Dr. Hui Hu

Martin C. Jischke Professor in Aerospace Engineering
Associate Dept. Chair for Graduate Education
Director, Aircraft Icing Physics & Anti-/De-Icing Technology Laboratory
Director, Advanced Flow Diagnostics & Experimental Aerodynamics Lab

Ph: 515-294-0094
Office: 2251 Howe Hall
Email: huhui@iastate.edu
http://www.aere.iastate.edu/~huhui

Rm 1200 Howe Hall
Iowa State University
537 Bissell Road
Ames, IA 50011

Education

Ph.D. Mechanical Engineering, *the University of Tokyo, Japan, 2001,*
M.S. Aerospace Engineering, *Beijing University of Aeronautics and Astronautics (BUAA), China, 1993.*
B. S. Aerospace Engineering, *Beijing University of Aeronautics and Astronautics (BUAA), China, 1990.*

Academic Appointments

Iowa State University (2004 ~ Present)
Department of Aerospace Engineering

- *Martin C. Jischke Professor,* 2015 - present
- *Associate Dept. Chair for Graduate Education*, 2015 - present
- *Full Professor (2013 ~ Present); Associate Professor(2009~2013); Assistant Professor (2004~2009)*

Awards and Honors

- *Fellow, American Society of Mechanical Engineers (ASME).*
- *Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA).*
- *2023 D.R. Boylan Eminent Faculty in Research Award, Iowa State University.*
- *2022 AIAA Gas Turbine Engine Best Paper Award, AIAA 2022.*
- *2016 Outstanding Faculty Mentor Award, Iowa State University.*
- *2014 Renewable Energy Impact Award, Iowa Energy Center, State of Iowa, USA.*
- *2013 AIAA Best Paper in Ground Testing Technology Award, AIAA.*
- *2012 Mid-Career Achievement in Research Award, Iowa State University.*
- *2009 AIAA Best Paper in Applied Aerodynamics Award, AIAA*
- *2007 Best Paper Award, Measurement Science and Technology, IOP Publishing*
- *2006 Faculty Early Career Development (CAREER) Award, National Science Foundation*

Teaching Courses:

UNDERGRAD: *Engr160: Engineering Problems and Computer Programming; AerE243: Fundamentals of Aerodynamics; AerE344: Experimental Aerodynamics and Propulsion Laboratory,*

GRADUATE: *AerE541: Incompressible Aerodynamics; AerE545: Advanced Flow Diagnostic Techniques for Thermal-Fluid Studies.*

Research:

Research Interests: **1).Fundamental studies on challenging thermal-fluids problems:** aircraft icing physics, aero-engine icing and anti-/de-icing; wind turbine aeromechanics and wind farm aerodynamics.; heat transfer of gas turbines and cooling technology; UAS aerodynamics and bio-inspired flow dynamics; fluid-structure interactions (FSI) of built structures in violent tornadic and storms winds. **2).Advanced flow diagnostics and instrumentation:** Particle Image Velocimetry (PIV) and Stereoscopic Particle Image Velocimetry (SPIV); 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.

Sponsored Research Grants: Received ~ $20M total in funded research with over 60 research grants from federal agencies such as NSF, NASA, DoE, AFOSR, NAVY, USDA and NOAA, and aerospace industrials such as GE, P&W, DuPont, General Atomics, and Collins Aerospace Systems.

Selected Publications: (*6 book chapters; ~ 170 journal papers; ~ 250 conference papers; ~140 invited lectures; H-index = 54; I10-index = 191; according to https://scholar.google.com/ on 08/10/2023)*

1. **R. Veerakumar, HY Hu, LC Tian, NH Han, and H Hu, "** An Experimental Study of Rime Ice Accretion on Bundled Conductors", *Experimental Thermal Fluid Science*, Vol.147, 110962 (12 pages), 2023. https://doi.org/10.1016/j.expthermflusci.2023.110962.
2. **HY Hu, LC Tian, and H Hu, "**Experimental Investigation on Ice Accretion Process Upon Impacting of Ice Particles onto a Heated Surface", *AIAA Journal*, Vol. 61 No. 7, pp3019-3031. 2023. https://arc.aiaa.org/doi/10.2514/1.J062425
3. **HY Hu, F. Al-Masri, LC Tian, and H Hu, "** An Experimental Study of Dynamic Icing Process on a Pitot Probe Model", *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 37, No. 3, pp. 632-643, 2023. https://doi.org/10.2514/1.T6782
4. **NH Han, MA Siddique, ZC Zhang, LC Tian, HY Hu, and H Hu, "** A Flight-Testing Campaign to Examine Inflight Icing Characteristics and Its Effects on the Flight Performance of An Unmanned-Aerial-Vehicle", *Cold Regions Science and Technology*, Vol. 207, 103775 (11 pages), 2023. https://doi.org/10.1016/j.coldregions.2023.103775
5. **R. Veerakumar, LC Tian, HY Hu, Y. Liu, and H Hu, "**An Experimental Study of Dynamic Icing Process on an Aluminum-Conductor-Steel-Reinforced Power Cable with Twisted Outer Strands", *Experimental Thermal Fluid Science*, Vol. 142,110823 (12 pages), 2023. https://doi.org/10.1016/j.expthermflusci.2022.110823.
6. **LC Tian, LK Li, HY Hu, and H Hu,** "An Experimental Study of Dynamic Ice Accretion Process over Rotating Aero-engine Fan Blades", *AIAA Journal of Thermophysics and Heat Transfer*, Vol. 37, No. 2, pp. 353-364, 2023, https://doi.org/10.2514/1.T6667.
7. **WJ Huang, B. Nelson, S. Tian, R., Ordikhani-Seyedlar, R. Auyeung, A. Samanta, H. Hu, S. Shaw, C. Lamuta, HT Ding,** "Superhydrophobic surface processing for metal 3D printed parts", *Applied material Today*, Vol.29, 101630(12 pages), 2022. https://doi.org/10.1016/j.apmt.2022.101630.
8. **A. Islam, M. Sussman, H Hu and YS Lian, "**Simulation of drop impact on substrate with micro-wells", *Physics of Fluids*, 34, 062108 (15 pages). 2022. https://doi.org/10.1063/5.0093826.
9. **YH Peng, R. Veerakumar, ZC Zhang, HY Hu, Y. Liu, XH He, and H Hu, "**An Experimental Study on Mitigating Dynamic Ice Accretion Process on Bridge Cables with a Superhydrophobic Coating", *Experimental Thermal Fluid Science*, Vol. 132, 110573 (16 pages), 2022. https://doi.org/10.1016/j.expthermflusci.2021.110573.
10. **ZC Zhang, Y. Liu, H Hu, "**Effects of Chamber Pressure on the Kinematic Characteristics of Spray Flows Exhausted from an Airblast Atomizer", *Experimental Thermal Fluid Science*, Vol. 130, 110514 (10 pages) 2022. https://doi.org/10.1016/j.expthermflusci.2021.110514.

Graduate Students Supervision:

- **2 postdoc & 10 Current Graduate Students (08/2023):** A Kumar (postdoc); A Samad (Postdoc); C. Eluchie (PhD); JC Wang (PhD); A. Dhulipalla (PhD); H Sista (PhD); K Digavalli (PhD), M Rahman (PhD); C. Valentine (PhD);E. Ashley (PhD); K Bowers(MS); J. Frantz (MS).
- **22 Graduated PhD Students:** NH Han (2022); LC Tian (2021); HY Hu (2021); R. Veerakumar (2021); ZC Zhang (2021); C. Kolbarkir(2020); LY Gao (2019); LQ Ma(2019); LK Li(2018); Z Ning(2018); P Premaratne(2018); HX Li(2017); Y. Liu (2017); WW Zhou(2016); M. Khosravi(2016); K. Zhang (2015); Z. Wang (PhD, 2015); A. Ozbay (2014); Y. Zhang(2013); ML Yu (2012); ZF Yang (2009); ZY Jin (2008).
- **14 Graduated MS Students:** M. Ahmad Siddique (2021); F. Al-Masri (2020) P. Sagar(2017); M. Khosravi(2015); A. Ozbay(2012); D. Dvorak (2012);T. Grager (2011); A.Kumar (2011); H.Iagarashi (2010); L. Clemens(2009); J. Murphy (MS, 2008); K. Varma (2007); M. Tamai (2007).
- **Student Awards/Achievements:** 18 of the graduate students received the Teaching/Research Excellence Award. 16 of the former Ph.D. students are tenure-track/tenured Professors at Universities in USA (9) and China (6), Turkey (1).

Professional and Outreach Activities:

Editorship:

- Editor, *Experimental Thermal and Fluid Science*, *Elsevier*, since 2018
- Associate Editor, *ASME Open Journal of Engineering*, since 2021.
- Associate Editor, *Nature - Scientific Reports*, since 2021.
- Associate Editor, *ASME Journal of Fluids Engineering*, since 2015.
- Associate Editor, *SCIENCE CHINA Physics, Mechanics & Astronomy*, Springer.
- Editorial Board, *International Journal of Micro-Air-Vehicle*, Sage Journals.
- Editorial Board, *Journal of Bionic Engineering*, Elsevier.

Organization/Scientific Committees for International Conferences:

- 9th International Colloquium on Bluff Body Aerodynamics & Applications Birmingham, UK, 2024. https://uobevents.eventsair.com/bbaa-ix/.
- 4th International Symposium on Thermal-Fluid Dynamics (ISTFD2023), July 27-29 2023, Nanjing, China. http://www.istfd.com/.
- 20th International Symposium on Flow Visualization (ISFV 2023), Delft University of Technology, Netherlands, 10-13 July 2023. https://www.isfv20.org.