann Roger De Graeve* *Palm Desert, California* Mathematics
- Charles Meno Theodore DeBoer* *Omaha, Nebraska* Engineering and Applied Science (Mechanical Engineering)
- Kristian-Carlo Capacillo DelaCruz *Poway, California* Engineering and Applied Science
- Michael Edward DeSalvo *Marrero, Louisiana* Engineering and Applied Science (Mechanical Engineering)
- Erik Andrew Dill *Fenton, Michigan* Chemistry
- Benjamin Scott Driggs *Oakton, Virginia* Engineering and Applied Science
- Amy Catherine Duello *Stone Mountain, Georgia* Engineering and Applied Science (Mechanical Engineering)
- Bryan Keith Eastin* *Collinsville, Oklahoma* Physics
- Robert Paul Enright *El Cajon, California* Electrical Engineering
- David C. Fang* *Export, Pennsylvania* Electrical Engineering
- Vladimir Dmitri Fedorov* *Richmond, Virginia* Engineering and Applied Science
- Nathan Edward Flowers-Jacobs *Arcadia, California* Physics
- Dennis Ji-Bin Fong *North Potomac, Maryland* Physics
- Jennifer Alicia Fong *San Leandro, California* Chemical Engineering

Bachelor of Science continued

- Peter James Freese* *Omak, Washington* Engineering and Applied Science (Mechanical Engineering) and Economics
- Robin Sean Friedman* *Thousand Oaks, California* Chemistry
- David Jason Gagne *Shapleigh, Maine* Engineering and Applied Science
- Martin Elias Gaitan *Miami, Florida* Engineering and Applied Science (Aeronautics)
- Lu Gan *North Wales, Pennsylvania* Physics
- Jane Garrity* *Okemos, Michigan* Biology
- Peter Michael Gerdes* *Glenview, Illinois* Mathematics
- Dipasri Ghosh *Cherry Hill, New Jersey* Chemistry
- Vladimir Gluzman *San Francisco, California* Mathematics
- Heather Dawn Graven *Littleton, Colorado* Chemical Engineering
- Anthony Ray Griffin* *Baxter, Minnesota* Engineering and Applied Science
- Benjamin John Gudlewski *Mason, Ohio* Physics
- Antal Gyori* *Zalau, Romania* Electrical Engineering
- Andrew Clark Hafer *La Mesa, California* Independent Studies Program
- Anne Catherine Hanna *Libertyville, Illinois* Physics
- Derrick Paul Hasterok *Hoover, Alabama* Geophysics
- Aren Nathaniel Heinze *Houston, Texas* Astronomy
- Matthew James Higbie *Acampo, California* Engineering and Applied Science (Mechanical Engineering)
- Travis James Hime* *Houston, Texas* Physics
- Christopher Michael Hirata* *Deerfield, Illinois* Physics
- Tuomas Robert Holmberg *Bay Park, New York* Applied Physics
- Vit Hradecky* *Prague, Czech Republic* Physics
- Hsiang (Sean) Huang* *Temple City, California* Electrical Engineering
- Jay M. Hubisz *Peabody, Massachusetts* Physics
- Pei-Hua Hung *Edison, New Jersey* Engineering and Applied Science (Mechanical Engineering)
- Katherine Eve Isaacs *Baltimore, Maryland* Physics
- Jenny Marie Francis Ives *Cole Camp, Missouri* Geology
- Stona Reider Jackson *George West, Texas* Chemistry
- Eagle Sunrise Jones *Ashland, Oregon* Engineering and Applied Science
- Joy Melissa Justice *Woodbridge, Virginia* Engineering and Applied Science
- Harry Jye Kao *Olympia, Washington* Engineering and Applied Science
- Anne Elizabeth Kelly *Anchorage, Alaska* Physics
- Iljie Jennifer Kim* *Los Angeles, California* Biology and Literature
- Kurt Arthur Klein *Huntington Beach, California* Geology
- Andrew Hampton Koehl *Huntsville, Texas* Electrical Engineering

Bachelor of Science continued

- Dev Edward Kumar* *Dallas, Texas* Engineering and Applied Science
- Mohana Rama Kumar *Federal Way, Washington* Geophysics
- Jon Jeffrey Ladd *Richmond, Virginia* Chemical Engineering
- Ghee Hwee Lai* *Singapore, Singapore* Applied Physics
- Adam Lawton* *Paramus, New Jersey* Chemistry
- Jonathan Ryan Kyoung Ho Leong *Waipahu, Hawaii* Physics
- Janice Joyce Li* *Hillsborough, California* Electrical Engineering
- Jie De Jacky Liang* *Los Angeles, California* Electrical Engineering and Economics
- Adam Christopher Lichtl* *El Paso, Texas* Physics
- Megan Kathleen Linnehan *Sebastopol, California* Engineering and Applied Science
- Ruokun Liu *Tucson, Arizona* Engineering and Applied Science
- Nita Losoponkul *East Hills, New York* Engineering and Applied Science
- Francis Alexander Macdonald *Moscow, Idaho* Geology
- Howen Mak* *Alhambra, California* Engineering and Applied Science (Mechanical Engineering)
- Elitza Nikolaeva Maneva* *Sofia, Bulgaria* Engineering and Applied Science
- Ewa Matejska *New York City, New York* Engineering and Applied Science
- Bradley Kenneth McCoy *Lewistown, Montana* Physics
- Alice Alexandra Medvedev *Framingham, Massachusetts* Mathematics
- Geoffrey Wilson Meissner* *Chapel Hill, North Carolina* Biology
- Jason T. Meltzer* *Dix Hills, New York* Engineering and Applied Science
- Arjun Menon* *Trichur, India* Astronomy
- Irina Miklovsy *Los Angeles, California* Chemistry
- Seth Louis Miller *Lubbock, Texas* Mathematics
- Benson K. Muite* *Nairobi, Kenya* Engineering and Applied Science (Mechanical Engineering) and Economics
- Alexander Hopkins Muller* *Poland Spring, Maine* Engineering and Applied Science (Aeronautics)
- Daniel John Murphy *Cortlandt Manor, New York* Physics and Economics
- Patrick Nercessian *Upland, California* Electrical Engineering
- Puneet Prashant Newaskar* *New Delhi, India* Electrical Engineering
- Nhien Hao Nguyen* *Irvine, California* Biology
- Peter Thang Nguyen *Ottawa, Ontario, Canada* Chemical Engineering
- Paul Michael Novak *Riverwoods, Illinois* Engineering and Applied Science (Mechanical Engineering)
- Roger C. O'Brient* *Moraga, California* Physics
- Kathryn Midori Oseen-Senda *Edmonton, Alberta, Canada* Applied Physics
- Hitaine Vipin Patel *Gahanna, Ohio* Economics
- Jonathan Broder Penoyar* *South Bend, Washington* Physics
- Amy Robynne Peterson *Shoreview, Minnesota* Engineering and Applied Science

Bachelor of Science continued

- Sean Ariel Pintchovski* *Austin, Texas* Biology
- Brian Daniel Platt* *Bethesda, Maryland* Engineering and Applied Science (Mechanical Engineering)
- Peter Paul Plavchan* *LaGrangeville, New York* Physics
- Michael Jennings Pruett* *New Orleans, Louisiana* Engineering and Applied Science
- Matthew Owen Reese *San Diego, California* Physics
- Christian L. Reichardt* *San Francisco, California* Physics
- Aspen Dawn Richter *Williams, California* Chemistry
- Lori Robison *Houston, Texas* Engineering and Applied Science
- Raphael Y. Rubin *Rochester, New York* Engineering and Applied Science
- Dominika Rytwinska* *Warsaw, Poland* Chemical Engineering
- Trisha Arlene Sando *Thousand Oaks, California* Biology
- Ashwani Pillutla Sastry* *Englewood Cliffs, New Jersey* Mathematics
- Michael Mose Schein* *Fayetteville, Arkansas* Mathematics
- Steven Edward Schell* *Colorado Springs, Colorado* Engineering and Applied Science (Mechanical Engineering)
- Adam Liddle Scott *Sarasota, Florida* Physics
- Denis A. Shcherbakov* *Moscow, Russia* Chemical Engineering
- Susan Mei-Chen Sher* *Burlingame, California* Engineering and Applied Science
- Eric Alan Sherer *Valparaiso, Indiana* Chemical Engineering
- Albert Young-Ming Shih* *Palos Verdes Estates, California* Physics and Mathematics
- Carrie Shilyansky* *San Marino, California* Biology
- Yasufumi Shiraishi* *Ithaca, New York* Engineering and Applied Science
- Vanessa Ann Sih *San Jose, California* Applied Physics
- Ryan Matthew Simkovsky* *Poway, California* Biology
- Micah Steven Stuart Sittig *Brea, California* Applied Physics
- Ronald K. Siu* *San Marino, California* Biology
- Justin David Smith* *Waco, Texas* Engineering and Applied Science
- Kayla Elaine Smith *Santa Cruz, California* Biology
- Linda Soo *Taipei, Taiwan* Applied and Computational Mathematics and Engineering and Applied Science
- Brian Adam Stalder *Colfax, California* Astronomy
- Nathan David Stein *Calgary, Alberta, Canada* Applied Physics
- Shannon Fisher Stewman* *Gibsonia, Pennsylvania* Chemistry
- Naru Sundar *Toronto, Ontario, Canada* Electrical and Computer Engineering
- Serge Sverdlov* *Vacaville, California* Engineering and Applied Science and Economics

Bachelor of Science continued

Barney Oran Switzer *Nashville, Tennessee* Engineering and Applied Science
Yuki David Takahashi* *Shizouka-Ken, Japan* Physics
Eric Robert Tardiff *Macomb, Michigan* Physics
Christian Louis Thomas *Simi Valley, California* Physics
Kathryn Grace Todd* *Ukiah, California* Physics and Literature
Ernest Kien-Keung Tong* *Fort Collins, Colorado* Engineering and Applied Science
Viet Quoc Tran *Beaverton, Oregon* Electrical Engineering
Andrew Tyler Tretten* *Verdi, Nevada* Engineering and Applied Science (Mechanical Engineering)
Dela Tsikata *Accra, Ghana* Engineering and Applied Science
Jason Donald Turner *Allamuchy, New Jersey* Engineering and Applied Science
Melinda Lee Turner* *Woburn, Massachusetts* Independent Studies Program
Eric Preston Tuttle* *Edmonds, Washington* Applied Physics
Lisa Van Hoozer *Kansas City, Missouri* Chemistry
Elizabeth Ruth Verschell* *Brooklyn, New York* Physics
Chia-Jean Wang* *Lake Forest, California* Electrical Engineering
Lawrence C. Wang *Madison, Wisconsin* Engineering and Applied Science
Sarah Marie Wantoch *Overland Park, Kansas* Chemical Engineering
Brian Watkins* *Austin, Texas* Mathematics
Nancy Chi Wei *Santa Clara, California* Biology
Stephen Michael Wexler* *West Hartford, Connecticut* Engineering and Applied Science
Paula Beck Whitten *Carrollton, Georgia* Biology
Rik Williams* *Silverton, Oregon* Astronomy
Nicholas Andrew Wisniewski* *Detroit, Michigan* Physics
Agnieszka Ewa Wojciechowska *Indianapolis, Indiana* Economics
Jessica Ja-Li Wu* *Tasaloosa, Alabama* Chemical Engineering
Eric Chenjian Xu* *Shanghai, China* Engineering and Applied Science
Celeste Evelyn Yang *Santa Barbara, California* Physics
Jackie Sai Yue Yeung* *Arcadia, California* Engineering and Applied Science (Mechanical Engineering) and Economics
Yin Yuen* *San Francisco, California* Applied Physics
Roussislava Stefanova Zaharieva *Sofia, Bulgaria* Engineering and Applied Science
Eugene Zarakhovskiy *Los Angeles, California* Engineering and Applied Science
Summer Ruonan Zhang* *Woodside, New York* Chemistry

Master of Science

- Huirong Ai (*Geology*) B.S., Peking University 1996; M.S., 1999.
- Steven Wayne Alves (*Civil Engineering*) B.S., Harvey Mudd College 2000.
- Roberto Aparicio (*Electrical Engineering*) Licenciado en Electrónica, Benemérita Universidad Autónoma 1999.
- Mustafa Bakkal (*Applied Mechanics*) B.Sc., Istanbul Technical University 1997; M.Sc., 1999.
- David Nicholas Barsic (*Electrical Engineering*) B.S.E.E., University of Iowa 1997.
- Nizar Nooruddin Batada (*Control and Dynamical Systems*) B.S., Carleton University 1998.
- Sanjay Kumar Bhatia (*Chemical Engineering*) B.S., Rensselaer Polytechnic Institute 1998.
- Justin Scott Boland (*Electrical Engineering*) B.S., University of Texas at Dallas 2000.
- Stacey Walker Boland (*Mechanical Engineering*) B.S., University of Texas at Dallas 2000.
- Víctor Borrero Mayora (*Aeronautics*) Baccalauréat and Selectividad, Lycée Français d'Alicante 1998; Ingénieur, École Centrale Paris 2000.
- Christopher Shawn Boxe (*Planetary Science*) B.S., Morehouse College 1999.
- Dane Andrew Boysen (*Materials Science*) B.S., University of Washington 1997.
- Edward Allan Branchaud (*Mechanical Engineering*) B.S., Boston University 2000.
- Evan Ross Brockwell (*Aeronautics*) B.S., Georgia Institute of Technology 1999.
- Shane Byrne (*Planetary Science*) M.Sc., University of Wales 1998.
- Murat Celik (*Aeronautics*) B.S., B.E., The University of Michigan 2000.
- Joseph Jing-Fong Chen (*Electrical Engineering*) B.S.E.E., University of Virginia 1999.
- Chu-Mei Chern (*Geochemistry*) B.Sc., National Cheng Kung University 1999.
- Calum Ronald Inneas Chisholm (*Materials Science*) B.S., Yale College 1995.
- John Myun Choi (*Electrical Engineering*) B.S., State University of New York at Buffalo 1999.
- Ming-Chit Franky Choi (*Aeronautics*) B.S., University of California, San Diego 2000.
- Wing-Yiu Chow (*Electrical Engineering*) B.Eng., The University of Melbourne 2000.
- Serena Hsin-Yi Chung (*Chemical Engineering*) B.S., University of Illinois at Urbana-Champaign 1998.
- Daniel Ray Clendenning (*Social Science*) B.S., Purdue University 1997; M.S., 1999.
- Kaushik Srinivas Dayal (*Aeronautics*) B.Tech., Indian Institute of Technology, Madras 2000.
- Nicholas John DiCeglie, Jr. (*Chemistry*) A.B., Harvard College 1999.
- Boris Dimitrov (*Computer Science*)
- Aaron Charles Eichelberger (*Physics*) B.S. (*Astronomy*), B.S. (*Physics*), University of Maryland, College Park 1997.
- Ramez Ahmed Elgammal (*Applied Physics*) B.S. (*Biology*), H.B.S. (*Chemistry*), Central Michigan University 1996.
- Vladimir Dmitri Fedorov (*Computer Science*) B.S., California Institute of Technology 2001.

Master of Science continued

- Marcel Gavrilu (*Computer Science*) B.S., California Institute of Technology 1997.
- Haoquan Ge (*Mechanical Engineering*) B.S., Rutgers University 2000.
- Radu Georgescu (*Biochemistry and Molecular Biophysics*) B.A., Occidental College 1999.
- Tran Sin Gieng (*Computer Science*) B.S., University of California, Davis 1997.
- Siew Wee Alvina Goh (*Electrical Engineering*) B.S.E. (*Computer Science*), B.S.E. (*Electrical Engineering*), The University of Michigan 2000.
- Robert Golanski (*Social Science*) B.S., Warsaw School of Economics 1997; M.S., 1998; M.Ph., University of Cambridge 1999.
- Lawrence Cary Gunn III (*Electrical Engineering*) B.S., United States Air Force Academy 1995.
- Hossein Hashemi (*Electrical Engineering*) B.S., Sharif University of Technology 1997; M.S., 1999.
- Qing He (*Electrical Engineering*) B.E., Tsinghua University 2000.
- Jean-Philippe Hébral (*Aeronautics*) Diplôme d'Ingénieur, École Centrale Paris 2001.
- Jeremy David Heidel (*Chemical Engineering*) S.B. (*Biology*), S.B. (*Chemical Engineering*), Massachusetts Institute of Technology 1999.
- Gilberto Hernandez, Jr. (*Biology*) B.A., University of California, Los Angeles 1996.
- Vincent Michel Hibon (*Electrical Engineering*) Diplôme de Technologue, École Supérieure de Technologie Électronique 1998; Diplôme d'Ingénieur, École Supérieure d'Ingénieurs en Électrotechnique et Électronique 2001.
- Stephen Richard Hostler (*Mechanical Engineering*) B.S.E., Case Western Reserve University 2000.
- Meredith Laura Howard (*Chemistry*) B.A., Amherst College 1996.
- Mon-Quen Huang (*Electrical Engineering*) B.S.E.E., Cornell University 1999.
- Ali Husain (*Electrical Engineering*) B.S. (*Electrical Engineering*), B.S. (*Economics*), University of Pennsylvania 1998.
- Mandar Mukund Inamdar (*Civil Engineering*) B.Tech., Indian Institute of Technology, Bombay 2000.
- Sidharth Jaggi (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Bombay 2000.
- Joel Jones (*Applied Physics*) B.S.E., The University of Michigan 1995.
- Christopher R. Kankel (*Chemistry*) B.A., Northwestern University 1993.
- Krzysztof Bogdan Kasprzyk (*Social Science*) B.Sc., Warsaw School of Economics 1997; M.Sc., 1998.
- Ben Klemens (*Social Science*) B.A., The University of Chicago 1996.
- Megan Alameda Knight (*Environmental Engineering Science*) B.S. (*Chemistry*), B.S. (*Geography and Environmental Systems*), University of Maryland 2000.
- Robert D. Kolasinski (*Mechanical Engineering*) B.S., Rutgers University 2000.
- Kristopher Lars Kriechbaum (*Mechanical Engineering*) B.S., Carnegie Mellon University 1999.
- William Michal Leblanc (*Social Science*) S.B., Massachusetts Institute of Technology 1999.
- Khim Wee Lee (*Mechanical Engineering*) B.Sc., B.A., University of California, Berkeley 2000.

Master of Science continued

- Daniel H.B. Lieberman (*Aeronautics*) B.Sc., McGill University 2000.
- Matthieu Liger (*Electrical Engineering*) Diplôme d'Ingénieur, École Supérieure d'Ingénieurs en Électrotechnique et Électronique 2001.
- Jiao Lin (*Materials Science*) B.S., Peking University 1996; M.S., Chinese Academy of Science 1999.
- Jamie Wenzel Lindfors (*Environmental Engineering Science*) B.S., University of Minnesota 1999.
- Nathan Jacob Litke (*Computer Science*) B.A., University of Waterloo 1998.
- Yi-Ping Liu (*Environmental Engineering Science*) B.S., California Institute of Technology 2000.
- Jun Lu (*Electrical Engineering*) B.S., Tsinghua University 1992; M.S., 1995; M.S. (*Mechanical Engineering*), California Institute of Technology 2000.
- Natalia Lukina (*Biology*) B.S., Moscow Institute of Physics and Technology 1999; M.S., 2000.
- Shengnian Luo (*Geophysics*) B.S., University of Science and Technology of China 1994.
- Amanda Kathryn Mainzer (*Astronomy*) B.S., Stanford University 1995.
- Todd Philip Meyrath (*Electrical Engineering*) B.S. (*Applied Mathematics*), B.S. (*Physics*), Georgia Institute of Technology 1998; M.S., University of Texas at Austin 2000.
- Robert Carlos Moeller (*Mechanical Engineering*) B.S., University of Southern California 1999.
- Matthew Alexander Morgan (*Electrical Engineering*) B.S., University of Virginia 1999.
- Michela Muñoz Fernández (*Electrical Engineering*) B.S., Universidad de Alcalá 1998; M.S., International Space University 2000.
- John Frank Murphy (*Chemical Engineering*) B.S., Cornell University 1999.
- Matthew Mokihana Muto (*Civil Engineering*) B.S., Harvey Mudd College 2000.
- Elisabeth Sophia Nadin (*Geology*) B.S., University of Rhode Island 1998.
- Purnima Naganathan (*Electrical Engineering*) B.E., PSG College of Technology 2000.
- Terrell Demetris Neal (*Electrical Engineering*) B.S.E.E., Georgia Institute of Technology 2000; B.S. (*Mathematics*), Morehouse College 2000.
- Sheldon Yoshio Okada (*Chemistry*) B.A., University of California, Berkeley 1997.
- Ravi Palanki (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Madras 2000.
- George Tardenat Palocz (*Applied Physics*) B.S., University of California, Santa Barbara 1999.
- Panagiotis Panagopoulos (*Mathematics*) Diploma, University of Patras 1997.
- Eric A. Pape (*Chemical Engineering*) B.S., University of Missouri–Rolla 1999.
- Kevin L. Parkin (*Aeronautics*) M.Phys., University of Leicester 1999.
- Jasmine Upendra Patel (*Electrical Engineering*) B.E., B.V.M. Engineering College, Sardar Patel University 2000.
- Elizabeth Maggie Penn (*Social Science*) B.A., University of California, Berkeley 1999.
- Patricia Persaud (*Geophysics*) B.Sc., University of Houston 1998.
- Samuel Thomas Pfister (*Mechanical Engineering*) S.B., Harvard College 1999.
- Nicolas Frederic Ponchaut (*Aeronautics*) Candidat Ingénieur, Université De Liège 1997; Ingénieur Aérospatiale, 2000.

Master of Science continued

- Daniel James Richardson (*Social Science*) B.S., Virginia Polytechnic Institute and State University 1995.
- Kathleen Marie Richter (*Biology*) B.S., University of Wisconsin-Madison 1998.
- Silvio Savarese (*Electrical Engineering*) Laurea, Università degli Studi di Napoli - Federico II 1998.
- Olga Schneider (*Aeronautics*) Vordiplom, University of Technology 1996; Diplom, 2000.
- Charlotte Annegret Schulten (*Geophysics*) B.S., The University of Chicago 1999.
- Michael James Sekerak (*Aeronautics*) B.S., Illinois Institute of Technology 1999.
- Wenjin Shao (*Physics*) B.S., University of Science and Technology of China 1999.
- Wei Shen (*Chemical Engineering*) B.S., East China University of Science and Technology 1992; M.S., 1995.
- Andrew James Spakowitz (*Chemical Engineering*) B.S., University of Wisconsin-Madison 1999.
- Geoffrey A. Swift (*Materials Science*) A.S., John A. Logan College 1995; B.S., Southern Illinois University 1997; M.S., 1999.
- Shervin Taghavi (*Electrical Engineering*) Diplôme d'Ingénieur, Université de Paris XI 1999.
- Eng Keong Tan (*Mechanical Engineering*) B.S., Cornell University 2000.
- Jeremy Christopher Thorpe (*Electrical Engineering*) B.S., University of California, Riverside 2000.
- Andre Tkacenko (*Electrical Engineering*) B.S., California Institute of Technology 1999.
- Philip C. Tsao (*Electrical Engineering*) B.S.E.E., Georgia Institute of Technology 1999.
- Dave Anton Van Gogh (*Mechanical Engineering*) B.S., University of California, Berkeley 1990.
- Bingwen Wang (*Mechanical Engineering*) B.Eng., Tsinghua University 1998.
- Guodong Wang (*Physics*) B.S., University of Science and Technology of China 1999.
- Shaoyu Wang (*Mathematics*) B.S., Beijing University 1995.
- Brian Watkins* (*Physics*) B.S., California Institute of Technology 2001.
- Benjamin Paul Weiss (*Planetary Science*) B.A., Amherst College 1995.
- Christopher John White (*Electrical Engineering*) B.S., University of Illinois at Urbana-Champaign 1999.
- Richard Edward Wirz (*Aeronautics*) B.S., Virginia Polytechnic Institute and State University 1992.
- Jeremy Witzens (*Electrical Engineering*) Diplôme d'Ingénieur, École Polytechnique 2000.
- Stephen Matthew Wood (*Chemical Engineering*) B.S., Rice University 1999.
- Hui Wu (*Electrical Engineering*) B.E., Tsinghua University 1996; M.S., 1998.
- Jian Wu (*Materials Science*) B.S., Tsinghua University 1999.
- Guoyun Xia (*Environmental Engineering Science*) B.S., Nanjing University 1996; M.S., Chinese Academy of Science 1999.
- Zhimei Yan (*Geophysics*) B.S., Peking University 1996; M.S., 1999.
- Choon Hwai Yap (*Civil Engineering*) B.S., Cornell University 2000.
- Yizhen Zhang (*Mechanical Engineering*) B.S., Tsinghua University 2000.
- Hong Zhuang (*Environmental Engineering Science*) B.S., Beijing Polytechnic University 1991; MPhil., Hong Kong University of Science and Technology 1998.

Engineer

Wei-Jen Su (*Aeronautics*) B.S., Polytechnic University 1998.

Doctor of Philosophy

DIVISION OF BIOLOGY

- Keith B. Brown (*Biology*) B.S., Grambling State University 1992.
Thesis: Comparative Studies of Vulva Development in *C. briggsae*.
- Chieh Chang (*Biology*) B.S., Chung Shan Medical and Dental College 1990; M.S., National Yang-Ming Medical College 1992.
Thesis: Signal Transduction, Regulation, and Developmental Logic of EGFR Signaling in *C. elegans*.
- Yong Chi (*Biology*) B.A., University of California, Berkeley 1993.
Thesis: Negative Regulation of Transcription Factors by Srb10 Cyclin-Dependent Kinase.
- Anita Gould (*Biology*) A.A., Simon's Rock College of Bard 1982; B.A., 1985.
Thesis: Expression of Eph-family Receptor Tyrosine Kinases and Ephrins in the Tadpole of the Frog *Xenopus Laevis*, and Possible Roles in the Development of Retinotectal Topography.
- David Matthew Herman (*Biochemistry and Molecular Biophysics*) B.S., University of California, San Diego 1993.
Thesis: Stereochemically Modified Polyamides for Recognition in Minor Groove of DNA.
- Yukiyasu Kamitani (*Computation and Neural Systems*) B.A., The University of Tokyo 1993; M.S., 1995.
Thesis: Psychobiophysics of Transcranial Magnetic Stimulation.
- Yang Liu (*Biology*) B.S., Peking University 1990.
Thesis: Molecular Mechanism of Sulfated Carbohydrate Recognition: Structural and Biochemical Studies of the Cysteine-Rich Domain of Mannose Receptor.
- Svetlana A. Lyapina (*Biology*) B.S., Moscow State University 1994.
Thesis: Characterization of the Human SCF Ubiquitin Ligases - Structure, Function, and Regulation.
- Warham Lance Martin (*Biochemistry and Molecular Biophysics*) B.A., DePaul University 1989; M.S., California State University, Los Angeles 1995.
Thesis: Protein-Protein Recognition: The Neonatal Fc Receptor and Immunoglobulin G.
- Wenyng Shou (*Biology*) B.A., Pomona College 1993; M.S., California Institute of Technology 1998.
Thesis: Diverse Mechanisms of Regulating the Mitotic Cell Cycle.
- Michael Christopher Vanier (*Computation and Neural Systems*) B.Sc., McGill University 1986; M.Sc., 1990.
Thesis: Realistic Computer Modeling of the Mammalian Olfactory Cortex.

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

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

Christopher Graham Brandow (*Chemistry*) B.S., The University of Tennessee at Chattanooga 1994.

Thesis: Zirconocenes as Models for Homogeneous Ziegler-Natta Olefin Polymerization Catalysts.

Aileen Yulin Chang (*Chemistry*) B.S., The University of Chicago 1994.

Thesis: Cleavage of DNA by Polyamide-*Seco*-CBI Conjugates.

Sing Hwa Chong (*Chemistry*) B.S., University of Kansas 1992.

Thesis: Ultrafast Dynamics of Barrier Crossing: Step-Wise Solvation Effect on Isomerization of *Trans*-Stilbene in Alkane Clusters.

Derek A. Debe (*Chemistry*) B.S., University of Minnesota 1995.

Thesis: Shaving Levinthal with Occam's Razor: Understanding the Rate Limiting Step in Protein Folding.

Xiangdong Fang (*Chemistry*) B.S., University of Science and Technology of China 1988.

Thesis: Developmentally Regulated Transcription Factors in *Drosophila Melanogaster*.

Yi Qin Gao (*Chemistry*) B.S., Sichuan University 1993; M.S., University of Science and Technology of China 1996.

Thesis: Theory of Ozone Isotopic Effects and Various Electron Transfer Reactions.

Shao-Ching Hung (*Chemistry*) B.S., National Tsing Hua University 1993; M.S., 1995.

Thesis: Succinate: Ubiquinone Oxidoreductase from *Paracoccus denitrificans* and Particulate Methane Monooxygenase from *Methylococcus capsulatus* (Bath): Experimental and Theoretical EPR Studies of the Metal Cofactors.

Suzie J. Hwang (*Chemical Engineering and Biology*) B.S., Stanford University 1996; M.S., California Institute of Technology 1998.

Thesis: Rational Design of a New Class of Cyclodextrin-Containing Polymers for Gene Delivery.

Hyotcherl Ihee (*Chemistry*) B.S., Korea Advanced Institute of Science and Technology 1994.

Thesis: Ultrafast Electron Diffraction.

James G. Kempf (*Chemistry*) B.S., State University of New York at Fredonia 1993.

Thesis: Probing Quantum Confinement at the Atomic Scale with Optically Detected Nuclear Magnetic Resonance.

Elizabeth Stratford Krider (*Chemistry*) B.S., Brigham Young University 1994.

Thesis: Synthesis and Spectroscopy of Ruthenium-Modified Nucleic Acids.

Jeremy Soo Pin Kua (*Chemistry*) B.A., Reed College 1996.

Thesis: Computational Studies of Heterogeneous and Homogeneous Catalysis by Late Transition Metals.

Doctor of Philosophy continued

- Re Lai (*Chemistry and Chemical Engineering*) B.S., University of Science and Technology of China 1992; M.S., 1995.
Thesis: Synthesis and Characterization of ZSM-5 Zeolite Membranes.
- Julio Danin Lobo (*Chemistry*) B.S., University of Massachusetts at Amherst 1995; M.S., California Institute of Technology 1997.
Thesis: Experimental Chemical Physics of Droplets and Clusters.
- Lin Luo (*Chemical Engineering*) B.S., University of Science and Technology of China 1993; M.S., The University of Chicago 1994.
Thesis: Partial Oxidation of Propane Over Vanadium-Containing Zeolite Catalysts.
- Michael C. Machczynski (*Chemistry*) B.S., Michigan State University 1995.
Thesis: Physical Characterization of the Rack Effect and Hydrogen Bond Networks in Blue Copper Proteins.
- Heather Dawn Maynard (*Chemistry*) B.S., University of North Carolina at Chapel Hill 1992; M.S., University of California, Santa Barbara 1995.
Thesis: New Materials for Biological Applications Prepared by Olefin Metathesis Reactions.
- Michael Andrew Miller (*Chemistry*) A.A., Saddleback Community College 1990; B.S., University of California, Irvine 1992.
Thesis: Laser Synchronized Optical Nuclear Magnetic Resonance via Larmor Beat Detection—Imaging Electronic Wavefunctions in GaAs Device Structures.
- Michael R. Mish (*Chemistry*) B.S., The University of Arizona 1996.
Thesis: The Application of Trimethylsilyl Diazomethane to the Synthesis of Optically Active Pyrazolines and Related Studies.
- Duncan Odom (*Chemistry*) B.A., New College of the University of South Florida 1993.
Thesis: The Application of Metallointercalators in Recognition of and Charge Transport in Nucleic Acids.
- Michele Louisa Ostraat (*Chemical Engineering*) B.S., Trinity University 1996; M.S., California Institute of Technology
Thesis: Synthesis and Characterization of Aerosol Silicon Nanoparticle Nonvolatile Floating Gate Memory Devices.
- Piboon Pantu (*Chemical Engineering*) B.S., Kasetsart University 1996; M.S., California Institute of Technology 1998.
Thesis: Methane Conversion to Synthesis Gas over Platinum Supported on Rare Earth Oxides.
- Alison Pratt (*Chemical Engineering*) A.B., Dartmouth College 1992; B.S., Northeastern University 1995; M.S., California Institute of Technology 1997.
Thesis: Cell-Responsive Synthetic Biomaterials Formed *in situ*.
- Vsevolod V. Rostovtsev (*Chemistry*) B.S., Russian Academy of Sciences Higher Chemical College 1995; M.S., 1996; M.S., University of Nebraska-Lincoln 1996.
Thesis: Reactions of Platinum(II) Complexes with Dioxigen: Progress Toward Alkane Functionalization.

Doctor of Philosophy continued

- William Joseph Royea (*Chemistry*) B.A., Occidental College 1995.
Thesis: Investigations of Charge-Carrier Dynamics at Semiconductor/Liquid Interfaces.
- Melanie Sarah Sanford (*Chemistry*) B.S., Yale College 1996.
Thesis: Synthetic and Mechanistic Investigations of Ruthenium Olefin Metathesis Catalysts.
- Jeremy Tyson Starr (*Chemistry*) B.S., Santa Clara University 1996.
Thesis: Studies Directed Toward the Synthesis of Palau'amine and Axinellamines A-D.
- Steven Henry Szczepankiewicz (*Chemistry*) B.S., Canisius College 1995.
Thesis: Surface Chemistry of TiO₂ Photocatalysts.
- Faik Akif Tezcan (*Chemistry*) B.A., Macalester College 1995.
Thesis: Reactions of Heme Proteins in Solutions and Crystals.
- Craig S. Tomooka (*Chemistry*) B.S., University of California, Irvine 1996.
Thesis: Nitrogen Atom-Transfer Incorporating Metal Complexes as Reagents or Catalysts.
- Natalie Dawn Winblade (*Chemical Engineering and Biology*) B.S., University of Washington 1995; M.S., California Institute of Technology 1997.
Thesis: Blocking Adhesion to Cell and Tissue Surfaces via Steric Stabilization with Graft Copolymers Containing Poly(Ethylene Glycol) and Phenylboronic Acid.
- Chi-Kin Wong (*Chemistry*) B.S., The Chinese University of Hong Kong 1994.
Thesis: Spectroscopic Studies of Gas-Phase Molecular Clusters.
- Jeffrey Charles Yoder (*Chemistry*) B.S., Texas A&M University 1995.
Thesis: Model Studies of Ziegler-Natta Olefin Polymerization Using Group 3 and Group 4 Metallocenes.
- Todd Ross Younkin (*Chemistry*) B.S., University of Florida 1996.
Thesis: Polymerization of Functionalized Olefins with Neutral Group Ten Catalysts.
- Hong Zhong (*Chemistry*) S.B., Massachusetts Institute of Technology 1996.
Thesis: Ancillary Ligand Effects: From Zirconium(IV)-Catalyzed Homogeneous Propylene Polymerization to Platinum(II)-Mediated C-H Bond Activation.
- Weijun Zhou (*Chemical Engineering*) B.S., University of Science and Technology of China 1993; M.S., California Institute of Technology 1998.
Thesis: Dynamics and Shear Alignment Behavior of a Model Thermotropic Liquid Crystalline Polymer.
- Deanna Lynn Zubris (*Chemistry*) B.S., University of Rochester 1995.
Thesis: Investigations of the Origin of Stereocontrol in Syndiospecific Ziegler-Natta Polymerizations.

Doctor of Philosophy continued

DIVISION OF ENGINEERING AND APPLIED SCIENCES

- Sony John Akkarakaran (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Bombay 1996; M.S., California Institute of Technology 1997.
Thesis: Filter Bank Optimization with Applications in Noise Suppression and Communications.
- Siu Kui Au (*Civil Engineering*) B.E., Hong Kong University of Science and Technology 1995; M.S., 1997.
Thesis: On the Solution of First Excursion Problems by Simulation with Applications to Probabilistic Seismic Performance Assessment.
- Ashish Ishwar Singh Bhardwaj (*Applied Physics*) B.Sc., Indian Institute of Technology, Kharagpur 1994; M.Sc., 1996; M.S., California Institute of Technology 1998.
Thesis: All-Optical Logic Circuits Based on the Polarization Properties of Non-Degenerate Four-Wave Mixing.
- Joseph Gregory Billock (*Electrical Engineering*) B.S., Walla Walla College 1994; M.S., California Institute of Technology 1995.
Thesis: Attentional Control of Complex Systems.
- John Joseph Blandino (*Mechanical Engineering*) B.S., Rensselaer Polytechnic Institute 1987; S.M., Massachusetts Institute of Technology 1989.
Thesis: Application of Diamond Films to Electric Propulsion: Low Energy Sputter Yield Measurement and MPD Plasma Assisted Chemical Vapor Deposition.
- Elizabeth Boer (*Applied Physics*) B.Sc., McGill University 1994; M.S., California Institute of Technology 1996.
Thesis: Synthesis, Passivation and Charging of Silicon Nanocrystals.
- Sven Cecile Rene Bossuyt (*Applied Physics*) Kandidaat Burgerlijk Ingenieur, Vrije Universiteit Brussel 1992; Burgerlijk Materiaalkundig Ingenieur, 1995; M.S., California Institute of Technology 1997.
Thesis: Microstructure and Crystallization Behavior in Bulk Glass Forming Alloys.
- Eric Noboru Burcsu (*Aeronautics and Materials Science*) B.S., North Carolina State University 1996; M.S., California Institute of Technology 1997.
Thesis: Investigation of Large Strain Actuation in Barium Titanate.
- Ming Cai (*Electrical Engineering*) B.S., Tsinghua University 1995; M.S., California Institute of Technology 1998.
Thesis: Optical Fiber Taper Coupled Glass Microsphere Resonators.
- Claudine Minnie Chen (*Applied Physics and Environmental Engineering Science*) B.S., University of North Carolina at Chapel Hill 1995; M.S., California Institute of Technology 1997.
Thesis: Polycrystalline Silicon Thin Films for Photovoltaics.
- Weng Ki Ching (*Environmental Engineering Science and Aeronautics*) B.A., B.S., Boston University 1993.
Thesis: Disinfection by Pulsed Power Discharges.

Doctor of Philosophy continued

- Benjamin Bin Chow (*Aeronautics and Business, Economics and Management*) B.S., University of California, Los Angeles 1995; M.S., 1996; M.S., California Institute of Technology 1998.
Thesis: Application of Dynamic Fracture Mechanics to the Investigation of Catastrophic Failure in Aircraft Structures.
- David Rea Cocker III (*Environmental Engineering Science and Chemical Engineering*) B.S. (*Chemistry*), B.S. (*Environmental Engineering*), University of California, Riverside 1996; M.S., California Institute of Technology 1998.
Thesis: Chamber Investigations of Secondary Organic Aerosol Formation.
- Demirkan Coker (*Aeronautics and Geophysics*) B.S., Middle East Technical University 1986; M.S., Wright State University 1990; M.S., University of Dayton 1993.
Thesis: Dynamic Initiation and Propagation of Cracks in Unidirectional Composite Plates.
- Yael Dubowski (*Environmental Engineering Science and Chemistry*) B.Sc., The Hebrew University of Jerusalem 1993; M.Sc., 1996; M.S., California Institute of Technology 1998.
Thesis: Photochemical Transformations in Ice: Implications for the Fate of Chemical Species.
- Olivier Duchemin (*Aeronautics and Planetary Science*) Diplôme d'Ingénieur, École Nationale Supérieure des Ingénieurs des Études et Techniques d'Armement 1993; M.S., California Institute of Technology 1995.
Thesis: An Investigation of Ion Engine Erosion by Low Energy Sputtering.
- Mark Edward Duttweiler (*Mechanical Engineering*) B.S., Rice University 1995; M.S., California Institute of Technology 1996.
Thesis: Surge Instability on a Cavitating Propeller.
- Christopher Adam Eckett (*Aeronautics and Planetary Science*) B.E., University of Queensland 1993; M.S., California Institute of Technology 1995.
Thesis: Numerical and Analytical Studies of the Dynamics of Gaseous Detonations.
- Daniel Clark Fain (*Computation and Neural Systems*) B.S., B.A., Evergreen State College 1992.
Thesis: Kinematic Measurement and Feature Sets for Automatic Speech Recognition.
- Chengcong Charles Fan (*Electrical Engineering*) B.E., The Cooper Union 1995; M.S., California Institute of Technology 1996.
Thesis: Fault-Tolerant Cluster of Networking Elements.
- Daniel E. Giammar (*Environmental Engineering Science and Geochemistry*) B.S., Carnegie Mellon University 1996; M.S., California Institute of Technology 1998.
Thesis: Geochemistry of Uranium at Mineral-Water Interfaces: Rates of Sorption-Desorption and Dissolution-Precipitation Reactions.
- Stephen Clarke Glade (*Materials Science*) B.S., Georgia Institute of Technology 1994; M.S., California Institute of Technology 1998.
Thesis: The $\text{Cu}_{47}\text{Ti}_{34}\text{Zr}_{11}\text{Ni}_8$ Glass-Forming Alloy: Thermophysical Properties, Crystallization, and the Effect of Small Alloying Additions On the Thermal Stability.

Doctor of Philosophy continued

- Nathan Ray Good (*Applied Physics*) B.S., University of Alabama 1996; M.S., California Institute of Technology 1998.
Thesis: The Influence of Texture on the Magnetoelastic Properties of Polycrystalline TbDy Alloys.
- Charles Inmyong Grosjean (*Electrical Engineering*) B.S., California Institute of Technology 1994; M.S., California Institute of Technology 1995.
Thesis: Silicone MEMS for Fluidics.
- Pradeep R. Guduru (*Aeronautics and Materials Science*) B.Tech., Sri Venkateswara University College of Engineering 1993; M.E., Indian Institute of Science 1994.
Thesis: An Investigation of Dynamic Failure Events in Steels Using Full Field High-Speed Infrared Thermography and High-Speed Photography.
- Freddy Hansen (*Applied Physics*) M.Sc., Chalmers University of Technology 1993; M.S., California Institute of Technology 1996.
Thesis: Laboratory Simulations of Solar Prominences.
- Adrian Hightower (*Materials Science*) B.S., California Institute of Technology 1995; M.S., 1998.
Thesis: Lithium Electronic Environments in Rechargeable Battery Electrodes.
- Cory James Hill (*Applied Physics*) B.A., B.S., University of Southern California 1996; M.S., California Institute of Technology 1998.
Thesis: Investigation of Spin Injection and Optical Imaging with Scanning Probe Microscopy Techniques.
- Wen Hsuan Hsieh (*Electrical Engineering and Biology*) B.S., California Institute of Technology 1994; M.S., California Institute of Technology 1995.
Thesis: MEMS Thin Film Teflon Electret Condenser Microphones.
- Yun Hsu (*Mechanical Engineering*) B.S., University of Arizona 1996; M.S., California Institute of Technology 1997.
Thesis: Rotordynamic Forces Generated by Annular Leakage Flows in Centrifugal Pumps.
- Gang Hu (*Applied and Computational Mathematics*) B.S., Tsinghua University 1995.
Thesis: Singularity Formation in Three-Dimensional Vortex Sheets.
- Ying Huang (*Aeronautics and Computer Science*) B.E., Tsinghua University 1995; M.S., California Institute of Technology 1996.
Thesis: Scanning Tunneling Microscopy and Digital Image Correlation in Nanomechanics Investigations.
- Lara Hughes (*Environmental Engineering Science*) B.S., Washington University 1994; M.S., California Institute of Technology 1996.
Thesis: Evolution of Atmospheric Aerosols Along Trajectories Crossing the Los Angeles Basin.

Doctor of Philosophy continued

- Giorgio C. Isella (*Aeronautics and Control and Dynamical Systems*) Laurea, Politecnico di Milano 1994.
Thesis: Modeling and Simulation of Combustion Chamber and Propellant Dynamics and Issues in Active Control of Combustion Instabilities.
- Ali Jadbabaie (*Control and Dynamical Systems*) B.S., Sharif University of Technology 1995; M.S., University of New Mexico 1997.
Thesis: Receding Horizon Control of Nonlinear Systems: A Control Lyapunov Function Approach.
- Hui Jin (*Electrical Engineering*) B.S., California Institute of Technology 1998.
Thesis: Analysis and Design of Turbo-Like Codes.
- Choongnyun Paul Kim (*Materials Science*) B.S., University of South Florida 1994.
Thesis: Ductile Phase Reinforced Bulk Metallic Glass Composites Formed by Chemical Partitioning.
- Vincent F. Koosh (*Electrical Engineering*) B.S., M.S., The Johns Hopkins University 1994.
Thesis: Analog Computation and Learning in VLSI.
- Roger Gérard Matthias Paul Koumans (*Electrical Engineering*) B.S., Eindhoven University of Technology 1994; M.S., 1994; M.S., California Institute of Technology 1996.
Thesis: Semiconductor Mode-Locked Lasers: Modeling, Characterization and Applications.
- Paul Samuel Krueger (*Aeronautics and Dynamics and Controls*) B.S., University of California, Berkeley 1997; M.S., California Institute of Technology 1998.
Thesis: The Significance of Vortex Ring Formation and Nozzle Exit Over-Pressure to Pulsatile Jet Propulsion.
- John Lindal (*Electrical Engineering*) B.S., California Institute of Technology 1994; M.S., California Institute of Technology 1995.
Thesis: An Investigation of Several Document Classification Algorithms Leading to the Design of an Autonomous Software Agent for Locating Specific, Relevant Information on the World Wide Web.
- Wenhai Liu (*Electrical Engineering*) B.S., Tsinghua University 1992; M.S., The University of Chicago 1995.
Thesis: Holographic Resolution and Its Application in Memory and Imaging.
- Murtuza Lokhandwalla (*Aeronautics and Applied Computation*) B.E., Victoria Jubilee Technical Institute 1994; M.E., Indian Institute of Science 1996.
Thesis: Damage Mechanisms in Shock Wave Lithotripsy (SWL).
- Michael Louie (*Applied and Computational Mathematics*) B.Sc., Victoria University of Wellington 1988; B.Sc., 1989; M.Sc., 1992.
Thesis: Numerical Study of Pattern Forming Processes in Models of Rotating Rayleigh-Bénard Convection.

Doctor of Philosophy continued

Lin Ma (*Mechanical Engineering*) B.S., Beijing University 1996; M.S., California Institute of Technology 1997.

Thesis: Robust Mask-Layout and Process Synthesis in Micro-Electro-Mechanical-Systems (MEMS) Using Genetic Algorithms.

Michael Edward Manley (*Materials Science*) B.S.M.E., University of Massachusetts, Lowell 1994; M.S., California Institute of Technology 1998.

Thesis: From Elementary Excitations to Microstructures: The Thermodynamics of Metals and Alloys across Length Scales.

Neelesh B. Mehta (*Electrical Engineering*) B.Tech., Indian Institute of Technology, Madras 1996; M.S., California Institute of Technology 1997.

Thesis: Impact of User Mobility on Resource Allocation Schemes in Cellular Radio Systems.

Murat Meşe (*Electrical Engineering*) B.S., Bilkent University 1996; M.S., California Institute of Technology 1997.

Thesis: Image Halftoning and Inverse Reconstruction Problems with Considerations to Image Watermarking.

Jean-François Roland Molinari (*Aeronautics and Applied and Computational Mathematics*) Ingenieur, Université de Technologie de Compiègne 1996; M.S., California Institute of Technology 1997.

Thesis: Three-Dimensional Finite Element Analysis of Impact Damage and Erosion of Metallic Targets.

Christophe Moser (*Electrical Engineering and Economics*) B.S., Swiss Institute of Technology 1993; M.S., California Institute of Technology 1997.

Thesis: Optical Information Processing.

Christopher Glenn Nolte (*Environmental Engineering Science and Japanese*) B.S., Stanford University 1991; M.S., California Institute of Technology 1994.

Thesis: Polar Organic Compounds in Fine Particulate Matter Sources and in the Urban Atmosphere.

Mika Nyström (*Computer Science*) S.B., Massachusetts Institute of Technology 1994; M.S., California Institute of Technology 1997.

Thesis: Asynchronous Pulse Logic.

Michael V. OL (*Aeronautics and Applied and Computational Mathematics*) B.S.E., The University of Michigan 1992; M.S.E., 1994.

Thesis: The Passage Toward Stall of Nonslender Delta Wings at Low Reynolds Number.

Oskar J. Painter (*Electrical Engineering*) B.A.Sc., University of British Columbia 1994; M.S., California Institute of Technology 1995.

Thesis: Optical Nanocavities in Two-Dimensional Photonic Crystal Planar Waveguides.

Doctor of Philosophy continued

- Tatiana B. Piatina (*Environmental Engineering Science and Chemistry*) B.S., Mendeleev Moscow University of Chemical Technology 1989.
Thesis: Studies of Metal-Organic Interactions with Model Synthetic and Natural Ligands Applicable to Natural Waters.
- Dan Raymond Provenzano (*Applied Physics*) B.S., University of California, Santa Barbara 1994; M.S., California Institute of Technology 1996.
Thesis: From Semiconductor Lasers to Fiber Bragg Grating Lasers in Optical Communications.
- Winston Pun (*Mechanical Engineering*) B.A.Sc., University of Toronto 1994; M.S., California Institute of Technology 1995.
Thesis: Measurements of Thermo-Acoustic Coupling.
- Yue Qi (*Materials Science and Computer Science*) B.E. (*Materials Science and Engineering*), B.E. (*Computer Science*), Tsinghua University 1996; M.S., California Institute of Technology 1998.
Thesis: Molecular Dynamics (MD) Studies on Phase Transformation and Deformation Behavior in FCC Metals and Alloys.
- Adam Rasheed (*Aeronautics and Business, Economics and Management*) B.E., Carleton University 1995; M.S., California Institute of Technology 1998.
Thesis: Passive Hypervelocity Boundary Layer Control Using an Ultrasonically Absorptive Surface.
- Gregory Charles Roberts (*Environmental Engineering Science and Planetary Science*) B.A., B.S., Kansas State University 1994; M.S., California Institute of Technology 1995.
Thesis: Cloud Condensation Nuclei in the Amazon Basin: Their Role in a Tropical Rainforest.
- Tina M. Salmassi (*Environmental Engineering Science and Chemistry*) B.S., University of California, Los Angeles 1996; M.S., California Institute of Technology 1998.
Thesis: Bacterial Oxidation of Arsenite at Hot Creek: Characterization of Biofilm Communities and Isolation of Novel Bacteria Associated with Aquatic Macrophytes.
- Omprakash Samudrala (*Aeronautics and Geophysics*) B.Eng., Andhra University 1991; M.Eng., Indian Institute of Science, Bangalore 1993.
Thesis: Subsonic and Intersonic Crack Growth along Weak Planes and Bimaterial Interfaces.
- Sandeep Bhalchandra Sane (*Aeronautics and Business, Economics and Management*) B.Tech., Indian Institute of Technology, Bombay 1995; M.S., California Institute of Technology 1996.
Thesis: Time-Dependent Compressibility of Poly(Methyl Methacrylate) (PMMA): An Experimental and Molecular Dynamics Investigation.
- Fidel Santamaria (*Computation and Neural Systems*) Physicist, Universidad Nacional Autónoma de Mexico 1994; M.Sc., 1995.
Thesis: Processing of Mossy Fiber Activity in the Cerebellar Cortex: A Combination of Computer Modeling and Electrophysiological Experiments.

Doctor of Philosophy continued

- Eve Meryl Schooler (*Computer Science*) B.S., Yale College 1983; M.S., University of California, Los Angeles 1988; M.S., California Institute of Technology 1996.
Thesis: Why Multicast Protocols (Don't) Scale: An Analysis of Multipoint Algorithms for Scalable Group Communication.
- Claude Seywert (*Aeronautics and Control and Dynamical Systems*) Diplom, Eidgenossische Technische Hochschule Zurich 1991; Schlussdiplom, 1995; M.S., California Institute of Technology 1996.
Thesis: Combustion Instabilities: Issues in Modeling and Control.
- Jerry Wei-Jen Shan (*Aeronautics and Electrical Engineering*) B.S., California Institute of Technology 1995; M.S., 1996.
Thesis: Mixing and Isosurface Geometry in Turbulent Transverse Jets.
- Gregory Joseph Steckman (*Electrical Engineering*) B.S., University of California, San Diego 1995; M.S., California Institute of Technology 1997.
Thesis: Holographic Recording in Polymeric Materials with Applications.
- Kea-Tiong Tang (*Electrical Engineering*) B.S., National Taiwan University 1996; M.S., California Institute of Technology 1998.
Thesis: Neuromorphic VLSI Circuits for an Electronic Nose Chip.
- Mayya Tokman (*Applied and Computational Mathematics*) B.S., University of California, Los Angeles 1995.
Thesis: Magneto-hydrodynamic Modeling of Solar Magnetic Arcades Using Exponential Propagation Methods.
- Ashok Burton Tripathi (*Mechanical Engineering and Materials Science*) B.S., Cornell University 1993; M.S., California Institute of Technology 1994.
Thesis: *In situ* Diagnostics for Metalorganic Chemical Vapor Deposition of YBCO.
- Katsumi Watanabe (*Computation and Neural Systems*) B.A., The University of Tokyo 1995; M.A., 1997.
Thesis: Crossmodal Interaction in Humans.
- Yun Ye (*Materials Science*) B.E., Tsinghua University 1995; M.S., California Institute of Technology 1997.
Thesis: Interaction of Hydrogen with Novel Carbon Materials.
- Chengxiang Rena Yu (*Aeronautics and Applied and Computational Mathematics*) B.E., Beijing University of Aeronautics and Astronautics 1994; M.S., California Institute of Technology 1997.
Thesis: Three-Dimensional Cohesive Modeling of Impact Damage of Composites.
- Yunfeng Zhang (*Applied Mechanics*) B.E., Tongji University 1993; M.E., Tsinghua University 1996.
Thesis: Semi-Active Control of Dynamically Excited Structures Using Active Interaction Control.
- Lavi Rizki Zuhail (*Aeronautics*) B.Sc., University of Maryland 1996; M.S., California Institute of Technology 1997.
Thesis: Formation and Near-Field Dynamics of a Wing Tip Vortex.

Doctor of Philosophy continued

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

- Emily Elizabeth Brodsky (*Geophysics*) B.A., Harvard College 1995.
Thesis: Studies in Fluid Dynamics as Applied to Seismology and Volcanology.
- Leo Eisner (*Geophysics*) Magister, Charles University 1994.
Thesis: A Reciprocity Method for Multiple Source Simulations.
- Julia S. Goreva (*Geochemistry*) B.S., Moscow State University 1993; M.S., California Institute of Technology 1997.
Thesis: Origin of Th/U Variations in Chondritic Meteorites.
- Jeanne L. Hardebeck (*Geophysics*) A.B., Cornell University 1993; M.S., California Institute of Technology 1997.
Thesis: The Crustal Stress Field in Southern California and its Implications for Fault Mechanics.
- Yuan-Tai Lee (*Planetary Science and Astronomy*) B.S., National Taiwan University 1986; M.S., 1989.
Thesis: Atmospheric Chemistry and Transport Modeling in the Outer Solar System.
- Elisabeth Jeanne Bailey Moyer (*Planetary Science and Environmental Engineering Science*) B.S., Stanford University 1990.
Thesis: Tracers of Rapid Transport in the Lower Stratosphere.
- Sidao Ni (*Geophysics and Computer Science*) B.S., University of Science and Technology of China 1993; M.S., 1996; M.S., California Institute of Technology 1998.
Thesis: 2D Modeling of Lower Mantle Structure with WKM Synthetics.
- Gregory S. Okin (*Geochemistry*) B.A., Middlebury College 1995; M.S., California Institute of Technology 1997.
Thesis: Wind-Driven Desertification: Process Modeling, Remote Monitoring, and Forecasting.
- Alexey A. Pankine (*Planetary Science and Fluid Mechanics and Stochastic Processes*) Diploma, Moscow State University 1994.
Thesis: Low Order Model of Martian Circulation and Interannual Variability of Global Dust Storms.
- Chunhua Qi (*Planetary Science and Astronomy*) B.S., Peking University 1995.
Thesis: Aperture Synthesis Studies of the Chemical Composition of Protoplanetary Disks and Comets.
- Anthony Domenick Toigo (*Planetary Science and Mechanical Engineering*) B.A., Cornell University 1992; M.S., California Institute of Technology 1994.
Thesis: Behavior of Dust in the Martian Atmosphere.
- Hui Zhang (*Planetary Sciences and Environmental Engineering Science*) B.S., Peking University 1992; M.S., California Institute of Technology 1996.
Thesis: Spectroscopic Studies of N₂O and HNO₄: A Window into the Global Biogeochemistry of Nitrogen.

Doctor of Philosophy continued

DIVISION OF HUMANITIES AND SOCIAL SCIENCES

- Christopher Madden Anderson (*Social Science*) Sc.B., Brown University 1996.
Thesis: Behavioral Models of Strategies in Multi-armed Bandit Problems.
- Tara Lee Butterfield (*Social Science*) B.A., University of California, Berkeley 1990;
M.S., California Institute of Technology 1997.
Thesis: Awakening a Sleeping Giant: The Riddle of Latino Political Participation.
- Leslie Rachel Fine (*Social Science*) B.A., Wesleyan University 1994; M.S., California
Institute of Technology 1998.
Thesis: Cooperative and Market-Based Solutions to Pollution Abatement Problems.
- Angela A. Hung (*Social Science*) B.A., Rice University 1995; M.A., University of
Virginia 1997; M.S., California Institute of Technology 1998.
Thesis: A Theoretical and Empirical Study of Addiction.
- John Wiggs Patty (*Social Science*) B.A., University of North Carolina at Chapel Hill 1996.
Thesis: Voting Games with Incomplete Information.
- Reginald Eric Roberts (*Social Science*) A.A., El Camino College 1990; B.A., California
Polytechnic State University, San Luis Obispo 1993; M.S., Carnegie Mellon
University 1995; M.S., California Institute of Technology 1997.
Thesis: Protecting the Public Welfare and Morals: Political Institutions, Federalism,
and Prohibition, 1834–1934.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

- Robert Andrew Beach Jr. (*Physics*) B.S., California Polytechnic State University,
San Luis Obispo 1995.
Thesis: Column III Nitride Growth, Characterization and Devices.
- Brendan P. Crill (*Physics*) Sc.B., Brown University 1995.
Thesis: A Measurement of the Angular Power Spectrum of the Cosmic Microwave
Background with a Long Duration Balloon-Borne Receiver.
- Roy R. Gal (*Astronomy*) B.A., Columbia University 1994.
Thesis: The Northern Sky Optical Cluster Survey: Galaxy Clusters from Five
Thousand Square Degrees of DPOSS.
- Walter D. Goldberger (*Physics*) S.B., Massachusetts Institute of Technology 1997.
Thesis: Brane Models and the Hierarchy Problem.
- Alexa Welsh Harter (*Physics*) Sc.B., Brown University 1991; M.S., California Institute
of Technology 1996.
Thesis: The Heat Capacity of Superfluid ^4He in the Presence of a Constant Heat Flux
Near λ .
- Fredrick August Jenet (*Physics*) S.B., Massachusetts Institute of Technology 1992.
Thesis: High Time Resolution Observations of Radio Pulsars: The First Detection of

Doctor of Philosophy continued

Coherent Emission.

John Steffen Jensen (*Physics*) B.S., California Polytechnic State University, San Luis Obispo 1995.

Thesis: Measurement of the Neutron (^3He) Spin Structure Function at Low Q^2 : A Connection between the Bjorken and Drell-Hearn-Gerasimov Sum Rules.

Rowan Killip (*Mathematics*) B.S., The University of Auckland 1995; M.S., 1996.

Thesis: Perturbations of One-Dimensional Schrödinger Operators Preserving the Absolutely Continuous Spectrum.

Marc Jason Kuchner (*Astronomy and Physics*) A.B., Harvard College 1994.

Thesis: Exozodiacal Dust.

Jason L. Maron (*Physics*) B.S. (*Mathematics*), B.S. (*Physics*), University of Wisconsin-Madison 1993; M.S., California Institute of Technology 1996.

Thesis: Magnetohydrodynamic Turbulence.

James E. Mason (*Physics*) B.S., Metropolitan State College 1994.

Thesis: Signal Extraction and Optical Design for an Advanced Gravitational Wave Interferometer.

Melissa Masae Midzor (*Physics*) B.A. (*Physics and Sociology*), University of Colorado, Boulder 1992; M.S., California Institute of Technology 1995.

Thesis: Ferromagnetic Resonance Force Microscopy.

Stephen M. Ouellette (*Physics*) B.S., University of Maine 1992; M.S., California Institute of Technology 1995.

Thesis: $SU(3)$ Chiral Symmetry in Non-Relativistic Field Theory.

Costin Radu Popescu (*Physics*) A.B., Harvard College 1994.

Thesis: Branes, Brane Actions and Applications to Field Theory.

Jagmit Singh Sandhu (*Astronomy*) B.Tech., Indian Institute of Technology, Kanpur 1991.

Thesis: High Precision Dual Frequency Timing of Millisecond Pulsars.

Alexander Shvorob (*Physics*) B.S., Moscow Institute of Physics and Technology 1994.

Thesis: A Study of W Boson Properties with Four-Jet W^+W^- Events at LEP.

Yong Xu (*Physics*) B.S., Tsinghua University 1995.

Thesis: Analytical and Numerical Studies of Waveguiding and Coupling in Periodic Dielectric Materials.

PRIZES AND AWARDS

Prizes and awards are listed only for those students receiving degrees in 2001, and include prizes and awards received by them in previous years.

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.

Recipient to be announced at commencement.

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.

2001 *Mark Orrin Barrett, Iljie Jennifer Kim*

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.

2001 *Jit Kee Chin*

ROSALIND W. ALCOTT MERIT SCHOLARSHIP, CALTECH PRIZE
SCHOLARSHIP, CARNATION SCHOLARSHIP, AND JOHN STAUFFER
MERIT SCHOLARSHIP

Each year Caltech awards these prizes for academic excellence to undergraduates. They are based solely on merit (selection is made on the basis of grades, faculty recommendations, and demonstrated research productivity) with no consideration given to need or any other nonacademic criteria.

1999 *Travis James Hime*
Michael Mose Schein

2000 *Orkun Akin*
Mark Christian Arnesen
Jeffrey Evan Barrick
Jit Kee Chin
Peter James Freese
Christopher Michael Hirata
Eagle Sunrise Jones
Dominika Rytwinska

Ashwani Pillutla Sastry
Michael Mose Schein
Steven Edward Schell
Eric Preston Tuttle
Brian Watkins
Jessica Ja-Li Wu
Summer Ruonan Zhang

2001 *Orkun Akin*
Ron Alterovitz
Jeffrey Evan Barrick
Jit Kee Chin
Vladimir Dmitri Fedorov
Peter James Freese
Christopher Michael Hirata
Vit Hradecky

Jie-De Jacky Liang
Christian Louis Reichardt
Michael Mose Schein
Steven Edward Schell
Carrie Shilyansky
Brian Watkins
Jessica Ja-Li Wu
Summer Ruonan Zhang

CHARLES D. BABCOCK AWARD

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

1996 *Christopher Adam Eckett*

2000 *Murtuza Lokhandwalla*

WILLIAM F. BALLHAUS PRIZE

Awarded to aeronautics students for outstanding doctoral dissertations.

2001 *Christopher Adam Eckett, Pradeep R. Guduru*

ERIC TEMPLE BELL UNDERGRADUATE MATHEMATICS RESEARCH PRIZE

Awarded to one or more juniors or seniors for outstanding original research in mathematics.

1999 *Scott Huai-Lei Carnahan*

2000 *Peter Michael Gerdes*

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.

1998 *Travis James Hime*

ROLF D. BUHLER MEMORIAL AWARD IN AERONAUTICS

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

1995 *Christopher Adam Eckett*

1998 *Paul Samuel Krueger*

2001 *Nicolas Frederic Ponchaut*

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

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

2001 *Gang Hu, Mayya Tokman*

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.

2001 *Mark Edward Duttweiler, Paul Samuel Krueger*

DONALD S. CLARK MEMORIAL AWARDS

May be 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.

2000 *Alexander Hopkins Muller, Melinda Lee Turner*

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.

2001 *Eric Noboru Burcsu*

DEANS' CUP AND DIRECTOR OF RESIDENCE LIFE AND MASTER'S AWARD

Two awards, selected by the Deans, the Director of Residence 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.

2000 *Amy Catherine Duello, Residence Life and Master's Award*

2001 *Heather Dawn Graven, Dean's Cup*

Alexander Hopkins Muller, Dean's Cup

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.

1998 *Suzie J. Hwang*

EVERHART DISTINGUISHED GRADUATE STUDENT LECTURER AWARD

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

2000 *Brendan P. Crill, Suzie J. Hwang*

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.

2001 *Melinda Lee Turner*

LAWRENCE L. AND AUDREY W. FERGUSON PRIZE

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

2001 *Wenying Shou*

RICHARD P. FEYNMAN PRIZE IN THEORETICAL PHYSICS

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

2001 *Christopher Michael Hirata*

HAREN LEE FISHER MEMORIAL AWARD IN JUNIOR PHYSICS

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

2000 *Christopher Michael Hirata*

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.

2000 *Peter James Freese*

JACK E. FROEHLICH MEMORIAL AWARD

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

2000 *Christopher Michael Hirata*

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.

2001 *Keith B. Brown*
Daniel E. Giammer

GEORGE W. GREEN MEMORIAL PRIZE

Awarded to the undergraduate student who, in the opinion of the division chairs, has shown outstanding ability and achievement in creative scholarship.

2000 *Jeffrey Evan Barrick*
2001 *Benson K. Muite*

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.

2001 *Bryan Keith Eastin*

SCOTT RUSSELL JOHNSON UNDERGRADUATE MATHEMATICS PRIZE

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

2001 *Scott Huai-Lei Carnahan, Michael Mose Schein*

D. S. KOTHARI PRIZE IN PHYSICS

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

2001 *Kathryn Grace Todd*

DOROTHY B. AND HARRISON C. LINGLE SCHOLARSHIP

Awarded to an incoming freshman in recognition of interest in a career in science or engineering, outstanding academic record, demonstrated fair-mindedness, and unquestioned integrity.

1997 *Jeffrey Evan Barrick*

THE HERBERT NEWBY McCOY AWARD

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

2001 *Derek A. Debe, Yi Qin Gao, Jeremy Soo Pin Kua, Melanie S. Sanford, Faik Akif Tezcan*

MARY A. EARL MCKINNEY PRIZE IN LITERATURE

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

1998 *Erik Andrew Dill, Kathryn Grace Todd*

1999 *Jane Garrity*

2000 *Jit Kee Chin*

MERIT AND PRESIDENT'S SCHOLARS

Awarded to selected freshmen whose record of personal and academic accomplishment is judged outstanding among incoming freshmen.

1997	<i>Jorge Eduardo Avelar</i>	<i>Michael Mose Schein</i>
	<i>Jeffrey Evan Barrick</i>	<i>Steven Edward Schell</i>
	<i>Jane Garrity</i>	<i>Carrie Shilyansky</i>
	<i>Christopher Michael Hirata</i>	<i>Serge Sverdlov</i>
	<i>Eagle Sunrise Jones</i>	<i>Kathryn Grace Todd</i>
	<i>Dev Edward Kumar</i>	<i>Sarah Marie Wantoch</i>
	<i>Christian L. Reichardt</i>	<i>Eugene Zarakhovsky</i>
	<i>Ashwani Pillutla Sastry</i>	

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.

2001	<i>Laura Anne Brogoch, Elizabeth Chen Chiang, Daniel Patrick Daly, Eric Preston Tuttle</i>
------	--

RODMAN W. PAUL HISTORY PRIZE

Awarded to a junior or senior who has displayed an unusual interest in and talent for history.

2001	<i>Brian Platt</i>
------	--------------------

HERBERT J. RYSER MEMORIAL SCHOLARSHIPS

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

2000	<i>Christopher Michael Hirata, Michael Mose Schein</i>
------	--

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.

2001 *Jessica Ja-Li Wu*

ERNEST E. SECHLER MEMORIAL AWARD IN AERONAUTICS

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

1998 *Pradeep R. Guduru*

2000 *Jean-François Roland Molinari*

2001 *Demirkan Coker*

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.

1998 *Jay M. Hubisz*

Iljje Jennifer Kim

1999 *Boris Semyonovich Axelrod*

Christoph James Baranec

Samantha Robin Bench

Jit Kee Chin

Jonathan Broder Penoyar

Rik Williams

Summer Ruonan Zhang

2000 *Peter James Freese*

Vit Hradecky

Pei-Hua Hung

Stona Reider Jackson

SIGMA XI AWARD

Awarded to a senior selected for an outstanding piece of original scientific research.

2001 *Christian L. Reichardt*

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.

1998 *Fredrick August Jenet*

PAUL STUDENSKI MEMORIAL FUND PRIZE

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.

2000 *Andrew Clark Hafer*

FRANK TERUGGI MEMORIAL AWARD

Awarded to an undergraduate student who honors the spirit of Frank Teruggi's life through participation "in the areas of Latin American Studies, radical politics, creative radio programming, and other activities aimed at improving the living conditions of the less fortunate."

2001 *Anne Elizabeth Kelly*

MORGAN WARD PRIZE

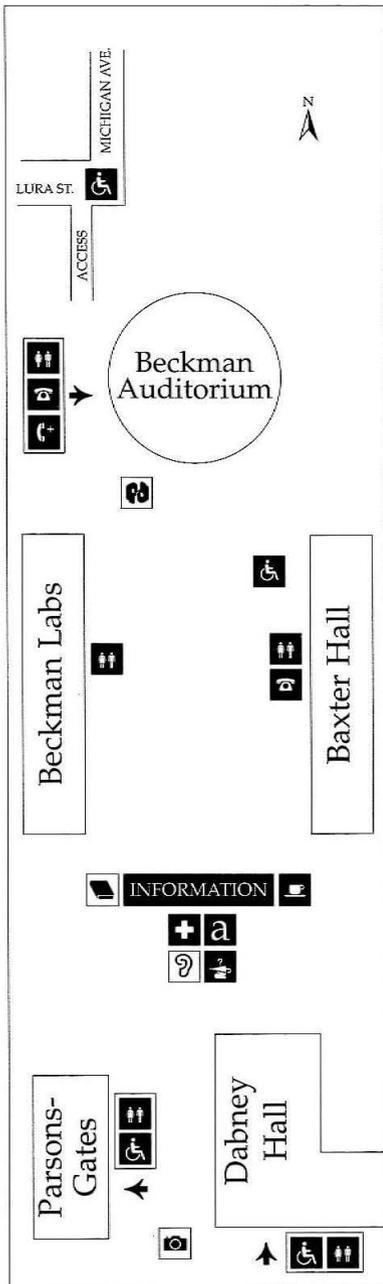
Awarded for the best problems and solutions in mathematics submitted by a freshman or sophomore.

1999 *Ashwani Pillutla Sastry*

Caltech Alma Mater

by Manton Barnes, BS '21 EE

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!



SERVICES FOR COMMENCEMENT GUESTS

-  PUBLIC TELEPHONES are available in Baxter Hall and Beckman Auditorium.
-  RESTROOMS are available in Baxter Hall, Beckman Labs, Dabney Hall, Parsons-Gates Hall of Administration, and Beckman Auditorium.
-  FIRST AID SERVICES are available at the Information Center.
-  LOST AND FOUND items may be reported and/or claimed at the Information Center.
-  Complimentary COFFEE and PUNCH (beginning at 8:30 a.m.)
-  Informal cap and gown photographs 8:30 a.m.–9:30 a.m.
-  CALTECH BOOKSTORE sells souvenirs, film, and other items. ATHENAEUM luncheon tickets on sale 8 a.m.–10 a.m.

SPECIAL SERVICES FOR PERSONS WITH DISABILITIES

-  ASSISTIVE LISTENING DEVICES are available at the Information Center. A driver's license or state-issued ID card is required.
-  LARGE-TYPE PROGRAMS (abridged) are available at the Information Center.
-  AMERICAN SIGN LANGUAGE (ASL) interpreters are stationed at the west front of the Ceremony seating area.
-  PEOPLE WHO USE WHEELCHAIRS, and their guests, will find a special section near the east front of the Ceremony seating area.
-  RESTROOMS ACCESSIBLE TO PEOPLE WHO USE WHEELCHAIRS are located on the first floor of Dabney Hall and in the Parsons-Gates Hall of Administration.
-  AMPLIFIED TELEPHONE is available in Beckman Auditorium.