

Curriculum Vitae - Dr. Hui Hu

Martin C. Jischke Professor in Aerospace Engineering
Assoc. Dept. Chair and Direction of Graduate Education (DOGE)
Department of Aerospace Engineering, Iowa State University
2271 Howe Hall, Room 2251, Ames, Iowa 50011-2271
Tel: 515-294-0094 (O) / Email: huhui@iastate.edu

Education:

- Ph. D., Mechanical Engineering, the University of Tokyo, Japan, 2001.
- Ph. D., Aerospace Engineering, Beijing Univ. of Aero. & Astro., China, 1996.
- M. S., Aerospace Engineering, Beijing Univ. of Aero. & Astro., China, 1993.
- B. S., Aerospace Engineering, Beijing Univ. of Aero. & Astro., China, 1990.

Professional Experience:

- 2004 – Present Martin C. Jischke Professor & Assoc. Dept. Chair for Graduate Education (15~)
Full Professor (2013~ present; 2-year earlier promotion)
Associate Professor (2009~2013, 1-year earlier promotion)
Assistant Professor (2004~2009)
Dept. of Aerospace Engineering, Iowa State University, Ames, Iowa, USA
- 2000 – 2004 Research Associate and Course Instructor
Dept. of Mechanical Engineering, Michigan State University, USA.
- 1997 – 2000 JSPS Research Fellow
Institute of Industrial Science, the University of Tokyo, Japan

Honors and Awards:

- Fellow, American Society of Mechanical Engineers (ASME), since 2014.
- Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA), since 2012.
- *Renewable Energy Impact Award*, Iowa Energy Center, USA, 2014.
- *AIAA Best Paper Award in Ground Testing Technology*, 2013.
- *ISU Award for Mid-Career Achievement in Research*, Iowa State University, 2012.
- *AIAA Best Paper Award in Applied Aerodynamics*, 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.

Research Interests and Expertise:

1). **Fundamental studies on challenging thermal-fluids problems:**

- Aircraft icing physics and anti-/de-icing technologies.
- Film cooling, trailing edge cooling and thermal management of gas turbines.
- Renewable energy, wind turbine aeromechanics and wind farm aerodynamics.
- Bio-inspired flow, bio-inspired aerodynamics of Unman-Air-Vehicle (UAV) applications.
- Microfluidics, micro-flows and micro-scale heat transfer.
- Fluid-structure interactions (FSI) of built structures in tornadic and storms winds.

2). **Advanced flow diagnostics and instrumentation:**

- Particle Image Velocimetry (PIV) and Stereoscopic Particle Image Velocimetry (SPIV)
- 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 Dots (QD) thermal imaging and Digital Image Projection (DIP) techniques

Recent Publications

- **6 book chapters; 102 journal papers; over 200 conference papers; over 100 invited lectures**
 - **H – index =28, I10-index = 69 according to <https://scholar.google.com/>**
- J-1. **W. Tian, A. Ozbay, XD Wang, and H. Hu**, “Experimental investigation on the wake interference among wind turbines sited in atmospheric boundary layer winds”. *Acta Mechanica Sinica*, Springer, 2017. DOI: [10.1007/s10409-017-0684-5](https://doi.org/10.1007/s10409-017-0684-5).
- J-2. **LK. Li and H. Hu**, “Experimental Study of Dynamic Ice Accretion Process on Aero-engine Spinners”, *AIAA Journal of Power and Propulsion*, accepted, in press, 2017.
- J-3. **WW Zhou and H. Hu**, “A Novel Sand-Dune-Inspired Design for Improved Film Cooling Performance”, *International Journal of Heat and Mass Transfer*, Vol. 110(7), pp908–920, 2017. <http://www.sciencedirect.com/science/article/pii/S0017931017303757>
- J-4. **Y. Liu, LK Li, Z. Ning, W. Tian and H. Hu**, “Experimental Investigation on the Dynamic Icing Process over a Rotating UAS Propeller”, *AIAA Journal of Power and Propulsion*, accepted, in press, 2017.
- J-5. **Y. Liu, L. Bond and H. Hu**, “Ultrasonic-Attenuation-Based Technique for Ice Characterization Pertinent to Aircraft Icing Phenomena”, *AIAA Journal*, Vol. 55, No.5, pp. 1602-1609. 2017. <http://dx.doi.org/10.2514/1.J055500>.
- J-6. **WW Zhou and H. Hu**, “Effects of Flow Compressibility and Density Ratio on Film Cooling Performance”, *AIAA Journal of Power and Propulsion*, Vol. 33, No. 4, pp. 964-974, 2017. <http://arc.aiaa.org/doi/pdf/10.2514/1.B36275>.
- J-7. **F Chen, H. Liu, ZF Yang and H. Hu**, “Tracking characteristics of tracer particles for PIV measurements in supersonic flows”, *Chinese Journal of Aeronautics*, 2017. <http://dx.doi.org/10.1016/j.cja.2016.12.033>.
- J-8. **Y. Liu, WL Chen, L. Bond and H. Hu**, “An Experimental Study on the Characteristics of Wind-driven Surface Water Film Flows by Using a Multi-Transducer Ultrasonic Pulse-Echo Technique”, *Physics of Fluids*, 29, 012102 (13 pages), 2017. <http://dx.doi.org/10.1063/1.4973398>.
- J-9. **W. Tian, A. Ozbay and H. Hu**, “An Experimental Investigation on the Wake Interference among Wind Turbines Sited in Aligned and Staggered Wind Farms”. *Wind Energy*, in press, 2017.
- J-10. **WL Chen, DL Gao, H. Li, H. Hu** “Flow around a circular cylinder with slit”, *Experimental Thermal and Fluid Science*, Vol. 82, No. 4, pp287-301, 2017. <http://dx.doi.org/10.1016/j.expthermflusci.2016.11.025>
- J-11. **ZY Wang, A. Ozbay, W. Tian, Anupam Sharma and H. Hu**, “An Experimental Study on the Aeromechanics and Wake Characteristics of a Novel Twin-Rotor Wind Turbine in a Turbulent Boundary Layer Flow”, *Experiments in Fluids*, 57:150 (17 pages), 2016.
- J-12. **WW Zhou and H. Hu**, “Improvements of Film Cooling Effectiveness by using Barchan-Dune-Shaped-Ramps ”, *International Journal of Heat and Mass Transfer*, Vol. 103, No. 12, pp442-456, 2016.
- J-13. **WL Chen, XJ Wang, F. Xu, H. Li, H. Hu**, “A passive jet flow control method for suppressing unsteady vortex shedding from a circular cylinder ”, *ASCE's Journal of Aerospace Engineering*, 04016063 (19 pages), 2016.
- J-14. **B. Blake, and H. Hu**, “Measurement Uncertainty Analysis in Determining Adiabatic Film Cooling Effectiveness by using Pressure Sensitive Paint (PSP) Technique”, *ASME Journal of Turbomachinery*, 138(12), 121004, (11 pages), 2016.

- J-15. **A. Ozbay, W. Tian and H. Hu**, “An Experimental Investigation on The Wake Characteristics and Aeromechanics of Dual-Rotor Wind Turbines”, *ASME Journal of Engineering for Gas Turbines and Power*, Vol.138, No.4, 042602 (15 pages). DOI:10.1115/1.4031476.
- J-16. **W. Tian, A. Bodling, H. Liu, JC. Wu, GW He and H. Hu**, “An Experimental Study of the Effects of Pitch-pivot-point Location on the Propulsion Performance of a Pitching Airfoil”, *Journal of Fluids and Structures*, Vol. 60, No. 1, pp130-142, 2016.
- J-17. **WW. Zhou, Y. Rao and H. Hu**, “An Experimental Investigation on the Characteristics of Turbulent Boundary Layer Flows over a Dimpled Surface”, *ASME Journal of Fluids Engineering*, Vol. 138, No. 2, 021204(13 pages), 2016.
- J-18. **R. Waldman and H. Hu**. "High-Speed Imaging to Quantify the Transient Ice Accretion Process on a NACA 0012 Airfoil". *Journal of Aircraft*, volume 53, issue 2 on pages 369-377, 2016.
- J-19. **WL. Chen, DL. Gao, WY Yuan, H. Li and H. Hu**, “Passive jet control of flow around a circular cylinder”, *Experiments in Fluids*, 56:201(15 page), 2015.
- J-20. **HX. Li, F. Chen and H. Hu**, “Simultaneous Measurements of Droplet Size, Flying Velocity and Transient Temperature of In-Flight Droplets by Using a Molecular Tagging Technique”, *Experiments in Fluids*, 56:194 (14 pages), 2015.
- J-21. **W. Tian, A. Ozbay and H. Hu**, “Terrain Effects on Characteristics of Surface Wind and Wind Turbine Wakes”. *Procedia Engineering, Frontiers in Fluid Mechanics Research*, Vol. 126, pp542–548, 2015.
- J-22. **WW. Zhou, Y. Rao and H. Hu**, “An Experimental Investigation on the Characteristics of Turbulent Boundary Layer Flows over a Dimpled Surface”, *ASME Journal of Fluids Engineering*, Vol. 138, No. 2, 021204(13 pages), 2015.
- J-23. **K. Zhang, W. Tian and H. Hu**, “An Experimental Investigation on the Surface Water Transport Process over an Airfoil by using a Digital Image Projection Technique”, *Experiments in Fluids*, 56:173 (16 pages), 2015.
- J-24. **WL Chen, Y. Cao, H. Li and H. Hu**, “Numerical investigation of steady suction control of flow around a circular cylinder”, *Journal of Fluids and Structures*, Vol.59, No. 11, pp22-36, 2015.
- J-25. **Y. Zhang, P. Sarkar and H. Hu**, “An Experimental Investigation on the Characteristics of Fluid-Structure Interactions of a Wind Turbine Model Sited in Microburst-like Winds”. *Journal of Fluids and Structures*, Vol.57, No. 8, pp206–218, 2015.
- J-26. **R. Waldman and H. Hu**. "High-Speed Imaging to Quantify the Transient Ice Accretion Process on a NACA 0012 Airfoil". *AIAA Journal of Aircraft*, 2015. DOI: 10.2514/1.C033367.
- J-27. **F. Chen, HX. Li, H. Hu**, “Molecular Tagging Techniques and Their Applications to Study Complex Thermal Flow Phenomena”, *Acta Mechanica Sinica, Springer*, Vol. 31, No. 4, pp425-445, 2015.
- J-28. **WL Chen, QQ Zhang, H. Li, and H Hu**, “An experimental investigation on vortex induced vibration of a flexible inclined cable under a shear flow”, *Journal of Fluids and Structures*, Vol. 54, No. 4, pp 297–311, 2015.
- J-29. **H. Hu, K. Zhang, B. Wang, W. Lohry and S. Zhang**, “Development of a Novel Digital Fringe Projection Technique to Quantify The Transient Behavior of Wind-Driven Surface Droplet/Rivulet Flows”, *Journal of Visualization*, Vol. 18, No.4, pp705-718, 2015.