

Dr. HUI HU

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Education

Ph. D., Mechanical Engineering, the University of Tokyo, Japan.

Ph. D., Aerospace Engineering, Beijing University of Aeronautics & Astronautics, China.

M. S., Aerospace Engineering, Beijing University of Aeronautics & Astronautics, China.

B. S., Aerospace Engineering, Beijing University of Aeronautics & Astronautics, China.

Professional Experience

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| 2009 – Present | Associate Professor
Department of Aerospace Engineering, Iowa State University, U.S.A. |
| 2004 – 2009 | Assistant Professor
Department of Aerospace Engineering, Iowa State University, U.S.A. |
| 2000 – 2004 | Research Associate and Course Instructor
Department of Mechanical Engineering, Michigan State University, U.S.A. |
| 1997 – 2000 | JSPS Research Fellow
Institute of Industrial Science, the University of Tokyo, Japan |

Honors and Awards

- *Best Paper Award*, AIAA Applied Aerodynamics Technical Committee, 2009.
- *Air Force Summer Faculty Fellowship Award*, 2008
- *Best Paper Award*, Measurement Science and Technology, IOP Publishing, 2007.
- *Faculty Early Career Development (CAREER) Award*, National Science Foundation, 2006.
- *Best Paper Award*, Visualization Society of Japan, Japan, 2001.
- *Kodak Excellent Flow Visualization Award*, Visualization Society of Japan, 2000.
- *Award Winner of Sixth Computer Visualization Festival*, Nikkei Science, Japan, 2000.
- *Research Fellowship of Japan Society for Promotion of Science*, Japan, 1997-2000.
- *Best Paper Award*, Chinese Society of Aeronautics and Astronautics, China, 1995.
- *Achievement Award on Aerospace Science & Technology*, Chinese Aerospace Ministry, 1995.

Professional Service

- Associate editor, *International Journal of Aerospace Engineering*, Hindawi Publishing.
- AIAA Aerodynamic Measurement Technologies Technical Committee, 2005 – present.

Research Interests

- 1). Fundamental studies on challenging thermal-fluids problems:
 - Laminar flow separation and transition on low-Reynolds-number airfoils
 - Bio-inspired aerodynamic designs for micro-air-vehicle (MAV) applications
 - Icing physics, aircraft icing, wind turbine icing and power cable icing.
 - Micro-flows and micro-scale heat transfer in microfluidics.
 - Vortex flow and flow-structure interaction in tornado-like winds
 - Film cooling and trailing edge cooling of turbine blades.
- 2). Advanced flow diagnostics and instrumentations:
 - Particle Image Velocimetry (PIV) and Stereoscopic PIV (SPIV) techniques
 - Laser Induced Fluorescence (LIF) and Laser Induced Phosphorescence (LIP)
 - Pressure Sensitive Paint (PSP) and Temperature Sensitive Paint (TSP)
 - Molecular Tagging Velocimetry (MTV) and Molecular Tagging Thermometry (MTT)
 - Quantum Dot imaging and Molecule-based microscopic flow diagnostic techniques

Representative Publications in Recent 3 Years:

- **Z. Jin and H. Hu** "Quantification of Unsteady Heat Transfer and Phase Changing Process inside Small Icing Water Droplets", *Review of Scientific Instruments*, Vol. 80, No.6, 2009.
- **H. Hu, and D. Huang**, "Simultaneous Measurements of Droplet Size and Transient Temperature within Surface Water Droplets", *AIAA Journal*, Vol. 47, NO. 4, pp813-820, 2009.
- **J. T. Murphy and H. Hu**, "An Experimental Investigation on a Bio-inspired Corrugated Airfoil", AIAA Paper 2009-1087. (**Winner of 2009 AIAA Best Paper Award**).
- **M. Tamai and H. Hu**, "A Bio-inspired Corrugated Airfoil at Low Reynolds Numbers", *AIAA Journal of Aircraft*, Vol. 47, No. 6, pp2068-2077, 2008.
- **H. Hu, M. Tamai and J. T. Murphy**, "Flexible Membrane Airfoils at Low Reynolds Numbers", *AIAA Journal of Aircraft*, 2008, Vol. 47, No. 5, pp1767-1778, 2008.
- **H. Hu, and T. Kobayashi**, "Vortex Structures Downstream a Lobed Nozzle/Mixer", *Journal of Aerospace Power*, Vol. 23, No.7, pp1266-1278, 2008.
- **H. Hu and Z. Yang**, "An Experimental Study of the Laminar Flow Separation on a Low Reynolds-Number Airfoil", *ASME Journal of Fluid Engineering*, Vol. 130, No. 5, 051101, 2008.
- **H. Hu Z. Jin, A. Dawoud, and R. Jankowiak**, "Fluid Mixing Control Inside a Y-shaped Microchannel by Using Electrokinetic Instability", *Journal of Fluid Science and Engineering*, Vol.3, No.2, pp260-273, 2008.
- **Z. Yang and H. Hu**, "Laminar Flow Separation and Transition on a Low-Reynolds-Number Airfoil", *AIAA Journal of Aircraft*, Vol. 45, No. 3, pp1067-1070, 2008.
- **Z. Jin, S. Someya, K. Okamoto and H. Hu**, "Mixing Enhancement in a Microfluidic Device", *Journal of Visualization*, Vol.11, No. 1, pp35-36, 2008.
- **D. Huang and H. Hu**, "Molecular Tagging Thermometry for the Transient Temperature Mapping within a Water Droplet", *Optics Letters*, Vol.32. No.24, pp3534-3536, 2007.
- **H. Hu, Z. Yang and H. Igarashi**, "Aerodynamic Hysteresis of a Low-Reynolds-Number Airfoil", *AIAA Journal of Aircraft*, Vol. 44, No. 6, pp2083-2086, 2007.
- **H. Hu, and M. Koochesfahani**, "A Novel Molecular Tagging Technique for Simultaneous Measurements of Flow Velocity and Temperature Fields", *Journal of Visualization*, Vol.9, No.4, pp357, 2006.
- **H. Hu and M. Koochesfahani**, "Molecular Tagging Velocimetry and Thermometry (MTV&T) Technique and Its Application to the Wake of a Heated Circular Cylinder", *Measurement Science and Technology*, Vol. 17, No. 6, pp1269-1281, 2006. (**Winner of 2007 Best Paper Award**).
- **H. Hu, C. Lum and M. Koochesfahani**, "Molecular Tagging Thermometry with Adjustable Temperature Sensitivity", *Experiments in Fluids*, Vol.40, No. 5, pp753-763, 2006.