

# MATTHEW J. TRAUM

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## EDUCATION

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**Doctor of Philosophy in Mechanical Engineering**, G.P.A. : 4.80/5.0, June 2007

Minor in Nano- and Micro-technology Fabrication and Manufacturing, June 2007

**Master of Science in Mechanical Engineering**, G.P.A. : 4.57/5.0, June 2003

### UNIVERSITY OF CALIFORNIA, IRVINE

**Bachelor of Science in Mechanical Engineering**, June 2001

**Bachelor of Science in Aerospace Engineering**, June 2001 (Cum Laude)

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

## ENGINEERING 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: Ruthanne Thomas**

- Principal Investigator and Coordinator for the UNT Thermal Fluid Sciences Group (TFS Group @ UNT)
- Instruct the Department's introductory engineering courses: Mechanical and Energy Engineering Practice I & II

**Doctoral Research Assistant at the Institute for Soldier Nanotechnologies, Cambridge, MA.** Aug. 2003-present  
**MIT Department of Mechanical Engineering, Advisors: Professor E.L. Thomas and Dr. W.A. Peters**

- Invented a new process for surface cooling via latent heat carrier transport under concentration gradients
- Utilized scanning electron microscopy to image and characterize nano-engineered porous membranes
- Built apparatus to measure heat and mass transfer through porous membranes under simulated desert conditions
- Formulated an integrated heat and mass transfer model to accurately predict performance of this system

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

- Executed finite element iterative design process to converge upon the optimal electro-magnetic valve geometry
- Formulated and undertook experimental study to quantify static performance of cryogenic valves
- Built working prototype cryocooler – focused on cold valve development and cold end integration

**Sales Engineer at Nextek Power Systems, Inc., Sacramento CA.** June-September 2001

- Advanced product value propositions and modeling tools for energy system analysis
- Established and maintained technology partnerships and corporate alliances in the energy industry

## LEADERSHIP EXPERIENCE

**President, Engineering Student Council (ESC), UC Irvine, CA.** September 2000-May 2001

- Formulated and supervised the genesis of ESC as the official government of the UCI engineering student body
- Organized and successfully executed Engineering Week, including UCI's largest-ever technical career fair
- Maintained profitable cash flow while managing an annual budget of over \$25,000

**Managing Editor, Graduate Student Newsletter (GSN), MIT, Cambridge, MA.** Sept. 2001-Dec. 2002

- Supervised and guided a staff of fifteen in writing, editing and producing a periodical publication
- Coordinated and managed all aspects of newsletter publication, production schedule, and budget

## HONOR SOCIETY AFFILIATIONS

- Phi Beta Kappa National Honor Society, Lifetime Member, 1998-present
- Tau Beta Pi National Engineering Honor Society, Lifetime Member, 1998-present

## SELECTED PUBLICATIONS

**Traum, M.J., Griffith, P., Thomas, E.L., Peters, W.A.,** "Latent Heat Fluxes Through Soft Materials With Microtruss Architectures", *ASME Journal of Heat Transfer*, Accepted and In Press, anticipated April 2008.

**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.

## SOFTWARE PROFICIENCY

MATLAB 7.1    SolidWorks2005    Quickfield 4.3    ImageJ    MS Office    HTML 4.0    Adobe InDesign2.0