

Doctor of Philosophy

DIVISION OF BIOLOGY

- Stijn Cassenaer (*Biology*) B.S., University of California, San Diego 1999.
Thesis: Spike-Timing Dependent Plasticity and Synchronous Oscillations in an Invertebrate Olfactory System.
- Robert Sidney Cox III (*Biology*) B.S., New College of University of San Francisco 2001.
Thesis: Transcriptional Regulation and Combinatorial Genetic Logic in Synthetic Bacterial Circuits.
- Jennifer Leigh Green (*Biology*) A.A., Los Angeles Pierce College 1999; B.S., University of California, Los Angeles 2001.
Thesis: The *C. elegans* ROR Receptor Tyrosine Kinase, CAM-1, Regulates Wnt Signaling by Two Distinct Mechanisms.
- Asha Muthuraman Iyer (*Biology*) B.S., Stanford University 1998.
Thesis: fMRI Correlates of Planning Goal-Directed Actions.
- Ali Mortazavi (*Biology*) B.S., California Institute of Technology 1993; M.S., California State University, Los Angeles 2004.
Thesis: Structure and Evolution of Mammalian Gene Networks.
- Anna Maria Salazar (*Biology*) B.S., California Institute of Technology 1997.
Thesis: A Pumilio Domain that Forms Heritable Amyloid Aggregates in Yeast Can Regulate Pumilio-Mediated Translational Repression in *Drosophila*.
- Stephen Edward Paucha Smith (*Biology*) B.A., Occidental College 2002.
Thesis: Maternal Immune Activation and Abnormal Behavior in the Adult Offspring: Towards a Mechanism.
- Luigi Andrea Warren (*Biology*) B.Sc., University College London 1982; B.S., Columbia University 2001.
Thesis: Single-Cell Gene-Expression Analysis by Quantitative RT-PCR.
- Brian Matthew Zid (*Biology*) B.S., Truman State University 2000.
Thesis: Translational Control Mediates Lifespan Extension Due to Dietary Restriction in *Drosophila*.

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

- Donde R. Anderson (*Chemistry*) B.A., Northwestern University 2002.
Thesis: Ruthenium Olefin Metathesis Complexes: Catalyst Development and Mechanistic Studies.
- Melissa Jane Archer (*Chemical Engineering and Applied Physics*) B.S., Syracuse University 2003; M.S., California Institute of Technology 2005.
Thesis: Multijunction Solar Cells on Epitaxial Templates.

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

- Kimberly Elizabeth Beatty (*Chemistry and Biology*) B.S., University of California, Santa Barbara 2002.
Thesis: Imaging the Proteome: Metabolic Tagging of Newly Synthesized Proteins with Reactive Methionine Analogues.
- Teresa Diane Beeson (*Chemistry*) B.S., Colorado State University 2000.
Thesis: Development of Enantioselective Organocatalytic Technologies for the Alpha-Functionalization of Aldehydes and Ketones.
- Amie Kathleen Boal (*Chemistry*) B.A., Pomona College 2002.
Thesis: DNA-Mediated Charge Transport in DNA Repair.
- Akram Issam Boukai (*Chemistry*) B.S., University of California, Los Angeles 2002.
Thesis: Thermoelectric Properties of Bismuth and Silicon Nanowires.
- Mark Butler (*Chemistry*) B.S., Brigham Young University 1995; M.S., University of Utah 1999.
Thesis: Novel Methods for Force-Detected Nuclear Magnetic Resonance.
- Christie Anne Canaria (*Chemistry*) B.S., University of California, San Diego 2000.
Thesis: Self-Assembled Monolayers for the Study of Biological Targets.
- Daniel David Caspi (*Chemistry*) B.S., University of California, San Diego 2002.
Thesis: The Adaptive Nature of Palladium Reactivity in Synthesis.
- Rebecca Elizabeth Connor (*Chemistry*) B.S., Carnegie Mellon University 1999.
Thesis: N-terminal Modification and Codon Reassignment with Non-Canonical Amino Acids in Proteins.
- Ubaldo M. Córdova-Figueroa (*Chemical Engineering*) B.S., University of Puerto Rico, Mayaguez 2003.
Thesis: Directed Motion of Colloidal Particles via Chemical Reactions: Osmotic Propulsion.
- Ralph Leonard Ameri David (*Chemical Engineering*) A.S., Dixie College 1998; B.S., Brigham Young University 2003.
Thesis: Associative Polymers as Antimisting Agents and Other Functional Materials via Thiol-ene Coupling.
- Claudiu Adrian Giurumescu (*Chemical Engineering and Biology*) S.B., Massachusetts Institute of Technology 2001.
Thesis: Quantitative Insights into Developmental Signals and Phenotypes in *C. elegans*.
- Erin Nicole Guidry (*Chemistry*) B.S., Texas A&M University 2002.
Thesis: Interlocked Molecules Using Olefin Metathesis.
- Jason P. Jordan (*Chemistry*) B.S., Carnegie Mellon University 2001.
Thesis: The Development of Water-Soluble Olefin Metathesis Catalysts Containing an *N*-Heterocyclic Carbene Ligand.

Doctor of Philosophy continued

- Neena Sujata Kadaba (*Chemistry*) S.B., Massachusetts Institute of Technology 2002; S.M., 2003.
Thesis: Structural Studies of the *E. coli* Methionine ABC Transporter and Its Cognate Binding Protein.
- Victor Wai Tak Kam (*Chemistry*) B.A., Cornell University 2001.
Thesis: Methods in Computational Protein Design.
- Jordan E. Katz (*Chemistry*) B.A., Reed College 1999.
Thesis: Metal Oxide-Based Photoelectrochemical Cells for Solar Energy Conversion.
- Jason M. Keith (*Chemistry*) B.S., University of North Texas 2001.
Thesis: Palladium Mediated Activation of Molecular Oxygen.
- John A. Keith (*Chemistry*) B.A., Wesleyan University 2001.
Thesis: Computational Insight into Homogeneous Organopalladium Catalysis.
- Hugh Inkon Kim (*Chemistry*) B.S., University of California, Berkeley 2003.
Thesis: Fundamental and Applied Studies of the Structures and Reaction Dynamics of Biomolecules Using Mass Spectrometry and Ion Mobility Spectrometry.
- Tsun Yin Lai (*Chemistry*) B.A., The Johns Hopkins University 2003.
Thesis: Characterizing α -Synuclein Membrane Bound Structure.
- Sandra Lee (*Chemistry*) B.S., University of California, Berkeley 2000.
Thesis: Development of Iminium-Activation Technologies and the Total Synthesis of (+)-Fronodosin B.
- Michael J. Mackel (*Chemical Engineering*) B.A., University of California, Davis 1995; B.S., University of California, Santa Barbara 2000.
Thesis: Hydrophilic Polymers in Gels and Solutions: Surface Properties and Structure.
- Eric Louis Margelefsky (*Chemical Engineering*) B.S., Cornell University 2004.
Thesis: Cooperative Catalysis by Bifunctionalized Mesoporous Silica.
- Ryan Michael McFadden (*Chemistry*) B.S., Purdue University 2002.
Thesis: Applications of Palladium-Catalyzed Enantioselective Decarboxylative Alkylation in Natural Products Total Synthesis.
- Sarina Mohanty (*Biochemistry and Molecular Biophysics*) B.A., University of Virginia 2001.
Thesis: Akt Phosphorylation of *Drosophila* Heat-Shock Factor: A Signature for Stress Resistance.
- Vijay Natraj (*Chemical Engineering*) B.E., National University of Singapore 1998; M.E., 2001; M.S., California Institute of Technology 2004.
Thesis: Radiative Transfer Modeling for the Retrieval of CO₂ from Space.
- Nicholas George Nickols (*Chemistry*) B.A., Pomona College 2000.
Thesis: Endogenous Gene Regulation by DNA Binding Polyamides.

Doctor of Philosophy continued

- Clifford Anders Olson (*Biochemistry and Molecular Biophysics*) B.A., New York University 2001.
Thesis: mRNA Display Selection Using a Combinatorial 10FnIII Protein Library for Detection and Modulation of Cellular Processes.
- Christopher Richard Otey (*Biochemistry and Molecular Biophysics*) B.S., University of California, Santa Barbara 1999.
Thesis: Structural and Functional Analysis of an Artificial Family of Cytochromes P450.
- Yan Shuen Poon (*Chemistry*) B.A., B.S., University of California, Berkeley 2000.
Thesis: The Characterization and Structure of Mechanosensitive Channels of Small Conductance.
- David J. Robichaud (*Chemistry*) B.S., B.A., California State University, Fullerton 2001.
Thesis: High-Resolution Study of the O₂ A-Band using Frequency Stabilized Cavity Ring-Down Spectroscopy.
- Katie Rose Saliba (*Chemistry*) B.S., Georgia Institute of Technology 2001.
Thesis: Methodologies for the Rapid Synthesis of Hexoses and Their Application towards a Differentially-Protected Chondroitin Sulfate Tetrasaccharide.
- Fangwei Shao (*Chemistry*) B.S., Fudan University 1999; M.S., 2002.
Thesis: DNA-Mediated Hole and Electron Transport.
- Crystal Shih (*Chemistry*) S.B., Massachusetts Institute of Technology 2003.
Thesis: Electron Tunneling and Hopping Through Proteins.
- Armin Sorooshian (*Chemical Engineering and Environmental Science and Engineering*) B.S., The University of Arizona 2003; M.S., California Institute of Technology 2005.
Thesis: Aerosol Composition and Hygroscopicity Studies: Instrument Development/Characterization, Ambient and Laboratory Measurements, and Modeling.
- Ryan Leonard Stafford (*Chemistry*) B.S. (*Biology*), B.S. (*Chemistry*), University of California, Irvine 2002.
Thesis: Design of Protein-DNA Dimerizers.
- Matthew C. Traub (*Chemistry*) A.B., Princeton University 2001.
Thesis: Chemical Functionalization and Electronic Passivation of Gallium Arsenide Surfaces.
- Sherry Mon-Yue Tsai (*Chemistry*) B.S., Yale University 2000.
Thesis: α -Diaminobutyric Acid-Linked Hairpin Polyamide-Alkylator Conjugates.
- Jamison Bryce Tuttle (*Chemistry*) B.A., Connecticut College 1999.
Thesis: Development of Enantioselective Organocatalytic Hydrogenation Methods and Progress toward the Total Synthesis of (+)-Minfiensine.
- Christina Luisa Vizcarra (*Chemistry*) B.S., University of Kansas 2002.
Thesis: Development and Evaluation of Protein Design Methods for Functional Targets.

Doctor of Philosophy continued

Maung Nyan Win (*Chemistry*) B.S., Virginia Commonwealth University 2003; M.S., California Institute of Technology 2005.

Thesis: Engineering RNA Devices for Gene Regulation, Biosensing, and Higher-Order Cellular Information Processing.

Xinan Xiu (*Biochemistry and Molecular Biophysics*) B.S., University of Louisville 2002.

Thesis: Structure-function Studies of Nicotinic Acetylcholine Receptors Using Unnatural Amino Acids.

Tae Hyeon Yoo (*Chemical Engineering*) B.S., Seoul National University 1996; M.S., 1998.

Thesis: Proteins of Novel Composition: Synthesis, Evolution, Dynamics.

Cheng-Zhong Zhang (*Chemical Engineering and Physics*) B.E., Tsinghua University 2001; M.S., California Institute of Technology 2003.

Thesis: Interplay between Long-Range and Short-Range Interactions in Polymer Self-Assembly and Cell Adhesion.

DIVISION OF ENGINEERING AND APPLIED SCIENCE

Anelia Angelova (*Computer Science*) M.S., Sofia University 2000; M.S., California Institute of Technology 2004.

Thesis: Visual Prediction of Rover Slip: Learning Algorithms and Field Experiments.

Meher Kiran Prakash Ayalasomayajula (*Applied Physics*) B.Tech., Indian Institute of Technology, Madras 2001; M.S., California Institute of Technology 2003.

Thesis: Theoretical Studies of Single Molecule Biophysical Systems and Photochemical Ensembles.

Aydin Babakhani (*Electrical Engineering*) B.S., Sharif University of Technology 2003; M.S., California Institute of Technology 2005.

Thesis: Direct Antenna Modulation (DAM) for On-chip mm-Wave Transceivers.

Iván Bermejo Moreno (*Aeronautics and French and German*) Aeronautical Engineer, Universidad Politecnica de Madrid 2001; M.S., California Institute of Technology 2004.

Thesis: On the Non-Local Geometry of Turbulence.

Antoine Jean Bruguier (*Electrical Engineering*) Diplôme d'Ingénieur, École Supérieure d'Ingénieurs en Électrotechnique et Électronique 2004; M.S., California Institute of Technology 2004.

Thesis: Encoding of Financial Signals in the Human Brain.

John Maurice Carson III (*Mechanical Engineering and Control and Dynamical Systems*) B.S., The University of Texas at Austin 1992; M.S., 1997.

Thesis: Robust Model Predictive Control with a Reactive Safety Mode.

Doctor of Philosophy continued

- Yuval Cassuto (*Electrical Engineering*) B.Sc., Technion – Israel Institute of Technology 2001; M.S., California Institute of Technology 2004.
Thesis: Coding Techniques for Data-Storage Systems.
- Gang Chow (*Bioengineering*) B.S., University of California, San Diego 1998; M.S., California State University, Northridge 2002.
Thesis: Laser Tweezers for Moving Live Dissociated Neurons.
- Roger David Donaldson (*Applied and Computational Mathematics*) B.A.Sc., The University of British Columbia 2001; M.S., 2003.
Thesis: Discrete Geometric Homogenisation and Inverse Homogenisation of an Elliptic Operator.
- Gang Duan (*Materials Science*) B.S., Beijing University 1999; M.S., 2002; M.S., California Institute of Technology 2004.
Thesis: Simulations, Modeling, and Designs of Bulk Metallic Glasses.
- Mary Julia Dunlop (*Mechanical Engineering*) B.S.E., Princeton University 2002; M.S., California Institute of Technology 2004.
Thesis: Dynamics and Correlated Noise in Gene Regulation.
- Tamer El Sayed (*Mechanical Engineering*) A.S., Chaffey Community College 1997; B.S., California State Polytechnic University, Pomona 2002; M.S., California Institute of Technology 2004.
Thesis: Constitutive Models for Polymers and Soft Biological Tissues.
- Teresa Holly Emery (*Electrical Engineering*) B.S., Cornell University 2002; M.E., 2003.
Thesis: Fabrication of Nanowire-based Magnetic Structures for Magnetic Resonance Applications.
- Michael Steven Epstein (*Mechanical Engineering*) B.S., University of California, Los Angeles 2002; M.S., California Institute of Technology 2003.
Thesis: Managing Information in Networked and Multi-Agent Control Systems.
- Jonathan Christopher Erickson (*Bioengineering*) B.S., Harvey Mudd College 2001; M.S., California Institute of Technology 2002.
Thesis: The Neurochip: A Complete System for Long-Term Investigation of Cultured Neural Network Connectivity.
- Claudio Fanti (*Computer Science*) Diploma Di Laurea, Università Degli Studi Di Padova 2001; M.S., California Institute of Technology 2004.
Thesis: Towards Automatic Discovery of Human Movemes.
- Daniel Robert Feldman (*Environmental Science and Engineering*) S.B., Massachusetts Institute of Technology 2002; M.S., California Institute of Technology 2004.
Thesis: Remote Sensing of Radiative Fluxes and Heating Rates from Satellite Instrument Measurements.

Doctor of Philosophy continued

- Melvin Estuardo Flores Contreras (*Control and Dynamical Systems*) B.S.E., Arizona State University 1998.
Thesis: Real-Time Trajectory Generation for Constrained Nonlinear Dynamical Systems Using Non-Uniform Rational B-Spline Basis Functions.
- Ebraheem Ihsan Fontaine (*Mechanical Engineering*) S.B., Massachusetts Institute of Technology 2002; M.S., California Institute of Technology 2004.
Thesis: Automated Visual Tracking for Behavioral Analysis of Biological Model Organisms.
- Christian Franck (*Aeronautics*) B.S., University of Virginia 2003; M.S., California Institute of Technology 2004.
Thesis: Quantitative Characterization of 3D Deformations of Cell Interactions with Soft Biomaterials.
- Jiansong Gao (*Applied Physics*) B.S., Tsinghua University 1999; M.S., 2002; M.S., California Institute of Technology 2004.
Thesis: The Physics of Superconducting Microwave Resonators.
- Xiaojie Gao (*Computer Science*) B.S., Peking University 2002; M.S., California Institute of Technology 2004.
Thesis: On A Capacitated Multivehicle Routing Problem.
- Anna Grosberg (*Bioengineering*) B.S., University of Minnesota 2002.
Thesis: A Bioinspired Computational Model of Cardiac Mechanics: Pathology and Development.
- Katalin Anna Grubits (*Control and Dynamical Systems*) B.Sc., University of Sydney 2001.
Thesis: Low-dimensional Representations of Transitions in Molecular Systems.
- Lin Han (*Applied Physics*) B.S., Jilin University 2001; M.S., California Institute of Technology 2003.
Thesis: *In vitro* DNA Mechanics in Gene Regulation: One Molecule at a Time.
- Hannes Helgason (*Applied and Computational Mathematics*) B.S. (*Electrical Engineering*), B.S. (*Mathematics*), University of Iceland 2001.
Thesis: Nonparametric Detection and Estimation of Highly Oscillatory Signals.
- Xin Heng (*Electrical Engineering and Applied Physics*) B.S., Nanjing University 2002; M.S., California Institute of Technology 2003.
Thesis: Optofluidic Microscopy: Technology Development and Its Applications in Biology.
- Jinseong Heo (*Applied Physics*) B.S., Korea Advanced Institute of Science and Technology 2002; M.S., California Institute of Technology 2004.
Thesis: Probing Electronic Properties of Carbon Nanotubes.
- David Hoch (*Applied and Computational Mathematics*) Diploma, Kantonsschule Im Lee 1996; C.S.A.E., Swiss Federal Institute of Technology 2001.
Thesis: Nonreflecting Boundary Conditions Obtained from Equivalent Sources for Time-Dependent Scattering Problems.

Doctor of Philosophy continued

- Tomonori Honda (*Mechanical Engineering and Control and Dynamical Systems*) B.S., University of California, Berkeley 2002; M.S., California Institute of Technology 2003.
Thesis: Formalization and Applications of Grayscale Reliability Analysis for Engineering Design.
- Princess Izevbua Ikhianosen Uerenikhosen Imoukhuede (*Bioengineering*) S.B., Massachusetts Institute of Technology 2002.
Thesis: Visualizing the Membrane Confinement, Trafficking and Structure of the GABA Transporter, GATI.
- Winston Paul Jackson (*Applied Mechanics*) B.S., Southern University 2003; B.S., Texas A&M University 2003; M.S., California Institute of Technology 2005.
Thesis: Characterization of Soft Polymers and Gels Using the Pressure-Bulge Technique.
- Wonjin Jang (*Computer Science*) B.A., Seoul National University 1998; M.S., California Institute of Technology 2004.
Thesis: Soft-error Tolerant Quasi Delay-insensitive Circuits.
- Hao Jiang (*Mechanical Engineering and Electrical Engineering*) B.E., Tsinghua University 1998; M.S., California Institute of Technology 2002.
Thesis: Adaptive Feature Selection in Pattern Recognition and Ultra-wideband Radar Signal Analysis.
- Eric Johnsen (*Mechanical Engineering*) B.S., University of California, Santa Barbara 2001; M.S., California Institute of Technology 2002.
Thesis: Numerical Simulations of Non-Spherical Bubble Collapse with Applications to Shockwave Lithotripsy.
- Shannon Theresa Kao (*Mechanical Engineering*) B.S., The Johns Hopkins University 2002.
Thesis: Detonation Stability with Reversible Kinetics.
- Shwetank Kumar (*Applied Physics*) B.Tech., Indian Institute of Technology, Delhi 2000; M.S., California Institute of Technology 2003.
Thesis: Submillimeter Wave Camera Using A Novel Photon Detector Technology.
- Wonhee Lee (*Applied Physics*) B.S., Korea Advanced Institute of Science and Technology 2002; M.S., California Institute of Technology 2004.
Thesis: Microfluidic Chip Calorimeters for Biological Applications.
- Sebastien Leprince (*Electrical Engineering*) Diplôme de Technologue, École Supérieure de Technologie Électronique 2000; Diplôme d'Ingénieur, École Supérieure d'Ingénieurs en Électrotechnique et Électronique 2002; M.S., California Institute of Technology 2003.
Thesis: Monitoring Earth Surface Dynamics with Optical Imagery.
- Zhenyu Li (*Electrical Engineering*) B.S., Tsinghua University 1999; M.S., University of California, Santa Barbara 2001.
Thesis: Optofluidic Dye Lasers.

Doctor of Philosophy continued

- Wei Liang (*Applied Physics*) B.S., Tsinghua University 2001; M.S., California Institute of Technology 2003.
Thesis: Study of Optical Phase Lock Loops and the Applications in Coherent Beam Combining and Coherence Cloning.
- Yongqiang Liang (*Mechanical Engineering*) B.S., University of Science and Technology of China 1998; M.E., 2001; M.S., California Institute of Technology 2004.
Thesis: Robotic Training for Motor Rehabilitation after Complete Spinal Cord Injury.
- Hsuan-Tien Lin (*Computer Science*) B.S., National Taiwan University 2001; M.S., California Institute of Technology 2005.
Thesis: From Ordinal Ranking to Binary Classification.
- Mary Laura Lind (*Materials Science*) B.S., Yale University 2002; M.S., California Institute of Technology 2004.
Thesis: Ultrasonic Investigation of the Elastic Properties and Liquid Fragility of Bulk Metallic Glasses in the Supercooled Liquid Region.
- Manuel Lombardini (*Aeronautics*) Diplôme d'Ingenieur, École Polytechnique 2003; M.S., California Institute of Technology 2004.
Thesis: Richtmyer-Meshkov Instability in Converging Geometries.
- Jian Lu (*Bioengineering*) B.S., Tsinghua University 2002; M.S., California Institute of Technology 2003.
Thesis: Quantitative Three-dimensional Imaging of Droplet Convection and Cardiac Cell Motions Based on Micro DDPIV.
- Sebastian Josef Maerkl (*Biochemistry and Molecular Biophysics*) B.S., Fairleigh Dickinson University 2001.
Thesis: Microfluidic Large Scale Integration and its Application to Systems Biology.
- Georgios Matheou (*Aeronautics*) Diploma, National Technical University of Athens 2002.
Thesis: Large-Eddy Simulations of Molecular Mixing in a Recirculating Shear Flow.
- Matthew Sanford Mattson (*Applied Physics*) B.S., Marshall University 2002; M.S., California Institute of Technology 2004.
Thesis: Understanding and Treating Eye Diseases: Mechanical Characterization and Photochemical Modification of the Cornea and Sclera.
- Kevin L. McHale (*Bioengineering and Control and Dynamical Systems*) B.S. (*Chemistry*), B.S. (*Mathematics*), University of Florida 2002.
Thesis: Feedback Tracking and Correlation Spectroscopy of Fluorescent Nanoparticles and Biomolecules.
- Jeffrey Mendez (*Environmental Science and Engineering*) B.S., California Institute of Technology 1999.
Thesis: Iron and Manganese in the Ocean. A Coastal Ocean Time Series, and an Investigation of Atmospheric Input by Dust.

Doctor of Philosophy continued

- John Anderson Monro, Jr. (*Applied and Computational Mathematics*) B.S., California Institute of Technology 1996.
Thesis: A Super-Algebraically Convergent, Windowing-Based Approach to the Evaluation of Scattering from Periodic Rough Surfaces.
- Pierre Moreels (*Electrical Engineering*) Diplôme d'Ingénieur, École Polytechnique 1999; DEA, Université de Bourgogne 2000; Diplôme d'Ingénieur, École Nationale des Ponts et Chaussées 2001; M.S., California Institute of Technology 2002.
Thesis: Probabilistic, Features-Based Object Recognition.
- Grant Haverstock Mulliken (*Computation and Neural Systems*) B.S., The Colorado School of Mines 1998; M.S., The Johns Hopkins University 2002.
Thesis: Continuous Sensorimotor Control Mechanisms in Posterior Parietal Cortex: Forward Model Encoding and Trajectory Decoding.
- Helia Naeimi (*Computer Science*) B.S., Sharif University of Technology 2002; M.S., California Institute of Technology 2005.
Thesis: Reliable Integration of Terascale Systems with Nanoscale Devices.
- Fabien Nicaise (*Mechanical Engineering*) B.S., Rensselaer Polytechnic Institute 2000; M.B.A., 2001; M.S., California Institute of Technology 2003.
Thesis: Automated Design Synthesis of Discrete Structures using Growth Enhanced Evolution.
- Chang Kook Oh (*Civil Engineering*) B.S., Seoul National University 1998; M.S., 2000; M.S., California Institute of Technology 2004.
Thesis: Bayesian Learning for Earthquake Engineering Applications and Structural Health Monitoring.
- Anna H. Olsen (*Civil Engineering*) B.S., Harvey Mudd College 2003; M.S., California Institute of Technology 2004.
Thesis: Steel Moment-Resisting Frame Responses in Simulated Strong Ground Motions: Or How I Learned to Stop Worrying and Love the Big One.
- Changlin Pang (*Electrical Engineering*) B.S., Tsinghua University 2000; M.S., 2002; M.S., California Institute of Technology 2003.
Thesis: Parylene Technology for Neural Probes Applications.
- Piyush Prakash (*Computer Science*) B.S., California Institute of Technology 2002; M.S., 2005.
Thesis: Throughput Optimization of Quasi Delay Insensitive Circuits via Slack Matching.
- Amrit Pratap (*Computer Science*) M.Sc., Indian Institute of Technology, Kanpur 2001; M.S., California Institute of Technology 2004.
Thesis: Adaptive Learning Algorithms and Data Cloning.

Doctor of Philosophy continued

- Derek Gresham Rinderknecht (*Bioengineering*) S.B., Massachusetts Institute of Technology 2002.
Thesis: Development of a Microimpedance Pump for Pulsatile Flow Transport - Part 1: Flow Characteristics of the Microimpedance Pump. Part 2: A Systematic Study of Steady and Pulsatile Transport in Microscale Cavities.
- Damien Craig Rodger (*Bioengineering*) B.S., Cornell University 2000.
Thesis: Development of Flexible Parylene-based Microtechnologies for Retinal and Spinal Cord Stimulation and Recording.
- Angel Ruiz Angulo (*Mechanical Engineering*) B.S., National University of Mexico 2002; M.S., California Institute of Technology 2004.
Thesis: Surface Deformation in a Liquid Environment Resulting from Single Particle Collisions.
- Ueli Rutishauser (*Computation and Neural Systems*) B.S., University of Applied Sciences, Rapperswil 2003.
Thesis: Learning and Representation of Declarative Memories by Single Neurons in the Human Brain.
- Effrosyni Seitaridou (*Applied Physics*) B.A., Smith College 2002; B.E., Dartmouth College 2002; M.S., California Institute of Technology 2004.
Thesis: Non-Equilibrium Dynamics: Diffusion in Small Numbers and Ribosomal Self-Assembly.
- Jason Shih (*Electrical Engineering*) B.S., California Institute of Technology 2003; M.S., 2004.
Thesis: Microfabricated High-Performance Liquid Chromatography (HPLC) System with Closed-Loop Flow Control.
- Edwin Soedarmadji (*Electrical Engineering and Biology*) B.S., California Institute of Technology 1997; M.S., 2003.
Thesis: Generalized Network Routing Metrics and Algorithms.
- David Soloveichik (*Computation and Neural Systems*) A.B., S.M., Harvard College 2002.
Thesis: Molecules Computing: Self-Assembled Nanostructures, Molecular Automata, and Chemical Reaction Networks.
- Mihailo Stojnic (*Electrical Engineering*) Dipl. Ing., Belgrade School of Electrical Engineering 2001; M.S., California Institute of Technology 2003.
Thesis: Optimization Algorithms in Wireless and Quantum Communications.
- Borching Su (*Electrical Engineering*) B.S., National Taiwan University 1999; M.S., 2001.
Thesis: Blind Channel Estimation Using Redundant Precoding: New Algorithms, Analysis, and Theory.
- Luke A. Sweatlock (*Applied Physics*) B.S., Cornell University 2001; M.S., California Institute of Technology 2003.
Thesis: Plasmonics: Numerical Methods and Device Applications.

Doctor of Philosophy continued

- Sarah Lynne Sweatlock (*Applied and Computational Mathematics*) B.S. (*Applied Math*), B.S. (*Electrical Engineering*), Northwestern University 2003.
Thesis: Asymptotic Weight Analysis of Low-Density Parity Check (LDPC) Code Ensembles.
- Alexandros Tafflinidis (*Civil Engineering and Control and Dynamical Systems*) Diploma, Aristotle University of Thessaloniki 2002; M.S., 2003.
Thesis: Stochastic System Design and Applications to Stochastically Robust Structural Control.
- Kunihiko Taira (*Mechanical Engineering and Aeronautics*) B.S., University of Tennessee 2002; M.S., California Institute of Technology 2003.
Thesis: The Immersed Boundary Projection Method and Its Application to Simulation and Control of Flows around Low-Aspect-Ratio Wings.
- Katsuaki Tanabe (*Materials Science*) B.Eng., University of Tokyo 2001; M.Eng., 2003; M.S., California Institute of Technology 2005.
Thesis: Low-Cost High-Efficiency Solar Cells with Wafer Bonding and Plasmonic Technologies.
- Lixiu Tian (*Applied and Computational Mathematics*) B.S., M.S., Peking University 1998.
Thesis: Effective Behavior of Dielectric Elastomer Composites.
- Ching Hang Tong (*Environmental Science and Engineering*) B.S., University of Delaware 2001; M.S., California Institute of Technology 2004.
Thesis: Thermodynamic Modeling of Organic Aerosol.
- Ke Wang (*Applied and Computational Mathematics*) B.S., Tsinghua University 1999; M.S., Hong Kong University of Science and Technology 2001.
Thesis: A Subdivision Approach to the Construction of Smooth Differential Forms.
- Stephen J. Waydo (*Control and Dynamical Systems*) B.S., University of Washington 2001.
Thesis: Explicit Object Representation by Sparse Neural Codes.
- Julie Anne Wolf (*Civil Engineering*) B.S., University of California, San Diego 1999; M.S., California Institute of Technology 2000.
Thesis: A Plasticity Model to Predict the Effects of Confinement on Concrete.
- Michael Timothy Wolf (*Mechanical Engineering and Control and Dynamical Systems*) B.S., Stanford University 1997; M.S., California Institute of Technology 2005.
Thesis: Target Tracking Using Clustered Measurements, with Applications to Autonomous Brain-Machine Interfaces.
- Gunsu S. Yun (*Applied Physics*) B.S., Pohang University of Science and Technology 1998; M.S., California Institute of Technology 2004.
Thesis: Dynamics of Plasma Structures Interacting with External and Self-Generated Magnetic Fields.

Doctor of Philosophy continued

Pun To (Douglas) Yung (*Bioengineering*) B.S. (*Electrical Engineering*), B.S. (*Mathematics*), University of California, Los Angeles 2003.

Thesis: Detection of Aerobic Bacterial Endospores: From Air Sampling, Sterilization Validation to Astrobiology.

Lin Zhu (*Electrical Engineering*) B.S., Tsinghua University 2000; M.S., 2003.

Thesis: Photonic Crystal Bragg Lasers: Design, Fabrication, and Characterization.

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

Kristina Marie Barkume (*Planetary Science*) B.A., Reed College 2003; M.S., California Institute of Technology 2005.

Thesis: Surface Properties of Kuiper Belt Objects and Centaurs.

Min Chen (*Geophysics*) B.S., University of Science and Technology of China 2001.

Thesis: Numerical Simulations of Seismic Wave Propagation in Anisotropic and Heterogeneous Earth Models: The Japan Subduction Zone.

Laura Baker Hebert (*Geochemistry*) B.S., University of Maryland 2001; M.S., California Institute of Technology 2004.

Thesis: (I) A Coupled Geochemical and Geodynamical Approach to Subduction Zone Modeling and (II) Development of Color in Greenish Quartz.

Troy Lee Hudson (*Planetary Science*) S.B. (*Materials Science and Engineering*), S.B. (*Planetary Science*), Massachusetts Institute of Technology 2000.

Thesis: Growth, Diffusion, and Loss of Subsurface Ice on Mars: Experiments and Models.

Ali Ozgun Konca (*Geophysics*) B.S., Koç University 2000.

Thesis: Investigating Large Earthquake Rupture Kinematics from Joint Analysis of Seismological, Geodetic and Remote Sensing Data.

Cody Zane Nash (*Geobiology*) B.Sc., Rhodes College 2000; M.S., International Space University 2001.

Thesis: Mechanisms and Evolution of Magnetotactic Bacteria.

Emily Lauren Schaller (*Planetary Science*) B.A., Dartmouth College 2002; M.S., California Institute of Technology 2004.

Thesis: I. Seasonal Changes in Titan's Cloud Activity. II. Volatile Ices on Outer Solar System Objects.

Teh-Ru Alex Song (*Geophysics*) B.S., National Central University 1997; M.S., 1997.

Thesis: Broad Band Modeling Earthquake Source and Upper Mantle Structure on Plate Boundary Zones.

Zhonghua Yang (*Geochemistry*) B.S., University of Science and Technology of China 2000; M.S., California Institute of Technology 2005.

Thesis: Constraining Global Carbon Budget Using Vertically-Integrated CO₂ Measurements.

Doctor of Philosophy continued

DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

Meghana Bhatt (*Social Science*) A.B., Harvard College 2001; M.S., California Institute of Technology 2004.

Thesis: Three Papers in Neuroeconomics.

Alexander L. Brown (*Social Science*) B.S., The Ohio State University 2003; M.S., California Institute of Technology 2005.

Thesis: Investigating Psychology-Influenced Economic Models in Lab, Field, and Theory.

Laurent Alexandre Mathevet (*Social Science*) B.S., Jean Monnet University 2002; M.S., 2003; M.S., California Institute of Technology 2005.

Thesis: Selection, Learning, and Nomination: Essays on Supermodular Games, Design, and Political Theory.

Kyle Alan Mattes (*Social Science*) B.A., Northwestern University 1997; M.S., California Institute of Technology 2005.

Thesis: When Candidates Attack: Who Goes Negative, and Why it Works.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

Igor Bargatin (*Physics and Electrical Engineering*) Diploma, M.V. Lomonosov Moscow State University 2000.

Thesis: High-Frequency Nanomechanical Resonators for Sensor Applications.

Joanna Margaret Brown (*Astronomy*) B.A., Swarthmore College 2002.

Thesis: Childhood to Adolescence: Dust and Gas Clearing in Protoplanetary Disks.

Chi Ming Hubert Chen (*Physics*) S.B., Massachusetts Institute of Technology 1999.

Thesis: Development of Hard X-ray Imaging Detectors for the High Energy Focusing Telescope.

Micol Huw Christopher (*Astrophysics*) A.B., Harvard College 1999; M.S., California Institute of Technology 2005.

Thesis: Young, Massive Star Clusters in the Antennae.

Paul Langabi Hogan Cook (*Physics*) B.A., University of Witwatersrand 2002; B.S., 2003

Thesis: Aspects of Topological String Theory.

Theodore Allen Corcovilos (*Physics*) B.A., University of Tennessee 1999.

Thesis: Fluid Phase Thermodynamics: I) Nucleate Pool Boiling of Oxygen under Magnetically Enhanced Gravity and II) Superconducting Cavity Resonators for High-Stability Frequency References and Precision Density Measurements of Helium-4 Gas.

Melissa Lanae Enoch (*Astrophysics*) A.B., University of California, Berkeley 2001.

Thesis: Molecular Clouds and Star Formation: A Multiwavelength Study of Perseus, Serpens, and Ophiuchus.

Doctor of Philosophy continued

- Lisa Maria Goggin (*Physics*) B.S., University College Cork 2001; M.S., 2002; M.S., California Institute of Technology 2004.
Thesis: A Search for Gravitational Waves from Perturbed Black Hole Ringdowns in LIGO Data.
- Ivan S. Grudinin (*Physics*) Diploma, Moscow State University 2003.
Thesis: Crystalline Whispering Gallery Mode Resonators for Quantum and Nonlinear Optics.
- Aliekber Gürel (*Mathematics*) B.S., Bilkent University 2000; M.A., University of California, Santa Barbara 2002.
Thesis: An Exact Average Formula for the Symmetric Square L-Function at the Center.
- Laura J. Hainline (*Astrophysics*) B.S., Indiana University, Bloomington 2001.
Thesis: Multi-Wavelength Properties of Submillimeter-Selected Galaxies.
- Rassul Karabalin (*Physics*) B.S., Moscow Institute of Physics and Technology 2002; M.S., 2003.
Thesis: Nonlinear, Coupled, and Parametric Nanoelectromechanical Systems.
- Claire Isabelle Levaillant (*Mathematics*) Ingénieur, École Normale Supérieure de Cachan 2002; M.S., California Institute of Technology 2005.
Thesis: Irreducibility of the Lawrence-Krammer Representation of the BMW Algebra of Type An-1.
- Ziyang Ma (*Physics*) B.S., University of Science and Technology of China 2001.
Thesis: Precision Optical Measurements of DNA Structure and Synthesis.
- Ilya Mandel (*Physics*) B.S., Stanford University 2000; M.S., 2001; M.S., California Institute of Technology 2003.
Thesis: The Three S's of Gravitational-Wave Astronomy: Sources, Signals, Searches.
- Sean Michael Moran (*Astrophysics*) A.B., Harvard College 2002.
Thesis: Understanding the Physical Processes Driving Galaxy Evolution in Clusters: A Case Study of Two $z \sim 0.5$ Galaxy Clusters.
- Bret Justin Naylor (*Physics*) B.S., University of California, San Diego 1998.
Thesis: Broadband Millimeter-Wave Spectroscopy with Z-Spec: An Unbiased Molecular-Line Survey of the Starburst Galaxy M82.
- Tracy Eleanor Northup (*Physics*) A.B., Harvard College 1999.
Thesis: Coherent Control in Cavity QED.
- Francis Thomas O'Donovan (*Astrophysics*) B.Sc., National University of Ireland, Cork 2001; M.Sc., 2004; M.S., California Institute of Technology 2004.
Thesis: The Detection and Exploration of Planets from the Trans-Atlantic Exoplanet Survey.
- Eric Lee Peterson (*Physics*) B.S., Brigham Young University 2003.
Thesis: A Random Walk in Physical Biology.

Doctor of Philosophy continued

- Christian L. Reichardt (*Physics*) B.S., California Institute of Technology 2001.
Thesis: A High Resolution Measurement of Temperature Anisotropies in the Cosmic Microwave Background Radiation with the Complete ACBAR Data Set.
- Pavlin Savov (*Physics*) S.B., Massachusetts Institute of Technology 2001.
Thesis: Topics in Gravitational-Wave Physics.
- Jack Sayers (*Physics*) B.S. (*Mathematics and Computer Science and Physics*), Colorado School of Mines 2002; M.S., California Institute of Technology 2004.
Thesis: A Search for Cosmic Microwave Background Anisotropies on Arcminute Scales.
- Catherine L. Slesnick (*Astrophysics*) B.A., New York University 2000.
Thesis: 1-10 Myr-old Low Mass Stars and Brown Dwarfs in Nearby Star Forming Regions.
- Tristan Laine Smith (*Physics*) B.A., The University of Chicago 2003.
Thesis: The Gravity of the Situation.
- Sherry Hsuan Suyu (*Physics*) B.Sc., Queen's University 2001.
Thesis: Dissecting the Gravitational Lens B1608+656: Implications for the Hubble Constant.
- Lisa A. Tracy (*Physics*) B.S., Arizona State University 2001.
Thesis: Studies of Two Dimensional Electron Systems via Surface Acoustic Waves and Nuclear Magnetic Resonance Techniques.
- Todor Dimitrov Tsankov (*Mathematics*) B.S., Sofia University 2003.
Thesis: Amenability, Countable Equivalence Relations, and Their Full Groups.
- Rupert William Venzke (*Mathematics*) B.S., M.A., University of Pittsburgh 2003.
Thesis: Braid Forcing, Hyperbolic Geometry, and Pseudo-Anosov Sequences of Low Entropy.
- Jie Yang (*Physics*) B.S., University of Science and Technology of China 2000; M.S., 2003.
Thesis: Holomorphic Anomaly Equations in Topological String Theory.
- Ki Won Yoon (*Physics*) B.A., University of California, Berkeley 2000.
Thesis: Design and Deployment of BICEP: A Novel Small-Aperture CMB Polarimeter to Test Inflationary Cosmology.
- Michael Philip Zwolak (*Physics*) B.A., B.S. (*Chemical Engineering*), B.S. (*Chemistry*), Virginia Polytechnic Institute and State University 2002; M.S., 2003.
Thesis: Dynamics and Simulation of Open Quantum Systems.