JENNIFER R. LUKES, Ph.D.

Department of Mechanical Engineering and Applied Mechanics
Laboratory for Research on the Structure of Matter
Institute for Medicine and Engineering
University of Pennsylvania
220 South 33rd Street, Philadelphia, Pennsylvania 19104-6315
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RESEARCH INTERESTS

Nanoscale thermal, fluid, and mass transport; molecular dynamics simulation; laser-based materials characterization; field-directed patterning for nanofabrication; flow measurement in confined geometries; micro- and nanoscale engineering.

EDUCATION

University of California, Berkeley, California

Ph.D. in Mechanical Engineering, December 2001

Dissertation: Molecular Dynamics Simulation of Thermal Conduction in Solid and Nanoporous Thin Films

Advisor: Professor Chang-Lin Tien

M.S. in Mechanical Engineering, May 1998

Rice University, Houston, Texas

B.S. in Mechanical Engineering, *magna cum laude,* May 1994

POSITIONS HELD

William K. Gemmill Assistant Professor, Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania. September 2002 – present.

Graduate Student Researcher, University of California, Berkeley. August 1995 - December 2001. Investigated the influence of characteristic size and structure on thermal conduction in solid and nanoporous thin films using molecular dynamics simulations and modulated photothermal reflectance laser experiments.

Graduate Student Instructor, University of California, Berkeley. January 1999 - May 1999.

Summer Researcher, Lawrence Livermore National Laboratory, Livermore, California. June 1998 - August 1998. Performed laser damage testing experiments to examine the relationship between organic contamination of porous thin-film antireflective optical coatings and damage threshold degradation.

Facility Engineer, Amoco Production Company, Houston, Texas. August 1994 - July 1995. Coordinated the efforts of equipment vendors, outside oil and gas interests, Amoco's Natural Gas Group, and right-of-way securers to enable the development of new gas wells; optimized oil and natural gas processing facilities and pipeline networks.

HONORS AND AWARDS

Invited to National Academy of Engineering's U.S. Frontiers of Engineering Symposium, 2007
National Science Foundation CAREER Award, 2006
William K. Gemmill Term Chair, 2002

National Science Foundation Fellow, 1995-1998
Phi Beta Kappa, 1994
Rice Engineering Alumni Senior Scholar Award, 1994
Texas Society of Professional Engineers Outstanding Student Award, 1994
Schlumberger Design Project Award, 1994
Tau Beta Pi, 1993
Rice University Presidential Scholarship, 1990-1994
National Merit Scholar, 1990

PUBLICATIONS

*(** = JRL's student or postdoctoral fellow)*

Refereed Journal Publications

N. Zuckerman** and J. R. Lukes, 2008, "Acoustic Phonon Scattering from Particles Embedded in an Anisotropic Medium," to appear in *Physical Review B*.

N. Zuckerman** and J. R. Lukes, 2008, "Atomistic Visualization of Anisotropic Wave Propagation in Crystals," to appear in *Journal of Heat Transfer*.

J. R. Lukes and H. Zhong**, 2007, "Thermal Conductivity of Individual Single-Wall Carbon Nanotubes," *Journal of Heat Transfer*, Vol. 129, pp. 705-716. **(Second most downloaded article in Journal of Heat Transfer, June 2007)**

R. Haggenmueller, C. Guthy, J. R. Lukes, J. E. Fischer, and K. I. Winey, 2007, "Single Wall Carbon Nanotube/Polyethylene Nanocomposites. Thermal and Electrical Conductivity," *Macromolecules,* Vol. 40, pp. 2417-2421.

H. Zhong** and J. R. Lukes, 2006, "Interfacial Thermal Resistance between Carbon Nanotubes: Molecular Dynamics Simulations and Analytical Thermal Modeling," *Physical Review B,* Vol. 74, 125403. **(Selected for the September 18, 2006 issue of Virtual Journal of Nanoscale Science & Technology)**

Y. Chen, D. Li, J. R. Lukes, Z. Ni, and M. Chen, 2005, "Minimum Superlattice Thermal Conductivity from Molecular Dynamics," *Physical Review B,* Vol. 72, 174302. **(Selected for the November 21, 2005 issue of Virtual Journal of Nanoscale Science & Technology)**

Y. Chen, D. Li, J. R. Lukes, and A. Majumdar, 2005, "Monte Carlo Simulation of Silicon Nanowire Thermal Conductivity," *Journal of Heat Transfer*, Vol. 127, pp. 1129-1137.

J. R. Lukes and C.-L. Tien, 2004, "Molecular Dynamics Simulation of Thermal Conduction in Nanoporous Thin Films," *Microscale Thermophysical Engineering*, Vol. 8, pp. 341-359.

Y. Chen, D. Li, J. Yang, Y. Wu, J. R. Lukes, and A. Majumdar, 2004, "Molecular Dynamics Study of the Lattice Thermal Conductivity of Kr/Ar Superlattice Nanowires," *Physica B*, Vol. 349, pp. 270-280.

Y. Chen, J. R. Lukes, D. Li, J. Yang, and Y. Wu, 2004, "Thermal Expansion and Impurity Effects on Lattice Thermal Conductivity of Solid Argon," *Journal of Chemical Physics*, Vol. 120, pp. 3841-3846.

Y. Chen, J.-G. Weng, J. R. Lukes, A. Majumdar, and C.-L. Tien, 2001, "Molecular Dynamics Simulation of the Meniscus Formation between Two Surfaces," *Applied Physics Letters*, Vol. 79, pp. 1267-1269.

J. R. Lukes, D. Y. Li, X.-G. Liang, and C.-L. Tien, 2000, "Molecular Dynamics Study of Solid Thin-Film Thermal Conductivity," *Journal of Heat Transfer*, Vol. 122, pp. 536-543.

J.-G. Weng, S. Park, J. R. Lukes, and C.-L. Tien, 2000, "Molecular Dynamics Investigation of Thickness Effect on Liquid Films," *Journal of Chemical Physics*, Vol. 113, pp. 5917-5923.

F.-C. Chou, J. R. Lukes, and C.-L. Tien, 1999, "Heat Transfer Enhancement by Fins in the Microscale Regime," *Journal of Heat Transfer*, Vol. 121, pp. 972-977.

C.-L. Tien, J. R. Lukes, and F.-C. Chou, 1998, "Molecular Dynamics Simulation of Thermal Transport in Solids," *Microscale Thermophysical Engineering*, Vol. 2, pp. 133-137.

Book Chapters and Review Articles

J. Hong** and J. R. Lukes, "Flow Cytometer Lab-on-a-Chip Devices," 2007, to appear in *Encyclopedia of Microfluidics and Nanofluidics*, Springer **(Invited)**

J. Hong** and J. R. Lukes, "Microfluidic Systems for High-Throughput Screening," 2007, to appear in *Encyclopedia of Microfluidics and Nanofluidics*, Springer **(Invited)**

J. R. Lukes, A. R. Abramson, and J.-G. Weng, 2005, "Nanoscale Thermophysical Phenomena from Molecular Dynamics Simulation: Recent Advances," in *Annual Review of Heat Transfer*, Vol. 14, V. Prasad, Y. Jaluria, and G. Chen, eds., Begell House, Inc., New York, pp. 197-224. **(Invited)**

G. Chen, A. Majumdar, and J. R. Lukes, 2005, "Chang-Lin Tien's Contributions to Micro- and Nanoscale Heat Transfer," in *Annual Review of Heat Transfer,* Vol. 14, V. Prasad, Y. Jaluria, and G. Chen, eds., Begell House, Inc., New York, pp. 97-102. **(Invited)**

F.-C. Chou, J. R. Lukes, X.-G. Liang, K. Takahashi, and C.-L. Tien, 1999, "Molecular Dynamics in Microscale Thermophysical Engineering," in *Annual Review of Heat Transfer*, Vol. 10, C.-L. Tien, ed., Begell House, Inc., New York, pp. 141-176.

Conference and Symposium Publications

(__ = JRL presented. All publications are refereed (except one - indicated below)

A. Chaudhri** and J. R. Lukes, 2008, "Multicomponent Energy Conserving Dissipative Particle Dynamics: A General Framework for Mesoscopic Heat Transfer Applications," *Proceedings of the 1st ASME International Conference on Micro/Nanoscale Heat Transfer*, January 6-9, 2008, Tainan, Taiwan, MNHT2008-52218.

N. Zuckerman** and J. R. Lukes, 2007, "Dependent Scattering of Acoustic Phonons from Particles Embedded in an Anisotropic Medium," *Proceedings of the 2007 International Mechanical Engineering Congress and Exposition*, November 11-15, 2007, Seattle, Washington, IMECE2007-41850.

N. Zuckerman** and J. R. Lukes, 2007, "Atomistic Visualization of Ballistic Phonon Transport," *Proceedings of the 2007 ASME-JSME Thermal Engineering Summer Heat Transfer Conference*, July 8-12, 2007, Vancouver, British Columbia, HT2007-32674.

Y. Chen, G. Wang, D. Li, and J. R. Lukes, 2006, "Thermal Expansion and Isotopic Composition Effects on Lattice Thermal Conductivity of Crystalline Silicon," *Proceedings of the 2006 International Mechanical Engineering Congress and Exposition*, November 5-10, 2006, Chicago, Illinois, IMECE2006-13870.

J. R. Lukes and H. Zhong**, 2006, "Thermal Conductivity of Single Wall Carbon Nanotubes: A Comparison of Molecular Dynamics Simulation Approaches," *Proceedings of the 13th International Heat Transfer Conference,* August 13-18, 2006, Sydney, Australia, NAN-29.

Y. Chen, D. Li, J. R. Lukes, and Z. Ni, 2005, "Monte Carlo Simulation of Thermal Conductivities of Silicon Nanowires," *Proceedings of the 2005 Summer Heat Transfer Conference,* July 17-22, 2005, San Francisco, California, HT2005-72377.

H. Zhong** and J. R. Lukes, 2004, "Thermal Conductivity of Single-Wall Carbon Nanotubes," *Proceedings of the 2004 International Mechanical Engineering Congress and Exposition*, November 13-20, 2004, Anaheim, California, IMECE2004-61665.

Y. Chen, D. Li, J. Yang, Z. Ni, and J. R. Lukes, 2004, "Interface Effect on Lattice Thermal Conductivities of Superlattice Nanowires," *Proceedings of the 2004 International Mechanical Engineering Congress and Exposition*, November 13-20, 2004, Anaheim, California, IMECE2004-59149.

(non-refereed) A. R. Abramson, J. R. Lukes, J.-G. Weng, C.-L. Tien, T. Choi, S. Chu, D. Hwang, and C. P. Grigoropoulos, 2001, "Fast Thermal Transport and Actuation in Microsystems," *Proceedings of the Nineteenth Symposium on Energy Engineering Sciences*, May 21-22, 2001, Argonne National Laboratory, Argonne, Illinois, CONF-2001, pp. 280-295.

J. R. Lukes, X.-G. Liang and C.-L. Tien, 1998, "Molecular Dynamics Study of Solid Thin-Film Thermal Conductivity," *Proceedings of the 1998 International Mechanical Engineering Congress and Exposition*, November 15-20, 1998, Anaheim, California, HTD-Vol. 361-4, pp. 229-240.

F.-C. Chou, J. R. Lukes, and C.-L. Tien, 1998, "Heat Transfer Enhancement by Fins in the Microscale Regime," *Proceedings of the 1998 International Mechanical Engineering Congress and Exposition*, November 15-20, 1998, Anaheim, California, HTD-Vol. 361-4, pp. 165-172.

X.-G. Liang, J. R. Lukes, and C.-L. Tien, 1998, "Anisotropic Thermal Conductance in Thin Layers of Disordered Packed Spheres," *Proceedings of the 11th International Heat Transfer Conference*, August 23-28, 1998, Kyongju, Korea, Vol. 7, pp. 33-38.

FUNDED RESEARCH PROJECTS

Current

"Thermal Waveguiding with Nanostructured Materials: Computational Design Tools and Experimental Validation." Air Force Office of Scientific Research. $305,926. 1/1/08-12/31/10. **Principal Investigator.**

"Collaborative Research: qHUB: Cyberinfrastructure for Community-Driven Research and Learning in Heat Transfer." National Science Foundation, CBET-0743760. $197,907 (JRL portion $11,026). 10/1/08-9/30/10 (with T. S. Fisher (Purdue), PI, and J. Y. Murthy (Purdue), G. Walker (Vanderbilt), C. P. Grigoropoulos (U.C. Berkeley), co-PIs).

"Graduate Program in Lab on Chip Technology." Graduate Assistance in Areas of National Need program, U. S. Department of Education, $1,013,376. 9/01/07-8/31/10. Participating Investigator (with H. Bau, PI, and 13 other University of Pennsylvania faculty).

"Nano-Textured Surfaces for Enhanced Heat Transfer at the Solid-Liquid Interface." Office of Naval Research, N00014-07-1-0665. $345,000. 2/26/07-5/31/10. **Principal Investigator**.

"CAREER: Integrated Approach for Modeling Thermal Energy Transport in Mesoscale Arrays of Nanostructures." National Science Foundation, CTS-0547588. $450,000. 7/1/06-6/31/11. **Principal Investigator**.

"Biological Modeling, Analysis, Computation and Synthesis (B-MACS)." Graduate Assistance in Areas of National Need program, U. S. Department of Education, P2000A060275. $506,688. 8/14/06-8/13/09. Participating Investigator (with V. Kumar, PI, and 12 other University of Pennsylvania faculty).

"NIRT: Directed Assembly of Nanostructures: Theory, Simulations, and Experiments in Hard and Soft Materials." National Science Foundation, CBET-0404259. $1,300,000. 9/01/04-8/31/08. Co-Principal Investigator (with T. R. Sinno, PI, and J. L. Bassani, J. C. Crocker, V. Vitek, Co-PIs).

Past

REU supplement to "SGER: Experimental Technique to Characterize Droplet Transport in Nanoscale Fluidic Channels." National Science Foundation, CTS-0424101. $4,936. 10/1/05-10/31/06. **Principal Investigator**.

"SGER: Experimental Technique to Characterize Droplet Transport in Nanoscale Fluidic Channels." National Science Foundation, CTS-0424101. $80,000. 5/15/04-10/31/06. **Principal Investigator**.

"NSEC: Molecular Function at the Nano/Bio Interface." National Science Foundation, DMR-0425780. $107,000 (seed funding from the Center). 1/01/05-8/31/06. Participating Investigator (with 17 other University of Pennsylvania faculty. D. Bonnell, PI).

"Nanocomposites for Improved Thermal Conductivity." Office of Naval Research, N00014-03-1-0890. $660,640. 6/1/03-5/31/06. Co-Principal Investigator (with K. I. Winey, PI, and J. E. Fischer, Co-PI).

"Laser-Based Flow Control in Micro/Nanoscale Fluidic Channels." University of Pennsylvania Research Foundation. $40,000. 7/1/03-6/30/04. **Principal Investigator**.

INVITED PRESENTATIONS

Seminars

Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace, and Nuclear Engineering, to be delivered February 2008.

University of Illinois at Urbana-Champaign, Department of Mechanical Science and Engineering, to be delivered April 2008.

New Jersey Institute of Technology, Granular Science Laboratory, to be delivered May 2008.

Georgia Institute of Technology, College of Engineering, Structural Mechanics Seminar Series, November 2007. "Thermal Transport at Nanostructure Interfaces."

Cornell University, Lindseth Lecture, Sibley School of Mechanical and Aerospace Engineering, October 2007. "Thermal Transport at Nanostructure Interfaces."

University of Virginia, Department of Mechanical and Aerospace Engineering, April 2007. "Thermal Transport at Nanostructure Interfaces."

University of Pennsylvania, Department of Mechanical Engineering and Applied Mechanics, March 2007. "Thermal Transport at Nanostructure Interfaces."

City College of New York, Mechanical Engineering Department, October 2006. "Thermal Transport Within and Between Single Wall Carbon Nanotubes from Molecular Dynamics Simulation."

University of Texas, Mechanical Engineering Department, Thermal/Fluids Systems Area, September 2006. "Thermal Transport Within and Between Single Wall Carbon Nanotubes from Molecular Dynamics Simulation."

Rice University, Department of Mechanical Engineering and Materials Science, September 2006. "Thermal Transport Within and Between Single Wall Carbon Nanotubes from Molecular Dynamics Simulation."

Villanova University, Department of Mechanical Engineering, April 2006. "Thermal Transport Within and Between Single Wall Carbon Nanotubes."

Universidad de Puerto Rico, Humacao, Departamento de Física y Electrónica, March 2005. "Carbon Nanotube Thermal Transport from Molecular Dynamics Simulation."

University of Pennsylvania, Department of Chemistry, March 2005. "Carbon Nanotube Thermal Transport from Molecular Dynamics Simulation."

Drexel University, Department of Mechanical Engineering and Mechanics, February 2005. "Molecular Dynamics Simulation of Carbon Nanotube Thermal Transport."

Carnegie Mellon University, Institute for Complex Engineered Systems, December 2004. "Carbon Nanotube Thermal Transport from Molecular Dynamics Simulation."

Lehigh University, Department of Mechanical Engineering and Mechanics, November 2002. "Thermal Transport in Nanoscale Solid and Porous Thin Films."

University of Pennsylvania, Department of Mechanical Engineering and Applied Mechanics, April 2002. "Thermal Transport in Nanoscale Solid and Porous Thin Films."

University of California, Riverside, Department of Mechanical Engineering, April 2002. "Thermal Transport in Nanoscale Solid and Porous Thin Films."

University of California, Los Angeles, Department of Mechanical and Aerospace Engineering, June 2001. "Molecular Dynamics Simulation of Thermal Conduction in Solid and Nanoporous Thin Films."

Conferences

American Physical Society March Meeting, Denver, Colorado, March 2007. "Interfacial Proximity Effects on Nanostructure Thermal Transport."

Workshops and Other Presentations

Boeing Nano-Technology Key Sector Workshop on Computational Modeling of Nanocomposite Material, Seattle, Washington, November 2005. "Thermal Transport In and Between Carbon Nanotubes."

Japan/U.S. Joint Seminar on Nanoscale Transport Phenomena – Science and Engineering, Matsushima, Japan, July 2005. "Atomistic Studies of Thermal Transport Within and Between Single Wall Carbon Nanotubes."

MEMS/NEMS Journal Club Meeting, University of Pennsylvania, Philadelphia, Pennsylvania, June 2004. "Molecular Dynamics Simulation of Thermal Transport in Carbon Nanotubes."

CONTRIBUTED CONFERENCE PRESENTATIONS

(Conferences without manuscripts where JRL or JRL's student/ postdoc presented. __= JRL presented)
*(** = JRL's student or postdoctoral fellow)*

"Controlling Precipitate Growth in Aluminum Rich Alloys via Externally Applied Stress," J. A. Franklin** and J. R. Lukes, to be delivered at the American Physical Society March Meeting, New Orleans, Louisiana, March 2008.

"Molecular Dynamics Simulation of Acoustic Phonon Scattering from Particles Embedded in an Anisotropic Medium," N. Zuckerman** and J. R. Lukes, to be delivered at the SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania, May 2008.

"Acoustic Phonon Scattering from Isolated Nanoparticles in Anisotropic Media," N. Zuckerman** and J. R. Lukes, Materials Research Society Spring Meeting, San Francisco, California, April 2007.

"Rheology of Deformable Particle Suspensions by Dissipative Particle Dynamics," A. Chaudhri** and J. R. Lukes, American Physical Society March Meeting, Denver, Colorado, March 2007.

"Thermal Transport Between and Around Nanoparticles," J. R. Lukes, H. Zhong**, and N. Zuckerman**, International Mechanical Engineering Congress and Exposition, Chicago, Illinois, November 2006.

"Interfacial Thermal Transport Between Single Wall Carbon Nanotubes," J. R. Lukes and H. Zhong**, American Physical Society March Meeting, Baltimore, Maryland, March 2006.

"Thermal Boundary Resistance Between Carbon Nanotubes," H. Zhong** and J. R. Lukes, Materials Research Society Spring Meeting, San Francisco, California, March 2005.

"Resistivity-Dependent Power Law Thermal Conductivity for Porous Silicon," J. R. Lukes, M. H. Lee, C. P. Grigoropoulos, and C.-L. Tien, Materials Research Society Spring Meeting, San Francisco, California, April 2003.

"Molecular Dynamics Simulation of Thermal Conduction in Nanoporous Materials," J. R. Lukes and C.-L. Tien, United Engineering Foundation Heat Transfer and Transport Phenomena in Microsystems Conference, Banff, Canada, October 2000.

"Molecular Dynamics Simulation of Thermal Transport in Solids," J. R. Lukes and C. -L. Tien, 11th International Heat Transfer Conference, Kyongju, Korea, August 1998.

"Molecular Dynamics Simulation of Thermal Transport in Solids," J. R. Lukes, F. C. Chou and C. -L. Tien, 2nd Annual Microscale Thermophysical Engineering Workshop, Albuquerque, New Mexico, June 1998.

"Microscale Heat Transfer in Light-Emitting Porous Silicon," M. C. Hipwell, J. R. Lukes, and C. -L. Tien, ASME National Heat Transfer Conference, Houston, Texas, August 1996.

OTHER PRESENTATIONS

(Meetings where JRL or JRL's student presented. __= JRL presented)
*(** = JRL's student or postdoctoral fellow)*

"Multiscale Modeling of Boiling Processes at Nano-Textured Surfaces," J. R. Lukes and A. Chaudhri, Thermal Management PI Meeting, Office of Naval Research, Hilton Head Island, South Carolina, September 2007.

"Multiscale Modeling of Complex Fluids," A. Chaudhri** and J. R. Lukes, 1st PA-OH-WV Simulators Meeting, Carnegie Mellon University, Pittsburgh, Pennsylvania, June 2007.

"Simulations of Anisotropic Phonon Transport using Molecular Dynamics," N. Zuckerman** and J. R. Lukes, 1st PA-OH-WV Simulators Meeting, Carnegie Mellon University, Pittsburgh, Pennsylvania, June 2007.

"Directed Assembly of Nanostructures: Theory, Simulations and Experiments in Hard Materials," T. R. Sinno, J. R. Lukes, J. A. Franklin**, and J. L. Bassani, Alcoa Technical Center, Alcoa Center, Pennsylvania, February 2006.

"Interfacial Thermal Transport Between Single Wall Carbon Nanotubes," J. R. Lukes, H. Zhong**, K. Winey, and J. Fischer, Thermal Management PI Meeting, Office of Naval Research, Orlando, Florida, October 2005.

"Thermal Transport In and Between Carbon Nanotubes," J. R. Lukes, H. Zhong**, J. Cugliotta**, K. Winey, and J. Fischer, Direct Energy Conversion Program Review and Workshop, DARPA/ONR/NASA/NAVSEA, Coronado, California, December 2004.

"Thermal Transport in Nanoscale Solid and Porous Thin Films," J. R. Lukes, Thermal Management Workshop, Office of Naval Research, Arlington, Virginia, October 2003.

TEACHING EXPERIENCE

Graduate Course

Micro/Nanoscale Energy Transport (MEAM 572–developed new course), Fall 2003-2007

Undergraduate Courses

Heat and Mass Transfer (MEAM 333), Spring 2005-2008
Design of Thermal/Fluid Systems (MEAM 310), Spring 2004
Design of Mechanical Systems (MEAM 310), Spring 2003

Undergraduate Senior Design Project Advising

Montana Rathe, Mari Oishi, Rachel Rothman, 2007-2008
Theodore Rosenbaum and Andrew Haberman, 2007-2008
Kevin Ecker and Daniel Wcislo, 2006-2007

RESEARCH SUPERVISION

Postdoctoral Fellows

Dr. Jongin Hong, June 2006 – June 2007. Current position: Research Scientist, Imperial College London

Doctoral Students

Ian Cosden, September 2007 – present.
Neil Zuckerman, September 2005 - present.

Jack Franklin, September 2004 - present.
Anuj Chaudhri, September 2004 – present.

Master's Students

Timothy Smiley, September 2005 – September 2006. M.S., 2006. Thesis: "Applied Modulated Thermoreflectance Microscopy for Detection of Buried Structures." Current position: Lieutenant Junior Grade, U. S. Navy

Jesse Cugliotta, September 2003 – May 2005. M.S., 2006. Thesis: "Fabrication and Testing of a Microscale Coulter Counter for Usage as a Flowrate Measurement System in Microscale Channels." Current position: Consultant, Terra Technology

Hongliang Zhong, September 2002 – December 2005. M.S., 2005

Joshua Fabian, January 2003 – May 2004. M.S., 2004. Thesis: "Multi-Modal Heat Transfer Program for Surface Ship Temperature Prediction." Current position: Deputy Program Manager and Experiment Lead, Lockheed Martin

Undergraduate Students

Brian Cohen, October 2007 – present (NSF qHUB grant)
Alexsandra Fridshtand, Summer 2006 (Sunfest NSF-REU program)
Fletcher Wilson, Summer 2005 (NSF-REU supplement to SGER grant)

PROFESSIONAL MEMBERSHIPS

American Society of Mechanical Engineers
Materials Research Society
American Physical Society

PEER REVIEW

Journal Articles

Science
Physical Review B
Journal of Applied Physics
International Journal of Heat and Mass Transfer
Journal of Heat Transfer
Thin Solid Films
Journal of Electronic Packaging
Experimental Thermal and Fluid Science
Materials Science and Engineering A
International Journal of Thermophysics
International Journal of Thermal Sciences

Grant Proposals

National Science Foundation (ad hoc review; panel review)
Department of Energy (ad hoc review)
American Chemical Society Petroleum Research Fund (ad hoc review)

INTERNATIONAL SERVICE

Track Chair, "Microscopic Modeling of Thermophysical Processes and Properties," 1st ASME International Conference on Micro/Nanoscale Heat Transfer, Tainan, Taiwan, January 6-9, 2008.

Session Co-Chair, "Carbon Nanotubes and Novel Nanostructured Materials," Japan/U.S. Joint Seminar on Nanoscale Transport Phenomena – Science and Engineering, Matsushima, Japan, July 2005.

NATIONAL SERVICE

Symposium Organizer, "Nanoscale Heat Transport – From Fundamentals to Devices," Materials Research Society Spring Meeting, to be held in San Francisco, California, April 13-17, 2009.

Track Chair, "Fundamental Issues of Nanoscale Energy Carrier Transport and Interaction," 3rd ASME Energy Nanotechnology International Conference, to be held in Jacksonville, Florida, August 10-14, 2008.

Session Co-Chair, "Symposium on Phononic Materials and Bandgap Filters," International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 2007.

Session Chair, "Fundamentals of Heat Transfer in Micro/Nano Systems," ASME-JSME Thermal Engineering and Summer Heat Transfer Conference, Vancouver, Canada, July 2007.

Session Co-Chair, "Nanoscale Heat Transport—From Fundamentals to Devices: Low Dimensional Systems," Materials Research Society Spring Meeting, San Francisco, California, April 2007.

Session Chair, "Fundamentals of Micro and Nanoscale Simulations of Thermal Transport Processes," International Mechanical Engineering Congress and Exposition, Chicago, Illinois, November 2006, and ASME Summer Heat Transfer Conference, San Francisco, California, July 2005.

Session Co-Chair, "Fundamentals of Near-Field Radiation," International Mechanical Engineering Congress and Exposition, Washington, D.C., November 2003.

SCHOOL SERVICE

Presented "NSF CAREER: Tips and Advice" to SEAS Junior Faculty. May 2006

MEAM Chair Search Committee. 2004-2005

Academic Performance Committee. 2002-2003, 2004-2006

DEPARTMENTAL SERVICE

Faculty Search Committee. 2002-2003, 2005-2006, 2006-2007

Seminar Series Chair. 2006-2007, 2007-2008

Graduate Curriculum Committee. 2006-2007

Graduate Admissions Committee. 2002-2005

Ph.D. Dissertation Committees. *Graduated students:* Tirumani Swaminathan (2006), Csaba Guthy (2007, Materials Science and Engineering), Joshua Lampe (2007). *Current students:* Michael Schrlau, Andrew Perrin

Master's Thesis Committee. *Graduated student:* Michael Riegelman (2004)

Qualifying Exam Committees. 2003-2007

Undergraduate Advising. 2002-2007

Master's Student Advising. 2002-2007

Recorder of Minutes. 2002-2004
ABET Committee. 2004-2005

COMMUNITY SERVICE

Participant, One-on-one question-and-answer session with aspiring engineers (middle school girls) and their mothers, ADVANCE Peer Mentoring Summit, Durham, North Carolina, June 2007.

Speaker, "Nanotechnology and Engineering," Springside School for Girls (11th and 12th grade girls), Philadelphia, Pennsylvania, December 2006.

Panelist, "Women in Science and Technology," Science and Technology Wing (Penn undergraduates interested in science and technology), University of Pennsylvania, Philadelphia, Pennsylvania, November 2005.

Speaker, "Energy and Mass Transport at the Nanoscale," NSF-Sponsored Lecture Series for Science Teachers on *Advanced Materials: Synthesis, Characterization, and Properties*, Laboratory for Research on the Structure of Matter, University of Pennsylvania, Philadelphia, Pennsylvania, October 2005.

Panelist, "Nanotechnology," Summer Academy in Applied Science and Technology (for high school students), University of Pennsylvania, Philadelphia, Pennsylvania, July 2005.

Advisor, NSF-REU undergraduate student research, 2005-2006.

PUBLIC RELATIONS

Penn Nanotechnology Brochure, 2007
Interview on Nanotechnology, PennScience, Vol. 5, Issue 2, Spring 2007
MEAM Department Recruiting Video, 2004