PETER Y. WONG

Mechanical Engineering Department, Tufts University
Medford, Massachusetts 02155

E-mail: peter.wong@tufts.edu
Phone: (617) 627-5162

University Relations Department, Museum of Science
Boston, MA 02114-1099

E-mail: pwong@mos.org
Phone: (617) 589-0220

EDUCATION

Doctor of Philosophy in Mechanical Engineering
TUFTS UNIVERSITY, Medford, Massachusetts 5/95

Bachelor of Science and Master of Science in Mechanical Engineering (5 Year Program)
TUFTS UNIVERSITY, Medford, Massachusetts 11/91

High School Diploma
BOSTON LATIN SCHOOL, Boston, Massachusetts 6/86

HONORS & AWARDS

- Allan Cormack Award for Collaborative Research, Tufts University 1995
- Full Scholarship for Doctoral Degree Program, Tufts University 1992
- Victor Prather Award for Outstanding Scientific Research, Tufts University 1990
- Lloyd M. Trefethen Undergraduate Research Award, Tufts University 1990
- Full Scholarship for Master Degree Program, Tufts University 1990
- Member of Tau Beta Pi, Engineering Honors Society 1989 - present
- Consolidated Chinese Benevolence Association Scholarship 1986, 1989

WORK EXPERIENCE

Director of University Relations, Museum of Science, Boston, MA 2004-present
Develop partnerships with Universities through strategic projects aligned with Museum's goals.
Projects: Public understanding of research, preK-12 educational outreach, teacher professional development, joint courses, specialized exhibits and programs.

Research Associate Professor - Mechanical Engineering Dept., Tufts University 2001-Present
Conduct fundamental and applied research in areas of thermal processing and manufacturing.
Teach courses, write proposals, collaborate with industry, and oversee student research projects.

Director - Thermal Analysis of Materials Processing Laboratory (TAMPL) 1995-Present
Mechanical Engineering Department, Tufts University
TAMPL: interdisciplinary laboratory that bridges gaps among thermal/fluid science, materials science, and manufacturing. Projects explore fundamental phenomena and are relevant to industry.
Coordinate research and education activities among core faculty members of laboratory.
Develop new programs and strategies for the laboratory through collaborative efforts.

Director -Special Initiatives for the School of Engineering, Tufts University 1997-2003
Develop and implement special programs designed to meet the school's goals.
Projects: ABET, K-12 Outreach, Women in Engineering Outreach, Distance Education, Museum-University Relationships, and Undergraduate Professional Skill Development

Research Assistant Professor - Mechanical Engineering Dept., Tufts University 1995-2001

RESEARCH INTERESTS

Thermal analysis of materials processing and manufacturing, Comparative biomechanics, Microscale rapid prototyping and manufacturing, and MicroElectroMechanical Systems

TEACHING EXPERIENCE

Introductory Engineering: Gourmet Engineering, Life in Moving Fluids, and Presentation Skills
Undergraduate: Introduction to Thermodynamics (using collaborative learning), Comparative Biomechanics Laboratory Course
Graduate: co-taught MEMS course for mechanical engineers
K-12 outreach: conduct science, engineering, and math workshops using hands-on activities and gender-inclusive approaches; co-design face-to-face course for museum professionals and online courses for teachers.

PROFESSIONAL ACTIVITIES

Member of ASME, ASEE, MRS, OSA, SPIE, ITEA, and WEPAN
Reviewer for J. of Appl. Physics, ASME, National Science Foundation, and Prentice-Hall

FUNDED PROJECTS

"Image Guidance Research to Improve Colonoscopy to Improve Diagnosis of IBD," Broad Institute 2007-2008, $109,948

"IPY: Collaborative Research: Live from the Poles; A Multimedia Educational Experience**,"** NSF ESI-0632064. 2007-2008, $97,202

"GSE/RES: A Social-Ecological Study of Gender, Relationships, and High School STEM," NSF HRD-0624507, 2006-2007, $153,081

"Building a Network Between Civil Engineers and Science Museums," NSF ESI-0529213, 2005-2007, $232,655

"MRI: Acquisition of Equipment for Thermal and Thermo-Mechanical Analysis of Soft Materials," NSF DMR-0520655, 2005-2008, $447,618

"Biomedical Research Experiences for Engineering Majors," NIH NIH-1R25 GM073177-01, 2005-2009, $367,200

"SGER: High performance MEMS metals developed by solidification processing of composite coatings and embedded layers," NSF DMI-0342735, 2003-2004, $91,994

"Virtual Markets in Wireless Communications and Computational GRIDS," NSF EHR-0227879, 2003-2006, $600,000 + $120,000 supplemental with Syracuse University

"4 Schools for Women in Engineering," NSF EHR-0217110, 2002-2006, $899,768

"Integrating Algebra and Engineering into the Classroom," GE Foundation, 2002-2006, $360,870

"Tufts K-12: Distance Learning Program," Lockheed Martin Corporation and Lockheed Martin Foundation, 2002-2006, $500,000

"Miniaturized Solar Energy Systems Using Advanced Microfabrication Technologies," Link Foundation, 2002-2003, $50,000

"Ultrasonic Rapid Manufacturing of Meso/Microscale Functional and Active Structures," NSF DMII-0114309, 2001-2006, $418,641 + $12,000 REU supplement 2002

"Composite Coatings from Layered Precursors: Materials Structure Modeling and Thermal Control," NSF DMII-9802790, 1999-2002, transferred from PI Doumanidis 2001-2002, $253,777

"Thermal Analysis of Multi-Gas Sensor," PerkinElmer Optoelectronics, 2001, $50,000

"Girls Get SET for Life: Science, Engineering, and Technology," Lucent Technology Foundation, 2000-2002, $150,000

"The GE Fund "Women in Engineering" Web Site and Electronic Community," 2001, $80,000

"REU Site: Thermal Analysis of Materials Processing & Manufact.," NSF EEC-9732073 1998-2001, $254,640

"Tufts Rensselaer Thermal Manufacturing Research-Curriculum Development Program," NSF ENG-9700731 1997-2001, $370,732

"Microscale Reflectance Spectrometry of Biological Thin Films," NSF DBI-9605833 1997-1999, $87,468

"Investigation of Microscale Radiation Phenomena Affecting Thermal Processing of Patterned Wafers," NSF DMI-9612058 1996-1999, $307,660

"MPWG: Girls in Engineering: Hands-On Museum Exhibit Development," NSF MPWG-9632175, 1997, $99,762

"Fluid Dynamics of Polishing Slurry in Chemical Mechanical Planarization," Intel Corp. and Cabot Corp., 1996-1997, $50,000

"Women in Science and Technology Initiative, the 1996 NYNEX Scholars," NYNEX Foundation, 1996, $25,000

CONSULTING ACTIVITIES

Perkin Elmer (Peabody, MA), Kopin Coporation (Taunto, MA), Avery-Dennison (MA)

PATENT APPLICATIONS

"Vibratory Powder Consolidation," submitted 1/25/2006 Northeastern University

"Method for Polymer Synthesis Using Microfluidic Enzymatic Cascade, " submitted 2/28/2006, Tufts

"Bio-LOM: Manufacturing of Tissue Scaffolds Using Micromolding, Lamination, and in-situ Bio-product Growth," submitted 9/24/2004, Tufts Case Number T001327

"Functionalizing Microfluidic Devices by In Situ Formation of Membranes,"submitted 12/2/2003, Tufts Case Number T001275

RESEARCH STUDENTS

Advisor for Tufts Ph.D. Candidates : Haruna Tada

Advisor for Tufts Master Candidates: Armin Huseinovic, Teju Aurangabadkar, Kosta Tsioris

Advisor for Tufts Ph.D Graduates: Jin Zou

Advisor for Tufts Master Graduates: Rajarshi Chowdhury, Wei-Han Wu, Emily Shattuck, Brian Gravel, George Papanikolau, Seth Mann, Haruna Tada, and Alexis Abramson

Thesis Committee Member for Graduates: Kevin Hsu (Tufts MS-Biomed), Marios Allaedine (Tufts PHD-ME), Olga Vayena (Tufts PhD-ME), Eleni Skordeli (Tufts MS-ME), Ravid Durvasli (Tufts

PhD-ME), Emre Gundez (NEU PhD-ME), Selis Onel Evren (NEU PhD-ME), Yuanwei Song (NEU PhD-ME)

Advisor for dozens of undergraduate students on research at Tufts University and advisor for Tufts Summer Scholar, Andrew Beattie, 2003

Advisor for NSF Research Experience for Teachers 2003: Charles Low and Antoinette Marsinelli

WEBSITE DEVELOPMENTS

www.WIEO.org – the Women in Engineering Organization Website – a national clearinghouse of programs for girls and women funded by GE Fund with Tufts, SWE, and WEpan

www.BuildingMath.org – Building Math: Integrating Algebra and Engineering into Middle School Classrooms – a dissemination site for GE Foundation funded program to encourage an earlier introduction of algebra into schools through engineering activities.

www.GirlsGetSET.org – Girls get SET for Life: Science, Engineering, and Technology – a dissemination site for Lucent Foundation funded program to encourage partnerships between museums and colleges to help girls learn engineering through exhibit design

www.STEMteams.org - Science, Technology, Engineering, and Mathematics teams – a dissemination site for NSF funded program to encourage faculty, industry, and students to work with teachers to introduce engineering to middle schools using gender-inclusive approaches

www.PreK-12Engineering.org – a teacher's resource funded by Tufts, Verizon, Mass DOE, Pinnacle, Lockheed Martin, and private donors to provide downloadable engineering activities for Prek-12 classes.

Webmaster for several Tufts Sites: School of Engineering, Mechanical Engineering Department, Comparative Biomechanics Laboratory, and Thermal Analysis of Materials Processing Laboratory.

OUTREACH PRODUCTS

Participate in development of distance education tools for technological literacy nationwide

Co-develop middle school units that integrate algebra and engineering (to be published)
- Everest Trek, 6th grade
- Stranded!, 7th grade
- Amazon Mission, 8th grade

Co-develop manual for development of outreach teams to middle schools
Growing a Stem Team: How to Create a Gender-Equitable Engineering Program for Middle School Students, Edited by Suzanne Sontgerath and Erica Thrall (ISBN 1-4116-4604-5)

Started an engineering and science enrichment program in Newton, MA for k-2 grade children (2005) www.k2enrichment.com

SCIENCE EXHIBITS/ PROGRAMS

Direct program to have middle school girls to design and build exhibits at The Discovery Museum (Acton, MA), 1997-2002.

Co-direct undergraduate students to design and build "Sea Lion Quiz Machine" for New England Aquarium (Boston, MA), 2000

Co-develop proposals and direct activities associated with university relations at Museum of Science:
- Partnership of university, museums, and cultural institutions in Boston (NSF ISE 2005-2006)
- Wireless Grid Summer Institute for High School students (NSF 2002-2006)
- Middle school technology/engineering curricula strategy to meet MA standards (NIST 2005-2006)
- Network of science centers and civil engineers (NSF ISE 2005-2007)
- Distance education programs for k-5 teachers with Salem State College (MA DOE 2005-2007)
- Live Presentations from the Poles during International Polar Year" (NSF 2007-2008)

PUBLICATIONS AND PRESENTATIONS

I. PUBLICATIONS

A. REFEREED PUBLICATIONS IN JOURNALS

1. I. E. Gundez, T. Ando, E. Shattuck, P. Y. Wong, C. C. Doumanidis, “Enhanced Diffusion and Phase Transformations During Ultrasonic Welding of Zinc and Aluminum,” **Scripta Materialia**, Vol. 52, No. 9, pp. 939-943, 2005

2. B. E. Gravel, P. Y. Wong, P. T. Starks, J. A. Pechenik, “The use of artificial shells for exploring shell preference in the marine hermit crab *Pagurus longicarpus* (Say). **Annales Zoologici Fennici**, Vol. 41, pp.477-485, 2004

3. S. Mann, I. N. Miaoulis, and P. Y. Wong, “Spectral Imaging, Reflectivity Measurements, and Modeling of Iridescent Butterfly Scale Structures,” **Optical Engineering**,Vol. 40, No. 10, pp. 2061-2068, 2001

4. J. A. Pechenick, J. Hsieh, S. Owara*, P. Y. Wong, S. Untersee, D. Marshall, and W. Li, “Factors Selecting For Avodiance of Drilled Shells By the Hermit Crab,*Pagurus longicartus*” **Journal of Experimental and Marine Biology and Ecology**, Vol. 262, pp.75-89, 2001

5. H. Tada, A. E. Kumpel*, R. E. Lathrop*, P. Nieva, P. Zavracky, I. N. Miaoulis, and P. Y. Wong, "Thermal Expansion Coefficient of Polycrystalline Silicon and Silion Dioxide Thin Films at High Temperatures," **Journal of Applied Physics**, Vol. 87, No. 9, pp. 4189-4193, 2000

6. H. Tada, A. R. Abramson, S. E. Mann, I. N. Miaoulis, and P. Y. Wong, "Limiting the Effects of Thin Film Patterns on the Temperature Distribution of Silicon Wafers During Radiant Processing," **Optical Engineering**, Vol. 39, No. 8, pp. 2296-2304, 2000

7. H. Tada, A. E. Kumpel*, R. E. Lathrop*, I. N. Miaoulis, and P. Y. Wong, "Novel Imaging System for Measuring Microscale Curvatures at High Temperatures," **Review of Scientific Instruments**, Vol. 71, No. 1, pp.161-167, 2000

8. A. R. Abramson, P. Nieva, H. Tada, P. Zavracky, I.N. Miaoulis, and P. Y. Wong, "Effect of Doping Level During Rapid Thermal Processing of Multi-Layer Structures," **Journal of Materials Research**, Vol.14, No. 6, pp. 2402-2410, 1999

9. S. D. Bluestein*, E. K. Chan*, I. N. Miaoulis, and P. Y. Wong, "In-Situ Measurement of Thermo-Mechanical Effects and Properties in Thin Film-Polymer," **IEEE Transactions on Components, Packaging, and Manufacturing Technology**, Vol. 22, No. 3, pp. 421-425, 1999

10. H. Tada, S. E. Mann, I. N. Miaoulis, and P. Y. Wong, “The Effects of Butterfly Scale Microstructure on the Iridescent Color Observed at Different Angles,” **Applied Optics**, Vol. 37, No. 9, pp. 1579-1584, 1998

11. C. G. Madras, P. Y. Wong, I. N. Miaoulis, L. Goldman, and R. Korenstein, "Relaxation of Extrinsic and Intrinsic Stresses in Germanium Substrates with Silicon Films," **Thin Solid Films**, Vol. 320, No. 2, pp.260-263, 1998

12. S. E. Rosenberg, C. G. Madras, P. Y. Wong, and I. N. Miaoulis, "The Viscosity of Germanium During Substrate Relaxation Upon Thermal Anneal," **Journal of Materials Research**, Vol. 12, pp. 1706-1710, 1997

13. C. G. Madras, P. Y. Wong, and I. N. Miaoulis, "Prediction of Elastic Strains in Adhesively Bonded Diamond Optical Disks," **Glass Technology**, Vol. 38, pp. 65-70, 1997

14. C. G. Madras, P. Y. Wong, and I. N. Miaoulis, "Viscoelastic Deformation During Thermal Cycling of Adhesively Bonded Optical Coatings," **Materials Letters**, Vol. 28, pp. 21-26, 1996

15. C. G. Madras, P. Y. Wong, and I. N. Miaoulis, "Inelastic Effects in a Thermoplastic Adhesive Used for Bonding a Diamond Disk," **Optical Engineering**, Vol. 35, No. 8, pp. 2227-2233, 1996

16. S. E. Rosenberg, P. Y. Wong, and I. N. Miaoulis, "Rapid Thermal Annealing of High-Melting-Point Films on Low-Melting-Point Substrates," **IEEE Transactions of Semiconductor Manufacturing**, Vol. 9, pp. 249-256, 1996

17. S. E. Rosenberg, P. Y. Wong, and I. N. Miaoulis, "A Theoretical Study of the Effect of Thermal Annealing on Curvature Changes in Multilayered Structures," **Thin Solid Films**, Vol. 269, pp. 64-68, 1995

18. S. E. Rosenberg, P. Y. Wong, and I. N. Miaoulis, "Analysis of Deposition Stress During Thin-Film Growth on a Relaxing Substrate," **Journal of Applied Physics**, Vol. 77, No. 12, pp. 6273-6277, 1995

19. P. Y. Wong, C. K. Hess, and I. N. Miaoulis, "Coherent Thermal Radiation Effects on Temperature-Dependent Emissivity of Thin-Film Structures on Optically Thick Substrates," **Optical Engineering**, Vol. 34, No. 6, pp. 1776-1781, 1995

20. R. D. Robinson, P. Y. Wong, and I. N. Miaoulis, "Thermal Evaluation of Zone-Melting Recrystallization of Thin-Film Structures Over a Wide Range of Melting Points," **Journal of Materials Research**, Vol. 10, No. 4, pp. 877-884, 1995

21. B. D. Heilman, M. A. Marston, P. Y. Wong, and I. N. Miaoulis, "The Effects of Natural Convection and Conduction in a Zone-Melting Recrystallization Chamber," **Journal of Materials Research**, Vol. 8, No. 3, pp. 551-557, 1993

22. P. Y. Wong, C. K. Hess, and I. N. Miaoulis, "Thermal Radiation Modeling in Multilayer Thin-Film Structures," **International Journal of Heat and Mass Transfer**, Vol. 35, No. 12, pp. 3313-3321, 1992

23. P. Y. Wong, L. M. Trefethen, and I. N. Miaoulis, "Cross Correlation of Optical Properties of Thin Films Under Thermal Radiation." **Journal of Applied Physics**, Vol. 72, No. 10, pp. 4884-4887, 1992

24. I. N. Miaoulis, P. Y. Wong, S. M. Yoon, R. D. Robinson, and C. K. Hess, "Thermal Analysis of Zone-Melting Recrystallization of Silicon-on-Insulator Structures with an Infrared Heat Source: An Overview," **Journal of Electrochemical Society**, Vol. 139, No. 9, pp. 2687-2696, 1992

25. P. Y. Wong and I. N. Miaoulis, "Optical Effects of Multilayer Thin Film Structures during Zone-Melting Recrystallization with an Infrared Heat Source," **Journal of Applied Physics**, Vol. 70, No. 12, pp. 7594-7601, 1991

26. I. N. Miaoulis, P. Y. Wong, J. D. Lipman, and J. S. Im, "Thermal Modeling of Zone-Melting-Recrystallization Processing of Silicon-On-Insulator Film Structures," **Journal of Applied Physics**, Vol. 69, No. 10, pp. 7273-7282, 1991

27. I. N. Miaoulis, J. Lipman, D. A. Flodman*, P. Y. Wong*, M. W. Wolfson*, J. Barrett III, and A. Nelson, "Zone-Melting Processing of Thick High-T_c Superconducting Films," **Journal of Physics D: Applied Physics**, Vol. 22, pp. 864-867, 1989

* - refers to undergraduate student

B. REFEREED PUBLICATIONS IN CONFERENCE PROCEEDINGS

1. "A Model STEM Team Collaboration: 4 Schools for WIE," under reviewed for **Women in Engineering Programs & Advocates Network,** Annual Meeting, Pittsburgh, PA, June 2006

2. S. Sontgerath, S. Blaisdell, P. Wong, A. Swan, and K. Ziemer, "Growing a STEM Team: Review of an Innovative Program for Middle School Students," to be published in proceedings of **Women in Engineering Programs & Advocates Network**, Annual Meeting, Las Vegas, NV, 2005

3. I. E. Gundez, T. Ando, E. Shattuck, P. Y. Wong, C. C. Doumanidis, "Effects of High-Speed Deformation on the Phase Stability and Interdiffusion in Ultrasonically Joined Aluminum and Zinc Foils," to be published in proceedings of **Materials Research Society**, Fall 2004 Boston Meeting, 2004

4. "Simulation of the Temperature and Extent of Nickel Dissolution During the reactive Fabrication of Nickel Aluminide Coatings by Rapid Heating of Plated Precursors," **6th International Conference on Frontiers of Design and Manufacturing**, Xi'an CHINA, 441st paper, June 20-23 2004

5. M. T. Knight, C. A. Browning, P. Y. Wong, S. Ingraham, "4 Schools for Women in Engineering (WIE): Creating Partnerships for Gender Equity," Proceedings of the **ASEE New England Section 2004 Annual Conference**, Dedham, MA, April2-3 2004

6. H. Tada and P. Y. Wong, "MEMS based Microcalorimeter for Liquid Samples," to be published in proceedings of the 2003 International Mechanical Engineering Congress and Exposition, **American Society of Mechanical Engineers**, Washington DC, Fall 2003

7. J. Zou and P. Y. Wong, "Thermal Effects in Plasma Treatment of Patterned PDMS for Bonding Stacked Channels," **Materials Research Society**, to be published in proceedings of Fall 2003 Boston Meeting, 2003

8. M. Alaeddine, R. Ranganathan, T. Ando, C. C. Doumanidis, and P. Y. Wong, "Thermal and Mass Balance in Reactive Thermal Processing of Nickel Aluminide Coatings on Steel Substrates," **Materials Research Society**, to be published in proceedings of Fall 2002 Boston Meeting, 2002

9. M. Bargmann*, A. Kumpel*, H. Tada, I. N. Miaoulis, P. Y. Wong, P. Nieva, and P. Zavracky, "High-Temperature-Dependent Coefficient of Thermal Expansion of Silicon Nitride Films used in Microelectromechanical Systems," **Materials Research Society**, Vol. 605, pp. 235-240, 2000

10. P. Nieva, P. Zavracky, G. Adams, H. Tada, A. R. Abramson, I. N. Miaoulis, and P. Y. Wong, "Temperature Measurements During Rapid Thermal Annealing Using MEMS," Proceedings of the 5th **ASME/JSME Joint Thermal Engineering Conference**, San Diego, CA, 1999

11. H. Tada, P. Nieva, P. Zavracky, I. N. Miaoulis, and P. Y. Wong, "Determining the High Temperature Properties of Thin Films Using Bi-Layered Cantilevers," **Materials Research Society**, Vol. 546, pp. 39-44, 1999

12. P. Nieva, H. Tada, P. Zavracky, G. Adams, I. N. Miaoulis, and P .Y. Wong, "Mechanical and Thermophysical Properties of Silicon Nitride Thin Films at High Temperatures," **Materials Research Society**, Vol 546, pp. 97-102, 1999

13. H. Tada, A. R. Abramson, I. N. Miaoulis, and P. Y. Wong, "Effect of Surface Patterning in Thin Film Structures on the Thermal Radiative Properties During Rapid Thermal Processing," Proceedings of the 1998 International Mechanical Engineering Congress and Exposition, **American Society of Mechanical Engineers**, HTD-Vol. 361-2, pp. 93-98, 1998

14. H. Tada, I. N. Miaoulis, and P. Y. Wong, "Numerical Simulation of Radiant Thermal Processing of Bilayer Microcantilevers," Conference Proceedings, **American Society of Mechanical Engineers,** DSC-Vol.66, pp.37-44, 1998

15. H. Tada, A. R. Abramson, I. N. Miaoulis, P. Y. Wong, P. Nieva, and P. Zavracky, "MEMS as Temperature Sensors During High Temperature Processing," Proceedings of the Symposium on Microelectromechanical Structures for Materials Research, **Materials Research Society**, Vol. 518, pp. 161-166, 1998

16. A. R. Abramson, I. N. Miaoulis, P. Y. Wong, P. Nieva, and P. Zavracky, "Partial Transparency Effects of Silicon During Rapid Thermal Processing," **Materials Research Society,** Vol.525, pp. 15-20, 1998

17. V. P. Manno, R. N. Smith, P. Y. Wong, and R. W. Messler, "Tufts-Rensselear Thermal Manufacturing Research-Curriculum Development Program," Manufacturing Education for the 21st Century - Volume 5, **Society of Manufacturing Engineers**, Vol. 5, pp. 171-176, 1998

18. H. Tada, S. E. Mann, I. N. Miaoulis, and P. Y. Wong, "Microscale Radiative Effects in Complex Microstructures of Iridescent Butterfly Wing Scales," **Materials Research Society,** Vol.489, pp. 173-180, 1998

19. I. N. Miaoulis, H. Tada, S. E. Mann*, and P. Y. Wong, "Selective Multilayer Thin-Film Development in Insects," Advances in Heat and Mass Transfer in Biotechnology**, Proceedings of the 1997 International Mechanical Engineering Congress and Exposition**, American Society of Mechanical Engineers Heat Transfer Division, Vol. 355, pp. 33-40, 1997

20. S. D. Bluestein*, D. P. Y. Bramono*, I. N. Miaoulis, and P. Y. Wong, "Viscoelastic Behavior of Polymer Thin-Film under Thermo Stresses," **Materials Research Society**, Vol. 445, pp. 185-190, 1997

21. J. B. Hoppert*, I. N. Miaoulis, and P. Y. Wong, "Numerical Modeling of Radiative Properties of Patterned Wafers with Sub-Micron Features," Proceedings of Symposium on Rapid Thermal and Integrated Processing V, **Materials Research Society**, Vol. 429, pp. 51-56, 1996

22. P. Y. Wong and I. N. Miaoulis, "Microscale Reflectance Spectrometry of Thin-Film Structures in Butterfly Wing Scales," Proceedings of Session on Measurement Techniques and Instrumentation in Bio-Heat and Mass Transfer; Heat Transfer Division, **American Society of Mechanical Engineering**, Vol. 322, pp. 5-10, 1995

23. P. Y. Wong and I. N. Miaoulis, "Thermal Radiative Analysis of Rapid Thermal Processing of Electronic Materials," Proceedings of Session on Transport Phenomena in Electronic Materials Processing; Heat Transfer Division, **American Society of Mechanical Engineering**, Vol. 317-2, pp. 475-482, 1995

24. P. Y. Wong, I. N. Miaoulis, and C. G. Madras, "Transient and Spatial Radiative Properties of Patterned Wafers During Rapid Thermal Processing," Proceedings of Symposium on Rapid Thermal and Integrated Processing IV, **Materials Research Society**, Vol. 387, pp. 15-20, 1995

25. C. G. Madras, P. Y. Wong, and I. N. Miaoulis, "Adhesion and Thermal Deformation of Ceramic/Polymer Heterostructures," Proceedings of Symposium on Polymer/Inorganic Interfaces II, **Materials Research Society**, Vol. 385, pp. 71-76, 1995

26. C. G. Madras, P. Y. Wong, I. N. Miaoulis, and L. Goldman, "Measurement of the Effect of Temperature on Stress Distribution and Deformation in Multilayer Optical Thin Film Structures," Proceedings of Symposium on Thin Films: Stresses and Mechanical Properties V, **Materials Research Society**, Vol. 356, pp. 351-356, 1995

27. P. Y. Wong, R. D. Robinson, and I. N. Miaoulis, "Processing Uniformity Issues During Zone-Melting Recrystallization of Large Thin-Film Areas," Proceedings of Session on Heat Transfer in Thin Films; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 293, pp. 9-16, 1994

28. S. E. Rosenberg, P. Y. Wong, and I. N. Miaoulis, "Thermal and Deposition Stress Relaxation in Low-Melting-Point Substrates with High-Melting-Point Coatings," Proceedings of Session on Thermal-Mechanical Effects in Materials Processing and Manufacturing; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 289, pp. 1-5, 1994

29. P. Y. Wong, B. D. Heilman, and I. N. Miaoulis, "The Effect of Microscale and Macroscale Patterns on the Radiative Heating of Multilayer Thin-Film Structures," Proceedings of Session on Microscale Heat Transfer; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 291, pp. 27-34, 1994

30. P. Y. Wong and I. N. Miaoulis, "Thermal-Radiation Absorption Characteristics of Patterned Wafers During Rapid Thermal Processing," Proceedings of Symposium on Rapid Thermal and Integrated Processing III, **Materials Research Society**, Vol. 342, pp. 395-400, 1994

31. C. G. Madras, L. Goldman, P. Y. Wong, and I. N. Miaoulis, "The Effect of Substrate Temperature on the Crystallinity and Stress of Ion Beam Sputtered Silicon on Various Substrates," Proceedings of Symposium on Materials Reliability in Microelectronics IV, **Materials Research Society**, Vol. 338, pp. 179- 184, 1994

32. P. Y. Wong and I. N. Miaoulis, "Real Time Image Analysis and Control of Zone-Melting Recrystallization of Thick Gallium Films," Proceedings of Symposium on Microelectronic Processes, Sensors, and Controls; Microelectronic Processing '93, **Society of Photo-Instrumentation Engineering**, Vol. 2091, pp. 358-368, 1993

33. P. Y. Wong and I. N. Miaoulis, "Thermal Radiation Phenomena in Rapid Thermal Processing of Thin-Film Structures," Proceedings of 1st International Rapid Thermal Processing Conference, **RTP '93**, pp. 459-465, 1993, Invited paper

34. P. Y. Wong, C. K. Hess, and I. N. Miaoulis, "Microscale Radiation Effects in Multilayer Thin-Film Structures During Rapid Thermal Processing," Proceedings of Symposium on Rapid Thermal and Integrated Processing II, **Materials Research Society**, Vol. 303, pp. 217-222, 1993

35. C. K. Hess, P. Y. Wong, and I. N. Miaoulis, "Thermal Effects of Isolated Step Perturbations During Processing with a Line Heat Source," Proceedings of Session on Transport Phenomena in Materials Processing and Manufacturing; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 196, pp. 221-223, 1992

36. P. Y. Wong, L. M. Trefethen, and I. N. Miaoulis, "Cross-Correlation Thermal Radiation Phenomena in Multilayer Thin-Film Processing," Proceedings of Session on Microstructures, Sensors, and Actuators; Dynamic Systems and Control Division, **American Society of Mechanical Engineers**, Vol. 32, pp. 349-359, 1991

37. I. N. Miaoulis, S. M. Yoon, R. D. Robinson, C. K. Hess, and P. Y. Wong, "Thermal Analysis of Multilayer Thin Film Structure Processing with an Infrared Heat Source; an Overview," Proceedings of Session on Thin-Film Heat Transfer - Properties and Processing; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 184, pp. 81-90, 1991

38. P. Y. Wong, I. N. Miaoulis, and P. Zavracky, "Microscale Heat Transfer Phenomena in Multilayer Thin Film Processing with a Radiant Heat Source," Proceedings of Session on Microstructures, Sensors, and Actuators; Dynamic Systems and Control Division, **American Society of Mechanical Engineers**, Vol. 19, pp. 175-187, 1990

39. P. Y. Wong, I. N. Miaoulis, and P. Zavracky, "Optical Effects Induced by the Multilayer Nature of SOI Films During transient Thermal Processing with a Radiant Line Heat Source," Proceedings of Symposium on Surface Chemistry and Beam Solid Interactions, **Materials Research Society,** Vol. 201, pp. 445-450, 1990

40. J. D. Lipman, P. Y. Wong*, I. N. Miaoulis, and J. S. Im, "Numerical Simulation of the Radiation Effects in Graphite-Strip Zone-Melting Recrystallization of Thin Silicon Films," Proceedings of Session on Collected Papers in Heat Transfer; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 123, pp. 211-217, 1989

41. I. N. Miaoulis, J D. Lipman, D. A. Flodman*, P. Y. Wong*, M. W. Wolfson*, J. Barrett III, and A. Nelson, "Texture Enhancement of Thick High-Tc Superconductive Films by Zone-Melting," Proceedings of Session on Collected Papers in Heat Transfer; Heat Transfer Division, **American Society of Mechanical Engineers**, Vol. 123, pp. 77-81, 1989

* - refers to undergraduate student

C. THESES

Ph.D. Dissertation, "Processing Uniformity in Thin-Film Manufacturing by Thermal Radiative Heating," Tufts University, 1995
Thesis Committee: I. N. Miaoulis (Advisor), C. C. Doumanidis, V. P. Manno, and P. Zavracky

M.S.M.E. Thesis, "Microscale Heat Transfer Effects in Multilayer Thin Films Subjected to Thermal Radiation," Tufts University, 1991
Thesis Committee: I. N. Miaoulis (Advisor), L. M. Trefethen, and P. Zavracky

B.S.M.E. Thesis, "Zone-Melting Recrystallization of Y-Ba-Cu-Ox and Sr-Bi-Ca-Cu-Ox Superconducting Films," Tufts University, 1990
Thesis Advisor: I. N. Miaoulis

II. PRESENTATIONS IN PROFESSIONAL CONFERENCES AND SEMINARS

(References for those presentations that were published in refereed proceedings volumes are given in the previous section)

A. INVITED

• *Department of Mechanical Engineering Seminar, Tufts University*, September 2005
1. "BioMEMS for Materials Discovery and Analysis"

• *2nd Annual COMCAST Technology Summit for Higher Education, Royal Sonesta, Cambridge, MA*, October 2004
2. "Partnerships for Technology/Engineering Initiatives"

• *American Science and Technology Centers 2004, The Tech Museum of Innovation, San Jose, CA*, September 2004
3. "Science Centers and Universities: Creating Partnerships for Strategic Mutual Benefit"

• *Thermal Manufacturing Workshop, Tufts University*, June 2002
4. "Tufts Initiatives in Microscale Research and Education"

• *Department of Mechanical Engineering, Aerospace Engineering, and Manufacturing, Rensselaer Polytechnic Institute,* October 1999
5. "Links between Butterflies and Microchips"

• *Department of Mechanical, Industrial, and Manufacturing Engineering, Northeastern University,* May 1999
6. "Microscale Heat TransferThermal Processing"

• *NIST Physics Laboratory-Optical Technology Division,Gaithersburg, MD,* January 1998
7. "MEMS as Temperature Sensors in Rapid Thermal Processing"

• *Int. Symposium on Mechanics on Plants, Animals, and Their Environment, San Diego, CA,* January 1998
8. "How Butterflies Optimize Solar Energy Absorption and Convective Heat Transport by Wing Design"

• *Optical Society of America, Light and Color in the Open Air, Santa Fe, NM,* February 1997
9. "Multifunctional Thin Films in Butterflies"

• *Biomedical Engineering Society 1996 Annual Fall Meeting, University Park, PA,* October 1996
10. "BioHeat Transfer in Butterfly Wings for Thermoregulation"

• *Department of Mechanical Engineering Seminar, Tufts University*, June 1996
11. "Thermo-Mechanical Effects in Polymer Thin-Film Structures"

• *Department of Mechanical Engineering Seminar, Tufts University*, April 1995
12. "Thermal Radiative Effects in the Manufacturing of Thin-Film Structures "

• *Department of Mechanical Engineering Seminar, University of Rhode Island,* November 1994
13. "Thin Film Heat Transfer in Materials Processing"

• *Department of Mechanical Engineering Seminar, Tufts University*, January 1994
14. "Thin Film Heat Transfer in Materials Processing"

• *1st International Rapid Thermal Processing Conference*, *Scottsdale, AZ,* 1993
15. "Thermal Radiation Phenomena in Rapid Thermal Processing of Thin-Film Structures"

B. CONTRIBUTED

• *Women in Engineering Programs & Advocates Network, Annual Meeting,* Pittsburgh, PA June 2006

1. "A Model STEM Team Collaboration: 4 Schools for WIE"

• *Women in Engineering Programs & Advocates Network, Annual Meeting,* Las Vegas, NV, 2005

2. "Growing a STEM Team: Review of an Innovative Program for Middle School Students"

• *Materials Research Society Fall Meeting*, Boston, MA, 2004

3. "Effects of High-Speed Deformation on the Phase Stability and Interdiffusion in Ultrasonically Joined Aluminum and Zinc Foils"

• *6th International Conference on Frontiers of Design and Manufacturing, Xi'an CHINA, 441st paper, June 2004*

4. "Simulation of the Temperature and Extent of Nickel Dissolution During the reactive Fabrication of Nickel Aluminide Coatings by Rapid Heating of Plated Precursors"

• *ASEE New England Section 2004 Annual Conference, Dedham, MA, April 2004*

5. "4 Schools for Women in Engineering (WIE): Creating Partnerships for Gender Equity"

• *American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*, Washington DC, 2003

6. "MEMS based Microcalorimeter for Liquid Samples"

• *Materials Research Society Fall Meeting*, Boston, MA, 2003

7. "Thermal Effects in Plasma Treatment of Patterned PDMS for Bonding Stacked Channels"

• *Materials Research Society Fall Meeting*, Boston, MA, 2002

8. "Thermal and Mass Balance in Reactive Thermal Processing of Nickel Aluminide Coatings on Steel Substrates"

• *Materials Research Society Fall Meeting*, Boston, MA, 1999

9. "Microscale Rapid Prototyping using UV curing polymers"
10. "High-Temperature-Dependent Coefficient of Thermal Expansion of Silicon Nitride Films used in Microelectromechanical Systems"

• *American Society of Mechanical Engineers/Japanese Society of Mechanical Engineers Joint Thermal Engineering Conference,* San Diego, CA, 1999

11. "Temperature Measurements During Rapid Thermal Annealing Using MEMS"

• *Materials Research Society Fall Meeting*, Boston, MA, 1998

12. "Mechanical and Thermophysical Properties of Silicon Nitride Thin Films at High Temperatures"
13. "Determining the High Temperature Properties of Thin Films Using Bi-Layered Cantilevers"

• *American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*, Annaheim, CA, 1998

14. "Effect of Surface Patterning in Thin Film Structures on the Thermal Radiative Properties During Rapid Thermal Processing"
15. "Numerical Simulation of Radiant Thermal Processing of Bilayer Microcantilevers"

• *Society of Manufacturing Engineers International Conference on Education in Manufacturing ,* San Diego, CA 1998

16. "Tufts-Rensselear Thermal Manufacturing Research-Curriculum Development Program,"

• *Materials Research Society Spring Meeting*, San Francisco, CA, 1998

17. "Partial Transparency Effects of Silicon During Rapid Thermal Processing"
18. "MEMS as Temperature Sensors During High Temperature Processing"

• *Society of Manufacturing Engineers International Conference on Education in Manufacturing*, San Diego, CA 1998

19. "Tufts-Rensselear Thermal Manufacturing Research-Curriculum Development Program"

• *Materials Research Society Fall Meeting*, Boston, MA, 1997

20. "Microscale Radiative Effects in Complex Microstructures of Iridescent Butterfly Wing Scales"

• *American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*, Dallas, TX 1997

21. "Selective Multilayer Thin-Film Development in Insects"

• *Materials Research Society Fall Meeting*, Boston, MA, 1996

22. "*In-Situ* Measuring of Thermo-Mechanical Effects and Properties in Thin-Film Polymers"

• *Materials Research Society Spring Meeting*, San Francisco, CA, 1996

23. "Numerical Modeling of Radiative Properties of Patterned Wafers with Sub-Micron Features"

• *Materials Research Society Fall Meeting*, Boston, MA, 1995

24. "Temperature and time dependent viscosity of polymer adhesives in multilayer structures"

• *American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*, San Francisco, CA, 1995

25. "Thermal Radiative Analysis of Rapid Thermal Processing of Electronic Materials"
26. "Microscale Reflectance Spectrometry of Thin-Film Structures in Butterfly Wing Scales"

• *Materials Research Society Spring Meeting*, San Francisco, CA, 1995

27. "Transient and Spatial Radiative Properties of Patterned Wafers During Rapid Thermal Processing"
28. "Adhesion and Thermal Deformation of Ceramic/Polymer heterostructures"

• *Materials Research Society Fall Meeting*, Boston, MA, 1994

29. "Measurement of the Effect of Temperature on Stress Distribution and Deformation in Multilayer Optical Thin Film Structures"

• *American Society of Mechanical Engineers Winter Annual Meeting*, Chicago, IL, 1994

30. "Processing Uniformity Issues During Zone-Melting Recrystallization of Large Thin-Film Areas"
31. "Thermal and Deposition Stress Relaxation in Low-Melting-Point Substrates with High-Melting-Point Coatings"
32. "The Effect of Microscale and Macroscale Patterns on the Radiative Heating of Multilayer Thin-Film Structures"

• *Materials Research Society Spring Meeting,* San Francisco, CA, 1994

33. "Thermal-Radiation Absorption Characteristics of Patterned Wafers During Rapid Thermal Processing"
34. "The Effect of Substrate Temperature on the Crystallinity and Stress of Ion Beam Sputtered Silicon on Various Substrates"
35. "Thermal Stress and Creep Modeling in Thin-Film Structures on Substrates with Low Melting Temperatures"

• *Society of Photo-Instrumentation Engineering*, *Microelectronic Processing*, Monterey, CA, 1993

36. "Real Time Image Analysis and Control of Zone-Melting Recrystallization of Thick Gallium Films"

• *Materials Research Society Spring Meeting,* San Francisco, CA, 1993

37. "Microscale Radiation Effects in Multilayer Thin-Film Structures During Rapid Thermal Processing"
38. "Solidification Front Stability During Zone-Melting Recrystallization of Thin Silicon Films"

• *American Society of Mechanical Engineers, 28th National Heat Transfer Conference and Exhibition*, San Diego, CA, 1992

39. "Thermal Effects of Isolated Step Perturbations During Processing with a Line Heat Source"

• *American Society of Mechanical Engineers Winter Annual Meeting*, Atlanta, GA, 1991

40. "Cross-Correlation Thermal Radiation Phenomena in Multilayer Thin-Film Processing"
41. "Thermal Analysis of Multilayer Thin Film Structure Processing with an Infrared Heat Source; an Overview"

• *American Society of Mechanical Engineers Winter Annual Meeting,* Dallas, TX, 1990

42. "Microscale Heat Transfer Phenomena in Multilayer Thin Film Processing with a Radiant Heat Source"

• *Materials Research Society Fall Meeting*, Boston, MA, 1990

43. "Optical Effects Induced by the Multilayer Nature of SOI Films During Transient Thermal Processing with a Radiant Line Heat Source"

• *American Society of Mechanical Engineering Winter Annual Meeting*, San Francisco, CA, 1989

44. "Numerical Simulation of the Radiation Effects in Graphite-Strip Zone-Melting Recrystallization of Thin Silicon Films"
45. "Texture Enhancement of Thick High-Tc Superconductive Films by Zone-Melting"

• *Materials Research Society Fall Meeting*, Boston, MA, 1988

46. "Development of Thick Sr-Bi-Ca-Cu-O Superconductive Films by a Simple Screen Processing Technique"