

Doctor of Philosophy

DIVISION OF BIOLOGY

- Xavier Ignacio Ambroggio (*Biology*) B.S., George Mason University 1999.
Thesis: Structural and Functional Studies of Jamm Domain Proteins and Their Role in the Ubiquitin System.
- Magdalena Bak-Maier (*Cellular and Molecular Neurobiology*) B.S., New York University 1999.
Thesis: Commissural Axon Kinetics and the Role of Netrin in Early Brain Circuitry Development.
- Susannah Dale Barbee (*Biology*) B.A., Harvard-Radcliffe College 1997.
Thesis: The Functions of Phosphatidylinositol₃-Kinase in T Lymphocyte Development: Roles in Positive Selection and Thymic Exit.
- Sujata Bhattacharyya (*Biology*) B.Sc., Saint Xavier's College 1996; M.Sc., Institute of Science, University of Bombay 1998.
Thesis: Embryonic Origin of the Olfactory Sensory System: Fate Map, Lineage Analysis and Specification of the Avian Olfactory Placode.
- Gloria Bohyun Choi (*Biology*) B.A., University of California, Berkeley 1999.
Thesis: Characterization of the Circuitries Mediating Innate Reproductive and Defensive Behaviors from the Amygdala to the Hypothalamus.
- Jeffrey Michael Copeland (*Biology*) B.A., University of Virginia 1996.
Thesis: Identification of Novel Cell Death Regulators in *C. elegans* and *Drosophila*.
- Laura Rosemary Croal (*Biology and Geobiology*) B.S., University of Wisconsin-Madison 1999.
Thesis: Fe(II) Oxidation by Anaerobic Phototrophic Bacteria: Molecular Mechanisms and Geological Implications.
- Shabnam Sarah Farivar (*Biology*) B.A., University of California, Berkeley 1998.
Thesis: Cytoarchitecture of the Locust Olfactory System.
- Christopher Edward Hart (*Biology*) B.S., Siena College 1998.
Thesis: Inferring Genetic Regulatory Network Structure: Integrative Analysis of Genome-Scale Data.
- Geoffrey Kai Tong Hom (*Biochemistry and Molecular Biophysics*) B.A., University of California, Berkeley 1999.
Thesis: Advances in Computational Protein Design: Development of More Efficient Search Algorithms and their Application to the Full-Sequence Design of Larger Proteins.
- Jun Ryul Huh (*Biology*) B.S., Seoul National University 1996; M.S., 1998.
Thesis: To Die or to Differentiate: Apoptotic and Non-apoptotic Roles of Death Molecules in *Drosophila melanogaster*.
- Thomas Hin-Chai Leung (*Biology*) B.S., Stanford University 1998.
Thesis: Specificity of Transcription Activation by NF- κ B Subunits.
- Angie Siu Yee Mah (*Biochemistry and Molecular Biophysics*) B.Sc., McGill University 1999.
Thesis: Regulation of Protein Kinase Dbf2 in Mitotic Exit.

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

- Ofer Mazor (*Computation and Neural Systems*) A.B., B.S., Brown University 1998.
Thesis: Neural Dynamics and Population Coding in the Insect Brain.
- Joyce Yaochun Peng (*Biology*) B.S., National Tsing Hua University 1996; M.S., California Institute of Technology 1998.
Thesis: Structure and Function Prediction of Human Muscarinic Acetylcholine Receptor 1, Cation- π Studies, and Protein Design.
- Leila Reddy (*Computation and Neural Systems*) B.A., Pomona College 2000.
Thesis: Attention and the Processing of Natural Stimuli: Psychophysics, fMRI and Single Unit Recordings in the Human Brain.
- Premal S. Shah (*Biochemistry and Molecular Biophysics*) B.S., University of Maryland 1998.
Thesis: Advances in Force Field Development and Sequence Optimization Methods for Computational Protein Design.
- Donghun Shin (*Biology*) B.S., Seoul National University 1995; M.S., 1997.
Thesis: Identification and Characterization of Endothelial Specific Genes.
- Claudiu Simion (*Biology*) B.S., California Institute of Technology 1999.
Thesis: Orienting and Preference: An Enquiry into the Mechanisms Underlying Emotional Decision Making.
- Hui Yu (*Biology*) B.S., Fudan University 1990.
Thesis: *C. elegans* Male Tail Development.

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

- Darren Lee Beene (*Chemistry*) B.A., Portland State University 1991; B.S., University of Arizona 1998.
Thesis: Chemical Scale Investigations of Ligand-Gated Ion Channels Using Unnatural Amino Acids.
- Diego Benitez (*Chemistry*) B.S., Universidad Nacional Autonoma de Mexico 2001.
Thesis: Theoretical Study of the Mechanism of Olefin Metathesis and Synthesis of Cyclic Polymers.
- Timothy Patrick Best (*Chemistry*) B.S., Butler University 1999.
Thesis: Localization of DNA-Binding Polyamides in Living Cells.
- Theodore Alexander Betley (*Chemistry*) B.S.E., University of Michigan 1999.
Thesis: Coordination Chemistry from Trigonally Coordinated Iron Platforms: Chemistry Relevant to Dinitrogen Reduction.
- Wendy Belliston Bittner (*Chemistry*) B.A., Bryn Mawr College 1999.
Thesis: Ultrafast Photoreduction of Nitric Oxide Synthase by Electron Tunneling Wires.
- Christopher J. Borths (*Chemistry*) B.S., University of Kentucky 1998; M.S., University of California, Berkeley 2000.
Thesis: Investigations in Enantioselective Catalysis. Development of Novel Asymmetric Organocatalytic Reactions.

Doctor of Philosophy continued

- Elizabeth Loraine Borths (*Biochemistry and Molecular Biophysics*) B.S., University of Kentucky 1998.
Thesis: Structural and Biochemical Characterization of the Vitamin B₁₂ ABC Transporter, BtuCD-F.
- Sean Pomeroy Brown (*Chemistry*) B.S., University of California, Davis 1998.
Thesis: Iminium and Enamine Activation: Methods for Enantioselective Organocatalysis.
- Steven Douglas Brown (*Chemistry*) B.S., University of Utah 2000.
Thesis: The Chemistry of Tris(phosphino)borate Supported Iron-Nitrogen Multiply-Bonded Linkages.
- Ileana Cristina Carpen (*Chemical Engineering*) B.S., Stanford University 1999; M.S., California Institute of Technology 2002.
Thesis: Studies of Suspension Behavior. I. Instabilities of Non-Brownian Suspensions. II. Microrheology of Colloidal Suspensions.
- Serena Hsin-Yi Chung (*Chemical Engineering*) B.S., University of Illinois at Urbana-Champaign 1995; M.S., California Institute of Technology 2001.
Thesis: Global Distribution, Radiative Forcing, and Climate Impact of Carbonaceous Aerosols.
- Andrei Deev (*Chemistry*) B.S., Moscow Institute of Physics and Technology 1997; M.S., 1998.
Thesis: Cavity Ringdown Spectroscopy of Atmospherically Important Radicals.
- Robert Michael Dirks (*Chemistry*) B.A., Wabash College 2000.
Thesis: Analysis, Design, and Construction of Nucleic Acid Devices.
- Benjamin S. Edelson (*Chemistry*) A.B., Harvard College 2000.
Thesis: Nuclear Localization of Polyamide-Fluorescein Conjugates in Cell Culture.
- Ramez Ahmed Elgammal (*Chemistry and Physics*) B.S. (*Biology*), H.B.S. (*Chemistry*), Central Michigan University 1996; M.S. (*Applied Physics*), California Institute of Technology 2001; M.S. (*Physics*), 2002.
Thesis: Theoretical and Experimental Investigations in MEMS-Based Force-Detected NMR.
- Eric James Fechter (*Chemistry*) B.S., California State Polytechnic University, San Luis Obispo 2000.
Thesis: Design of Sequence-Specific DNA Intercalators.
- Eric Matthew Ferreira (*Chemistry*) S.B., Massachusetts Institute of Technology 2000.
Thesis: The Design and Development of Palladium-Catalyzed Aerobic Oxidative Transformations.
- Jonathan Michael Galownia (*Chemical Engineering and Chemistry*) B.S., University of Illinois at Urbana-Champaign 2000; M.S., California Institute of Technology 2003.
Thesis: I. Synthesis, Characterization, and Base Catalysis of Novel Zeolite Supported Super-basic Materials. II. Oxidative Dehydrogenation of Ethane Over Reduced Heteropolyanion Catalysts.

Doctor of Philosophy continued

- Neil Kamal Garg (*Chemistry*) B.S., New York University 2000.
Thesis: The Total Synthesis of Dragmacidins D and F.
- Spencer Eugene Hall (*Chemistry*) B.S., Brigham Young University 1997; M.S., 2000.
Thesis: Development of a Structure Prediction Method for G-Protein Coupled Receptors.
- Jeremy David Heidel (*Chemical Engineering and Biology*) S.B. (*Biology*), S.B. (*Chemical Engineering*), Massachusetts Institute of Technology 1999; M.S., California Institute of Technology 2001.
Thesis: Targeted, Systemic Non-Viral Delivery of Small Interfering RNA *in vivo*.
- William W. Ja (*Chemistry*) B.S., University of California, Berkeley 1998.
Thesis: Peptide Modulators of G Protein Signaling.
- David Matthew Jenkins (*Chemistry*) B.A., Cornell University 2000.
Thesis: Low Spin Pseudotetrahedral Cobalt Tris(phosphino)borate Complexes.
- Elizabeth Anne Vincent Jones (*Chemical Engineering and Biology*) B.A.Sc., University of Waterloo 1999; M.S., California Institute of Technology 2002.
Thesis: Blood Flow and the Mammalian Embryo.
- Vadym A. Kapinus (*Chemistry*) B.S., Moscow Institute of Physics and Technology 1995; M.S., 1997.
Thesis: Photophysical Properties of Protonated Aromatic Hydrocarbons.
- Sara Bernadine Klamo (*Chemistry*) B.S., Wayne State University 1999.
Thesis: Direct Examination of Initiation and Propagation Kinetics of Zirconocene-Catalyzed Alkene Polymerization.
- Bruce Michael Lambert (*Chemistry and Physics*) B.S., Bates College 1997.
Thesis: Force-Detected, Single-Molecule Spectroscopy and Imaging Using Nanoscale Mechanical Resonators.
- Hyunjoo Lee (*Chemical Engineering and Chemistry*) B.S., Seoul National University 1998; M.S., 2000; M.S., California Institute of Technology 2003.
Thesis: A New Strategy for Synthesizing Zeolites and Zeolite-like Materials.
- Youyong Li (*Chemistry*) B.S., Peking University 1997; M.S., 2000.
Thesis: Atomistic Simulation of Macromolecules.
- Michael A. Marques (*Chemistry*) B.S., Santa Clara University 2000.
Thesis: The Molecular Recognition of DNA by Novel Heterocycles.
- Peter Meinhold (*Biochemistry and Molecular Biophysics*)
Thesis: Engineering Cytochrome P450 BM-3 for Selective Hydroxylation of Alkanes.
- John Frank Murphy (*Chemical Engineering*) B.S., Cornell University 1999; M.S., California Institute of Technology 2001.
Thesis: Methods for Collection and Processing of Gene Expression Data.
- Robert J. Nielsen (*Chemical Engineering and Chemistry*) B.S., Northwestern University 1998.
Thesis: Computational Strategy in Catalyst Design.

Doctor of Philosophy continued

- Alan Bowers Northrup (*Chemistry*) A.B., Harvard College 2000.
Thesis: Design and Development of New Enantioselective Organocatalytic Transformations, a Two-Step Synthesis of Carbohydrates, and Progress toward the Total Synthesis of Callipeltoside C.
- Jonathan S. Owen (*Chemistry*) B.S., University of Wisconsin-Madison 2000.
Thesis: A Study of Ligand Substitution and Its Importance in the C-H Activation of Methane and Methanol.
- Ernest James Petersson (*Chemistry*) B.A., Dartmouth College 1998.
Thesis: Investigations of Ion Channel Structure and Function. I. Studies of Nicotine Binding to the Acetylcholine Receptor. II. Development of Tools for Studying Learning and Memory with Unnatural Amino Acids.
- Stephen R. Popielarski (*Chemical Engineering*) B.S., Rensselaer Polytechnic Institute 1999; M.S., California Institute of Technology 2004.
Thesis: Development of a Nanoparticle-Based Model Delivery System to Guide the Rational Design of Gene Delivery to the Liver.
- Adam Thomas Poulin-Kerstien (*Chemistry*) B.A., Amherst College 2000.
Thesis: DNA-Templated Dimerizations of Minor Groove-Binding Polyamides.
- Xin Qi (*Chemistry*) B.S., Peking University 1991.
Thesis: Unnatural Amino Acid Incorporation to Rewrite the Genetic Code and RNA-peptide Interactions.
- Isaac Michael Rutenberg (*Chemistry*) B.S., Colorado School of Mines 2000.
Thesis: Functionalized Polymers and Surfaces via Ring-Opening Metathesis Polymerization.
- Daniel Paul Sanders (*Chemistry*) B.S., Case Western Reserve University 1996; M.S. 1999.
Thesis: Development of Fluorinated Monomers and Polymers for Advanced Photolithographic Applications.
- Catherine Ann Sarisky (*Chemistry*) B.A., New College of the University of South Florida 1995.
Thesis: Exploration of the Determinants of Protein Structure and Stability by Protein Design.
- Shantanu Sharma (*Chemistry*) B.S., California State University, Los Angeles 2001.
Thesis: Prediction of Structure and Antagonist Binding Site in Human and Rodent Chemokine Receptor 1.
- Wei Shen (*Chemical Engineering and Biology*) B.S., East China University of Science and Technology 1992; M.S., 1995; M.S., California Institute of Technology 2001.
Thesis: Structure, Dynamics, and Properties of Artificial Protein Hydrogels Assembled through Coiled-coil Domains.
- Brian Christopher Sisk (*Chemistry*) B.S., Western Kentucky University 1999; M.S., 2000.
Thesis: Computational Optimization of Chemical Vapor Detector Arrays.

Doctor of Philosophy continued

Andrew J. Spakowitz (*Chemical Engineering*) B.S., University of Wisconsin–Madison 1999; M.S., California Institute of Technology 2001.

Thesis: Semiflexible Polymers: Fundamental Theory and Applications in DNA Packaging.

Ramesh Srinivasan (*Chemical Engineering and Chemistry*) B.ChE., University of Mumbai 1995.

Thesis: Structural Dynamics of Complex Molecules by Ultrafast Electron Diffraction: Concepts, Methodology and Applications.

Heather Ann Sumner (*Chemistry*) B.A., Williams College 1995.

Thesis: Gas Phase Reaction Dynamics and Design of Molecular Clusters and Bioconjugates.

Terry Torao Takahashi (*Biochemistry and Molecular Biophysics*) B.S., Claremont McKenna College 1998; M.S., California Institute of Technology 2004.

Thesis: *In Vitro* Selection of RNA Binding Peptides.

Andrew K. Udit (*Chemistry*) B.Sc., University of Toronto 2000.

Thesis: P450 BM3 Electrochemistry and Electrocatalysis.

Jeremy John Weaver (*Chemistry*) B.A., Gustavus Adolphus College 2000.

Thesis: Corroles.

Susanna Leigh Widicus Weaver (*Chemistry*) B.S., Illinois Wesleyan University 2000.

Thesis: Rotational Spectroscopy and Observational Astronomy of Prebiotic Molecules.

Lauren J. Webb (*Chemistry*) B.A., Bowdoin College 2000.

Thesis: Chemical Characterization and Charge Carrier Dynamics of Crystalline Silicon(III) Surfaces Modified with Surface-Bound Organic Functional Groups.

James Michael Zahler (*Chemical Engineering and Applied Physics*) B.A., Texas A&M University 1999; M.S., California Institute of Technology 2002.

Thesis: Materials Integrations for High-Performance Photovoltaics by Wafer Bonding.

DIVISION OF ENGINEERING AND APPLIED SCIENCES

Gabriel Alejandro Acevedo Bolton (*Bioengineering*) B.S., University of California, Berkeley 1998; M.S., California Institute of Technology 1999.

Thesis: Blood Flow Effects on Heart Development and a Minimally Invasive Technique for *in vivo* Flow Alterations.

Steven Wayne Alves (*Civil Engineering*) B.S., Harvey Mudd College 2000; M.S., California Institute of Technology 2001.

Thesis: Nonlinear Analysis of Pacoima Dam with Spatially Nonuniform Ground Motion.

Deniz Karapetian Armani (*Electrical Engineering*) B.S., University of Illinois at Urbana-Champaign 2000; M.S., California Institute of Technology 2003.

Thesis: Ultra-High-Q Planar Microcavities and Applications.

Roya Bahreini (*Environmental Science and Engineering*) B.S., University of Maryland 1999; M.S., California Institute of Technology 2003.

Thesis: Studies with the Aerosol Mass Spectrometer.

Doctor of Philosophy continued

- Jeffrey Myles Bergthorson (*Aeronautics and Chemistry*) B.Sc., University of Manitoba 1999; M.S., California Institute of Technology 2000.
Thesis: Experiments and Modeling of Impinging Jets and Premixed Hydrocarbon Stagnation Flames.
- Harish Subrahmanya Bhat (*Control and Dynamical Systems*) A.B., Harvard College 2000.
Thesis: Lagrangian Averaging, Nonlinear Waves, and Shock Regularization.
- Justin Scott Boland (*Electrical Engineering*) B.S., University of Texas at Dallas 2000; M.S., California Institute of Technology 2001.
Thesis: Micro Electret Power Generators.
- Stacey Walker Boland (*Mechanical Engineering*) B.S., University of Texas at Dallas 2000; M.S., California Institute of Technology 2001.
Thesis: Sol-gel Synthesis of Highly Oriented Lead Barium Titanate and Lanthanum Nickelate Thin Films for High Strain Sensor and Actuator Applications.
- Christopher Shawn Boxe (*Environmental Science and Engineering and Geology*) B.S., Morehouse College 1999; M.S. (*Planetary Science*), California Institute of Technology 2001; M.S. (*Environmental Science and Engineering*), 2002.
Thesis: Nitrate Photochemistry and Interrelated Chemical Phenomena in Ice.
- Philippe Chatelain (*Aeronautics and Applied and Computational Mathematics*) Ingénieur Civil Mécanicien, Université Catholique de Louvain 1999; M.S., California Institute of Technology 2000.
Thesis: Contributions to the Three-Dimensional Vortex Element Method and Spinning Bluff Body Flows.
- Stephanie Sienyee Chow (*Computation and Neural Systems*) B.Sc., University of Toronto 1995; M.A., Queen's University 1998.
Thesis: Speciation in Digital Organisms.
- Matthew M. Cook (*Computation and Neural Systems*)
Thesis: Networks of Relations.
- Georgia B. Cua (*Civil Engineering and Geophysics*) B.S., Harvey Mudd College 1998; M.S., California Institute of Technology 2000.
Thesis: Creating the Virtual Seismologist: Developments in Ground Motion Characterization and Seismic Early Warning.
- Uri Vaughan Cummings (*Electrical Engineering*) B.A., Wesleyan University 1994; B.S., California Institute of Technology 1994; M.S., California Institute of Technology 1995.
Thesis: Linearized and High Frequency Electrooptic Modulators.
- John Oluseun Dabiri (*Bioengineering and Aeronautics*) B.S.E. (*Mechanical Engineering and Aeronautics*), Princeton University 2001; M.S., California Institute of Technology 2003.
Thesis: Unsteady Fluid Mechanics of Starting-Flow Vortex Generators with Time-Dependent Boundary Conditions.
- Domitilla Del Vecchio (*Control and Dynamical Systems*) Diploma, Università degli Studi di Roma "Tor Vergata" 1999.
Thesis: State Estimation in Multi-Agent Decision and Control Systems.

Doctor of Philosophy continued

- Bradley Scott Dooley (*Aeronautics and Planetary Science*) B.S., Rice University 1993; M.S., California Institute of Technology 1994.
Thesis: Stereo Digital Particle Image Velocimetry Investigation of a Free Surface Mixing Layer.
- Evan David Dorn (*Computation and Neural Systems*) B.S., B.A., Swarthmore College 1997.
Thesis: Universal Biosignatures for the Detection of Life.
- Jeffrey B. Endelman (*Bioengineering*) B.S., Northwestern University 2000; M.S., University of California, Santa Barbara 2002.
Thesis: Design and Analysis of Combinatorial Protein Libraries Created by Site-Directed Recombination.
- James Malcolm Faddy (*Aeronautics and Planetary Science*) M.E., University of Queensland 1998; M.E., 2000.
Thesis: Flow Structure in a Model of Aircraft Trailing Vortices.
- Ilja Friedel (*Computer Science*) B.S., University of Jena 1997; M.S., University of Kaiserslautern 1999; M.S., California Institute of Technology 2002.
Thesis: Approximation of Surfaces by Normal Meshes.
- Jimmy Fung (*Aeronautics and Control and Dynamical Systems*) B.S., Virginia Polytechnic Institute and State University 1997; M.S., 1998; M.S., California Institute of Technology 1999.
Thesis: Coarse Analysis of Multiscale Systems: Diffuser Flows, Charged Particle Motion, and Connections to Averaging Theory.
- Marcel Gavrilu (*Computer Science*) B.S., California Institute of Technology 1997; M.S., 2001.
Thesis: Towards More Efficient Interval Analysis: Corner Forms and a Remainder Interval Newton Method.
- William M. J. Green (*Electrical Engineering*) B.Sc., University of Alberta 1999; M.S., California Institute of Technology 2000.
Thesis: InGaAsP-InP Semiconductor Microcavity Geometries for Annular Bragg Reflection, Optical Switching, and Sensing.
- Irene Michelle Gregory (*Control and Dynamical Systems*) S.B., Massachusetts Institute of Technology 1988; M.S., University of Michigan 1990.
Thesis: Design and Stability Analysis of an Integrated Controller for Highly Flexible Advanced Aircraft Utilizing the Novel Nonlinear Dynamic Inversion.
- Lawrence Cary Gunn III (*Electrical Engineering*) B.S., United States Air Force Academy 1995; M.S., California Institute of Technology 2001.
Thesis: Integration of Complex Optical Functionality in a Production CMOS Process.
- Anna Iwaniec Hickerson (*Bioengineering*) B.S., California Institute of Technology 2000.
Thesis: An Experimental Analysis of the Characteristic Behaviors of an Impedance Pump.
- Stephen Richard Hostler (*Mechanical Engineering*) B.S.E., Case Western Reserve University 2000; M.S., California Institute of Technology 2001.
Thesis: Wave Propagation in Granular Materials.

Doctor of Philosophy continued

- Hung-Te Hsieh (*Electrical Engineering*) B.S., National Taiwan University 1998; M.S., California Institute of Technology 2002.
Thesis: Operation of Holographic Elements with Broadband Light Sources.
- James Sean Humbert (*Mechanical Engineering*) B.S., University of California, Davis 1997; M.S., California Institute of Technology 1999.
Thesis: Bio-Inspired Visuomotor Convergence in Navigation and Flight Control Systems.
- Scott Irving Jackson (*Aeronautics and Geophysics*) S.B., Brown University 1999; M.S., California Institute of Technology 2000.
Thesis: Gaseous Detonation Initiation via Wave Implosion.
- Yindi Jing (*Electrical Engineering*) B.E., University of Science and Technology of China 1996; M.E., 1999; M.S., California Institute of Technology 2000.
Thesis: Space-Time Code Design and Its Applications in Wireless Networks.
- Olga Kowalewsky (*Aeronautics and Computer Science*) Vordiplom, Aachen University of Technology 1996; Diplom, 2000; M.S., California Institute of Technology 2001.
Thesis: Theory of Complex Lattice Quasicontinuum and Its Application to Ferroelectrics.
- Seung-Yub Lee (*Materials Science*) B.S., Yonsei University 1997; M.S., University of California, Los Angeles 2000; M.S., California Institute of Technology 2002.
Thesis: Deformation Mechanisms of Bulk Metallic Glass Matrix Composites.
- Fei Fei Li (*Electrical Engineering*) B.A., Princeton University 1999; M.S., California Institute of Technology 2002.
Thesis: Visual Recognition: Computational Models and Human Psychophysics.
- Nathan Jacob Litke (*Computer Science*) B.A., University of Waterloo 1998; M.S., California Institute of Technology 2001.
Thesis: Variational Methods in Surface Parameterization.
- Miao-Ling Lu (*Environmental Science and Engineering*) B.S., National Taiwan University 1996; M.S., 1998; M.S., California Institute of Technology 2000.
Thesis: Large-Eddy Simulations of Marine Cumulus and Stratocumulus and Study of Humidity Halos and Aerosol Indirect Radiative Effects.
- Daniella Meeker (*Computation and Neural Systems*) B.A., University of Chicago 1998.
Thesis: Cognitive Neural Prosthetics.
- Sundeep Mukherjee (*Materials Science*) B.Tech., Indian Institute of Technology 1998; M.S., University of Alabama 2000; M.S., California Institute of Technology 2003.
Thesis: Study of Crystallization Behavior, Kinetics and Thermodynamics of Bulk Metallic Glasses Using Noncontact Electrostatic Levitation Technique.
- Saleem Mukhtar (*Computation and Neural Systems*) B.S., Carnegie Mellon University 1996.
Thesis: Interval Modulation: A New Paradigm for the Design of High Speed Communication Systems.
- George T. Paloczi (*Applied Physics*) B.S., University of California, Santa Barbara 1999; M.S., California Institute of Technology 2001.
Thesis: Polymer Integrated Optics: Device Architectures and Fabrication Methods.

Doctor of Philosophy continued

- Antonis Papachristodoulou (*Control and Dynamical Systems and Aeronautics*) B.A., M.E., Cambridge University 2000.
Thesis: Scalable Analysis of Nonlinear Systems Using Convex Optimization.
- Florian Peter Pintgen (*Applied Physics*) Ingenieur, Technische Universität München 2000.
Thesis: Detonation Diffraction in Mixtures with Various Degrees of Instability.
- Nicolas Frédéric Ponchaut (*Aeronautics and Mechanical Engineering*) Candidat Ingénieur, Université De Liège 1997; Ingénieur Aérospatiale 2000; M.S., California Institute of Technology 2001.
Thesis: Part I: 3DPTV Advances and Error Analysis. Part II: Extension of Guderley's Solution for Converging Shock Waves.
- Stephen Prajna (*Control and Dynamical Systems*) S.T., Institut Teknologi Bandung 1998; M.Sc., University of Twente 2000.
Thesis: Optimization-Based Methods for Nonlinear and Hybrid Systems Verification.
- Carlos Alejandro Romero Talamás (*Mechanical Engineering and Applied Physics*) Industrial Physics Engineering, Instituto Tecnológico y de Estudios Superiores de Monterrey 1995; M.S., International Space University 1998; M.S., California Institute of Technology 2000.
Thesis: Investigations of Spheromak Plasma Dynamics: High-Speed Imaging at the Sustained Spheromak Physics Experiment and Magnetic Diagnostics at the Caltech Spheromak Experiment.
- Silvio Savarese (*Electrical Engineering*) Laurea, Università degli Studi di Napoli - Federico II 1998; M.S., California Institute of Technology 2001.
Thesis: Shape Reconstruction from Shadows and Reflections.
- Geoffrey D. Staneff (*Materials Science*) B.S., University of Washington 1998; M.S., California Institute of Technology 2003.
Thesis: High-pressure Synthesis of Thermoelectric Materials.
- Valentin Gabriel Stredie (*Applied and Computational Mathematics*) B.S., California Institute of Technology 1999.
Thesis: Mathematical Modeling and Simulation of Aquatic and Aerial Animal Locomotion.
- Jeremy Christopher Thorpe (*Electrical Engineering*) B.S., University of California, Riverside 2000; M.S., California Institute of Technology 2001.
Thesis: Analysis and Design of Protograph Based LDPC Codes and Ensembles.
- Daniel Pierre Thunnissen (*Mechanical Engineering*) B.S.E., University of Michigan 1995; M.S., University of Illinois at Urbana-Champaign 1996.
Thesis: Propagating and Mitigating Uncertainty in the Design of Complex Multidisciplinary Systems.
- Andrew Neil Westhead (*Applied and Computational Mathematics*) B.S., M.S., Imperial College London 1998.
Thesis: Upscaling for Two-phase Flows in Porous Media.

Doctor of Philosophy continued

- Vincent Wheatley (*Aeronautics and Planetary Science*) B.E., University of Queensland 1998; M.Eng.Sc., 2000.
Thesis: On the Richtmyer-Meshkov Instability in Magnetohydrodynamics.
- Christopher John White (*Electrical Engineering*) B.S., University of Illinois at Urbana-Champaign 1999; M.S., California Institute of Technology 2001.
Thesis: A Solid-state Atomic Frequency Standard.
- Richard Edward Wirz (*Aeronautics and Electrical Engineering*) B.S., Virginia Polytechnic Institute and State University 1992; M.S., California Institute of Technology 2001.
Thesis: Discharge Plasma Processes of Ring-Cusp Ion Thrusters.
- Jeremy Witzens (*Electrical Engineering*) Diplôme d'Ingénieur, École Polytechnique 2000; M.S., California Institute of Technology 2001.
Thesis: Dispersion in Photonic Crystals.
- Jian Wu (*Materials Science*) B.S., Tsinghua University 1999; M.S., California Institute of Technology 2001.
Thesis: Defect Chemistry and Proton Conductivity in Ba-based Perovskites.
- Kaiwen Xia (*Mechanical Engineering and Geophysics*) B.S., University of Science and Technology of China 1995; M.S., 1998; M.S., California Institute of Technology 2000.
Thesis: Laboratory Investigations of Earthquake Dynamics.
- Yu Xiao (*Mechanical Engineering and Materials Science*) B.S., University of Science and Technology of China 1995; M.S., 1998.
Thesis: The Influence of Oxygen Vacancies on Domain Patterns in Ferroelectric Perovskites.
- Jun Xie (*Electrical Engineering*) B.E., Zhejiang University 1996; M.S., California Institute of Technology 2000.
Thesis: Integrated Parylene LC-ESI on a Chip.
- Donghua Xu (*Materials Science*) B.E., Jilin University 1998; M.S., 2001; M.S., California Institute of Technology 2002.
Thesis: Development of Novel Binary and Multi-component Bulk Metallic Glasses.
- Lan Yang (*Applied Physics*) B.S., University of Science and Technology of China 1996; M.S., California Institute of Technology 2000.
Thesis: Fabrication and Characterization of Microlasers by the Sol-Gel Method.
- Arash Yavari (*Applied Mechanics and Mathematics*) B.S., Sharif University of Technology 1997; M.S., George Washington University 2000.
Thesis: Atomic Structure of Ferroelectric Domain Walls, Free Surfaces and Steps.
- Xinwei Yu (*Applied and Computational Mathematics*) B.S., Peking University 1997; M.S., 2000.
Thesis: Localized Non-blowup Conditions for 3D Incompressible Euler Flows and Related Equations.
- Qingsong Zhang (*Materials Science*) B.E., Tsinghua University 1996; M.S., California Institute of Technology 2000.
Thesis: Atomistic Simulation of Barium Titanate.
- Jijie Zhou (*Bioengineering*) B.S., Peking University 1997; M.S., 2000.
Thesis: Nanowicking: Multi-scale Flow Interaction with Nanofabric Structures.

Doctor of Philosophy continued

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

Tanja Bosak (*Geobiology*) B.Sc., University of Zagreb 1998.

Thesis: Laboratory Models of Microbial Biosignatures in Carbonate Rocks.

Jane Ellen Dmochowski (*Geophysics*) B.S., University of California, Santa Barbara 1995; M.S., California Institute of Technology 1997.

Thesis: Application of MODIS-ASTER (Master) Simulator Data to Geological Mapping of Young Volcanic Regions in Baja California, Mexico.

William R. Keller (*Geophysics*) B.S., University of Arizona 1996.

Thesis: Cenozoic Plate Tectonic Reconstructions and Plate Boundary Processes in the Southwest Pacific.

David Lawrence Shuster (*Geochemistry*) B.A., University of California, Berkeley 1996; M.S., California Institute of Technology 2003.

Thesis: Application of Spallogenic Noble Gases Induced by Energetic Proton Irradiation to Problems in Geochemistry and Thermochronometry.

Zhengrong Wang (*Geochemistry*) B.S., University of Science and Technology of China 1996; M.S., 1999; M.S., California Institute of Technology 2002.

Thesis: Oxygen Isotope Studies of the Petrogenesis of Hawaiian Lavas and a Theoretical Study on Equilibrium Thermodynamics of Multiply-Substituted Isotopologues.

DIVISION OF HUMANITIES AND SOCIAL SCIENCES

Paul Jay Healy (*Social Science*) B.S., Purdue University 2000; M.S., California Institute of Technology 2003.

Thesis: Institutions, Incentives and Behavior: Essays in Public Economics and Mechanism Design.

Kevin A. Roust (*Social Science*) B.S., California Institute of Technology 1997; M.S., 2003.

Thesis: Minority Rights in Majoritarian Institutions.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

Sever Achimescu (*Mathematics*) B.Sc., M.Sc., West University of Timisoara 1995; M.Sc., University of South Alabama 1998.

Thesis: Hilbert Modular Forms of Weight $1/2$.

Kevin Michael Birnbaum (*Physics*) B.S., Stanford University 1999.

Thesis: Cavity QED with Multilevel Atoms.

Andreea Boca (*Physics*) A.B., Harvard College 1999.

Thesis: Experiments in Cavity QED: Exploring the Interaction of Quantized Light with a Single Trapped Atom.

Allen David Boozer (*Physics*) B.S., University of Virginia 1996.

Thesis: Raman Transitions in Cavity QED.

Kaihua Cai (*Mathematics*) B.S., University of Science and Technology of China 2000.

Thesis: Dispersive Properties of Schrödinger Equations.

Doctor of Philosophy continued

- Martin Centurion Mac Lean (*Physics*) B.S., University of Michigan 2000.
Thesis: Study of the Nonlinear Propagation of Femtosecond Laser Pulses.
- Silviu Doru Covrig (*Physics*) B.Sc., University of Bucharest 1995; M.Sc., 1996.
Thesis: A Measurement of Parity-Violating Asymmetries in the G^0 Experiment in Forward Mode.
- Luca R. Diaconescu (*Physics*) B.Eng., Carleton University 1995; B.Sc., 1996; M.Eng., 1997, M.S., California Institute of Technology 2000.
Thesis: Applications of Effective Field Theory to Electron Scattering.
- Joshua Aaron Eisner (*Astrophysics*) A.B., Harvard College 1999.
Thesis: High Angular Resolution Studies of the Structure and Evolution of Protoplanetary Disks.
- Alison J. Farmer (*Astrophysics*) B.A., M.Sc., University of Cambridge 2000.
Thesis: Adventures in Theoretical Astrophysics.
- Stephan Ichiriu (*Physics*) B.S. (*Physics and Mathematics*), Indiana University 1999.
Thesis: Investigation of Spin Injection in Semiconductors: Theory and Experiment.
- Bryan Anthony Jacoby (*Astrophysics*) B.S., Pennsylvania State University 1997.
Thesis: Recycled Pulsars.
- Jennifer Michelle Johnson (*Mathematics and Chemistry*) B.S., College of William and Mary 1998.
Thesis: Artin L-functions for Abelian Extensions of Imaginary Quadratic Fields.
- William C. Jones (*Physics*) B.A., Princeton University 1998.
Thesis: A Measurement of the Temperature and Polarization Anisotropies in the Cosmic Microwave Background Radiation.
- Daniel Jerome Katz (*Mathematics*) B.A., Princeton University 1997.
Thesis: On p -Adic Estimates of Weights in Abelian Codes over Galois Rings.
- Melinda Jane Kellogg (*Physics*) B.S., University of California, Santa Barbara 1993; M.S., California Institute of Technology 1999.
Thesis: Evidence for Excitonic Superfluidity in a Bilayer Two-Dimensional Electron System.
- Michael Henry Kesden (*Physics*) B.A., Princeton University 2000.
Thesis: To the Horizon and Beyond: Weak Lensing of the CMB and Binary Inspirals into Horizonless Objects.
- Christopher Lee (*Physics*) B.A., Reed College 1999.
Thesis: Probing Physics and the Standard Model and Beyond with Electroweak Baryogenesis and Effective Theories of the Strong Interactions.
- Hok Kong Lee (*Physics*) M.S., Oxford University 1999.
Thesis: Gauge Theory and Supergravity Duality in the PP-Wave Background.
- Yi Li (*Physics*) B.S., California Institute of Technology 1998; M.S., 2000.
Thesis: Topological Sigma Models and Generalized Geometries.

Doctor of Philosophy continued

- Benjamin A. Mazin (*Astronomy*) B.S., Yale University 1997.
Thesis: Microwave Kinetic Inductance Detectors.
- Tristan McLoughlin (*Physics*) B.A., Trinity College Dublin 1999.
Thesis: The Near-Penrose Limit of AdS/CFT.
- Carlos Mochon (*Physics*) S.B., Massachusetts Institute of Technology 1999.
Thesis: From Non-Abelian Anyons to Quantum Computation to Coin-Flipping by Telephone.
- Irina Nenciu (*Mathematics*) B.S., University of Bucharest 2001.
Thesis: Lax Pairs for the Ablowitz-Ladik System Via Orthogonal Polynomials on the Unit Circle.
- Takuya Okuda (*Physics*) B.S., Kyoto University 2000; M.S., California Institute of Technology 2004.
Thesis: Large N Dualities in Topological String Theory.
- Yasser Rathore (*Physics*) B.A., Middlebury College 1998.
Thesis: Resonant Excitation of White Dwarf Oscillations in Compact Object Binaries.
- George G. Shapovalov (*Physics*) M.Sc., Kiev State Shevchenko University 1996.
Thesis: Mechanosensitive Channels of Bacteria: Structure and Function.
Electrophysiology as a High Resolution Technique of Ion Channel Study.
- Kris Raymond Sigurdson (*Physics*) B.A., Simon Fraser University 2000.
Thesis: Variations on the Standard Model of the Universe.
- Mihai Valentin Stoiciu (*Mathematics*) M.A., University of Bucharest 2000.
Thesis: Zeros of Random Orthogonal Polynomials on the Unit Circle.
- Ian Jakov Swanson (*Physics*) B.S., College of William and Mary 2000.
Thesis: Superstring Holography and Integrability in $AdS_5 \times S^5$.
- Tzer-jen Wei (*Mathematics*) B.S., National Taiwan University 1996; M.S., 1998.
Thesis: Descriptive Properties of Measure Preserving Actions and the Associated Unitary Representations.
- Nevin Nachum Weinberg (*Astronomy*) B.A., University of Chicago 2000.
Thesis: I. Ash Injection and Exposure During Radius Expansion Type I X-ray Bursts.
II. Stellar Dynamics at the Galactic Center. III. Weak Gravitational Lensing by Dark Matter Concentrations.
- Margaret Ellen Wessling (*Physics*) B.A., Amherst College 1999; M.S., California Institute of Technology 2002.
Thesis: Heavy Pentaquarks in the Diquark Model and the Large N_c Expansion.
- David Whitehouse (*Mathematics*) B.S., Imperial College London 1999; C.A.S.M., Cambridge University 2000.
Thesis: The Twisted Weighted Fundamental Lemma for the Transfer of Automorphic Forms from $GSp(4)$ to $GL(4)$.
- Paul Alexander Wiggins (*Physics*) B.S., Cornell University 1999.
Thesis: Biology Beyond Biochemistry: The Mechanics of Life.