

## HONGBIN MA

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### AEREAS OF

**ACADEMIC INTEREST:** Heat Pipes, Nanofluids, Microscale Heat Transfer and Fluid Flow, Phase-Change Heat Transfer, Electronics Cooling, Cell Freezing

### EDUCATION

Ph.D., Mechanical Engineering Department, Texas A&M University, August 1995  
M.S., Mechanical Engineering Department, Lamar University, December 1992  
M.S., Marine Engineering Department, Dalian Maritime University, July 1987  
B.S., Marine Engineering Department, Dalian Maritime University, July 1983

### EMPLOYMENT

09/2004-present, Associate Professor, Mechanical and Aerospace Engineering Department, University of Missouri-Columbia.  
09/2002-present, Chair of Thermal/Fluid Division, Mechanical and Aerospace Engineering Department, University of Missouri-Columbia  
09/2004-present, Director of ISoTherM Research Consortium, Mechanical and Aerospace Engineering Department, University of Missouri-Columbia.  
09/1999-08/2004, Assistant Professor, Mechanical and Aerospace Engineering Department, University of Missouri-Columbia  
09/1998-07/1999, Assistant Research Professor, Mechanical Engineering Department, Texas A&M University  
09/1995-08/1998 Postdoctoral Research Associate, Two-Phase Heat Transfer Laboratory, Mechanical Engineering Department, Texas A&M University.  
03/1987-12/1990 Lecturer, Department of Marine Engineering, Dalian Maritime University, Dalian, China

### AWARDS & SCHOLARSHIPS

Faculty Research Fellow, College of Engineering, University of Missouri, 2003, 2004, 2005, 2006  
Teaching Award from Students, College of Engineering, University of Missouri, 2000.  
Distinguished Graduate Student Doctoral Research Award, Texas A&M University, 1996.

### PUBLICATIONS (selected from 70 publications)

1. Cheng, P., and Ma, H.B., 2006, "A Mathematical Model Predicting Minimum Radius Occurring in Mixed Particles," accepted for publication in the ASME Journal of Heat Transfer.

2. Ma, H.B., Wilson, C., Yu, Q, Choi, U.S., Tirumala, M., 2006 “An Experimental Investigation of Heat Transport Capability in a Nanofluid Oscillating Heat Pipe,” accepted for publication in the ASME Journal of Heat Transfer.
3. Borgmeyer, B. and Ma, H.B., 2006, “Experimental Investigation of Oscillating Motions in a Flat Plate Pulsating Heat Pipe,” accepted for publication in AIAA Journal of Thermophysics and Heat Transfer.
4. Park, K. and Ma, H. B., 2006, “Nanofluid Effect on the Heat Transport Capability in a Well-Balanced Oscillating Heat Pipe,” accepted for publication in AIAA Journal of Thermophysics and Heat Transfer.
5. Qu, W. and Ma, H.B., 2006, “Theoretical Analysis of Start-up of a Pulsating Heat Pipe,” accepted for publication in the International Journal of Heat and Mass Transfer.
6. Sait, H. H., Demsky, S. M., and Ma, H.B., 2006, “Thermal Conductivity and Operating Temperature Effect on the Interline Region in a Micro/Miniature Heat Pipes,” accepted for publication in the *Journal of Technology Research*.
7. Yu, Q.S.; Kim, Y.J., Ma, H.B.; 2006, “Plasma Nanocoating on Diamond Nanoparticles for Dispersion Improvement in Water,” *Applied Physics Letters*, Vol. 88, No. 23, pp. 231503
8. Ma, H.B., Wilson, C. Borgmeyer, B., Park, K, Yu, Q, Choi, U.S., Tirumala, M., 2006 “Nanofluid Effect on the Heat Transport Capability in an Oscillating Heat Pipe,” *Applied Physics Letters*, Vol. 88, No. 14, pp. 1161-1163
9. Jiao, A., X, Han, Critser, J., and Ma, H. B., 2006, “Numerical Investigations of Transient Heat Transfer Characteristics and Vitrification Tendencies in Ultra-fast Cell Cooling Processes,” *Journal of Cryobiology*, Vol. 52, pp. 386-392.
10. Ma, H. B., Lofgreen, K. P., and Peterson, G.P., 2006 “An Experimental Investigation of a High Flux Heat Pipe Heat Sink,” *ASME Journal of Electronic Packaging*, Vol.128, No.1, pp.18-22.
11. Maschmann, M. R. and Ma, H. B., 2006, “An Investigation of Capillary Flow Effect on Condensation Heat Transfer on a Grooved Plate” *International Journal of Heat Transfer Engineering*, Vol. 27, No. 3, pp.22-31.
12. Ma, H. B., Hanlon, M.A., and Chen, C. L., 2006, “An Investigation of Oscillating Motions in a Miniature Pulsating Heat Pipe,” *Microfluidics and Nanofluidics*, Vol. 2, No. 2, pp. 171-179.
13. Ma, H. B., 2005, “Heat Pipes,” *Mechanical Engineers' Handbook*, 3rd Edition, Myer Kutz, John Wiley & Sons, ISBN: 0471449903.
14. Jiao, A. J., Riegler, R., Ma, H. B., and Peterson, G. P., 2005, “Thin Film Evaporation on the Heat Transport Capability in a Grooved Heat Pipe,” *Journal of Microfluidics and Nanofluidics*, Vol. 1, No. 3, pp. 227-233.
15. Jiao, A. J., Jeong, S., and Ma, H.B., 2004, “Heat Transfer Characteristics of Cryogenic Helium Gas Through a Miniature Tube with a Large Temperature Difference,” *Journal of Cryogenics*, Vol. 44, pp 859-866.
16. Demsky, S., and Ma, H. B., 2004 “Thin Film Evaporation on a Curved Surface,” *Microscale Thermophysical Engineering* , Vol. 3, No. 3, pp.285 – 299.
17. Liang, S. B., and Ma, H. B., 2003, “Oscillation Motions in an Oscillating Heat Pipe,” *International Communication of Heat and Mass Transfer*, Vol. 43. No. 9, pp.493-500.
18. Hanlon, M. A., and H. B. Ma, 2003, “Evaporation Heat Transfer in Sintered Porous Media,” *ASME Journal of Heat Transfer*, Vol. 125, August, pp. 644-653.

19. Liang, S. B., Li, X, and Ma, H. B., 2003, "Thermoacoustic Power Effect on the Refrigeration Performance of Thermal Separators," *International Journal of Cryogenics*, Vol. 43. No. 9, pp.493-500.
20. Teoh, C. K., Maschmann, M. R., and Ma, H. B., 2003, "Heat Transfer Analysis in a Heat Sink Embedded with a Closed Two-Phase Thermosyphon," *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 17, No. 3, pp. 348-353.
21. Ma, H. B., and Peterson, G. P., 2002, "The Influence of the Thermal Conductivity on the Heat Transfer Performance in a Heat Sink," *ASME Journal of Electronic Packaging*, Vol. 124, No. 3, pp. 164-170.
22. Wang, Y., Ma, H. B., and Peterson, 2001, "Investigation of the Temperature Distribution on Radiator Fins with Micro Heat Pipes," *AIAA Journal of Heat Transfer and Thermophysics*, Vol. 15, No.1, Jan. - Mar., pp. 42-49.
23. Peterson, G. P., and Ma, H. B., 1999, "Temperature Response and Heat Transport in a Micro Heat Pipe," *ASME Journal of Heat Transfer*, Vol. 121, No.2, May, pp. 438 – 445.
24. Ma, H. B., and Peterson, G. P., 1998, "Disjoining Pressure Effect on the Wetting Characteristics in a Capillary Tube," *Microscale Thermophysical Engineering*, Vol. 2, No. 4, pp.283-297.
25. Ma, H. B., and Peterson, G. P., 1998, "The minimum Meniscus Radius and Capillary Heat Transport limit in Micro Heat Pipes," *ASME Journal of Heat Transfer*, Vol. 120, No. 1, pp. 227-233.
26. Ma, H. B., and Peterson, G. P., 1997, "The Friction Factor for Laminar Flow in Microscale Ducts of Irregular Cross-section," *Microscale Thermophysical Engineering*, Vol. 1, No. 3, pp. 253-265.
27. Ma, H. B., and Peterson, G. P., 1997, "Temperature Variation and Heat Transfer in Triangular Grooves with an Evaporating Film," *AIAA Journal of Thermophysics and Heat Transfer*, Vol.11, No.1, pp.90-97.
28. Ma, H. B., and Peterson, G. P., 1996 "Experimental Investigation of the Maximum Heat transport in Triangular grooves," *ASME Journal of Heat Transfer*, Vol. 118, No. 3, pp. 740-746.
29. Ma, H. B., and Peterson, G. P., 1996, "Experimental Investigation of Countercurrent Liquid-Vapor Interactions and Its Effect on the Friction Factor," *International Journal of Experimental Thermal and Fluid Science*, Vol. 12, No.1, pp. 25-32.
30. Peterson, G. P., and Ma, H. B., 1996, "Analysis of Countercurrent Liquid-Vapor Interactions and the Effect on the Liquid Friction Factor," *International Journal of Experimental Thermal and Fluid Science*, Vol. 12, No. 1, pp. 13-24.
31. Peterson, G. P., and Ma, H. B., 1996, "The Theoretical Analysis of the Maximum Heat Transport in Triangular Grooves-A Study of Idealized Micro Heat Pipes," *ASME Journal of Heat Transfer*, Vol. 118, No. 3, August, 1996, pp. 731-739.
32. Ma, H. B., and Peterson, G. P., 1995, "Thermodynamic Analysis of the Influence of Electric Fields on Frost Formation," *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 9, No. 3, pp. 562-565.
33. Peng, X. F., Wang, B. X., Peterson, G. P., and Ma, H. B., 1995, "Experimental Investigation of Heat Transfer in Flat Plates with Rectangular Microchannels," *International Journal of Heat and Mass Transfer*, Vol. 38, No.1, pp.127-137.
34. Ma, H. B., and Peterson, G. P., 1994, "The Influence of Vapor-Liquid Interactions on the Liquid Pressure Drop in Triangular Microgrooves," *International Journal of Heat and Mass Transfer*, Vol.37, No.15, pp.2211-2219.