MATTHEW J. TRAUM

• PO Box 1394 • Denton, TX 76202-1394 • (617) 233-9735 • mtraum@unt.edu • http://www.mtraum.com •

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Doctor of Philosophy in Mechanical Engineering, June 2007
Minor in Nanotechnology/Microtechnology Fabrication and Manufacturing, June 2007
G.P.A. : 4.80/5.0
Master of Science in Mechanical Engineering, June 2003
G.P.A. : 4.57/5.0

UNIVERSITY OF CALIFORNIA, IRVINE
Bachelor of Science in Aerospace Engineering, June 2001 (Cum Laude)
Bachelor of Science in Mechanical Engineering, June 2001
Minor in Women's Studies, June 2001
G.P.A. : 3.785/4.000
Dean's List: Fall 1996 through Spring 1999 and Fall 2000 through Spring 2001

UNIVERSITY OF BRISTOL, UNITED KINGDOM
Education Abroad Program in Aerospace Engineering, 1999-2000

UNIVERSITY FACULTY EXPERIENCE

Assistant Professor in the Department of Mechanical and Energy Engineering, Denton, TX. June 2007-present
University of North Texas (UNT), College of Engineering, Department Interim Chair: Prof. Nourredine Boubekri
- Principal Investigator and Director of the UNT Thermal Fluid Sciences Group (TFS Group @ UNT)
- Director of the UNT Researcher Incubator, which engages undergraduates in early engineering research experiences
- Chair Department Curriculum Committee; facilitated major curriculum adjustment to align with ABET requirements
- Instruct the Department's introductory courses, upper-division thermal science courses, and graduate courses

Lecturer in the Department of Physics, Boston, MA. September 2005-June 2006
Simmons College, Department Chair: Professor Velda Golderg
- Instructed a weekly laboratory class of 15 students as a component of the introductory physics course
- Students in my lab achieved a mean score of 11 points above the class average on lab-related final exam questions
- Monitored student progress, graded assignments, and assessed student accomplishments

RESEARCH EXPERIENCE

Research Assistant at the Institute for Soldier Nanotechnologies, Cambridge, MA. August 2003-June 2007
MIT's Institute for Soldier Nanotechnologies, Advisors: Professor E. L. Thomas and Dr. W. A. Peters

"Latent Heat Fluxes Through Nano-engineered Porous Materials"

My research capitalized on the unique properties of micro-frame, a nano-fabricated rigid porous structure that can be manufactured with straight-though pores. These tiny non-tortuous channels enhance the mass transport rate of water vapor in micro-frame with respect to bulk materials. Mass transport can be further augmented using advanced nano-fabrication techniques to modify channel diameter, shape, orientation, and arrangement. In addition, the channel walls can be coated to control functional properties like roughness and hydrophobicity. I created an experimental apparatus to measure the heat and mass transfer properties of micro-frame and related materials under simulated desert conditions. I evaluated micro-frame cooling performance against conventional materials, and I derived an integrated heat and mass transfer model to predict micro-frame's transport capabilities. Having developed these analytical and experimental tools, I quantified the thermal-fluidic impact of micro-frame pore size as the diameter transitions from 5400 to 39 nanometers. This work was performed with collaborators who studied the mechanical energy absorbing properties of micro-frame. The ultimate goal of the research was to develop self-cooling soldier body armor. Additional applications may include electronics protection and cooling as well as regulation of chemical and thermodynamic processes.

Research Assistant at the Cryogenics Engineering Laboratory, Cambridge, MA. September 2001-June 2003
MIT Department of Mechanical Engineering, Advisors: Professor J. G. Brisson and Professor J. L. Smith

"Development of a Cold End and High-Efficiency Valves for a One-Watt 10 Kelvin Cryocooler"

I created a desktop-sized cryocooler by miniaturizing an industrial-scale Collins cycle. I constructed a prototype for a three-stage cryocooler capable of maintaining a constant temperature of 10 Kelvin under a 1-watt heat load. My focus was to develop the cryogenic cold valves and coordinate their integration into the cold end. I used finite-element modeling to converge upon the optimal valve geometry. I then formulated an experimental process for valve static benchmarking. I explored the sensitivity of the valves to various geometric tolerances. I combined the finite element model with other analytical calculations to derive a series of first-order approximations for several aspects of cold end operation and performance. The target was to create a new type of satellite-based cryocooler; whereas forward-looking terrestrial applications include miniaturized coolers for desktop-sized super computers.

Research Assistant at the National Fuel Cell Research Center, Irvine, CA. March 1999-June 2001
UC Irvine Advanced Power and Energy Program, Advisors: Professor G. S. Samuelsen and Dr. J. Brouwer

- Installed molten carbonate fuel cell test stand infrastructure to assist in dynamic modeling project
- Established infrastructure and monitoring regimen to support solar-assisted lighting demonstration
- Coordinated fabrication of research-quality ambient air monitoring facility
- Edited and proofread technical papers for journal submission as well as the lab's quarterly newsletter

Research Assistant in UC Irvine's Supersonic Flow Group, Irvine, CA. Summer 1998 and Fall 2000
UCI Department of Mechanical and Aerospace Engineering, Advisor: Professor D. Papamoschou

- Designed and custom-machined a corrosion-resistant pressure probe for jet flow measurements
- Dismantled and cleaned precision parts from an existing test stand to cost-save for a new apparatus
- Calculated required mechanical strengths for test stand components and secured appropriate materials
- Coordinated outsourcing of electron discharge machining for high-quality two-dimensional supersonic nozzle

PUBLICATIONS

Peer Reviewed Journal Publications

1. **Traum, M. J.**, Griffith, P., Thomas, E. L., Peters, W. A., "Latent Heat Fluxes Through Soft Materials With Micro-truss Architectures," *ASME Journal of Heat Transfer,* Volume 130, April 2008.
2. Eric L Petersen, Matthew J. A. Rickard, Mark W. Crofton, Erin D. Abbey, **Matthew J. Traum**, and Danielle M. Kalitan, "A facility for gas- and condensed-phase measurements behind shock waves," *Measurements Science and Technology,* Volume 16, pp. 1716–1729, 2005.
3. **M. J. Traum**, J. L. Smith, J. G. Brisson, J. Gerstmann, C. Hannon, "Electromagnetic Smart Valves for Cryogenic Applications," *Advances in Cryogenic Engineering,* Volume 49a, pp. 428-435, 2004.
4. C. L. Hannon, J. Gerstmann, B. J. Krass, **M. J. Traum**, J. G. Brisson, and J. L. Smith, Jr., "Floating Piston Expander Development for Small-Scale Collins Type 10 K Cryocooler for Space Applications," *Advances in Cryogenic Engineering,* Volume 49b, pp. 1650-1657, 2004.

Invited Presentations

1. **Traum, M. J.**, "Latent Heat Fluxes Through Nano-engineered Porous Materials," *Society of Physics Students 2007 New England Regional Conference,* Simmons College, Boston, MA April 13, 2007.

Conference Proceedings

1. **M. J. Traum**, R. G. Carter, "Pitch Control Benefits of Elevators for Autogyros in Low-Speed Forward Flight," *Proceedings of the 43rd AIAA Aerospace Sciences Meeting and Exhibit,* Reno, NV, Jan. 10 - 13, 2005.

2. W. A. Peters, M. J. Cromie, **M. J. Traum**, E. L. Thomas, "Nanotechnology for Soldier Protection: Lessons from Space Suits and the Human Body," *Proceedings of the 24th United States Army Science Conference*, Orlando, FL, Nov. 29 - Dec. 2, 2004.
3. J. L. Smith, Jr., J. G. Brisson, **M. J. Traum**, C. Hannon, and J. Gerstmann, "Description of a High-Efficiency Floating-Piston Expander for a Miniature Cryocooler," ASME Paper IMECE2002-33402, *Proceedings of IMECE2002, ASME International Mechanical Engineering Congress & Exposition*, November 17 - 22, 2002.
4. C. Hannon, J. Gerstmann, **M. Traum**, J.G. Brisson, and J.L. Smith Jr, "Development of A Medium-Scale Collins-Type 10 K Cryocooler," *Proceedings of the 12th International Cryocooler Conference*, Cambridge, MA, June 18-20, 2002.
5. E. L. Petersen, R. P. Welle, **M. J. Traum**, E. D. Abbey, and M. J. A. Rickard, "A New Shock-Tube Facility for Studying Combustion Phenomena in Mixtures Containing Condensed Species," ASME Paper NHTC2001-20136, *Proceedings of NHTC '01, 35th National Heat Transfer Conference*, June 10-12, 2001.

Engineering Magazine Articles

1. **Matthew J. Traum**, "Second Life: A Virtual Universe for Real Engineering," *Design News Magazine*, Vol. 62, No. 15, October 22, 2007.

Poster Sessions

1. J. C. Day, A. D. Rowen, J. A. Goldstrom, M. Vakulenko, and **M. J. Traum**, "Static Repelling Force Between Two Axially Magnetized Ring Magnets," *University Scholars Day 2008*, Honors College, University of North Texas (UNT), Denton, TX April 3, 2008.
2. A. Wright, C. D. Frey, D. Gonzales, N. Ross, **M. J. Traum**, "An Instrumented Air Conditioning Unit for Quantitative Cycle Performance Analysis," *University Scholars Day 2008*, Honors College, University of North Texas (UNT), Denton, TX April 3, 2008.
3. J. E. McKeathen, C. S. Darden, D. W. Davis, **M. J. Traum**, "Wireless Indoor Sensor Network Battery Voltage Decay Study," *University Scholars Day 2008*, Honors College, University of North Texas (UNT), Denton, TX April 3, 2008.
4. J. D. McNutt, C. M. Fallwell, **M. J. Traum**, "Assessing Energy Conversion Efficiency for Sub-Kilowatt Thermoelectric Generators Under Concentrated Sunlight," *University Scholars Day 2008*, Honors College, University of North Texas (UNT), Denton, TX April 3, 2008.
5. **M. J. Traum**, S. L. Karackattu, D. Houston Jackson, J. D. McNutt, "Organization to Fast-Track Undergraduate Students Into Engineering Research via Just-In-Time Learning," *Conference On Being an Engineer: Cognitive Underpinnings of Engineering Education*, Center for the Integration of Science Education and Research, Lubbock, TX, February 1-2, 2008.
6. **M. J. Traum**, S. L. Karackattu, C. Heiden, "Impact of Early Exposure to Engineering Practice on Retention Rates Among Engineering Students," *Conference On Being an Engineer: Cognitive Underpinnings of Engineering Education*, Center for the Integration of Science Education and Research, Lubbock, TX, February 1-2, 2008.
7. **M. J. Traum**, Griffith, P., Thomas, E. L., Peters, W. A., "Latent Heat Fluxes Through Nano-engineered Porous Materials," *ASME Energy Nanotechnology International Conference*, Cambridge, MA, June 26 – 28, 2006.
8. **M. J. Traum**, M. J. Cromie, J. Nadeau, W. A. Peters, T. M. Swager, E. L. Thomas, "Systems Integration for Optimal Use of Nanotechnologies for Soldier Survivability," *ISN Day*, Cambridge, MA., May 2005.
9. **M. J. Traum**, W. A. Peters, E. L. Thomas, "Active Multifunctionality: Integrated Cooling and Ballistic Protection Enabled by Nanotechnology," *ISN Day*, Cambridge, MA., May 2005.

Published Reports

1. **M. J. Traum** and E. L. Petersen, "Some Issues on Powdered-Aerosol Handling on the Aerospace Shock Tube Facility," Aerospace Corporation Report TR-2000(8565)-5, 2001.

Doctoral Thesis

1. **Matthew J. Traum**, "Latent Heat Fluxes Through Nano-engineered Porous Materials," Ph.D. Thesis, Department of Mechanical Engineering, Massachusetts Institute of Technology, May 2007.

Master's Thesis

1. **Matthew J. Traum**, "Development of a Cold End and High-Efficiency Valves for a One-Watt 10 Kelvin Cryocooler," M.S. Thesis, Department of Mechanical Engineering, Massachusetts Institute of Technology, May 2003.

M.Eng Thesis

1. R. Carter and **M. Traum**, "Autogyro Pitch Sensitivity in Low Speed Forward Flight," M.Eng Thesis, Department of Aerospace Engineering, University of Bristol, UK, April 2000.

GRANTS, FELLOWSHIPS, AND FUNDING WON

1. "Environmental Monitoring Research Infrastructure," Research Infrastructure Support Grant [UNT Internal], $33,373, Xinrong Li (PI), Miguel Acevedo (Co-PI), Sandra Boetcher (Co-PI), Shengli Fu (Co-PI), Yan Huang (Co-PI), and **Matthew J. Traum** (Co-PI), submitted June 27, 2008.
2. "Hydrogen Bond Impact on Gas Diffusion through Nano Channels at High Knudsen Number", UNT Faculty Research Initiation Grant, $5,000, **Matthew J. Traum** (PI) and Sandra Boetcher (Co-PI), submitted April 7, 2008.
3. "A Formal International Exchange Program for UNT Engineering Students," Charn Uswachoke International Development Fund [UNT Internal], $5,000, **Matthew J. Traum** (PI), submitted April 4, 2008.
4. "Solar Drag Race: A Hands-On First-Year Energy Engineering Experience," unsolicited proposal submitted to the Dean of the UNT College of Engineering, $1,800, **Matthew J. Traum** (PI), submitted April 1, 2008.
5. "Solar Drag Race: A Hands-On First-Year Energy Engineering Experience," UNT Transformative Instruction Fellowship, $12,000, **Matthew J. Traum** (PI), submitted March 20, 2008.
6. "Quantifying Heat- and Mass Transport Via Water Vapor Diffusion Through Sub-Micron-Porous Membranes for Human Comfort and Protection", UNT Faculty Research Initiation Grant, $5,000, **Matthew J. Traum** (PI), submitted November 16, 2007.
7. "Quantifying Water Vapor Diffusion Through Sub-Micron-Porous Membranes for Human Comfort and Protection," UNT Junior Faculty Summer Research Fellowship, $5,000, **Matthew J. Traum** (PI), submitted November 5, 2007.

COURSES TAUGHT

University of California - Irvine (UCI), Irvine, CA

Course	Semesters	G/UG	Description
University Studies 1A: Issues and Options for Undecided/Undeclared Students	Fall 1998	UG	Introduces new undecided/undeclared freshmen to university issues, resources, and options as they learn about the academic undergraduate culture at UCI. Two-quarter course emphasizes necessary skills and tools for being a successful student, followed by exploration of UCI's undergraduate majors and career options with a focus on decision-making skills.
University Studies 1B: Issues and Options for Undecided/Undeclared Students	Winter 1999	UG	

Simmons College, Boston, MA

Course	Semesters	G/UG	Description
PHYS 112L: Introductory Physics Lab	Fall 2005	UG	Teaches the fundamentals of physics for students with preparation in algebra and trigonometry. Topics drawn from mechanics, electricity and magnetism, heat, waves, sound, optics, and modern physics. Weekly three-hour laboratory and one hour interactive problem-solving session.
PHYS 113L: Introductory Physics Lab	Spring 2006	UG	

University of North Texas (UNT), Denton, TX

Course	Semesters	G/UG	Description
MEEN 5110/4110: Alternative Energy Sources	Spring 2008	G/UG	Introduction to the physics, systems, and methods of energy conversion from non-conventional energy sources, such as solar, geothermal, ocean-thermal, biomass, tidal, hydroelectric, wind and wave energy. Advantages and disadvantages of alternative energy sources and engineering challenges for the harnessing of such forms of energy; energy storage; fuel cells.
MEEN 3125: Thermal-Fluid Sciences and Engineering Projects	Fall 2008	UG	The project component of the thermal-fluid sciences and engineering concentration in the MEE curriculum. Students complete practical engineering projects under realistic conditions while meeting customer needs.
MEEN 1110: Mechanical and Energy Engineering Practice I	Fall 2007 Fall 2008	UG	Introduction to the practice of Mechanical and Energy Engineering, applications of the subject, presentation of the work of the faculty and practicing engineers, seminars on "real world" projects, ethics and professional orientation.
MEEN 1210: Mechanical and Energy Engineering Practice II	Spring 2008	UG	Continuation of Practice I. Applications of Mechanical and Energy Engineering, presentations by faculty and practicing engineers, professional orientation, professional ethics.

STUDENT SUPERVISION

Graduate Students – Current

Thesis Advisor, Ali Mohiti Alsi (M.S. – Mechanical and Energy Engineering): September 2007 - present
Topic: *Analysis of Apparatus to Gauge Evaporative Cooling Effectiveness of Micro-porous Barriers*

Thesis Advisor, Simon Santillanes (M.S. – Mechanical and Energy Engineering): January 2007 - present
Topic: *Sustainable Retrofit to Improve Energy Efficiency and Economy of a College Dormitory Room*

Undergraduate Students – Current

Research Advisor, Jack McKeathen (B.S. – Mechanical and Energy Engineering): September 2007 - present
Topic 1: *Wireless Indoor Sensor Network Battery Voltage Decay Study*
Topic 2: *Apparatus to Measure the Contact Angle of Liquid Nitrogen on Metal Substrates*

Research Advisor, Chris Darden (B.S. – Mechanical and Energy Engineering): September 2007 - present
Topic 1: *Wireless Indoor Sensor Network Battery Voltage Decay Study*
Topic 2: *Comparison of Wireless to Hard-Wired Sensors to Monitor Indoor Human Comfort*

Research Advisor, Christie Fallwell (B.S. – Mechanical and Energy Engineering): September 2008 - present
Topic: *Improving Efficiency of a Thermoelectric Generator under Concentrated Sunlight*

Research Advisor, Dylan Davis (B.S. – Mechanical and Energy Engineering): September 2008 - present
Topic: *Improving Efficiency of a Thermoelectric Generator under Concentrated Sunlight*

Research Advisor, Andrew Farris (B.S. – Mechanical and Energy Engineering): September 2008 - present
Topic: *Gauging Thermal Survivability of an Outdoor Roofnet WiFi Wireless Hub*

Research Advisor, C. David Frey (B.S. – Mechanical and Energy Engineering): September 2007 - present
Topic: *Instrumenting an Apparatus to Quantify the Effectiveness of Ozone-friendly Refrigerants*

Undergraduate Students – Past

Research Advisor, Jerod C. Day (B.S. – Mechanical and Energy Engineering): September 2007 – September 2008
Topic: *Static Repelling Force Between Two Axially Magnetized Ring Magnets*

Research Advisor, Archie Wright (B.S. – Mechanical and Energy Engineering): September – May 2007
Topic: *An Instrumented Air Conditioning Unit for Quantitative Cycle Performance Analysis*

Research Advisor, Joshua D. McNutt (B.S. – Mechanical and Energy Engineering): September – May 2007
Topic: *Assessing Energy Conversion Efficiency for Sub-Kilowatt Thermoelectric Generators Under Concentrated Sunlight*

Research Advisor, Dana Houston Jackson (B.S. – Mechanical and Energy Engineering): September – February 2007
Topic: *Fast-tracking Undergraduates into Engineering Research Experiences via Just-In-Time Learning*

ACADEMIC SERVICE

Chair, Undergraduate Curriculum Committee, MEE Department – UNT, Denton, TX. Sept. 2007-present
- Coordinate and oversee development and maintenance of MEE undergraduate curriculum and student affairs
- Successfully led the Department through a major curriculum revision in preparation for ABET accreditation

Member, MEE Dept. Chair Search Committee, College of Engineering – UNT, Denton, TX. July 2007-present
- Seek, screen, and interview MEE Chair candidates as part of a five-member search committee

Faculty Advisor, Council of Engineering Organizations – UNT, Denton, TX. Sept. 2007-present
- Guide students in re-organizing the college-wide engineering student group umbrella organization

Founding Faculty Advisor, Society of Physics Students – Simmons College, Boston, MA. Sept. 2005-June 2006
- Guided students in organizing start-up activities and planning for a new science-based student club
- Communicated with students, faculty, and national office to charter a collegiate Society of Physics Students chapter

Graduate Resident Tutor, East Campus Residence Hall, MIT, Cambridge MA. September 2002-August 2005
- Fostered a supportive, safe, inclusive, and positive living environment for 40 undergraduate residents
- Built a community atmosphere by promoting safety, health, and awareness within the residence hall
- Provided social, educational, and recreational programs that responded to students' interests and needs
- Facilitated conflict resolution between residents and guided students away from problematic behavior

Discussion Leader, University Studies 1A and 1B Courses, UC Irvine, CA. September 1998-March 1999
Undecided/Undeclared Advising Program, Division of Undergraduate Education with Professor J. Loxley
- Provided freshmen with an introduction to university culture and basic concepts from all fields of study
- Worked cooperatively with university faculty and staff to design and develop lesson plans
- Lectured on university preparation subjects including time management, study habits, and self-expression

Engineering Tutor, Drop-in Engineering Tutoring Program, UC Irvine, CA. September 1998-June 2001
Center for Opportunities and Diversity in Engineering, The Henry Samueli School of Engineering
- Tutored lower-division students in college-level mathematics, science, and engineering courses on a daily basis
- Instructed special discussion/review sessions to prepare pupils for engineering exams
- Achieved consistently perfect ratings in tutoring/teaching ability and performance in evaluations by students

Journal Editor, Undergraduate Research Opportunities Program, UC Irvine, CA. September 1997-June 1998
- Reviewed, critiqued, and revised journal submissions, selecting the technical papers most fit for publication
- Drew upon technical writing and editorial background to publish UCI's first undergraduate research journal

ENGINEERING EXPERIENCE

Contributing Writer at *Design News* Engineering Magazine, Waltham, MA. Jan 2007-present
- Periodically author and contribute to on-line and in-print articles relevant to engineering research and design

Sales Engineer at Nextek Power Systems, Inc., Sacramento CA. June-September 2001
- Trained distributors in system utilization, Direct Current lighting technology, and sales approaches
- Advanced product value propositions and modeling tools for energy system analysis
- Established and maintained technology partnerships and corporate alliances in the energy industry

Engineering Intern at The Aerospace Corporation, El Segundo, CA. June-September 2000
Department of Propulsion Science and Experimental Mechanics, Advisor: Professor E. L. Petersen
- Authored technical reports, including a company memorandum on shock tube particulate injection
- Specified the design and bill of materials to remodel an existing shock tube high-quality vacuum system
- Critiqued numerous low-speed wind tunnels for applicability in experimental aerodynamic testing
- Designed and digitized a customized, high-vacuum poppet valve assembly for an existing shock tube

PROFESSIONAL LICENSURE

Engineer-In-Training (EIT) in the State of Massachusetts, October 2003 – present

LEADERSHIP EXPERIENCE

President, Engineering Student Council (ESC), UC Irvine, CA. September 2000-May 2001
- Revamped and reinvented the council to provide effective advocacy and social programming for students
- Formulated and supervised the genesis of ESC as the official government of the engineering student body
- Organized and successfully executed Engineering Week, including UCI's largest-ever technical career fair
- Cooperated with UCI Environmental Health and Safety Office to assure safety at 25 engineering competitions
- Maintained profitable cash flow while managing a budget of over $25,000

Managing Editor, Graduate Student Newsletter, MIT, Cambridge, MA. September 2001-December 2002
- Supervised and guided a staff of 15 in writing, editing, and producing a periodical publication
- Organized and lead positive meetings and work sessions to facilitate successful edition advancement
- Communicated effectively with MIT administrative offices to promote advertisement and awareness
- Coordinated and managed all aspects of newsletter publication, production schedule, and budget

Opinion Section Editor, New University Newspaper, UC Irvine, CA. September 1998-June 1999
- Assigned leads, edited incoming articles, and finalized section content while meeting a strict weekly deadline
- Presided over the Editorial Board, including all senior staff, to guide development of weekly editorial articles
- Supervised a staff of 10 (layout, columnists, writers, cartoonists, interns) to produce a weekly opinion section
- Forged media contacts with Irvine City government, local and state political organizations, and newsmakers

Campus Representative, Office of Admissions and Relations with Schools, UCI, CA. Sept. 1997-June 2001
- Introduced and familiarized prospective students, parents, school personnel, and other visitors with UCI
- Conducted semi-monthly walking tours of the UC Irvine campus for 5 to 30 guests
- Elucidated UCI's academic programs and majors, admission requirements, support services, and student life
- Enhanced visitors' experience by providing personalized service, accurate information, and appropriate referrals
- Assisted with university recruitment and outreach programs for prospective high school students

Publicity Chairperson, Engineering Student Council (ESC), UC Irvine, CA. September 1998-June 1999
- Managed, oversaw, and took ultimate responsibility for all ESC-related publicity media and activities
- Coordinated with UCI's facilities management to place building banners and marquee board announcements
- Authored and coordinated distribution of ESC's public media press releases, advertisements, and mass e-mails

Intern for Governor Pete Wilson of the State of California, Sacramento, CA. June-October 1997
Office of Planning and Research (OPR) under Lee Grissom, Director and Paul F. Miner, Acting Director
- Researched administration milestones for *Wilson Legacy Project* under George Duekmejian, Jr.
- Formulated recommendation of action to OPR's acting director regarding California's Proposition 208
- Explored higher education potential funding outcomes for UC, CSU, and CCC under Assembly Bill 1415
- Authored recommendation to Governor Wilson on California's public college finance model

Other Leadership Positions Held
- Executive Board Member, MIT Association of Student Activities, 2002-2004
- Executive Committee Member, MIT Graduate Student Council, 2002-2004
- Chairperson, Communications Committee, UCI Engineering Alumni Society, 2002-2005
- Chairperson, Seminar Committee, MIT Graduate Association of Mechanical Engineers (GAME), 2002-2003
- Founder, MIT Graduate Association of Mechanical Engineers (GAME), 2002
- Representative at-Large, MIT Graduate Student Council, 2001-2002
- President, Pi Kappa Phi Fraternity, Eta Eta Chapter at UC Irvine, 1998-1999, Lifetime Member, 1997-present
- ASUCI Legislative Council Representative for the School of Engineering, 1997-1998

PROFESSIONAL AFFILIATIONS

- Association of Energy Engineers (AEE), Lifetime Member, 2002-present
- American Society of Mechanical Engineers (ASME), Member, 1997-present
- American Institute of Aeronautics and Astronautics (AIAA), Member, 1996-present
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Associate Member, 2005-present
- National Society of Professional Engineers (NSPE), Member, 2005 - present
- Society of Physics Students (SPS), Member, 2006-present
- University of California, Irvine Alumni Association (UCIAA), Lifetime Member, 2001-present
- Massachusetts Institute of Technology Alumni Association, Member, 2003-present

HONOR SOCIETY AFFILIATIONS

- Phi Beta Kappa National Honor Society, Lifetime Member, 1998-present
- Tau Beta Pi National Engineering Honor Society, Lifetime Member, 1998-present
- Pi Tau Sigma National Mechanical Engineering Honor Society, Lifetime Member, 1999-present
- Sigma Gamma Tau, National Aerospace Engineering Honor Society, Lifetime Member, 2008-present
- Sigma Xi International Scientific Research Society, Full Member, 2007-present, Associate Member, 2003-2007
- Golden Key National Honor Society, Lifetime Member, 1998-present

SCHOLARSHIPS AND AWARDS

- The Henry Samueli School of Engineering "Engineer of the Year" Award Recipient, 2001
- Association of Energy Engineers Merit Scholarship [$500.00], 2001
- Associated Student of the University of California, Irvine (ASUCI) Merit Scholarship [$1,000.00], 1998
- ASUCI "Legislative Council Representative of the Year" Award Recipient, 1998
- UC Irvine Admission Scholarship [$250.00], 1996
- Eagle Scout, Boy Scouts of America, October 1996

100% of graduate educational expenses covered by scholarship, award, and research assistantship

CRISIS TRAINING

- Red Cross Certified Lifeguard, *CPR for the Professional Rescuer* and *Community First Aid* Certificates Moraga Valley Pool, Orinda, CA. 1994-1997; City of Newport Beach, CA. 1997-2000 (Certs. expired 2000)
- Crisis Center Volunteer, Contact Care Crisis Prevention Hotline, Lafayette, CA. 1994-1998
- Crisis Hotline New Volunteer Trainer, Contact Care Crisis Prevention Hotline, Lafayette, CA. 1996-1998