

Banafsheh Barabadi

Microelectronics & Emerging Technologies Thermal Laboratory
G. W. Woodruff School of Mechanical Engineering
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Research Interests

- Micro/Nano heat transfer
- Thermal management and thermo-mechanical reliability of 3-D interconnection architectures
- MEMS/NEMS fabrication

Education

M.S., Mechanical Engineering, Villanova University, Villanova, PA August 2008 -GPA 3.9/4.0
B.S., Mechanical Engineering, K.N.T. University of Technology, Tehran, Iran, May 2005

Technical Skills

Finite Element Analysis with **LSDYNA**, Computational Fluid Dynamics with **Fluent**,
Mathematical Programming with **MATLAB** and **Mathcad**, Data Acquisition Programming with **LabVIEW**, Microsoft
Office, MEMs fabrication techniques in Cleanroom

Research Experience

2008-present Doctoral Research Assistant, Microelectronics & Emerging Technologies Thermal Laboratory, Georgia
Institute of Technology, Atlanta, GA
*"Joule Heating in Planar and 3-D Interconnect Architectures under Pulsed and Non-Periodic
Transient Currents"*, Prof. Yogendra Joshi

2008 Summer Internship, Photonics Laboratory, Villanova University, Villanova, PA
"Experimental Analysis of Hollow-core Photonic Bandgap Fiber Gas Sensors", Prof. Alfonso
Ortega & Prof. Rosalind Wynne

2006-08 Graduate Research Assistant, Biomechanics and Sport Science Laboratory, Villanova University,
Villanova, PA.
"Experimental and Numerical Simulation of Highly Compressible Porous Media", Prof.
Qianhong Wu

2007 Summer Internship, Biomechanics Laboratory, Temple University, Philadelphia, PA
"Experimental and Numerical Simulation of Traumatic Brain Injury", Prof. Kurosh Darvish

2004-05 Research Assistant, K.N.T. University of Technology, Tehran, Iran.
"Design and Development of a Pneumatic Powered Robot", Prof. Ali Najafi

Previous Employment

2008 Teaching Assistant, Villanova University
Thermodynamics 1

2005 Petro Pars Co., Tehran, Iran.
Piping Design and Simulation of 4th and 5th Phases of an Oil Refinery

2004-05 Teaching Assistant, K.N.T University
Thermodynamics 1&2, Numerical Calculations, HVAC, Refrigeration and Cooling

2003-04 Festo Pneumatic S.K. Co., Tehran, Iran.
Pneumatic Systems, PLC, Proportional Hydraulics

2003 Private tutor
High School Mathematics and Physics, English for TOEFL

2001-03 Mega Motors, Tehran, Iran
400 hour Apprenticeship in Automotive Manufacturing

Course Work

Advanced Fluid Mechanics, Advanced Engineering Thermodynamics, Thermal Management for Electronics, Asymptotics for Engineers, Advanced Engineering Analysis, Radiation Heat Transfer, Convection Heat Transfer, Conduction Heat Transfer, Introduction to MEMS: Fabrication Processes, MEMS Theory

Honors and Awards

2008 Villanova University, Department of Mechanical Engineering, Certificate in Thermalfluid Systemss
2005 University of Cambridge ESOL Examinations, First Certificate in English Level B2
2003-04 Certificates for Festo Didactic Courses: Introduction to Pneumatics, Introduction to Electro-Pneumatics, Intro to Hydraulics, Basic Programming of PLC, Maintenance of Hydraulic Equipment and Systems.
2000 Ranked among top 1% in the Iranian National University Entrance Examination

Publications

Journal Papers

Wynne, R M, **Barabadi, B**, Creedon, K, and Ortega, A, “Sub-Minute Response Time of Hollow-Core Photonic Bandgap Fiber Gas Sensor”, submitted to the IEEE Journal of Lightwave Technology.
Barabadi, B, Nathan R, and Wu Q (2008) “Lift Generation in Soft Porous Media under Rapid Compaction”, submitted to Journal of Heat Transfer, August 2008.

Conference Papers

Wu Q, Ganguly S, and **Barabadi B** (2007) “Lift Mechanics of Snowboarding-A Revised Model”, 4th International Congress on Science and Skiing (ICSS2007), December 14-20, 2007, Tirol, Austria.
Barabadi B, Nathan R, and Wu Q (2008) “Lift Generation in Porous Media; From Finite to Infinite Domain”, AIAA/ASME 3rd Annual Greater Philadelphia Mini-symposium, Philadelphia, PA.
Wynne, R M, Creedon, K, **Barabadi, B**, Vedururu, S, Merritt, J, and Ortega, A (2008) “Simultaneously Sensing Multiple Gases using a Single Length of Hollow-Core Photonic Bandgap Fiber with Sub-Minute Response Times”, Proceedings of the SPIE International Conference, San Diego, CA.
Darvish, K, Shafieian, M, Laksari, K, **Barabadi, B**, and Parenti, C (2008) “Experimental and Computational Analysis of Brain Deformations in Linear Head Impact”, Proceedings of the ASME International Mechanical Engineering Congress and Exposition (IMECE2008), Boston, MA.
Barabadi, B, Nathan R, and Wu Q (2008) “Lift Generation in Soft Porous Media under Rapid Compaction”, Proceedings of the ASME International Mechanical Engineering Congress and Exposition (IMECE2008), Boston, MA.
Barabadi, B, Nathan R, and Wu Q (2008) “Lift Generation in Soft Porous Media under Rapid Compaction”, submitted to Journal of Heat Transfer for a special edition on poros media, August 2008.

Posters

Shafieian, M, Laksari, K, **Barabadi, B**, and Darvish, K (2007) “Simulation of Brain Kinematics in Linear Head Impact”, Annual Graduate Research Competition, Temple University, Philadelphia, PA. Selected by the Provost as the Best Poster.
Barabadi, B, Joshi, Y, and King, W (2008) “Joule Heating in Planar and 3-D Interconnect Architectures under Pulsed and Non-Periodic Transient Currents”, Annual Meeting of Semiconductor Research Corporation, Albany, NY.

Masters Thesis

Barabadi B (2008) “Study on the Dynamic Compression of Highly Compressible Porous Media”, MS Thesis, Villanova University, Villanova, PA, Advisor: Q Wu, Co-advisor: R Nathan (Penn State at Berks)

Extracurricular Activities

Painting (Solo and Group Exhibitions), Photography (1st Place, Tehran Local photography competition, Tehran, Iran), Skiing, Waterskiing, Rock Climbing